ST ANNE'S, LONDON

Baseline Dust Monitoring

Prepared for: **British Land Property Management**

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1.0 INTRODUCTION

SLR Consulting Ltd (SLR) has been commissioned by British Land Property Management to undertake Dust Monitoring to support a pre-commencement condition discharge in relation to the development of the consented at St Anne's Church, London.

1.1 Background

The Consented Development of St Anne's Church is located within London Borough of Camden (LBoC) and was granted planning consent on 21st of November 2017 (application number: **2016/6069/P**).

The Consented Development is the erection of part 6, part 9 storeys residential building, to provide 22 flats and other ancillary works following the demolition of St Anne's Church, London.

The application was granted consent by LBoC subject to a number of conditions. The following condition was included in regards to air quality:

> *"16 Air Quality Monitoring:*
>
> *Air quality monitoring shall be implemented on site. No development shall take place within:*
>
> *A) The commercial element; or*
> *B) The residential element of the development*
>
> *until full details of the air quality monitors for that element 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 and have been in place for 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.*
>
> *Reason: To safeguard the amenities of the adjoining premises and the area generally in accordance with the requirements of policies A1, D1 and CC4 of the London Borough of Camden Local Plan 2017."*

This report provides full details of the air quality monitors for the Residential Element of the Development only (Part B above).

1.2 Site Description

The Site is currently occupied by St Anne's Church which is a 2-storey building.

St Anne's church is surrounded by and attached to residential buildings of a similar height immediately to the north. The Site is also surrounded by residential buildings on Longford Street to the south and Laxton Place road west. These buildings are 4 storeys higher in the south and 3 storeys higher in the west than St Anne's Church. Immediately to the east of the Site is an open grassy space which is part of West Minster Kingsway Collage, an educational establishment which situated beyond the open space.

1.3 Scope

This report has been prepared to show compliance with pre-commencement condition 16(B) and to demonstrate that the air quality monitoring has been installed.

The scope of the assessment includes the following aspects:

- Monitoring of air quality during the baseline phase; and

- Monitoring of air quality during the construction phase (not addressed in this report).

2.0 RELEVANT AIR QUALITY LEGISLATION AND GUIDANCE

2.1 Air Quality Strategy

The United Kingdom Air Quality Strategy (UK AQS) 2007 for England, Scotland, Wales and Northern Ireland[1] sets out the Government's policies aimed at delivering cleaner air in the United Kingdom (UK). It sets out a comprehensive strategic framework within which air quality policy will be taken forward in the short to medium term, and the roles that Government, industry, the Environment Agency (EA), local government, business, individuals and transport have in protecting and improving air quality.

2.2 Air Quality Standards

The Air Quality Standards Regulations 2010Tranposes into English legislation the requirements of Directive (2008/50/EC) on ambient air quality and cleaner air for Europe and (2004/107/EC) relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air and the Council Decision (97/101/EC) on exchange on information.. 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 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 AQS 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 UK AQS 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. The UK AQS includes more exacting Objectives for some pollutants than those required by EU legislation. This Air Quality Assessment refers to UK Air Quality Standards, as compliance with these standards will also ensure that the less demanding EU Air Quality limit values would also be met.

The Air Quality Strategy defines 'standards' and 'objectives' in paragraph 17:

> *'For the purposes of the strategy:*
>
> *standards are the concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on assessment of the effects of each pollutant on human health including the effects on sensitive subgroups or on ecosystems;*
>
> *objectives are policy targets often expressed as a maximum ambient concentration not to be exceeded, either without exception or with a permitted number of exceedences, within a specified timescale.'*

[1] The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, DEFRA. July 2007.

The Air Quality Standards and Objectives considered within this report are presented within Table 2-1.

