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High Speed Rail  
(London-West Midlands)

Air Quality and Dust Monitoring  
Monthly Report - March 2018

London Borough of Camden

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April 2018





## Department for Transport

High Speed Two (HS2) Limited has been tasked by the Department for Transport (DfT) with managing the delivery of a new national high speed rail network. It is a non-departmental public body wholly owned by the DfT.

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## Non-technical summary

This Air Quality and Dust Monitoring Report is published in fulfilment of commitments detailed in the High Speed Rail (London-West Midlands) Environmental Minimum Requirements (EMRs), Annex 1: Code of Construction Practice, for the nominated undertaker to present the results of air quality and dust monitoring carried out within the London Borough of Camden (LBC).

The report presents data during March 2018 from thirteen dust monitoring locations installed around worksites at DB Cargo; One Euston Square, 40 Melton Street and Grant Thornton House, 22 Melton Street; Walkden House, 67-75 & 77-79 Euston Street; Euston Street / Melton Street / Drummond Street block; and the National Temperance Hospital, where demolition and pre-demolition works are underway.

The report also presents data from sixty-four nitrogen dioxide (NO<sub>2</sub>) diffusion tube monitoring locations around highways within the borough during February 2018 as part of the management of air quality where significant effects may occur due to the scheme.

Dust and NO<sub>2</sub> monitoring results can be found in Section 4 of the report. NO<sub>2</sub> concentrations from diffusion tube monitoring over the course of 2018 and running mean can be found in Appendix C. Line charts of monthly data from each dust monitor can also be found in Appendix C.

This report presents data informing both pre-demolition conditions and data collected from monitoring around active work sites within LBC. This and future LBC monthly reports will include a summary of the construction activities occurring; any complaints received; the data recorded over the monitoring period; any periods in exceedance of the agreed trigger levels; the results of any investigations; and, where the works have been found to be the source, any action taken to immediately resolve the issue and to prevent a recurrence.

## Abbreviations and descriptions

AQMA	Air Quality Management Area
AQS	Air Quality Strategy
BPM	Best practicable means
CFA	Community Forum Area
CoCP	Code of Construction Practice
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
EA	Environment Agency
EPUK	Environmental Protection UK
ES	Environmental Statement
HGV	Heavy Goods Vehicle
IAQM	Institute of Air Quality Management
IPPC	Integrated Pollution Prevention and Control
LAPPC	Local Authority Pollution Prevention and Control
LDV	Light Duty Vehicle
LEMP	Local Environmental Management Plan
LGV	Light Goods Vehicle
NO <sub>x</sub>	Oxides of nitrogen
NO <sub>2</sub>	Nitrogen dioxide
PM <sub>10</sub>	Particulate matter with an average aerodynamic diameter not exceeding 10 micrometres
SPG	Supplementary Planning Guidance
ULEV	Ultra Low Emission Vehicle

# 1 Introduction

1.1.1 The nominated undertaker is required to undertake air quality and dust monitoring as necessary to comply with the requirements of the High Speed Rail (London-West Midlands) Environmental Minimum Requirements, including specifically Annex 1: Code of Construction Practice. Monitoring will fulfil the following aims:

- monitoring the effectiveness of mitigation measures;
- monitoring the impact of construction works; and
- inform taking other actions as may be necessary to enable compliance.

1.1.2 Monitoring data and interpretive reports are to be provided to each relevant local authority monthly and shall include a summary of the construction activities occurring, any complaints received, the data recorded over the monitoring period, any periods in exceedance of agreed trigger levels, the results of any investigations; and where the works have been found to be the source, any action taken to immediately resolve the issue and to prevent a recurrence.

1.1.3 The report presents data from Nitrogen Dioxide (NO<sub>2</sub>) Diffusion Tube monitoring carried out around highway locations within the London Borough of Camden (LBC) during February 2018. It also presents continuous dust monitoring data installed around worksites at DB Cargo; One Euston Square, 40 Melton Street and Grant Thornton House, 22 Melton Street; Walkden House, 67-75 & 77-79 Euston Street; Euston Street / Melton Street / Drummond Street block; and the National Temperance Hospital, where demolition works are underway during March 2018.

1.1.4 Current worksites located within LBC are detailed in Figure 1, Appendix A and include:

- DB Cargo shed and adjacent land on Granby Terrace, *worksite ref. S001-WS01*
  - Works activities include soft strip and demolition of former accommodation block and shed.
- St James' Gardens, *worksite ref. S003-WS01*
  - Works activities include archaeological surveys and tree felling.
- National Temperance Hospital, Insull Wing, *worksite ref. S003-WS02*
  - Works activities include pre-demolition surveys.
- Walkden House, 67-75 & 77-79 Euston Street, *worksite ref. S003-WS03*
  - Works activities include pre-demolition surveys.
- Thistle Hotel, Cardington Street, *worksite ref. S003-WS04*
  - Works activities include pre-demolition surveys.
- Ibis Hotel, 3 Cardington Street & 1-3 Cobourg Street, *worksite ref. S003-WS05*

- Works activities include pre-demolition surveys.
- Former National Temperance Hospital, 110-122 Hampstead Road, *worksite ref: S003-WS06*
  - Site office and welfare. Groundworks for future staff accommodation and welfare.
- Euston Street, Melton Street, Drummond Street block, *worksite ref: S003-WS07*
  - Works activities include securing of the site and pre-demolition surveys.
- Euston Square Gardens, *worksite ref: S003-WS08*
  - Works activities include securing of the site, tree felling and temporary footpath construction.
- One Euston Square, 40 Melton Street and Grant Thornton House, 22 Melton Street, *worksite ref: S003-WS09*
  - Works activities include securing site and pre-demolition surveys.
- 132 and 140 Hampstead Road and Petrol Station, *worksite ref: S001-WS02*
  - Staff accommodation and pre-demolition surveys.

## 2 Applicable standards and guidance

### 2.1 Relevant legislation

#### *High Speed Rail (London - West Midlands) Act 2017*

- 2.1.1 On 23 February 2017, Royal Assent was granted for Phase One of HS2. The High Speed Two Bill is now an Act of Parliament (law) i.e. High Speed Rail (London - West Midlands) Act 2017.
- 2.1.2 The Act is accompanied by the Environmental Minimum Requirements (EMRs). The EMRs set out the high level environmental and sustainability commitments and are contained in the EMR General Principles document supported by a series of annexes:
  - Annex 1: Code of Construction Practice;
  - Annex 2: Planning Memorandum;
  - Annex 3: Heritage Memorandum; and
  - Annex 4: Environmental Memorandum

#### *Environmental Minimum Requirements: General Principles*

- 2.1.3 The EMR - General Principles require that the controls to be implemented in delivering the scheme (including the EMRs, powers contained in the Act and Undertakings) will ensure that impacts which have been assessed in the ES will not be exceeded. If the significant adverse

impacts identified in the ES are likely to be exceeded, all reasonable steps will be taken to minimise or eliminate those additional impacts.

2.1.1 The EMRs also require compliance with the undertakings and assurances.

2.1.2 Annex 1 to the EMRs comprises a Code of Construction Practice (CoCP), which shall be adopted and implemented by the nominated undertaker in delivering the works, the high level requirements of which are set out below.

### *Code of Construction Practice (CoCP)*

2.1.3 The CoCP details a range of control measures and the standards to be implemented during construction works across Area South (and all of Phase 1 Areas) to protect communities and the environment.

2.1.4 Section 7 of the CoCP stipulates the air quality management controls including monitoring to be implemented. The key requirement is for BPM to be employed to limit dust, odour, and exhaust emissions during construction work.

### **Construction dust**

#### *Environmental Protection Act 1990*

2.1.5 Under Part III of the Environmental Protection Act 1990 (EPA), a local authority has a duty to inspect its area from time to time to detect any statutory nuisances and to take such steps as are reasonably practicable to investigate any complaint of a statutory nuisance made by a person living within its area. Relevant statutory nuisances (under relevant conditions) include dust, odour, smoke, and fumes or gases which are prejudicial to health or a nuisance.

2.1.6 Work sites have the potential to give rise to dust, fumes, and odour during demolition and construction works and need to be managed in accordance with Best Practicable Means (BPM). BPM is defined in Section 79 of the Environmental Protection Act 1990 as those measures which are 'reasonably practicable having regard among other things to local conditions and circumstances, to the current state of technical knowledge and to financial implications'.

#### *Pollution Prevention and Control Act 1999*

2.1.7 The Pollution Prevention & Control Act 1999 and Environmental Permitting (England and Wales Regulations) 2010 which together govern the Environment Agency (EA) Integrated Pollution Prevention and Control (IPPC) and Local Authority Pollution Prevention and Control (LAPPC).

2.1.8 Future air quality related construction operations that may fall within the environmental permitting regime include crushing operations, batching plant and on site waste operations.

2.1.9 Operations such as these will have stringent dust control requirements including monitoring and inspections as conditions of their permit.

## **Air quality around highways**

### *EU and UK Air Quality Management Legislation*

- 2.1.1.10 In 1996 the European Commission published the Air Quality Framework Directive on ambient air quality assessment and management (96/62/EC). This directive defined the policy framework for 12 air pollutants known to have harmful effects on human health and the environment. Limit values (pollutant concentrations not to be exceeded by a certain date) for each specified pollutant were set through a series of Daughter Directives. Directive 1999/30/EC (the 1st Daughter Directive) sets limit values for NO<sub>2</sub> and PM<sub>10</sub> (amongst other pollutants) in ambient air.
- 2.1.1.11 In May 2008 the Directive 2008/50/EC on ambient air quality and cleaner air for Europe came into force. This Directive consolidates the above (apart from the 4th Daughter Directive), makes provision for extended compliance deadlines and sets new limit values for fine particulate matter (PM<sub>2.5</sub>).
- 2.1.1.12 The Directive 2008/50/EC was transposed into national legislation in England by the Air Quality Standards Regulations 2010 (as amended). The Secretary of State for the Environment has the duty of ensuring the air quality limit values are complied with.
- 2.1.1.13 The air quality limit values and objectives for England for the pollutants relevant to this project are detailed in Table 1 below.

Table 1 – UK air quality objectives relevant to construction dust and highways

Pollutant	Averaging period	Limit value / objective
<i>Human health</i>		
Nitrogen dioxide (NO <sub>2</sub> )	Annual mean	40 µg/m <sup>3</sup>
	1-hour mean	200 µg/m <sup>3</sup> [not to be exceeded more than 18 times a year (99.8th percentile)]
Particulate matter (PM <sub>10</sub> )	Annual mean	40 µg/m <sup>3</sup>
	24-hour mean	50 µg/m <sup>3</sup> not to be exceeded more than 35 times a year (90.4th percentile)
Fine particulate matter (PM <sub>2.5</sub> )	Annual mean	25 µg/m <sup>3</sup>
<i>Vegetation</i>		
Oxides of nitrogen (NO <sub>x</sub> )	Annual mean	30 µg/m <sup>3</sup>

## 2.2 Relevant guidance

### Construction dust

#### *IAQM Guidance*

- 2.2.1 The Institute of Air Quality Management (IAQM) has published guidance on air quality monitoring in the vicinity of demolition and construction sites, which sets up to date monitoring protocols and techniques (*IAQM (2012) Guidance on air quality monitoring in the vicinity of demolition and construction sites*). The approach to monitoring is based on the risk rating for the demolition / construction site, derived from an assessment of construction dust emissions as described in the *IAQM (2014) Guidance on the assessment of dust from demolition and construction*.
- 2.2.2 The IAQM guidance proposes that visual inspections for dust emissions are undertaken at least once on each working day and the results clearly recorded in the site log for all construction / demolition sites (regardless of the risk rating).
- 2.2.3 The IAQM guidance also suggests where dust monitoring is required based on the level of risk of dust emissions.
- 2.2.4 In the Area South priority will be given to using near real time measurements of airborne dust, to provide information for active dust management.
- 2.2.5 The guidance recommends the use of a real-time measurement site action level of 250 µg/m<sup>3</sup> (15min) unless other information becomes available, at which point a more appropriate level can be set.

### *GLA Guidance*

- 2.2.6 The Mayor's Supplementary Planning Guidance (SPG) on the control of dust and emissions during construction and demolition includes site monitoring protocols depending on the risk category of the site. The GLA guidance replicates the IAQM 2014 risk assessment matrix and associated control measures and monitoring requirements based on the level of risk of dust emissions.

### **Air quality around highways**

#### *Local Air Quality Management: Technical Guidance LAQM.TG(16)*

- 2.2.7 Defra's *Technical Guidance (TG16)*<sup>1</sup> sets the requirements and considerations to be taken when monitoring concentrations of NO<sub>2</sub> associated with highways. It provides recommendations for the selection of appropriate locations and the duration of the monitoring surveys and it specifies minimum requirements for quality assurance and quality control, laboratory performance, precision and bias.

## **3 Monitoring methodology**

### **3.1 Construction dust**

- 3.1.1 Monitoring of dust during construction of the project will be undertaken in accordance with Section 7 of the CoCP. The CoCP refers to the best practice in the IAQM and the GLA guidance documents as detailed in section 2.
- 3.1.2 Future visual inspections for dust emissions will be undertaken at least once on each working day and the results recorded in the site log for all construction / demolition sites (regardless of the risk rating)
- 3.1.3 Dust will be measured at appropriate locations at the site boundary and/or at sensitive receptors using instruments that provide continuous measurements of particulate matter as PM<sub>10</sub>. As a minimum standard of measurement uncertainty, these instruments shall be certified through MCERTS as being indicative ambient particulate monitors.

