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## High Speed Rail (London-West Midlands)

Air Quality and Dust Monitoring  
Monthly Report - December 2017

London Borough of Camden

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January 2018





## Department for Transport

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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 December 2017 from two dust monitoring locations installed around the recently established DB Cargo worksite where pre-demolition surveys are underway.

The also report presents data from sixty four nitrogen dioxide (NO<sub>2</sub>) diffusion tube monitoring locations around highways within the borough during November 2017 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 2017 and running mean can be found in Appendix C.

Whilst this report is limited to data informing pre-demolition conditions, future reports will present this and data collected from monitoring around active work sites as they are established within LBC. 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 November 2017. It also presents pre-demolition continuous dust monitoring data installed around the recently established DB Cargo worksite where pre-demolition surveys are underway during December 2017.

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 pre-demolition surveys, soft strip of buildings, asbestos removal and vegetation removal on Park Village East.
- St James' Gardens, *worksite ref. S003-WS01*
  - Archaeological surveys
- 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 securing of sites and pre-demolition surveys.
- Thistle Hotel, Cardington Street, *worksite ref. S003-WS04*
  - Works activities include securing of site
- Ibis Hotel, 3 Cardington Street & 1-3 Cobourg Street, *worksite ref. S003-WS05*
  - Works activities include securing of sites.
- Former National Temperance Hospital, 110-122 Hampstead Road, *worksite ref. S003-*

WS05

- Staff accommodation and deliveries.

## 2 Applicable standards and guidance

### 2.1 Relevant legislation

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

2.1.1.1 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.

2.1.1.2 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*

2.1.1.3 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.

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

2.1.1.2 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)*

2.1.1.3 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.

2.1.1.4 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*

- 2.1.10 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.
- 2.1.11 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>).
- 2.1.12 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.
- 2.1.13 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.
  - Risk of dust impacts.
  - Assessment of cumulative effects.
  - Mitigation measures to be considered.
  - Monitoring requirements.

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

- 3.1.5 The risk rating for DB Cargo is 'High' and therefore requires real time dust monitoring.
- 3.1.6 The risk rating for the former National Temperance Hospital, Insull Wing, Walkden House, 67-75 & 77-79 Euston Road, Thistle Hotel and IBIS Hotel are 'High' and real time dust monitoring will be installed in the coming months in advance of the commencement of demolition works.
- 3.1.7 Given the nature of the future archaeological works at St James' Garden the level of risk of dust being generated by the works is not considered sufficient to require monitoring.

### **Monitoring locations**

- 3.1.8 Current dust monitoring locations have been established at locations near sensitive receptors around DB Cargo shed where site establishment and pre-demolition surveys 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	N
S001-WS01	AQ002	528924, 183130	Park Village East	DB Cargo	H	Yes	N

## 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

Monitoring site ID	Grid reference (x,y)	Location description
HS2-000020BMN	528850, 183573	Junction of Delancey Street and Albert Street
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
HS2-000020BQo	529493, 183113	Werrington Street

Monitoring site ID	Grid reference (x,y)	Location description
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 (installed at end of August)
HS2-000020BQK	529398, 182593	Junction of Drummond Street and Cobourg Street (installed at end of August)
HS2-000020BQL	528768, 183581	Delancey Street (installed at end of August)
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 DB Cargo, 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 DB Cargo is included in Appendix C.

Table 4 – Summary statistics – construction dust 15-minute indicative PM<sub>10</sub> concentrations for December 2017

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	10.0	0.3	80.1	0	99.97
S001-WS01	AQ002	9.6	0.2	47.1	0	100

### Exceedances of dust trigger level

- 4.1.3 During the December 2017 dust monitoring there were no exceedances of trigger levels. In future reports, Table 5 below will present a summary of any exceedances of the dust trigger level associated with site activities, including dates/time periods and any explanation.

Table 5 – Summary of exceedances of trigger level – construction dust

Period exceeding trigger level	Worksite reference	Monitoring site ID	Complaint reference number (if applicable)	Reason	Resolution
n/a	n/a	n/a	n/a	n/a	n/a

## 4.2 Air quality around highways

### Data summary

- 4.2.1 Table 6 below details the monitoring results from the NO<sub>2</sub> diffusion tube monitoring survey in LBC for the month of November. This data is two months in arrears due to the time required for lab analysis.
- 4.2.2 Table 7 in Appendix C details NO<sub>2</sub> concentrations from diffusion tube monitoring for all previous months in 2017 and running mean (µg/m<sup>3</sup>).