Table 2-1
Relevant Air Quality Strategy Standards and Objectives

Pollutant	Standard (µg/m^3)	Measured As	Equivalent percentile
Particulate matter within an aerodynamic diameter of less than 10µm (PM_{10}) (gravimetric)	40	Annual Mean	-
	50	24-hour mean	90.41th percentile of 24-hour means (equivalent to 35 24-hour exceedences)
Particulate matter within an aerodynamic diameter of less than 2.5µm ($PM_{2.5}$) (gravimetric)	25	Annual Mean	-

Applicable Public Exposure

In accordance with the Department for Environment, Food and Rural Affairs' (DEFRA) technical guidance on London Local Air Quality Management (LLAQM.TG(16)), the AQOs should be assessed at locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the objective. A summary of relevant exposure for the objectives presented in Table 2-1 are shown below in Table 2-2.

Table 2-2
Relevant Public Exposure

Objective Averaging Period	Relevant Locations	Objectives should apply at	Objectives should not apply at
Annual Mean	Where individuals are exposed for a cumulative period of 6-months in a year	Building facades of residential properties, schools, hospitals etc.	Facades of offices Hotels Gardens of residences Kerbside sites
24-hour mean	Where individuals may be exposed for eight hours or more in a day	As above together with hotels and gardens of residential properties	Kerbside sites where public exposure is expected to be short term

2.3 Dust Nuisance

Dust is the generic term which the British Standard document BS 6069 (Part Two) used to describe particulate matter in the size range 1 – 75µm (micrometres) in diameter. Dust nuisance is the result of the perception of the soiling of surfaces by excessive rates of dust deposition. Under provisions in the Environmental Protection Act 1990, and subsequent amendments, dust nuisance is defined as a statutory nuisance. There are currently no standards or guidelines for dust nuisance in the UK, nor are formal dust deposition standards specified. This reflects the uncertainties in dust monitoring technology, and the highly subjective relationship between deposition events, surface soiling and the perception of such events as a nuisance. In law, complaints about

excessive dust deposition would have to be investigated by the local authority and any complaint upheld for a statutory nuisance to occur. However, dust deposition is generally managed by suitable on-site practices and mitigation rather than by the determination of statutory nuisance and/or prosecution or enforcement notice(s).

2.4 Relevant Guidance

2.4.1 Sustainable Design & Construction SPG

The Greater London Authority (GLA) published Supplementary Planning Guidance[2] (SPG) on the implementation of London Plan Policy 5.3 - Sustainable Design and Construction, as well as a range of policies, primarily in Chapters 5 and 7 that deal with matters relating to environmental sustainability in 2014. The Mayor's priorities concerning air quality, and of relevance to this Dust Monitoring, are outlined below:

- Developers are to design their schemes so that they are at least 'air quality neutral' (Policy 7.14);
- Developments should be designed to minimise the generation of air pollution (Policies 5.3, 7.14);
- Developments should be designed to minimise and mitigate against increased exposure to poor air quality (Policies 3.2, 5.3, 7.14); and
- Developers and contractors should follow the guidance set out in the emerging The Control of Dust and Emissions during Construction and Demolition SPG when constructing their development (Policies 5.3, 7.14).

2.4.2 Construction and Dust Demolition Guidance

The Control of Dust and Emissions during Construction and Demolition, SPG was published in July 2014 by the GLA. It seeks to reduce emissions of dust, PM_{10} and $PM_{2.5}$ from construction and demolition activities in London.

With regard to monitoring of dust emissions at demolition and construction sites, the guidance states the following:

> *"All demolition and construction sites should be monitored for the generation of air pollution. It is essential to monitor for dust generation, including PM_{10}. For smaller sites this can be simply visual monitoring. The need to monitor $PM_{2.5}$ and NO_2 will be determined on a case by case basis by the local planning authority. The need for monitoring will generally depend on existing air quality, air pollution risks from the development, the technical practicalities and financial implications of such monitoring".*

The guidance states that monitoring schemes vary from simple visual assessments for low risk sites to the installation of real time automatic monitors for PM_{10} for high risk sites. The guidance also states that for certain sites, it may be appropriate to determine the existing (baseline) pollution levels prior to commencement of any construction activities.