### **Risk rating**

- 3.1.4 The risk rating for future demolition / construction work sites will be based on IAQM 2014 construction dust assessment guidance. Each detailed assessment will follow the methodology provided in the aforementioned IAQM, guidance. The risk assessment for each demolition/construction work site will assess:
- Potential magnitude of dust emissions.
  - Sensitivity of the area.

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<sup>1</sup> See also: London Local Air Quality Management Technical Guidance LLAQM(TG.16)

- Risk of dust impacts.
- Assessment of cumulative effects.
- Mitigation measures to be considered.
- Monitoring requirements.

3.1.5 The risk ratings for DB Cargo; One Euston Square, 40 Melton Street and Grant Thornton House, 22 Melton Street; Walkden House, 67-75 & 77-79 Euston Street; Euston Street / Melton Street / Drummond Street block; former National Temperance Hospital, Insull Wing, Thistle Hotel, IBIS Hotel, and 132 and 140 Hampstead Road and Petrol Station are 'High' and therefore require real time dust monitoring. More real time dust monitoring associated with these sites will be installed in the coming months in advance of the commencement of demolition works.

3.1.6 Given the nature of the future archaeological works at St James' Garden and works at Euston Square Gardens the level of risk of dust being generated by the works is not considered sufficient to require monitoring.

### **Monitoring locations**

3.1.7 Current dust monitoring locations have been established at locations near sensitive receptors around worksites at DB Cargo; One Euston Square, 40 Melton Street and Grant Thornton House, 22 Melton Street; Walkden House, 67-75 & 77-79 Euston Street; Euston Street / Melton Street / Drummond Street block; and the National Temperance Hospital, where demolition works are currently underway. These monitoring locations are detailed in Table 2 below and in Figure 2 in Appendix B.

Table 2 – Monitoring locations – construction dust

Worksite reference	Monitoring site ID	Grid reference (x,y)	Location description	Area of works	Dust risk rating for site	Monitoring site active during period (Y/N)	Change to site since previous period report (Y/N)
S001-WS01	AQ001	529016, 183049	Junction of Park Village East, Stanhope Street and Granby Terrace	DB Cargo	H	Yes	Y
S001-WS01	AQ002	528924, 183130	Park Village East	DB Cargo	H	Yes	Y
S003-WS09	AQ004	529533, 182519	Melton Street	One Euston Square, 40 Melton Street and Grant Thornton House, 22 Melton Street	H	Yes	N/A
S003-WS03	AQ005	529498, 182502	Stephenson Way	Walkden House, 67-75 & 77-79 Euston Street	H	Yes	N/A
S003-WS03	AQ006	529408, 182528	Euston Street	Walkden House, 67-75 & 77-79 Euston Street	H	Yes	N/A
S003-WS07 and WS03-05	AQ007	529394, 182580	Drummond Street	Euston Street / Melton Street / Drummond Street block	H	Yes	N/A
S003-WS09	AQ009	529707, 182729	Eversholt Street	One Euston Square, 40 Melton Street and Grant Thornton House, 22 Melton Street	H	Yes	N/A
S001-WS02	AQ011	529198, 182889	Hampstead Road	National Temperance Hospital	H	Yes	N/A
TBC-Future site to be established	AQ012	529118, 182933	Harrington Street	Future site to be established	H	Yes	N/A
TBC - Future Lorry	AQ015	528550, 183602	Prince Albert Road	Future Lorry Holding area	L	Yes	N/A

Holding area							
S001-WS01	AQ016	528820, 183498	Mornington Terrace North	DB Cargo	H	Yes	N/A
S001-WS01	AQ017	528962, 183274	Mornington Terrace South	DB Cargo	H	Yes	N/A
TBC-Future site to be established	AQ018	529192, 182954	Hampstead Road North	TBC-Future site to be established	H	Yes	N/A

## 3.2 Air quality around highways

3.2.1 The locations, duration and standard of air quality monitoring around highways is being undertaken in accordance with Defra's TG16 guidance and any future revisions of it.

### Monitoring locations

3.2.2 Table 3 lists the HS2 diffusion tube locations in Camden. Figure 3 in Appendix B shows the location of the diffusion tubes.

Table 3 – Monitoring locations for Camden – air quality around highways

Monitoring site ID	Grid reference (x,y)	Location description
HS2-000020BM5	530436, 182929	Junction of St Chad's Street and Grays Inn Road
HS2-000020BM6	530321, 182268	Brunswick Square
HS2-000020BM7	529894, 182702	Chalton Street
HS2-000020BM8	529737, 182641	Junction of Euston Square and Grafton Place
HS2-000020BM9	529785, 182529	Junction of Endsleigh Gardens and Upper Woburn Place
HS2-000020BMA	529429, 182375	Junction of Euston Road and Gower Street
HS2-000020BMB	529273, 182114	Whitfield Street
HS2-000020BMC	529232, 182511	Hampstead Road
HS2-000020BMF	529715, 183123	Junction of Polygon Road and Ossulston Street
HS2-000020BMH	528861, 182717	Nash Street
HS2-000020BMJ	529080, 182698	Junction on Robert Street and Stanhope Street
HS2-000020BMK	529196, 183546	Junction of Plender Street and Bayham Street
HS2-000020BML	529093, 183356	Junction of Arlington Road and Mornington Crescent
HS2-000020BMM	529084, 183722	Junction of Bayham Street and Pratt Street
HS2-000020BMN	528850, 183573	Junction of Delancey Street and Albert Street

Monitoring site ID	Grid reference (x,y)	Location description
HS2-000020BMQ	528662, 183604	Junction of Parkway and Delancey Street
HS2-000020BMR	528548, 183967	Junction of Oval Road and Jamestown Road
HS2-000020BMS	528685, 184188	Junction of Chalk Farm Road and Castlehaven Road
HS2-000020BMT	529079, 184043	Junction of Camden Road and Camden Street
HS2-000020BMU	527783, 185407	Junction of Southampton Road and Fleet Road
HS2-000020BMV	527538, 184250	Primrose Hill Road
HS2-000020BMW	526619, 184081	Junction of Finchley Road and Hilgrove Road
HS2-000020BMZ	525102, 186042	Junction of Finchley Road and Hendon Way
HS2-000020BNA	527884, 183980	Junction of Regent's Park Road and Rothwell Street
HS2-000020BNB	528639, 183518	Junction of Gloucester Gate Bridge and Park Village East
HS2-000020BNC	528528, 183443	Junction of Outer Circle and Gloucester Gate
HS2-000020BNH	528763, 183720	Junction of Parkway and Albert Street
HS2-000020BNN	530744, 181308	Lincoln's Inn Fields
HS2-000020BNQ	529735, 183737	Camley Street
HS2-000020BNY	524839, 185136	Junction of Mill Lane and Hillfield Road
HS2-000020BNZ	528050, 185508	Mansfield Road
HS2-000020BPo	529708, 184871	Junction of Camden Road and Torriano Avenue
HS2-000020BP2	531149, 181616	Junction of Grays Inn Road and Holborn
HS2-000020BPB	528966, 183735	Camden High Street
HS2-000020BPC	528788, 184591	Castlehaven Road
HS2-000020BPD	528571, 184683	Prince of Wales Road
HS2-000020BPE	527710, 184749	Haverstock Hill
HS2-000020BPF	527549, 184640	Junction of Primrose Gardens and England's Lane
HS2-000020BPU	529476, 182267	Junction of Gower Street and Grafton Way
HS2-000020BPV	529653, 182958	Phoenix Road
HS2-000020BPW	528939, 183637	Junction of Delancey Street and Arlington Road
HS2-000020BPX	529177, 182625	Netley Street
HS2-000020BPY	529060, 182947	Stanhope Street
HS2-000020BPZ	528790, 182923	Albany Street

Monitoring site ID	Grid reference (x,y)	Location description
HS2-000020BQ0	529493, 183113	Werrington Street
HS2-000020BQ1	529574, 183045	Polygon Road
HS2-000020BQ2	526320, 183980	Alexandra Place
HS2-000020BQ3	529228, 183172	Harrington Square
HS2-000020BQ4	529290, 182572	Junction of North Gower Street and Starcross Street
HS2-000020BQ5	527713, 184392	Adelaide Road
HS2-000020BQ6	528836, 183474	Mornington Terrace
HS2-000020BQ7	529009, 183479	Arlington Road
HS2-000020BQ8	529024, 183213	Clarkson Row
HS2-000020BQ9	528923, 183121	Park Village East
HS2-000020BQA	529386, 183132	Eversholt Street
HS2-000020BQB	529147, 182816	Junction of Harrington Street and Varndell Street
HS2-000020BQC	529199, 182704	Junction of Robert Street and Hampstead Road
HS2-000020BQD	529648, 182856	Drummond Crescent
HS2-000020BQJ	529380, 182225	Grafton Way
HS2-000020BQK	529398, 182593	Junction of Drummond Street and Cobourg Street
HS2-000020BQL	528768, 183581	Delancey Street
HS2-000020BP4	526633, 184392	Triplicate site on Finchley Road next to Swiss Cottage kerbside automatic monitoring station
HS2-000020BP5	529895, 182657	Triplicate site next to the Euston Road roadside automatic monitoring stations
HS2-000020BP9	530120, 182034	Triplicate site in Russell Square next to Bloomsbury urban background automatic monitoring station

## 4 Monitoring results

### 4.1 Construction dust

#### Data summary

- 4.1.1 For construction and demolition sites with low risk of dust impacts commentary text on visual inspections will be provided in future reports.
- 4.1.2 For construction and demolition sites with medium or high risk of dust impacts future reports will provide:

- Commentary text on any visual inspections undertaken.
- Commentary text on the relevant trigger level; currently 250 µg/m<sup>3</sup> as a 15 minute mean.
- A table of summary statistics for each monitoring site – max, min, mean concentrations of PM<sub>10</sub>, number of exceedances of the trigger level. For the monitors around LBC, these statistics are presented in Table 4 below.
- Line charts of monthly data from each monitor relevant to each site, with trigger level line. The data for monitors around the worksites are included in Appendix C.

Table 4 – Summary statistics – construction dust 15-minute indicative PM<sub>10</sub> concentrations for March 2018

Worksite reference	Monitoring site ID	Mean 15-minute PM <sub>10</sub> concentration (µg/m <sup>3</sup> )	Minimum 15-minute PM <sub>10</sub> concentration (µg/m <sup>3</sup> )	Maximum 15-minute PM <sub>10</sub> concentration (µg/m <sup>3</sup> )	Number of 15-minute periods exceeding trigger level of 250 µg/m <sup>3</sup>	15-minute data capture (%)
S001-WS01	AQ001	13.9	0.6	65.10	0	99.6
S001-WS01	AQ002	13.4	0.5	64.10	0	99.7
S003-WS09	AQ004	12.7	0.8	53.60	0	72.4 <sup>2</sup>
S003-WS03	AQ005	13.8	0.7	62.80	0	99.9
S003-WS03	AQ006	14.8	0.8	74.70	0	99.9
S003-WS07 and WS03-05	AQ007	13.6	0.7	68.50	0	99.9
S003-WS09	AQ009	11.9	0.6	57.20	0	72.6 <sup>2</sup>
S001-WS02	AQ011	5.1	0.4	38.00	0	72.2 <sup>2</sup>
TBC-Future site to be established	AQ012	13.6	0.6	73.20	0	99.8
TBC -Future Lorry Holding area	AQ015	16.7	0.6	125.30	0	75.1 <sup>2</sup>
S001-WS01	AQ016	10.2	0.4	47.60	0	75.5 <sup>2</sup>
S001-WS01	AQ017	11.9	0.5	57.40	0	75.8 <sup>2</sup>

<sup>2</sup> Data capture at monitors AQ004, AQ009, AQ011, AQ015, AQ016, AQ017 and AQ018 was low as sampling at these locations commenced during March 2018.

TBC-Future site to be established	AQ018	15.1	1.3	65.70	0	49.8 <sup>2</sup>
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## 4.2 Air quality around highways

### Data summary

4.2.1 Table 5 below details the monitoring results from the NO<sub>2</sub> diffusion tube monitoring survey in LBC for the month of February. This data is two months in arrears due to the time required for lab analysis.

4.2.2 Table 6 in Appendix C details NO<sub>2</sub> concentrations from diffusion tube monitoring for all previous months in 2018 and running mean (µg/m<sup>3</sup>).