Table 6 – Monitoring results - air quality around highways

Monitoring Site ID	Location description	Provisional NO <sub>2</sub> concentration for November 2017 (µg/m <sup>3</sup> )
HS2-000020BM5	Junction of St Chad's Street and Grays Inn Road	61
HS2-000020BM6	Brunswick Square	66



Monitoring Site ID	Location description	Provisional NO <sub>2</sub> concentration for November 2017 (µg/m <sup>3</sup> )
HS2-000020BM7	Chalton Street	65
HS2-000020BM8	Junction of Euston Square and Grafton Place	62
HS2-000020BM9	Junction of Endsleigh Gardens and Upper Woburn Place	63
HS2-000020BMA	Junction of Euston Road and Gower Street	78
HS2-000020BMB	Whitfield Street	58
HS2-000020BMC	Hampstead Road	68
HS2-000020BMF	Junction of Polygon Road and Ossulston Street	39
HS2-000020BMH	Nash Street	54
HS2-000020BMJ	Junction on Robert Street and Stanhope Street	51
HS2-000020BMK	Junction of Plender Street and Bayham Street	64
HS2-000020BML	Junction of Arlington Road and Mornington Crescent	47
HS2-000020BMM	Junction of Bayham Street and Pratt Street	91
HS2-000020BMN	Junction of Delancey Street and Albert Street	54
HS2-000020BMQ	Junction of Parkway and Delancey Street	58
HS2-000020BMR	Junction of Oval Road and Jamestown Road	56
HS2-000020BMS	Junction of Chalk Farm Road and Castlehaven Road	60
HS2-000020BMT	Junction of Camden Road and Camden Street	64
HS2-000020BMU	Junction of Southampton Road and Fleet Road	48
HS2-000020BMV	Primrose Hill Road	58
HS2-000020BMW	Junction of Finchley Road and Hilgrove Road	69
HS2-000020BMZ	Junction of Finchley Road and Hendon Way	93
HS2-000020BNA	Junction of Regent's Park Road and Rothwell Street	46
HS2-000020BNB	Junction of Gloucester Gate Bridge and Park Village East	57
HS2-000020BNC	Junction of Outer Circle and Gloucester Gate	37
HS2-000020BNH	Junction of Parkway and Albert Street	52
HS2-000020BNN	Lincoln's Inn Fields	Tube missing
HS2-000020BNQ	Camley Street	54
HS2-000020BNY	Junction of Mill Lane and Hillfield Road	67
HS2-000020BNZ	Mansfield Road	55
HS2-000020BP0	Junction of Camden Road and Torriano Avenue	71
HS2-000020BP2	Junction of Grays Inn Road and Holborn	60