A summary of the best practice monitoring methods for automatic analysers set out by the SPG is as follows:

- Provision of high resolution measurements (typically hourly or shorter time periods);
- Maintain a high standard of maintenance, calibration and QA/QC procedures;
- Acknowledgement that monitors can measure various particulate fractions when fitted with designated inlet heads;

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2 Greater London Authority. Sustainable Design and Construction – SPG, Greater London Authority, 2014.

- Ensure results from monitors with heated inlets (i.e. TEOM or beta-attenuation analysers) are corrected by a factor of 1.3 when comparison to AQS objectives is undertaken; and
- Gravimetric monitoring is considered to be the most accurate; however this method typically measures over 24hrs and cannot be used as a trigger system given that instantaneous readings are not possible.

3.0 DUST MONITORING METHODOLOGY

In line with the Control of Dust and Emissions during Construction and Demolition SPG, real time automatic monitoring for PM_{10}, $PM_{2.5}$, $PM_{1.0}$ and TSP (Total Suspended Particles) was installed at the Consented Site. Condition 16(B) attached to the planning permission requires a 3-month air quality monitoring baseline period to be completed for the Residential Element, prior to the construction works commencing within that element.

3.1 Monitoring Approach

For the assessment of baseline pollutant concentrations one monitoring location has been installed on the Site to determine existing pollutant concentrations prior to the commencement of any construction works on site. The west was chosen to identify the existing baseline as this is the direction of the prevailing wind. This is considered representative for the baseline of the whole site as no works are currently being undertaken.

3.2 Monitoring Location

The Consented Site is currently disused. The monitor needed to be positioned securely, in a place accessible to required mains power supply and without causing a health and safety risk to members of the public.

The location of monitor A is shown below in Figure 3-1, with a photograph of the location of the monitor at the Site presented in Appendix A.

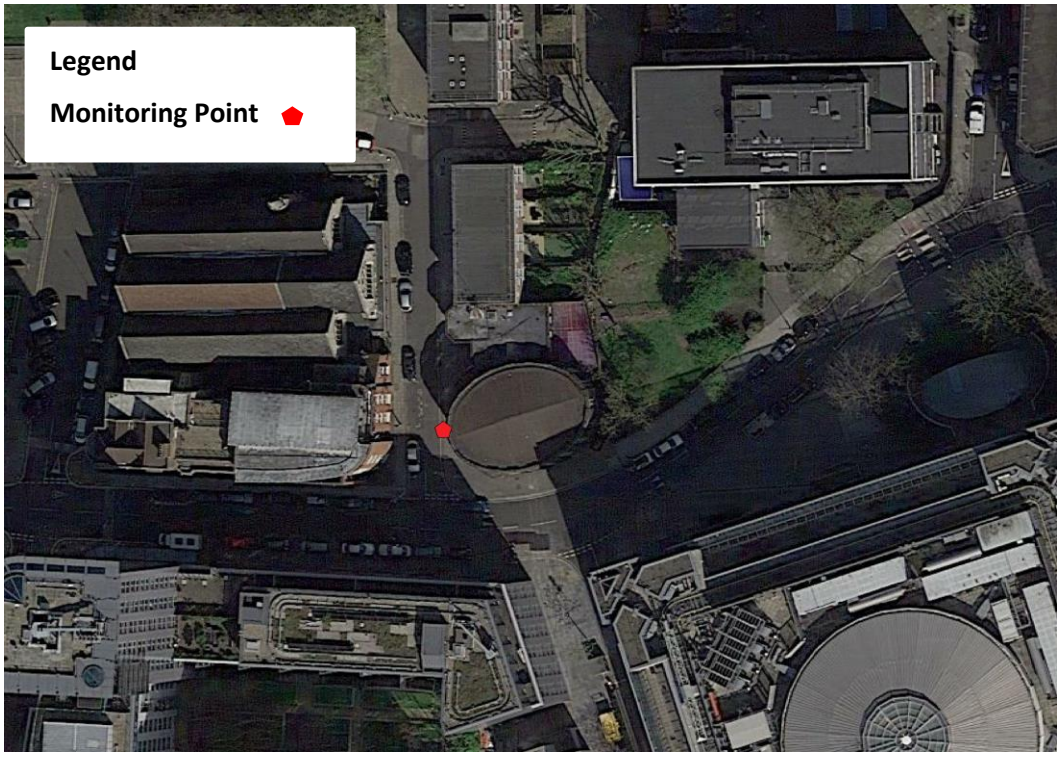


Figure 3-1
Site Map Indicating Approximate Monitoring Location

A description of monitoring location A is given in Table 3-1.