Table 5 – Monitoring results - air quality around highways

Monitoring Site ID	Location description	Provisional NO <sub>2</sub> concentration for February 2018 (µg/m <sup>3</sup> )
HS2-000020BM5	Junction of St Chad's Street and Grays Inn Road	58
HS2-000020BM6	Brunswick Square	41
HS2-000020BM7	Chalton Street	65
HS2-000020BM8	Junction of Euston Square and Grafton Place	64
HS2-000020BM9	Junction of Endsleigh Gardens and Upper Woburn Place	80
HS2-000020BMA	Junction of Euston Road and Gower Street	69
HS2-000020BMB	Whitfield Street	52
HS2-000020BMC	Hampstead Road	59
HS2-000020BMF	Junction of Polygon Road and Ossulston Street	42
HS2-000020BMH	Nash Street	42
HS2-000020BMJ	Junction on Robert Street and Stanhope Street	45
HS2-000020BMK	Junction of Plender Street and Bayham Street	56
HS2-000020BML	Junction of Arlington Road and Mornington Crescent	43
HS2-000020BMM	Junction of Bayham Street and Pratt Street	64
HS2-000020BMN	Junction of Delancey Street and Albert Street	44
HS2-000020BMQ	Junction of Parkway and Delancey Street	61
HS2-000020BMR	Junction of Oval Road and Jamestown Road	43
HS2-000020BMS	Junction of Chalk Farm Road and Castlehaven Road	61
HS2-000020BMT	Junction of Camden Road and Camden Street	62

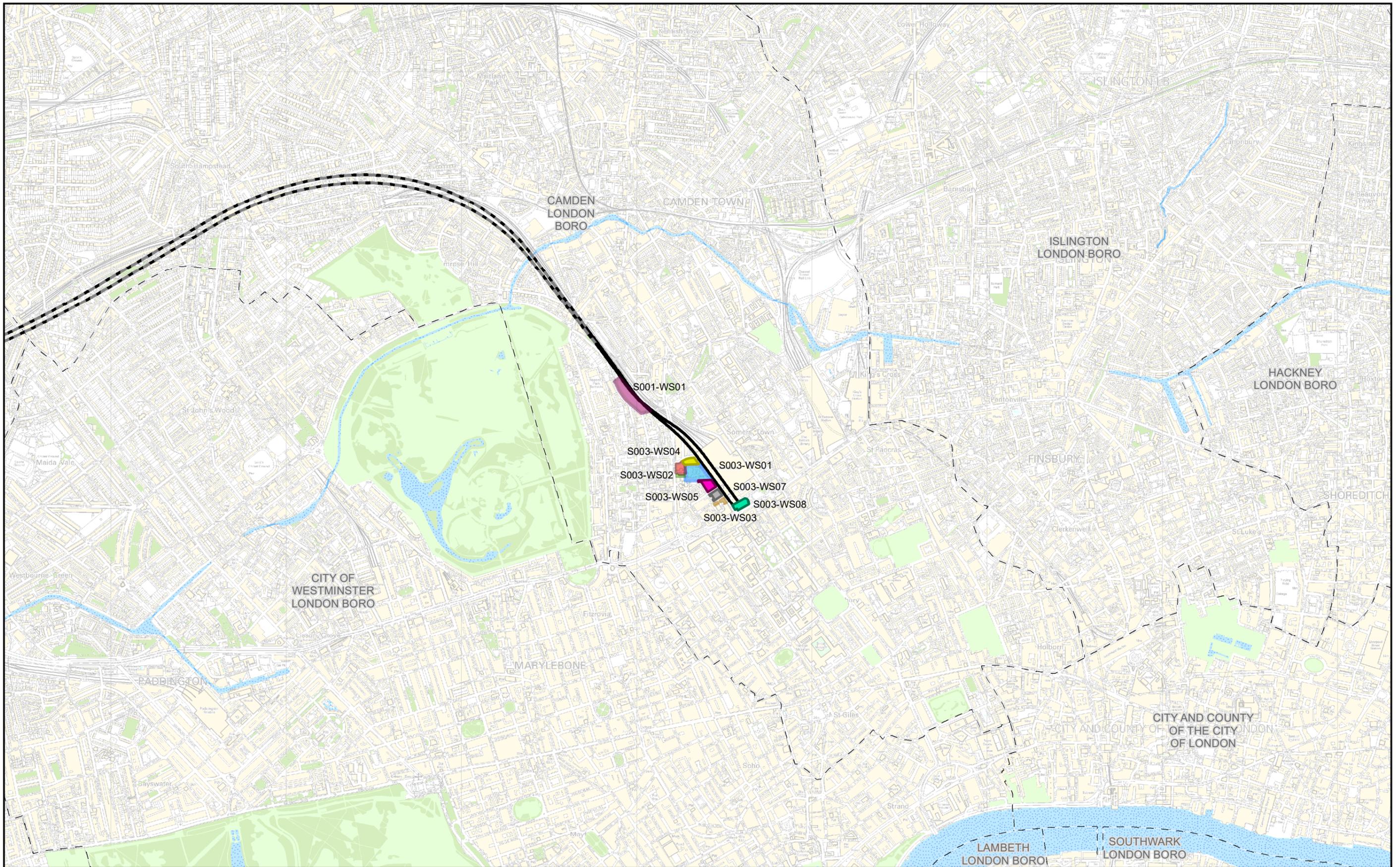
Monitoring Site ID	Location description	Provisional NO <sub>2</sub> concentration for February 2018 (µg/m <sup>3</sup> )
HS2-000020BMU	Junction of Southampton Road and Fleet Road	50
HS2-000020BMV	Primrose Hill Road	46
HS2-000020BMW	Junction of Finchley Road and Hilgrove Road	70
HS2-000020BMZ	Junction of Finchley Road and Hendon Way	88
HS2-000020BNA	Junction of Regent's Park Road and Rothwell Street	44
HS2-000020BNB	Junction of Gloucester Gate Bridge and Park Village East	46
HS2-000020BNC	Junction of Outer Circle and Gloucester Gate	37
HS2-000020BNH	Junction of Parkway and Albert Street	51
HS2-000020BNN	Lincoln's Inn Fields	Tube missing
HS2-000020BNQ	Camley Street	51
HS2-000020BNY	Junction of Mill Lane and Hillfield Road	49
HS2-000020BNZ	Mansfield Road	44
HS2-000020BP0	Junction of Camden Road and Torriano Avenue	74
HS2-000020BP2	Junction of Grays Inn Road and Holborn	57
HS2-000020BPB	Camden High Street	64
HS2-000020BPC	Castlehaven Road	43
HS2-000020BPD	Prince of Wales Road	40
HS2-000020BPE	Haverstock Hill	46
HS2-000020BPF	Junction of Primrose Gardens and England's Lane	40
HS2-000020BPU	Junction of Gower Street and Grafton Way	48
HS2-000020BPV	Phoenix Road	23
HS2-000020BPW	Junction of Delancey Street and Arlington Road	51
HS2-000020BPX	Netley Street	46
HS2-000020BPY	Stanhope Street	43
HS2-000020BPZ	Albany Street	46
HS2-000020BQ0	Werrington Street	46
HS2-000020BQ1	Polygon Road	50
HS2-000020BQ2	Alexandra Place	37
HS2-000020BQ3	Harrington Square	53

Monitoring Site ID	Location description	Provisional NO <sub>2</sub> concentration for February 2018 (µg/m <sup>3</sup> )
HS2-000020BQ4	Junction of North Gower Street and Starcross Street	55
HS2-000020BQ5	Adelaide Road	45
HS2-000020BQ6	Mornington Terrace	41
HS2-000020BQ7	Arlington Road	46
HS2-000020BQ8	Clarkson Row	46
HS2-000020BQ9	Park Village East	48
HS2-000020BQA	Eversholt Street	69
HS2-000020BQB	Junction of Harrington Street and Varndell Street	48
HS2-000020BQC	Junction of Robert Street and Hampstead Road	55
HS2-000020BQD	Drummond Crescent	55
HS2-000020BQJ	Grafton Way	75
HS2-000020BQK	Junction of Drummond Street and Cobourg Street	54
HS2-000020BQL	Delancey Street	55
HS2-000020BP4	Triplicate site on Finchley Road next to Swiss Cottage kerbside automatic monitoring station	Tubes missing
HS2-000020BP5	Triplicate site next to the Euston Road roadside automatic monitoring stations	82
HS2-000020BP9	Triplicate site in Russell Square next to Bloomsbury urban background automatic monitoring station	46

## 4.3 Complaints

4.3.1 There are no complaints relating to dust or air quality in this period.

## Appendix A – Site locations



Legend			
	Route in tunnel		Ibis Hotel, 3 Cardington Street & 1-3 Cobourg Street
	Route on surface		National Temperance Hospital, Insull Wing
	DB Cargo Shed worksite		Walkden House, 65-75 & 77-79 Euston Street
	St. James' Gardens worksite		Thistle Hotel, Cardington Street
	National Temperance Hospital worksite		Euston Street, Melton Street, Drummond Street block
			Euston Square Gardens

Figure Number	
Figure Name	Work Site Locations
London Borough of Camden	

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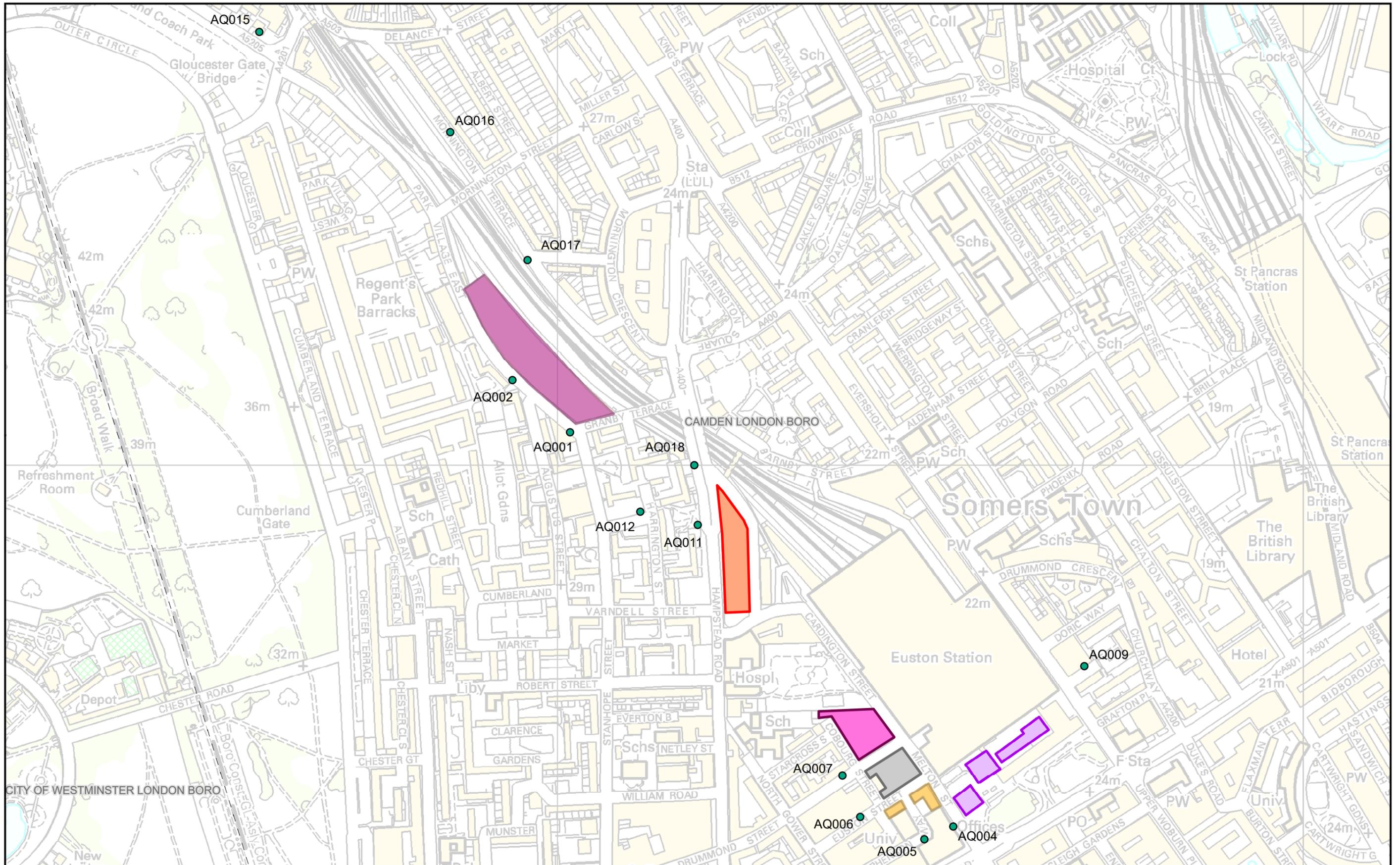
Scale at A3: 20,000

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Date: 08/02/18

## **Appendix B – Monitoring locations**

### **Construction dust**



- Legend**
- Route in tunnel
  - Route on surface
  - Construction Dust Monitoring Locations
  - DB Cargo Shed
  - Ibis Hotel, 3 Cardington Street & 1-3 Cobourgh Street
  - Euston Street, Melton Street, Drummond Street Block
  - Walkden House, 65-75 & 77-79 Euston Street
  - One Euston Square, 40 Melston Street and Gran Thortorn House, 22 Melston Street
  - 132 and 140 Hampstead Road and Petrol Station

Figure Number  
 Figure Name  
**Construction dust monitoring site locations**  
 London Borough of Camden

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 1EW02-CSJ-EV-REP-S000-000013\_appB\_fig2

Date: 20/04/18

## Air quality around highways



- Legend**
- Route in tunnel
  - Route on surface
  - Diffusion tube
  - Diffusion tube (co-located)
  - London Borough of Camden