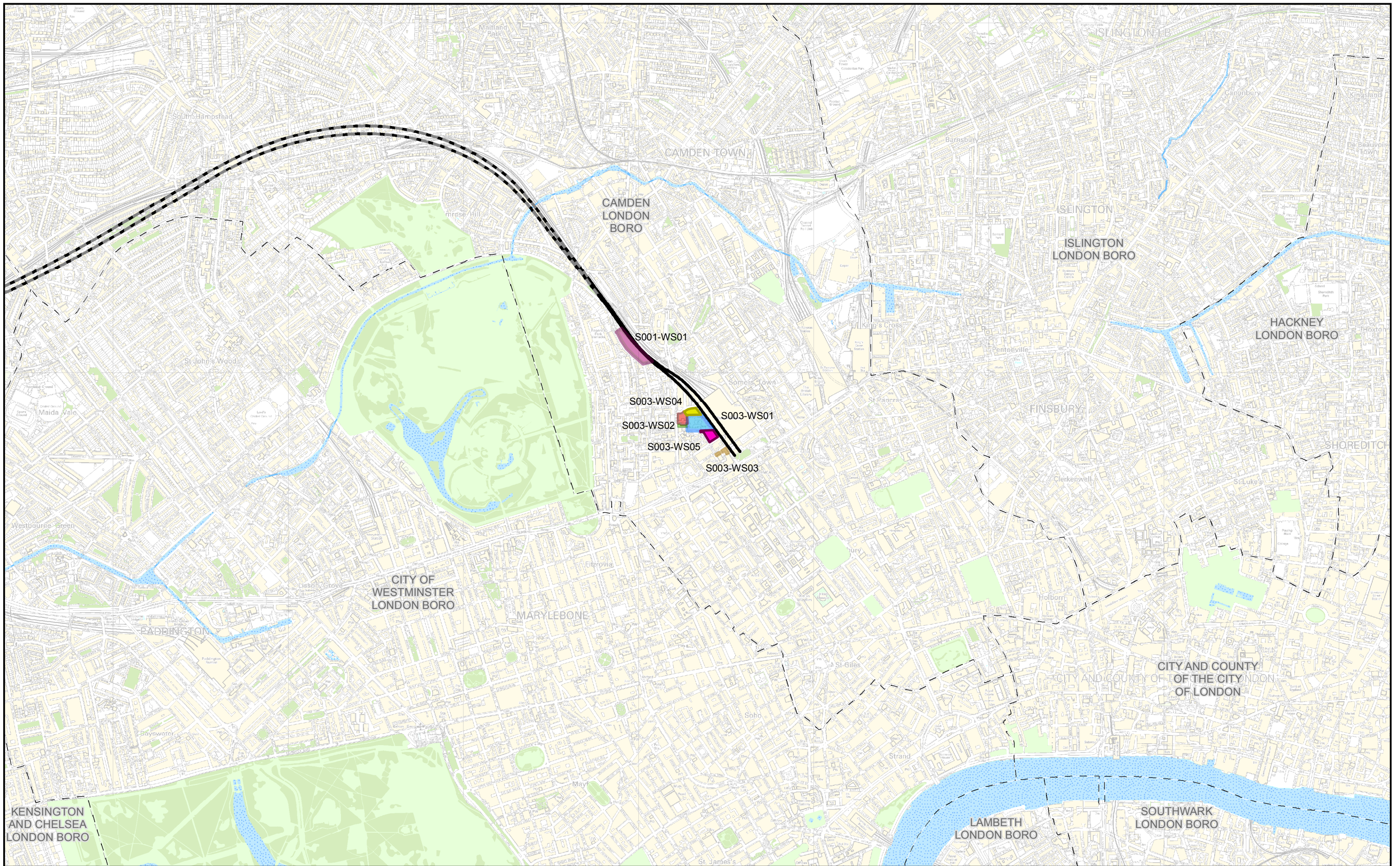
Monitoring Site ID	Location description	Provisional NO <sub>2</sub> concentration for November 2017 (µg/m <sup>3</sup> )
HS2-000020BPB	Camden High Street	81
HS2-000020BPC	Castlehaven Road	52
HS2-000020BPD	Prince of Wales Road	41
HS2-000020BPE	Haverstock Hill	54
HS2-000020BPF	Junction of Primrose Gardens and England's Lane	60
HS2-000020BPU	Junction of Gower Street and Grafton Way	69
HS2-000020BPV	Phoenix Road	Tube missing
HS2-000020BPW	Junction of Delancey Street and Arlington Road	54
HS2-000020BPX	Netley Street	41
HS2-000020BPY	Stanhope Street	44
HS2-000020BPZ	Albany Street	46
HS2-000020BQ0	Werrington Street	43
HS2-000020BQ1	Polygon Road	53
HS2-000020BQ2	Alexandra Place	41
HS2-000020BQ3	Harrington Square	61
HS2-000020BQ4	Junction of North Gower Street and Starcross Street	51
HS2-000020BQ5	Adelaide Road	55
HS2-000020BQ6	Mornington Terrace	45
HS2-000020BQ7	Arlington Road	42
HS2-000020BQ8	Clarkson Row	48
HS2-000020BQ9	Park Village East	43
HS2-000020BQA	Eversholt Street	68
HS2-000020BQB	Junction of Harrington Street and Varndell Street	Tube missing
HS2-000020BQC	Junction of Robert Street and Hampstead Road	53
HS2-000020BQD	Drummond Crescent	39
HS2-000020BQJ	Grafton Way (installed at end of August)	68
HS2-000020BQK	Junction of Drummond Street and Cobourg Street (installed at end of August)	51
HS2-000020BQL	Delancey Street (installed at end of August)	68
HS2-000020BP4	Triplicate site on Finchley Road next to Swiss Cottage kerbside automatic monitoring station	Tubes missing