Table 3-1
Description of Dust Monitoring Locations

Position	Description	Sensitive receptors	Grid Reference
Measurement Position A	Monitor placed at approximately 2.5m above ground level on the façade of the existing st Anne's church, on the junction of Longford Street and Laxton Place (see Appendix A)	Residential Blocks (2, Laxton Place and 9, Laxton Place)	X 528992 Y 182395

Site photographs of the dust monitoring installation at monitoring position A are included in Appendix A of this report.

3.3 Monitoring Equipment

Table 3-2 presents a description of the equipment used for the dust monitoring at monitoring location A.

Table 3-2
Description of Equipment used for Dust Monitoring

Monitoring Position	Installation Date	Equipment	Description	Serial Number
A	02/05/2018	INFRA X20DM2 Dust Monitor	Dust particulate sensor	X20DM2 11507

The installed INFRA X20DM2 Dust Monitor is a high quality sensor that simultaneously measures the airborne particle concentrations of PM_{10}, $PM_{2.5}$, $PM_{1.0}$ and TSP (Total Suspended Particles), in accordance with the best practice guidelines of the GLA SPG. The measurement range of the INFRA X20DM2 Dust Monitor is:

- 0.1 – 6000µg/m³ for PM_{10} and TSP; and
- 0.01 – 600µg/m³ for $PM_{2.5}$ and PM_1.

The dust monitor that was installed monitored in real time and had a remote telemetry online portal to view monitoring data. As such, the monitors met the requirements of the GLA SPG.

Dust monitoring commenced for the Residential Element on 3rd May 2018, which, as required by planning condition 16, is at least 3 months prior to implementation. Evidence that monitoring station A has been in place since the 3nd May 2018 for a total of 3 months is provided by the results presented Appendix B.

It should be noted that on 20th July 2018 the power supply to the Site was disabled preventing the dust monitor from continuing to operate. The dust monitor recommenced operation on the 28th August 2018. To ensure planning condition was met, monitoring continued until the 9th September 2018 to supply a full three months of monitoring.

4.0 CONCLUSIONS

SLR installed dust monitoring at St Anne's, London to monitor concentrations of PM_{10} over a 3-month baseline period.

Monitoring started on the 3rd May 2018 until 20th of July 2018, and recommenced on the 28th August 2018 until the 9th September 2018.

Therefore, it can be considered that pre-commencement planning condition 16(B) in association with application reference: 2016/6069/P is in part being met with reference to the installation of the dust monitoring equipment for a three month baseline period in line with the GLA Control of Dust and Emissions During Construction and Demolition SPG requirements.