Figure Number

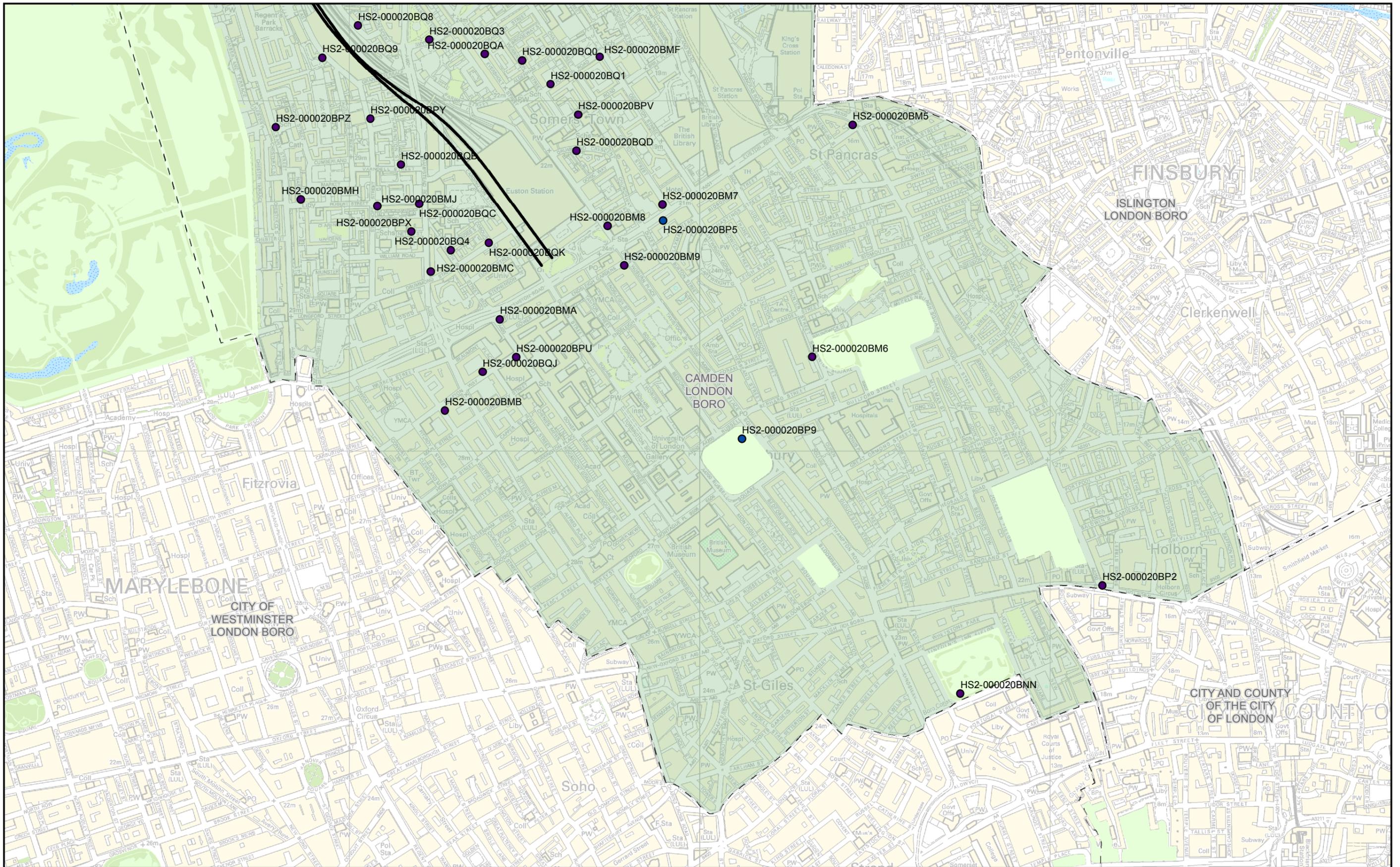
Figure Name  
**Nitrogen dioxide tube monitoring site locations (sheet 1)**

London Borough of Camden

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Scale at A3: 10,000

Metres



- Legend**
- Route in tunnel
  - Route on surface
  - Diffusion tube
  - Diffusion tube (co-located)
  - London Borough of Camden

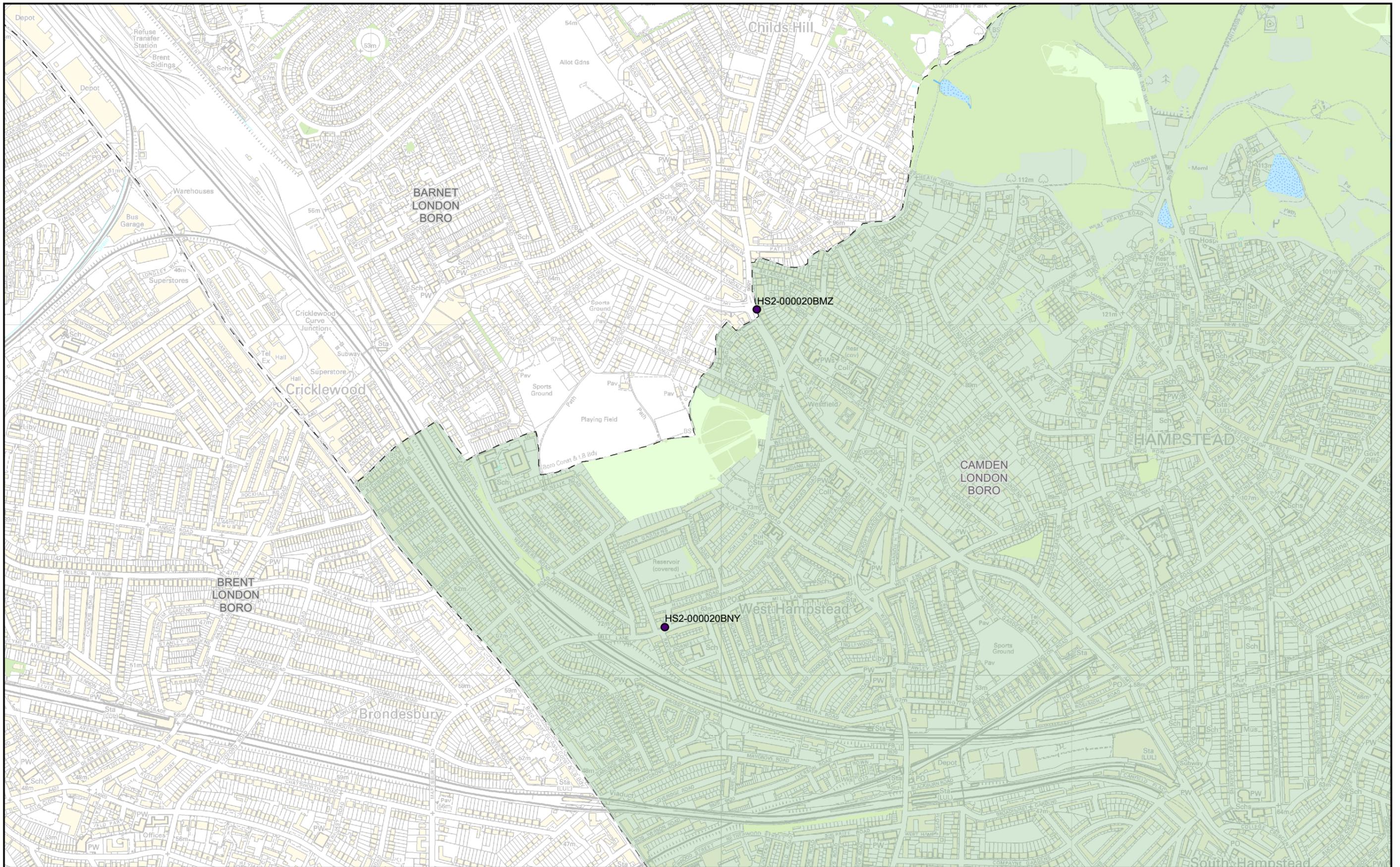
Figure Number  
 Figure Name  
**Nitrogen dioxide tube monitoring site locations (sheet 2)**  
 London Borough of Camden

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 1EW02-CSJ-EV-REP-S000-000013\_appA\_fig1

Date: 11/12/17



- Legend**
-  Route in tunnel
  -  Route on surface
  -  Diffusion tube
  -  Diffusion tube (co-located)
  -  London Borough of Camden

Figure Number

Figure Name  
**Nitrogen dioxide tube monitoring site locations (sheet 3)**

London Borough of Camden



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# Appendix C – Monitoring data

## Construction dust

Figure 6 – Construction dust 15-minute mean indicative PM<sub>10</sub> concentration for monitor AQ001.

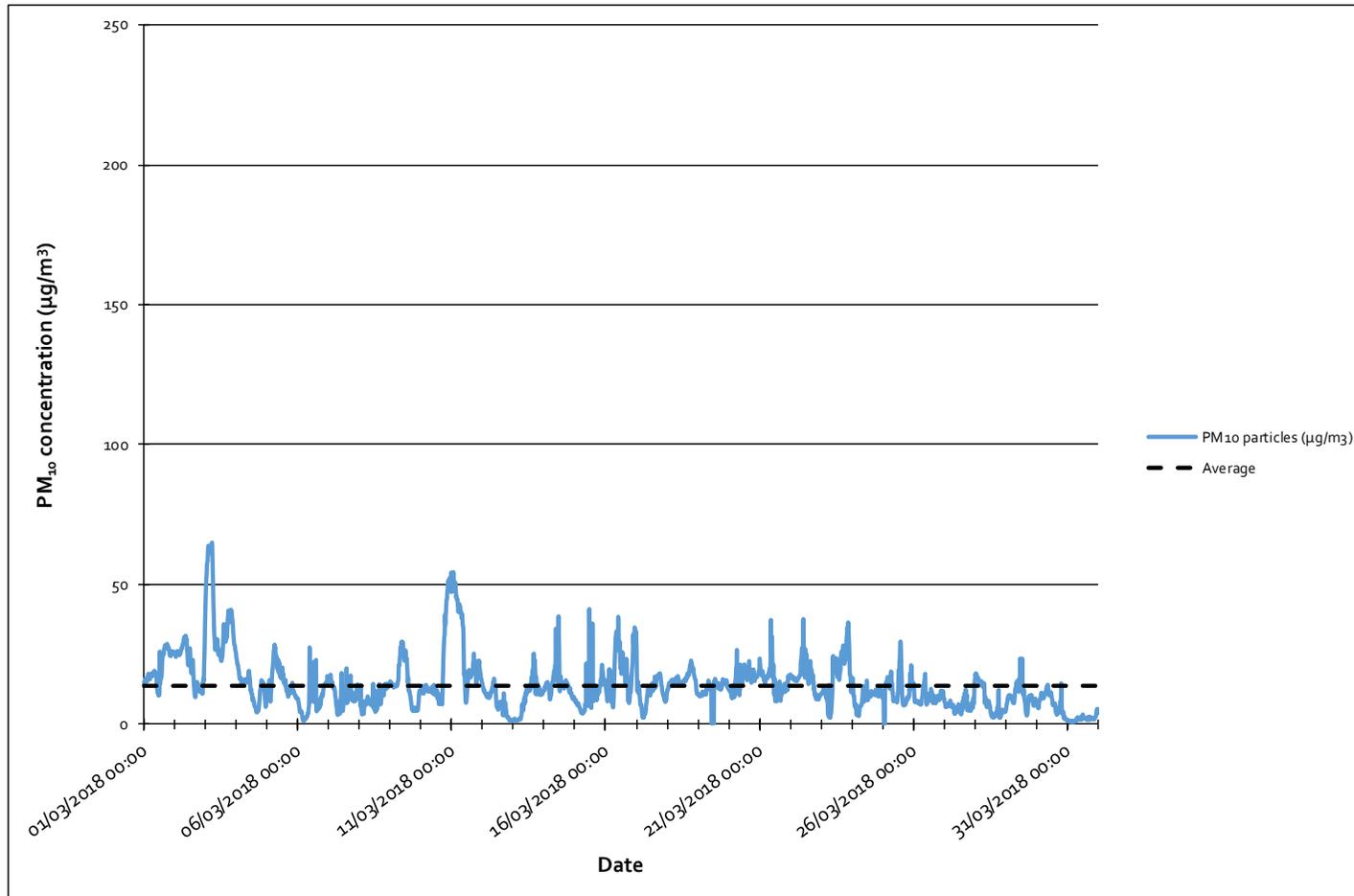


Figure 7– Construction dust 15-minute mean indicative PM<sub>10</sub> concentration for monitor AQ002.