Monitoring Site ID	Location description	Provisional NO <sub>2</sub> concentration for November 2017 (µg/m <sup>3</sup> )
HS2-000020BP5	Triplicate site next to the Euston Road roadside automatic monitoring stations	81
HS2-000020BP9	Triplicate site in Russell Square next to Bloomsbury urban background automatic monitoring station	53

## 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
  - Route on surface
  - Ibis Hotel, 3 Cardington Street & 1-3 Cobourg Street
  - 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

Figure Number	
Figure Name	<b>Work Site Locations</b>
	London Borough of Camden

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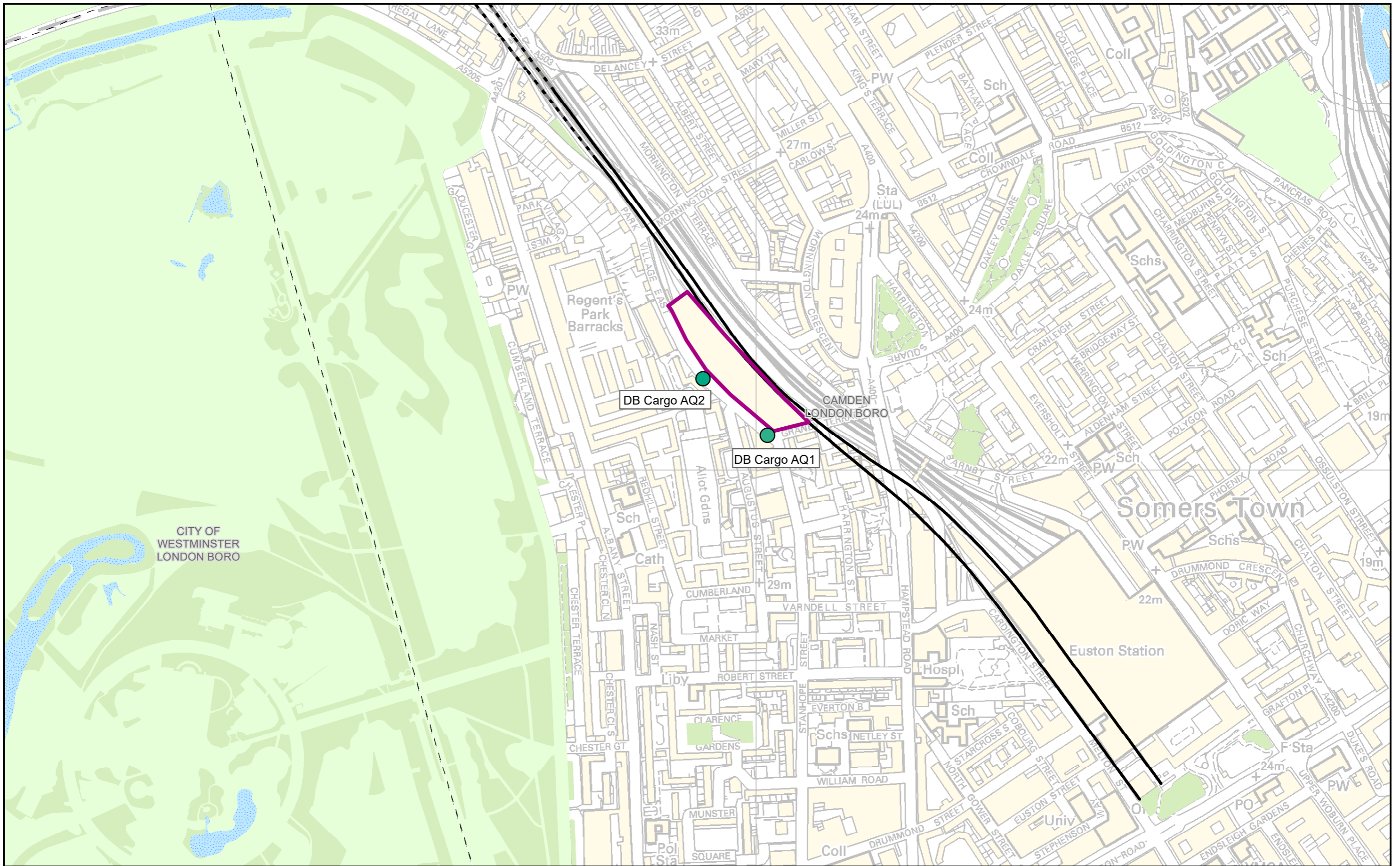
Scale at A3: 20,000