APPENDIX A

Site Photograph

Figure A-01 Monitoring Location A

APPENDIX B

Monitoring Results

Figure B-01 Monitoring results for May 2018 Location A

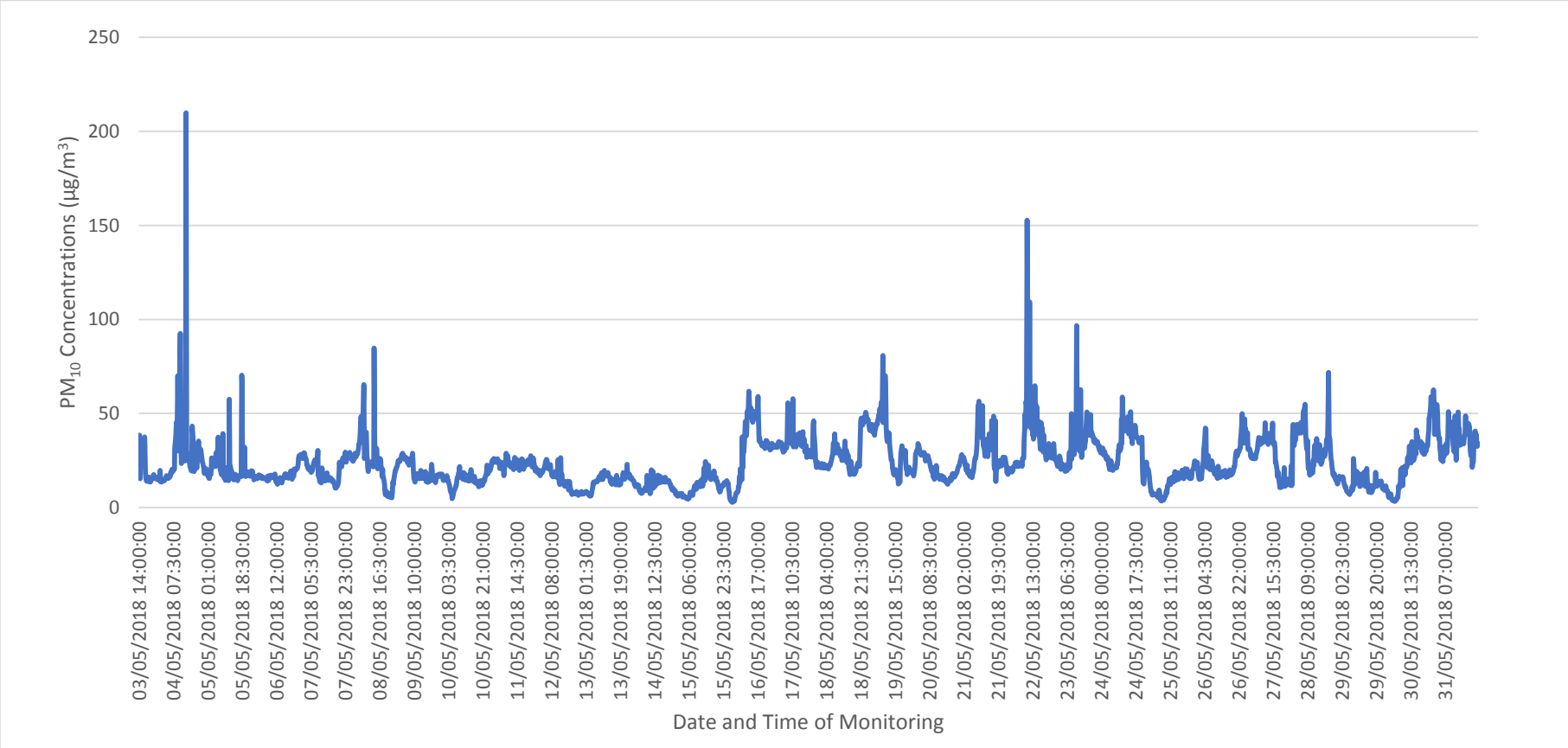


Figure B-02 Monitoring results for June 2018 Location A

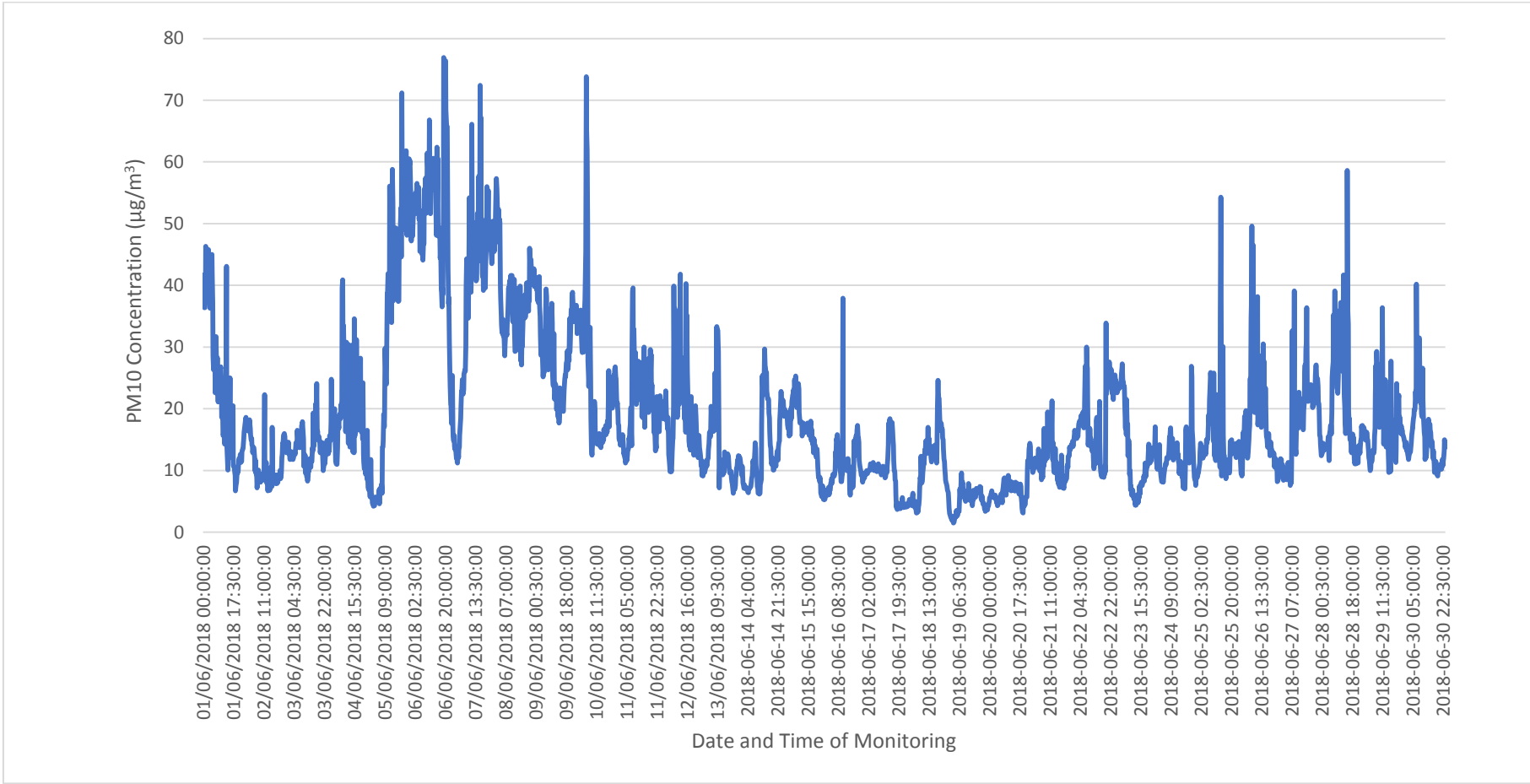