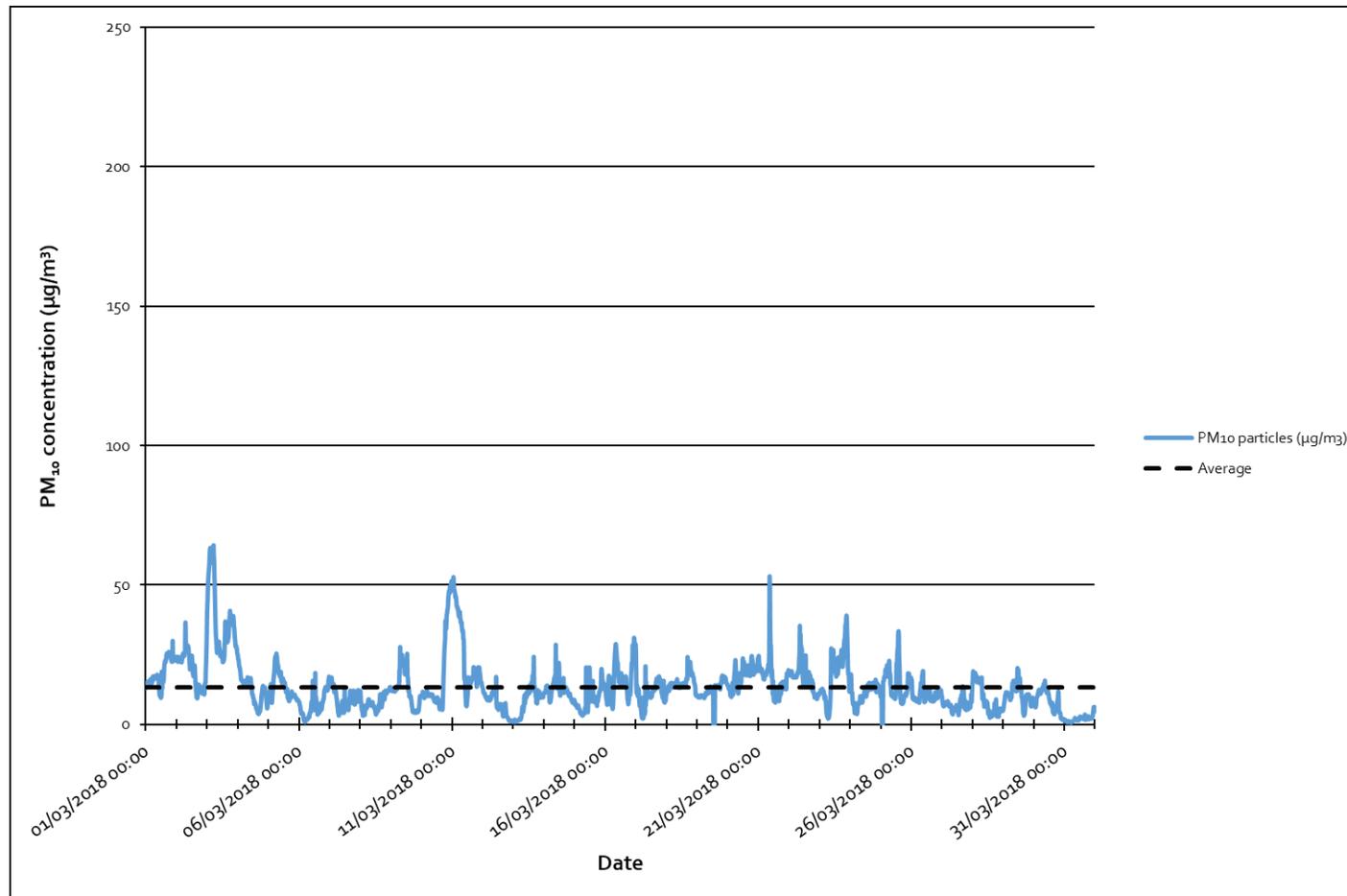


Figure 8– Construction dust 15-minute mean indicative PM<sub>10</sub> concentration for monitor AQ004.

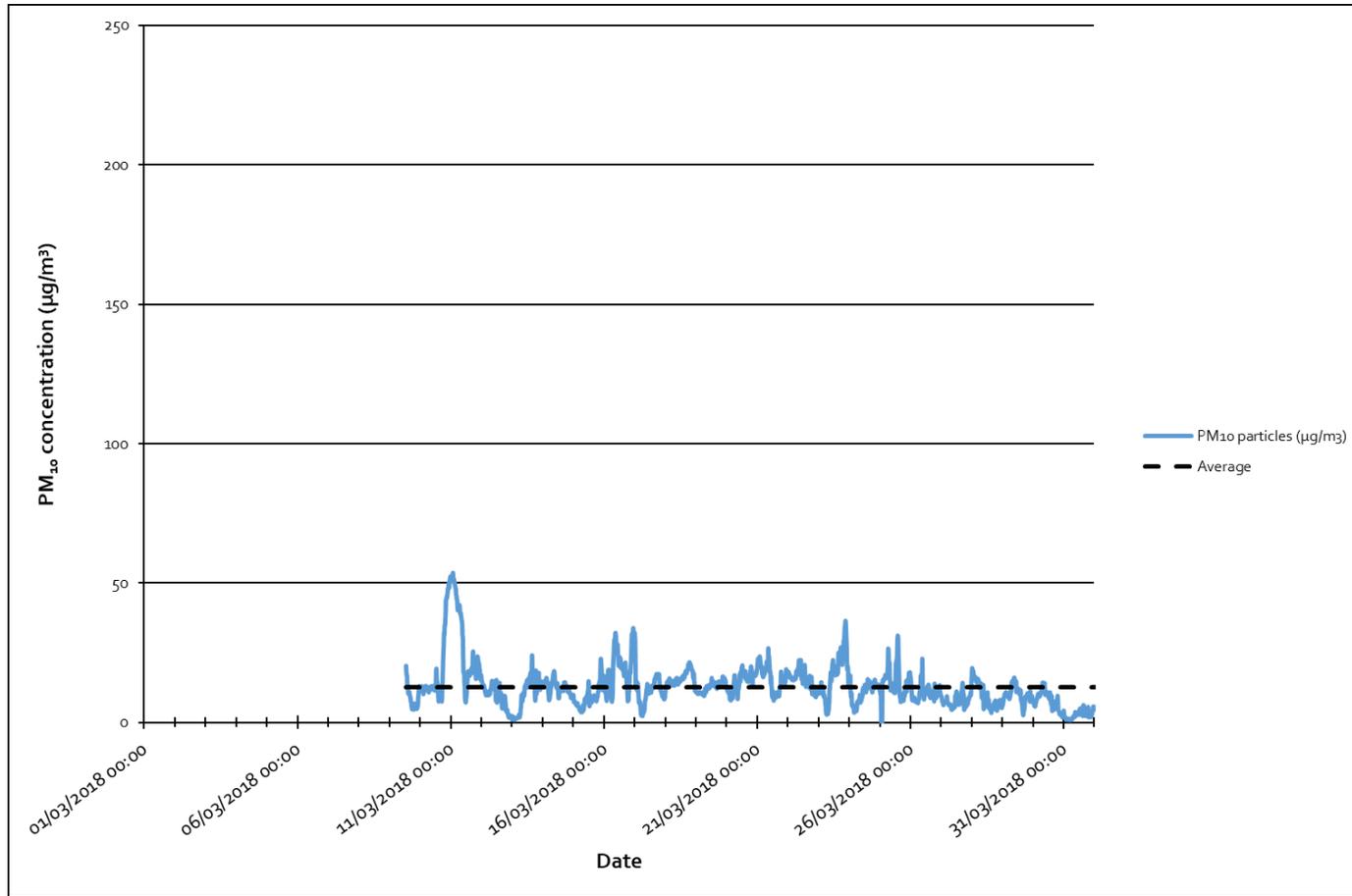


Figure 9– Construction dust 15-minute mean indicative PM10 concentration for monitor AQ005.

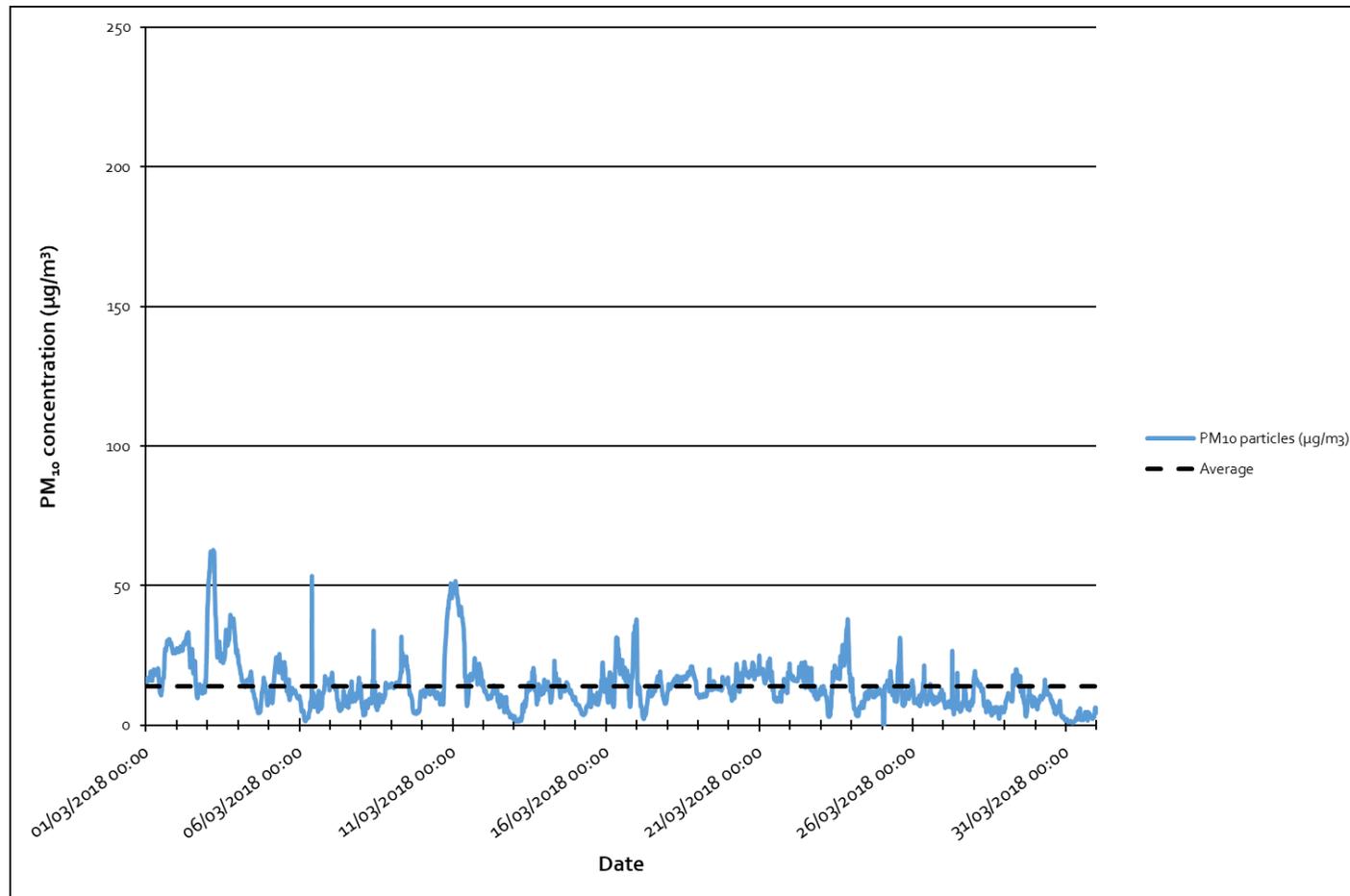


Figure 10– Construction dust 15-minute mean indicative PM<sub>10</sub> concentration for monitor AQ006.

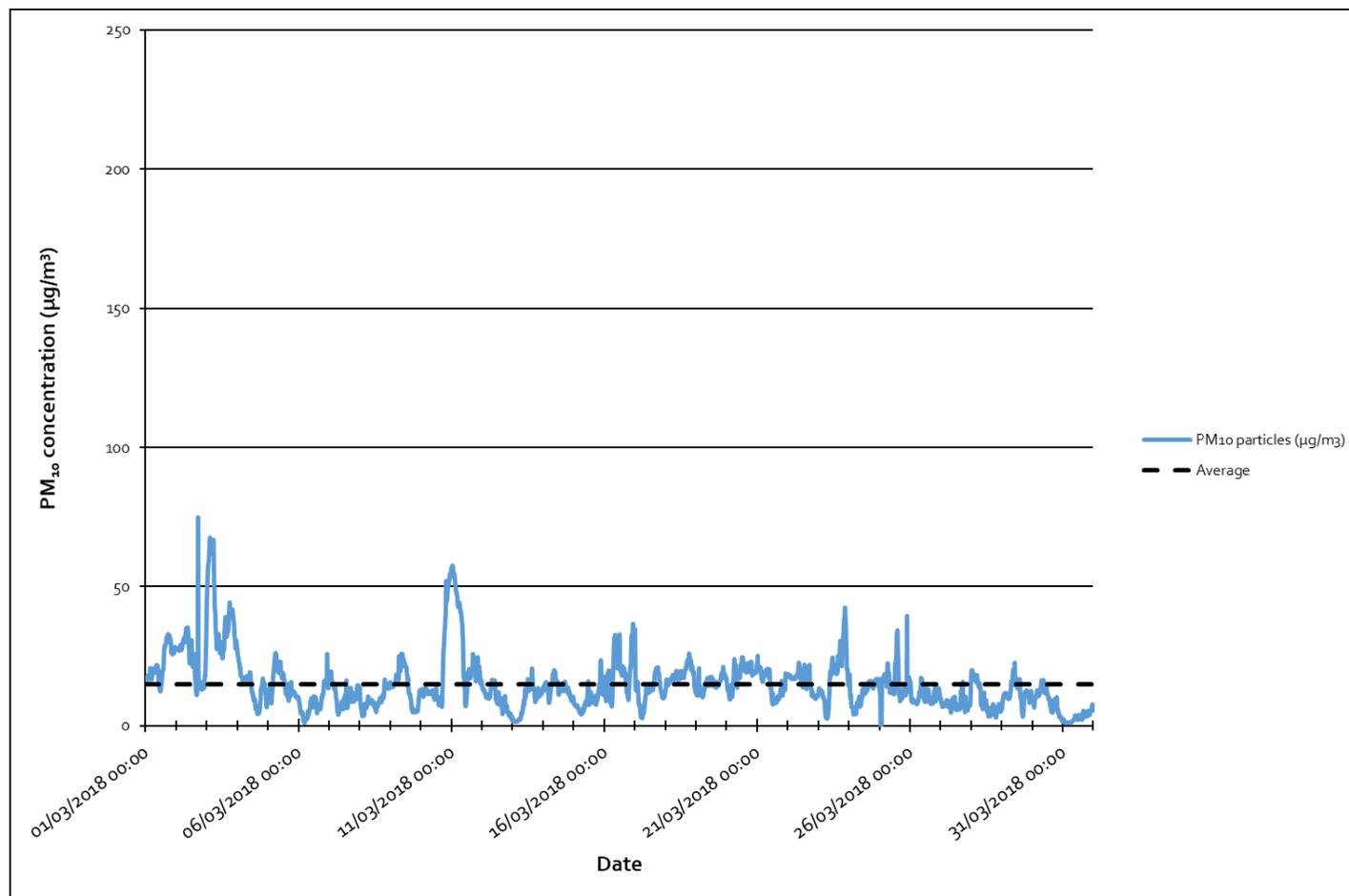


Figure 11– Construction dust 15-minute mean indicative PM<sub>10</sub> concentration for monitor AQ007.