Figure B-03 Monitoring results for July 2018 Location A

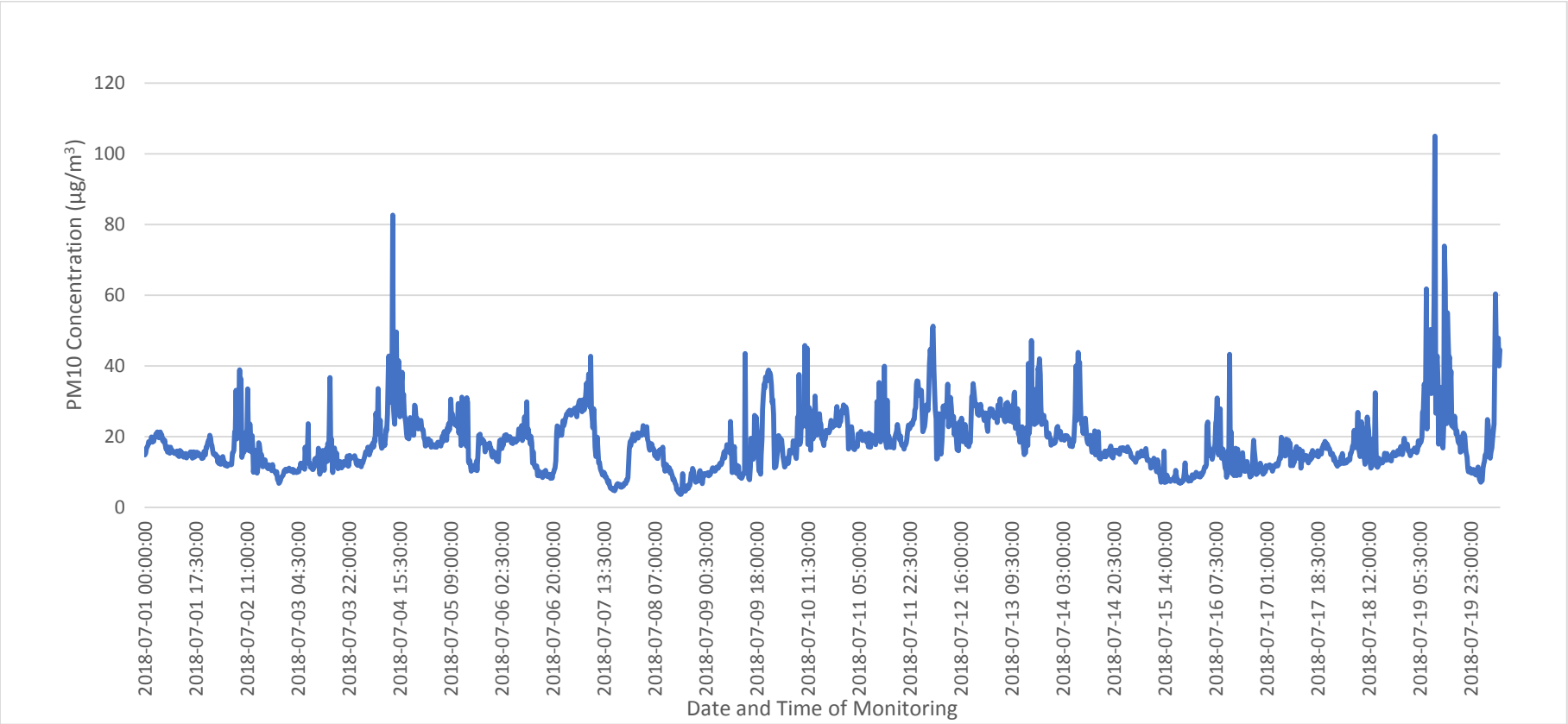
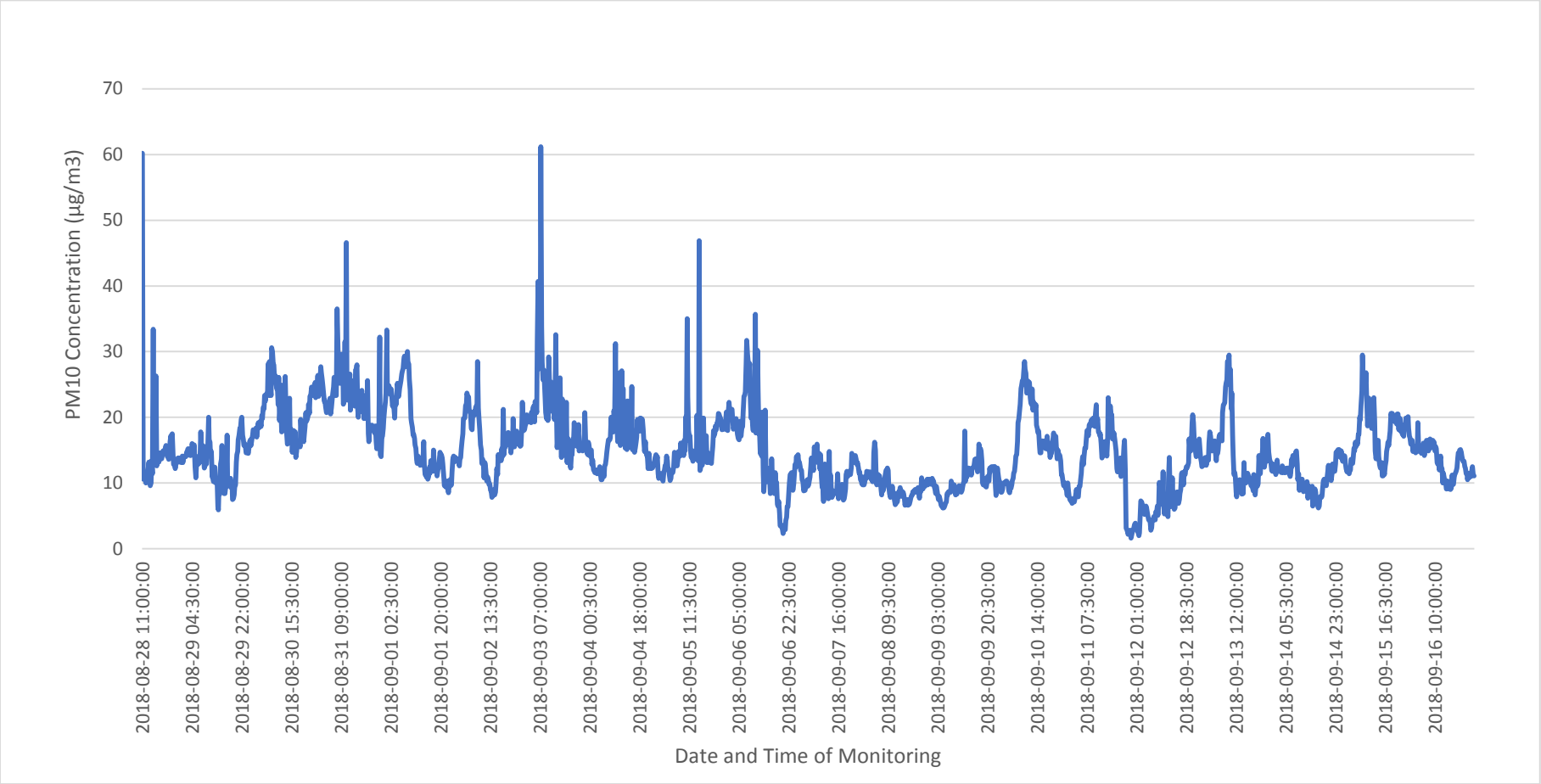