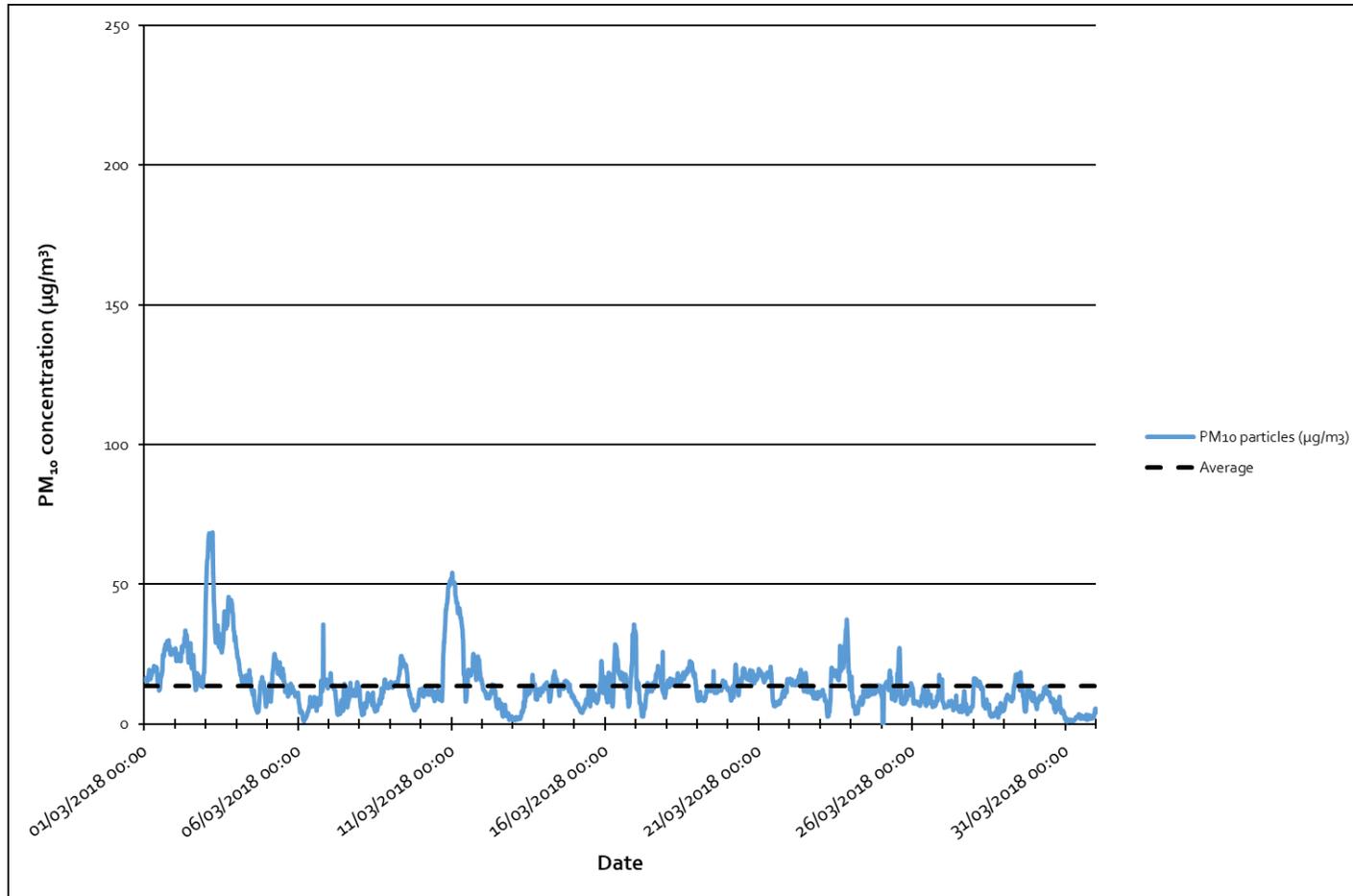


Figure 12– Construction dust 15-minute mean indicative PM<sub>10</sub> concentration for monitor AQ009.

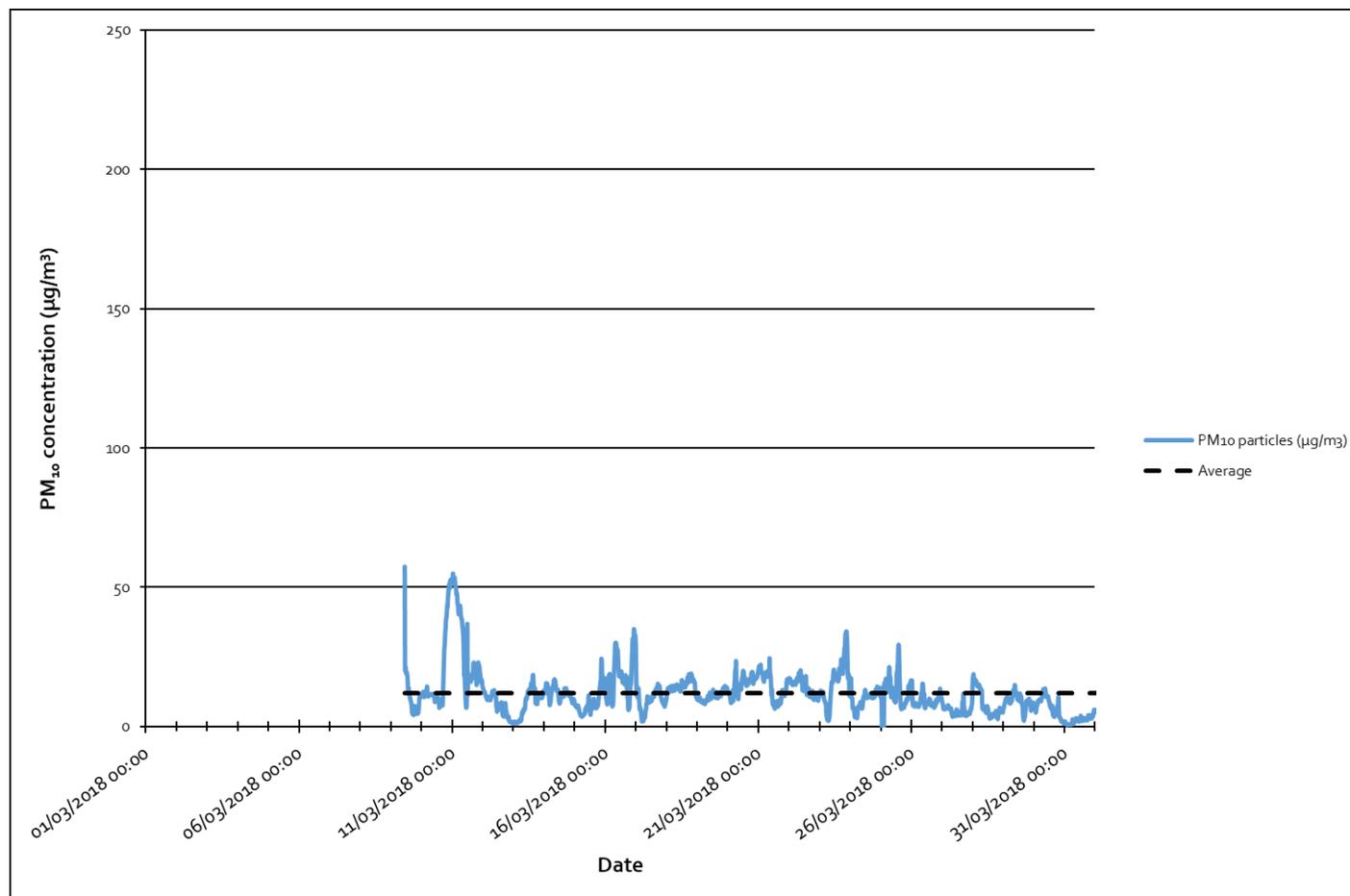


Figure 13– Construction dust 15-minute mean indicative PM<sub>10</sub> concentration for monitor AQ011.

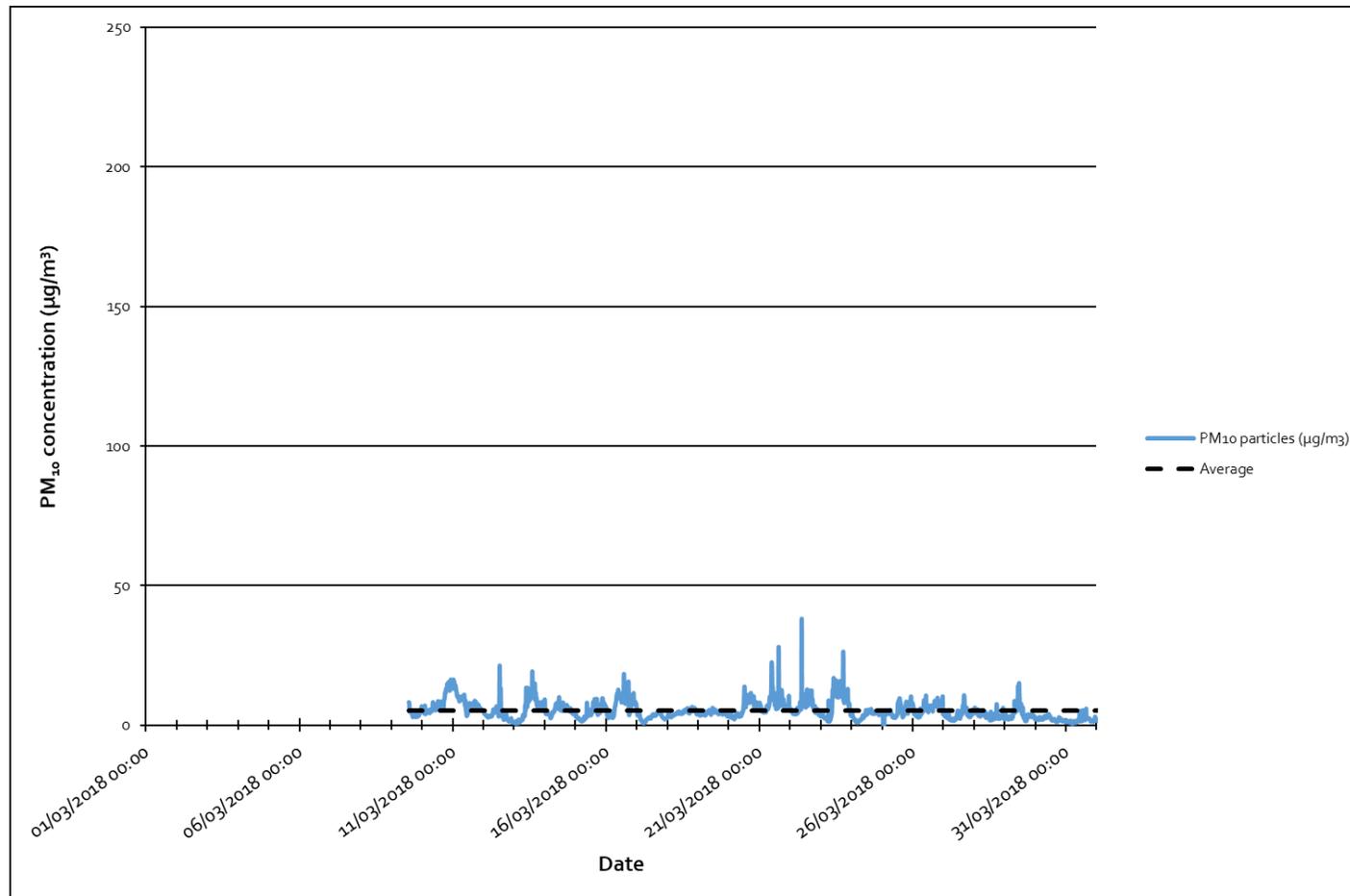


Figure 14– Construction dust 15-minute mean indicative PM<sub>10</sub> concentration for monitor AQ012.

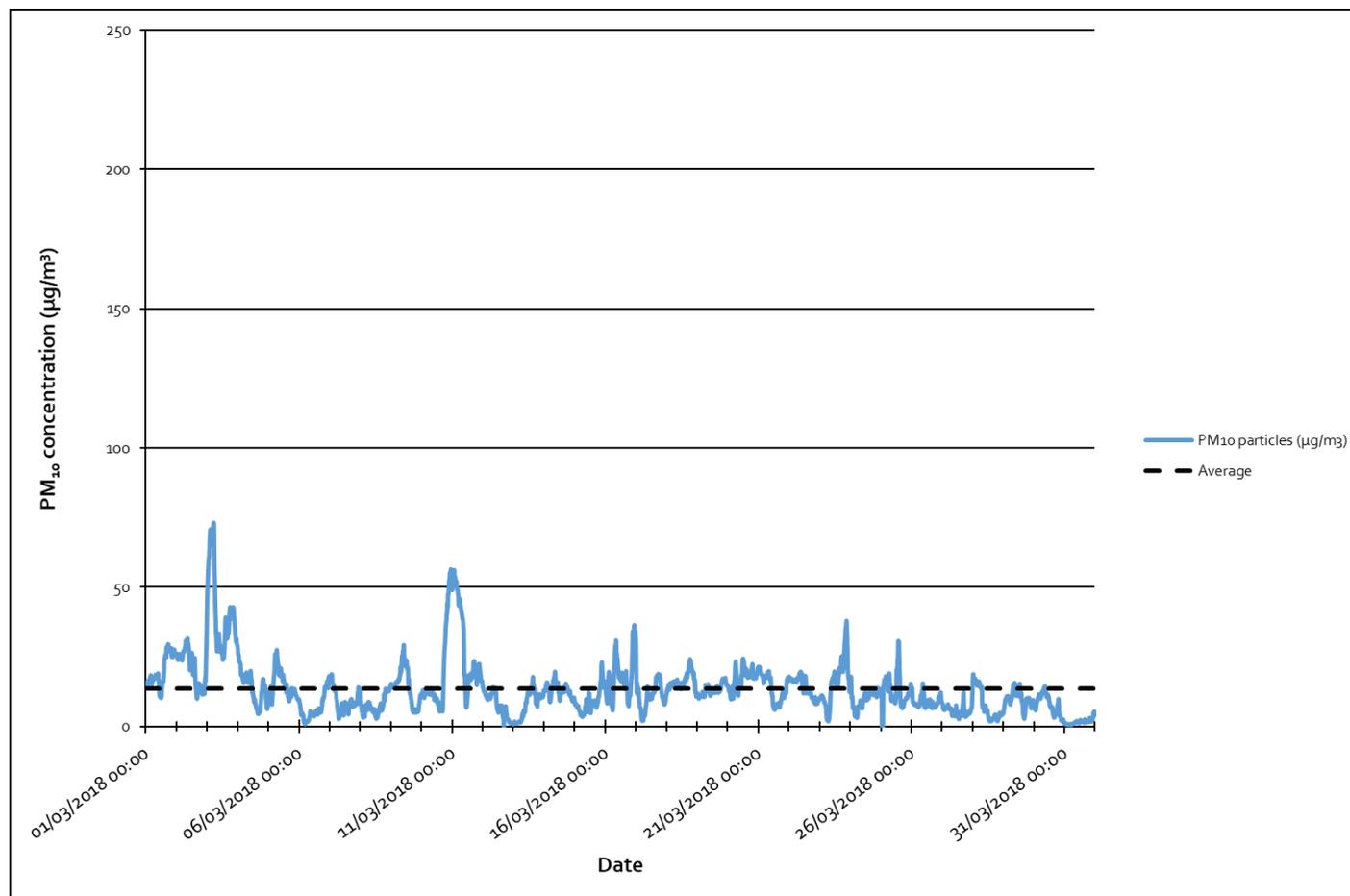


Figure 15– Construction dust 15-minute mean indicative PM<sub>10</sub> concentration for monitor AQ015.

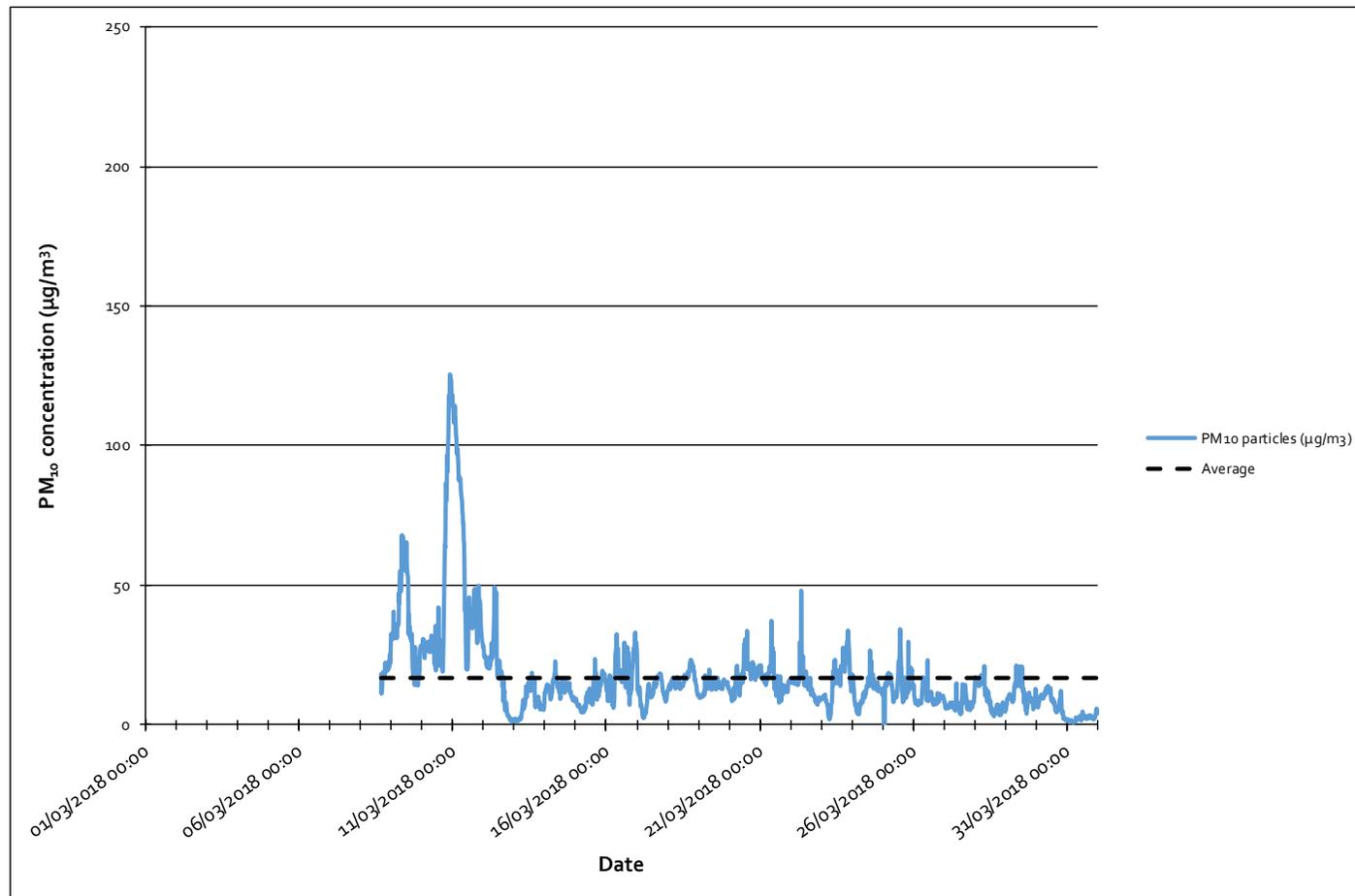


Figure 16– Construction dust 15-minute mean indicative PM<sub>10</sub> concentration for monitor AQ016.

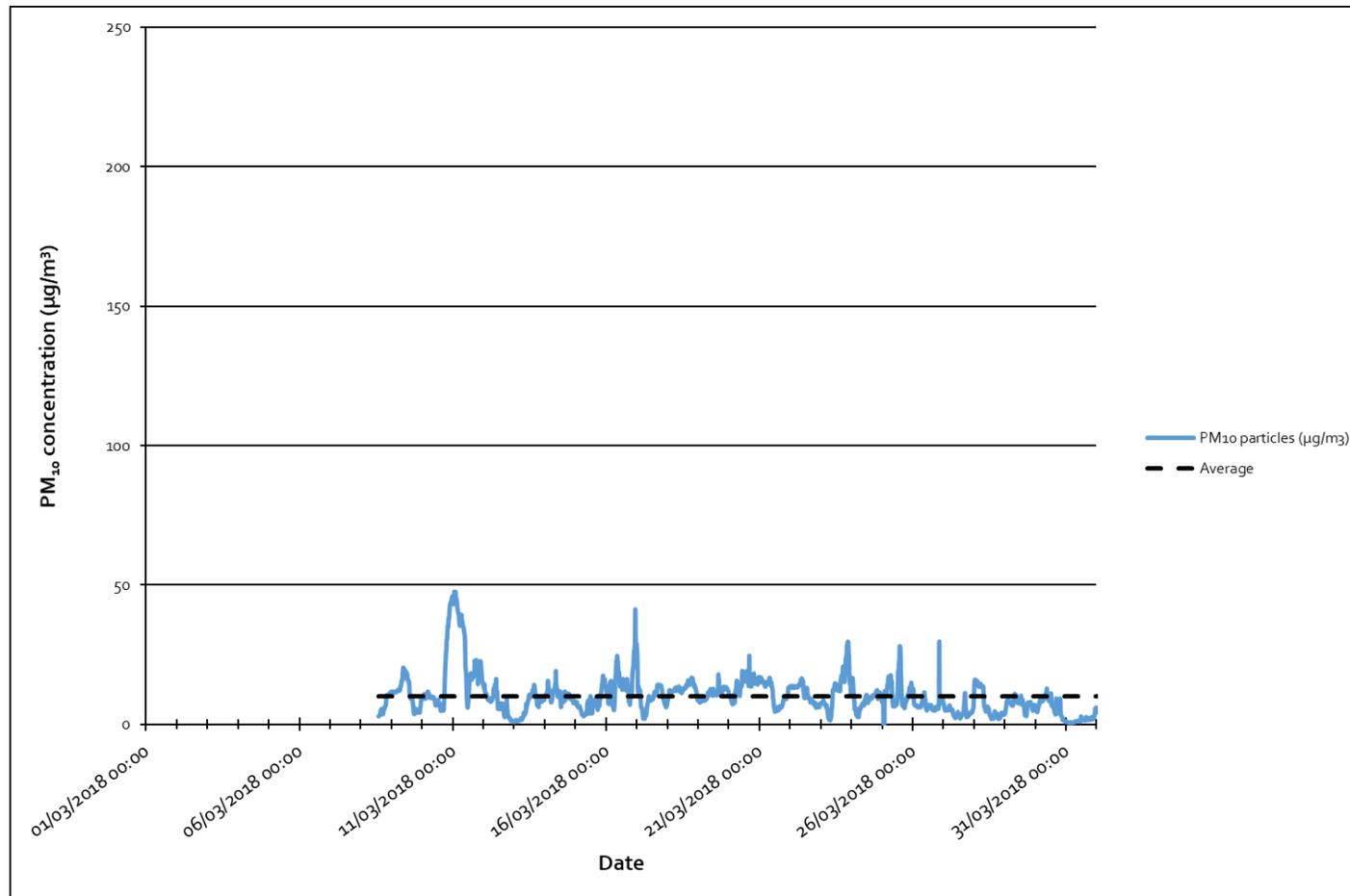


Figure 17– Construction dust 15-minute mean indicative PM<sub>10</sub> concentration for monitor AQ017.