Figure B-04 Monitoring results for August and September 2018 Location A



EUROPEAN OFFICES

United Kingdom

AYLESBURY
T: +44 (0)1844 337380

BELFAST
T: +44 (0)28 9073 2493

BRADFORD-ON-AVON
T: +44 (0)1225 309400

BRISTOL
T: +44 (0)117 906 4280

CAMBRIDGE
T: + 44 (0)1223 813805

CARDIFF
T: +44 (0)29 2049 1010

CHELMSFORD
T: +44 (0)1245 392170

EDINBURGH
T: +44 (0)131 335 6830

EXETER
T: + 44 (0)1392 490152

GLASGOW
T: +44 (0)141 353 5037

GUILDFORD
T: +44 (0)1483 889800

LEEDS
T: +44 (0)113 258 0650

LONDON
T: +44 (0)203 805 6418

MAIDSTONE
T: +44 (0)1622 609242

MANCHESTER
T: +44 (0)161 872 7564

NEWCASTLE UPON TYNE
T: +44 (0)191 261 1966

NOTTINGHAM
T: +44 (0)115 964 7280

SHEFFIELD
T: +44 (0)114 245 5153

SHREWSBURY
T: +44 (0)1743 23 9250

STAFFORD
T: +44 (0)1785 241755

STIRLING
T: +44 (0)1786 239900

WORCESTER
T: +44 (0)1905 751310

Ireland

DUBLIN
T: + 353 (0)1 296 4667

France

GRENOBLE
T: +33 (0)4 76 70 93 41