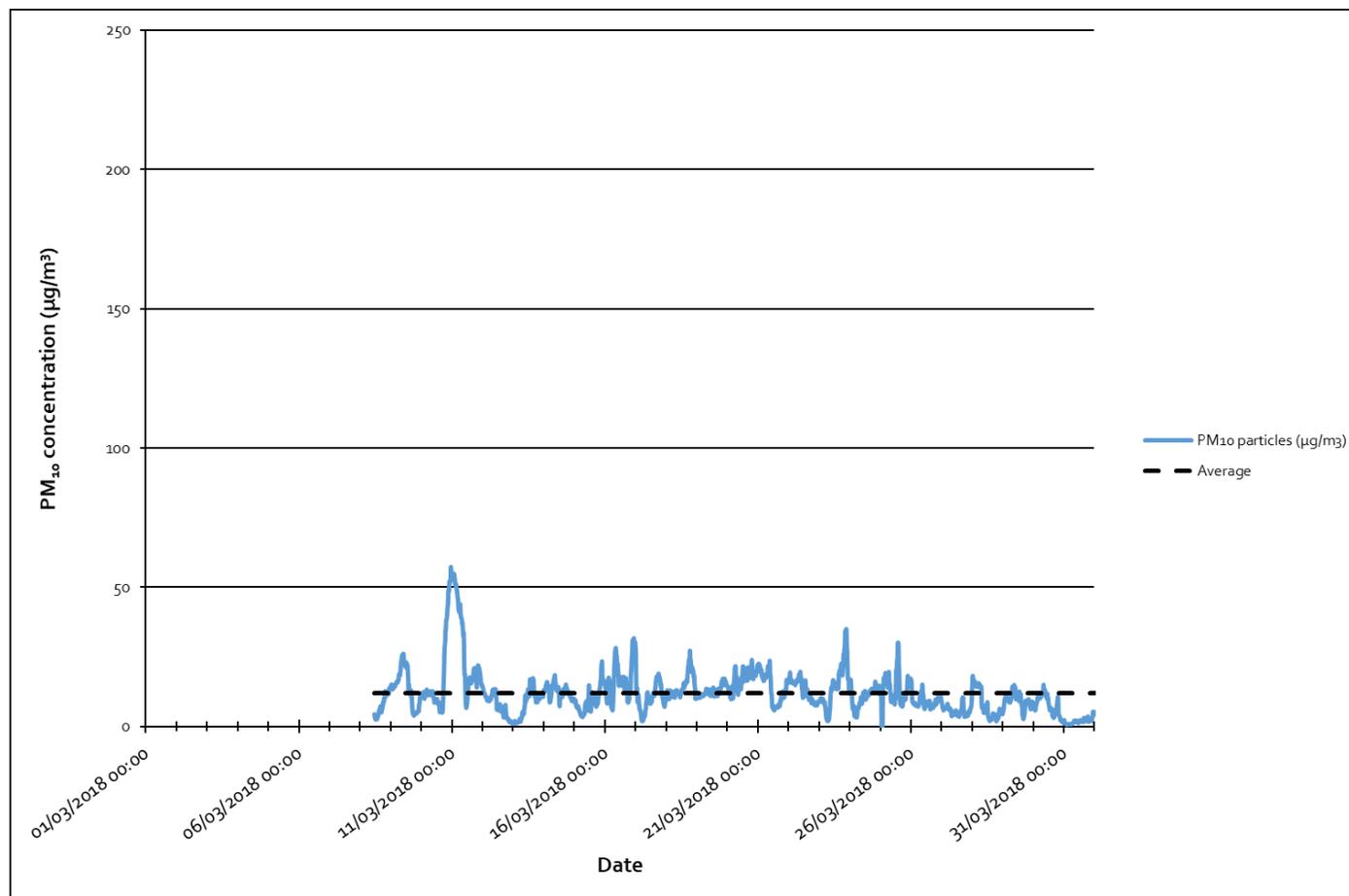
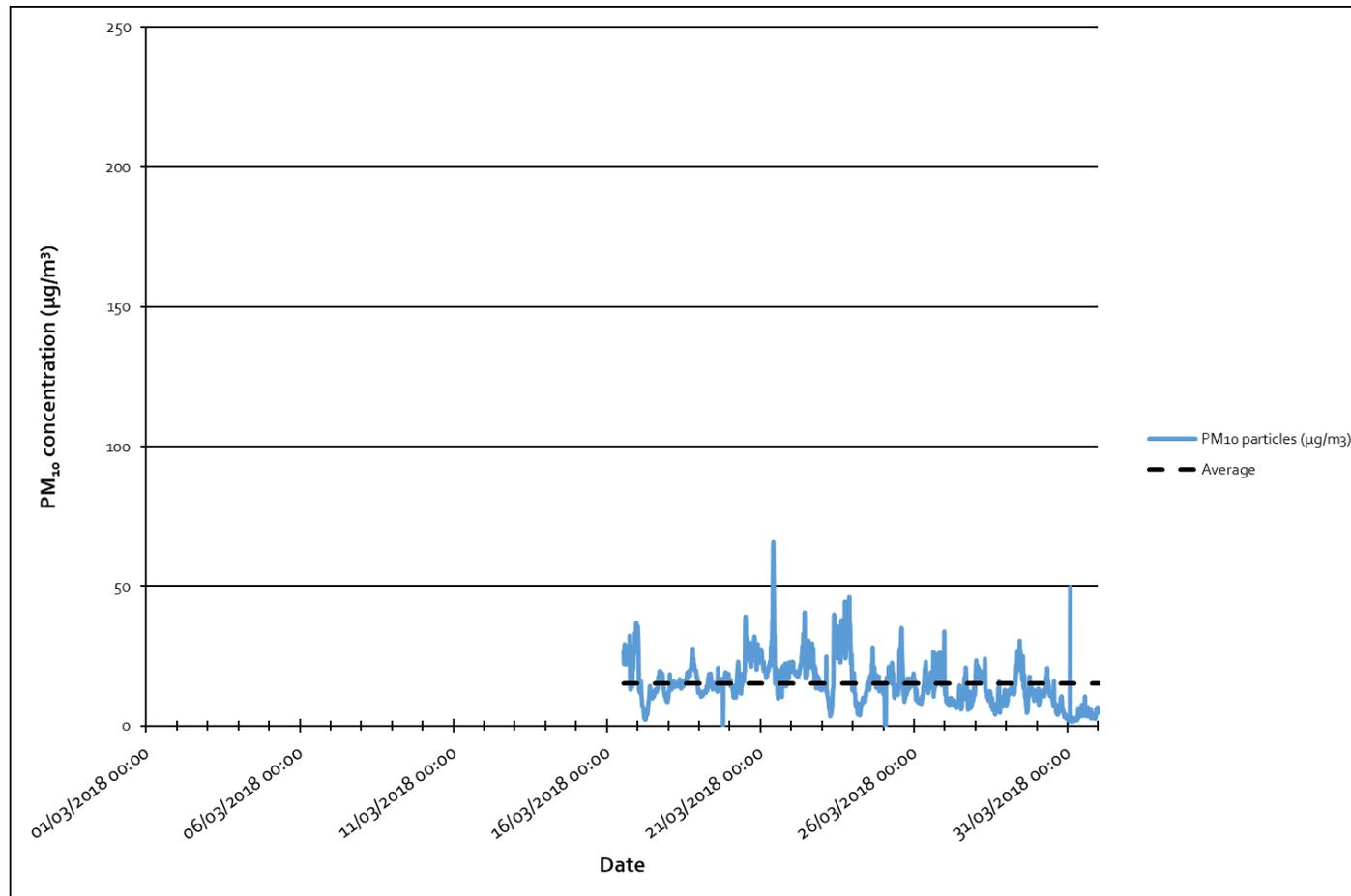


Figure 18– Construction dust 15-minute mean indicative PM<sub>10</sub> concentration for monitor AQ018.

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## Air quality around highways

Table 6 - Air quality around highways NO<sub>2</sub> concentrations from diffusion tube monitoring all months and running mean (µg/m<sup>3</sup>) within LB Camden

Monitoring Site ID	Location description	Jan 2018	Feb 2018	Mar 2018	Apr 2018	May 2018	June 2018	Jul 2018	Aug 2018	Sep 2018	Oct 2018	Nov 2018	Dec 2018	Mean <sup>3</sup>
HS2-000020BM5	Junction of St Chad's Street and Grays Inn Road	52	58											55
HS2-000020BM6	Brunswick Square	60	41											50
HS2-000020BM7	Chalton Street	62	65											63
HS2-000020BM8	Junction of Euston Square and Grafton Place	66	64											65
HS2-000020BM9	Junction of Endsleigh Gardens and Upper Woburn Place	74	80											77
HS2-000020BMA	Junction of Euston Road and Gower Street	71	69											70

<sup>3</sup> Note: to aid interpretation and conform with best practice, the monthly measurements in this table are reported rounded to the nearest whole number. The annual mean presented here is calculated based on laboratory data to 4 significant figures, rounded to a whole number, and therefore may differ slightly to a mean derived from averaging the rounded monthly measurements in the table.

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Monitoring Site ID	Location description	Jan 2018	Feb 2018	Mar 2018	Apr 2018	May 2018	June 2018	Jul 2018	Aug 2018	Sep 2018	Oct 2018	Nov 2018	Dec 2018	Mean <sup>3</sup>
HS2-000020BMB	Whitfield Street	56	52											54
HS2-000020BMC	Hampstead Road	59	59											59
HS2-000020BMF	Junction of Polygon Road and Ossulston Street	37	42											39
HS2-000020BMH	Nash Street	42	42											42
HS2-000020BMJ	Junction on Robert Street and Stanhope Street	48	45											47
HS2-000020BMK	Junction of Plender Street and Bayham Street	61	56											59
HS2-000020BML	Junction of Arlington Road and Mornington Crescent	47	43											45
HS2-000020BMM	Junction of Bayham Street and Pratt Street	85	64											75

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Monitoring Site ID	Location description	Jan 2018	Feb 2018	Mar 2018	Apr 2018	May 2018	June 2018	Jul 2018	Aug 2018	Sep 2018	Oct 2018	Nov 2018	Dec 2018	Mean <sup>3</sup>
HS2-000020BMN	Junction of Delancey Street and Albert Street	50	44											47
HS2-000020BMQ	Junction of Parkway and Delancey Street	Tube Missing	61											61
HS2-000020BMR	Junction of Oval Road and Jamestown Road	47	43											45
HS2-000020BMS	Junction of Chalk Farm Road and Castlehaven Road	57	61											59
HS2-000020BMT	Junction of Camden Road and Camden Street	63	62											63
HS2-000020BMU	Junction of Southampton Road and Fleet Road	51	50											51
HS2-000020BMV	Primrose Hill Road	49	46											48
HS2-000020BMW	Junction of Finchley Road and Hilgrove Road	55	70											63

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Monitoring Site ID	Location description	Jan 2018	Feb 2018	Mar 2018	Apr 2018	May 2018	June 2018	Jul 2018	Aug 2018	Sep 2018	Oct 2018	Nov 2018	Dec 2018	Mean <sup>3</sup>
HS2-000020BMZ	Junction of Finchley Road and Hendon Way	99	88											94
HS2-000020BNA	Junction of Regent's Park Road and Rothwell Street	50	44											47
HS2-000020BNB	Junction of Gloucester Gate Bridge and Park Village East	56	46											51
HS2-000020BNC	Junction of Outer Circle and Gloucester Gate	36	37											36
HS2-000020BNH	Junction of Parkway and Albert Street	56	51											53
HS2-000020BNN	Lincoln's Inn Fields	Tube missing	Tube missing											No data
HS2-000020BNQ	Camley Street	Tube missing	51											51
HS2-000020BNY	Junction of Mill Lane and Hillfield Road	52	49											51

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Monitoring Site ID	Location description	Jan 2018	Feb 2018	Mar 2018	Apr 2018	May 2018	June 2018	Jul 2018	Aug 2018	Sep 2018	Oct 2018	Nov 2018	Dec 2018	Mean <sup>3</sup>
HS2-000020BNZ	Mansfield Road	46	44											45
HS2-000020BPo	Junction of Camden Road and Torriano Avenue	68	74											71
HS2-000020BP2	Junction of Grays Inn Road and Holborn	Tube missing	57											57
HS2-000020BPB	Camden High Street	87	64											75
HS2-000020BPC	Castlehaven Road	41	43											42
HS2-000020BPD	Prince of Wales Road	40	40											40
HS2-000020BPE	Haverstock Hill	49	46											47
HS2-000020BPF	Junction of Primrose Gardens and England's Lane	42	40											41
HS2-000020BPU	Junction of Gower Street and Grafton Way	53	48											50
HS2-000020BPV	Phoenix Road	45	23											34

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Monitoring Site ID	Location description	Jan 2018	Feb 2018	Mar 2018	Apr 2018	May 2018	June 2018	Jul 2018	Aug 2018	Sep 2018	Oct 2018	Nov 2018	Dec 2018	Mean <sup>3</sup>
HS2-000020BPW	Junction of Delancey Street and Arlington Road	48	51											49
HS2-000020BPX	Netley Street	43	46											45
HS2-000020BPY	Stanhope Street	50	43											46
HS2-000020BPZ	Albany Street	49	46											48
HS2-000020BQ0	Werrington Street	42	46											44
HS2-000020BQ1	Polygon Road	42	50											46
HS2-000020BQ2	Alexandra Place	37	37											37
HS2-000020BQ3	Harrington Square	59	53											56
HS2-000020BQ4	Junction of North Gower Street and Starcross Street	50	55											53
HS2-000020BQ5	Adelaide Road	53	45											49

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Monitoring Site ID	Location description	Jan 2018	Feb 2018	Mar 2018	Apr 2018	May 2018	June 2018	Jul 2018	Aug 2018	Sep 2018	Oct 2018	Nov 2018	Dec 2018	Mean <sup>3</sup>
HS2-000020BQ6	Mornington Terrace	47	41											44
HS2-000020BQ7	Arlington Road	42	46											44
HS2-000020BQ8	Clarkson Row	50	46											48
HS2-000020BQ9	Park Village East	44	48											46
HS2-000020BQA	Eversholt Street	63	69											66
HS2-000020BQB	Junction of Harrington Street and Varndell Street	51	48											49
HS2-000020BQC	Junction of Robert Street and Hampstead Road	53	55											54
HS2-000020BQD	Drummond Crescent	53	55											54
HS2-000020BQJ	Grafton Way	72	75											74
HS2-000020BQK	Junction of Drummond Street and Cobourg Street	49	54											52

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Monitoring Site ID	Location description	Jan 2018	Feb 2018	Mar 2018	Apr 2018	May 2018	June 2018	Jul 2018	Aug 2018	Sep 2018	Oct 2018	Nov 2018	Dec 2018	Mean <sup>3</sup>
HS2-000020BQL	Delancey Street	60	55											57
HS2-000020BP4	Triplicate site on Finchley Road next to Swiss Cottage kerbside automatic monitoring station	Tubes missing	Tubes Missing											No data
HS2-000020BP5	Triplicate site next to the Euston Road roadside automatic monitoring stations	95	82											89
HS2-000020BP9	Triplicate site in Russell Square next to Bloomsbury urban background automatic monitoring station	47	46											47

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