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

Date: 21/12/17

## **Appendix B – Monitoring locations**

### **Construction dust**



- Legend**
- Route in tunnel
  - Route on surface
  - Construction Dust Monitoring Locations
  - DB Cargo Shed worksite

Figure Number
Figure Name <b>Construction dust monitoring site locations</b>
London Borough of Camden

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**Date: 26/10/17**

## 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



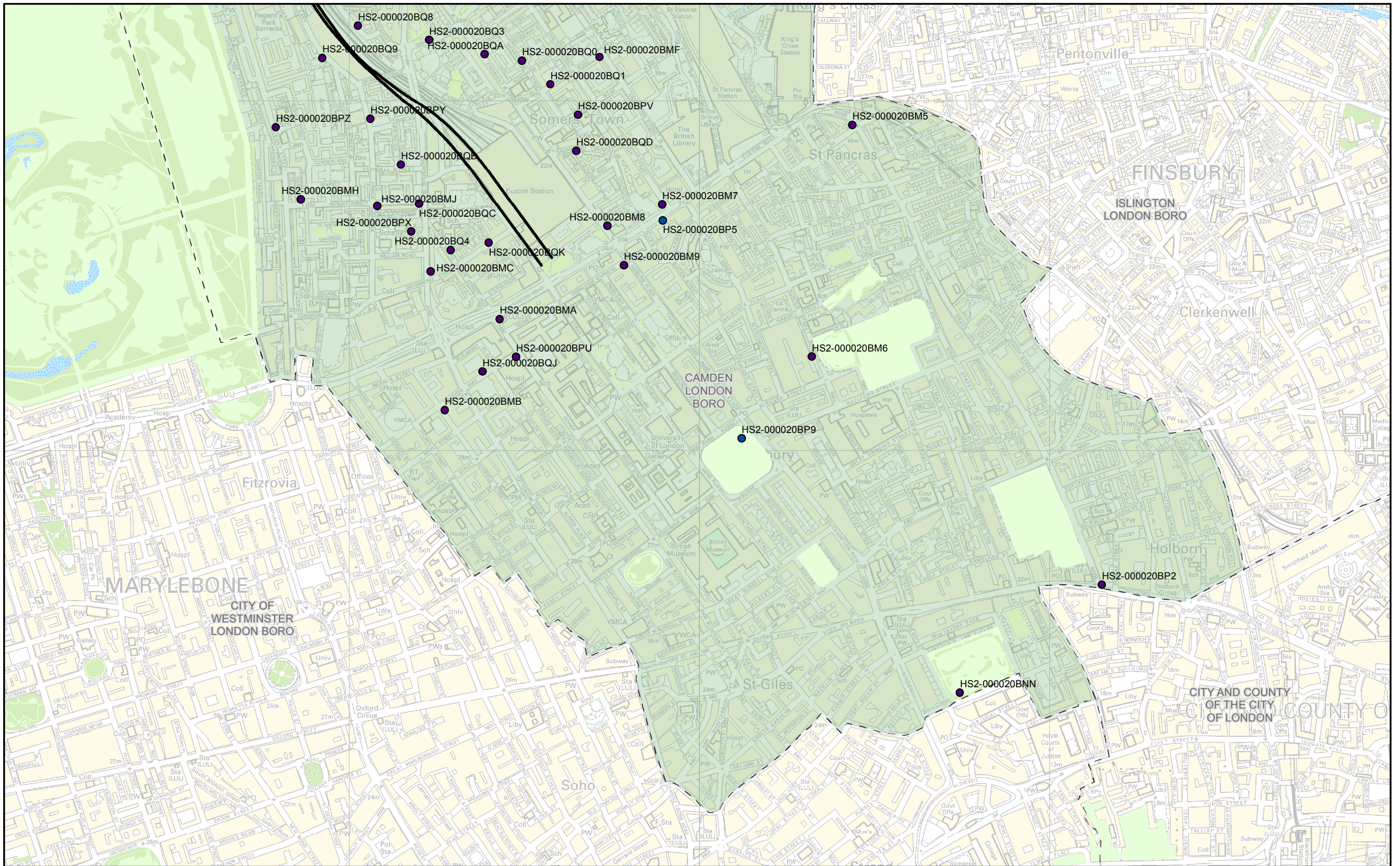
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Metres



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

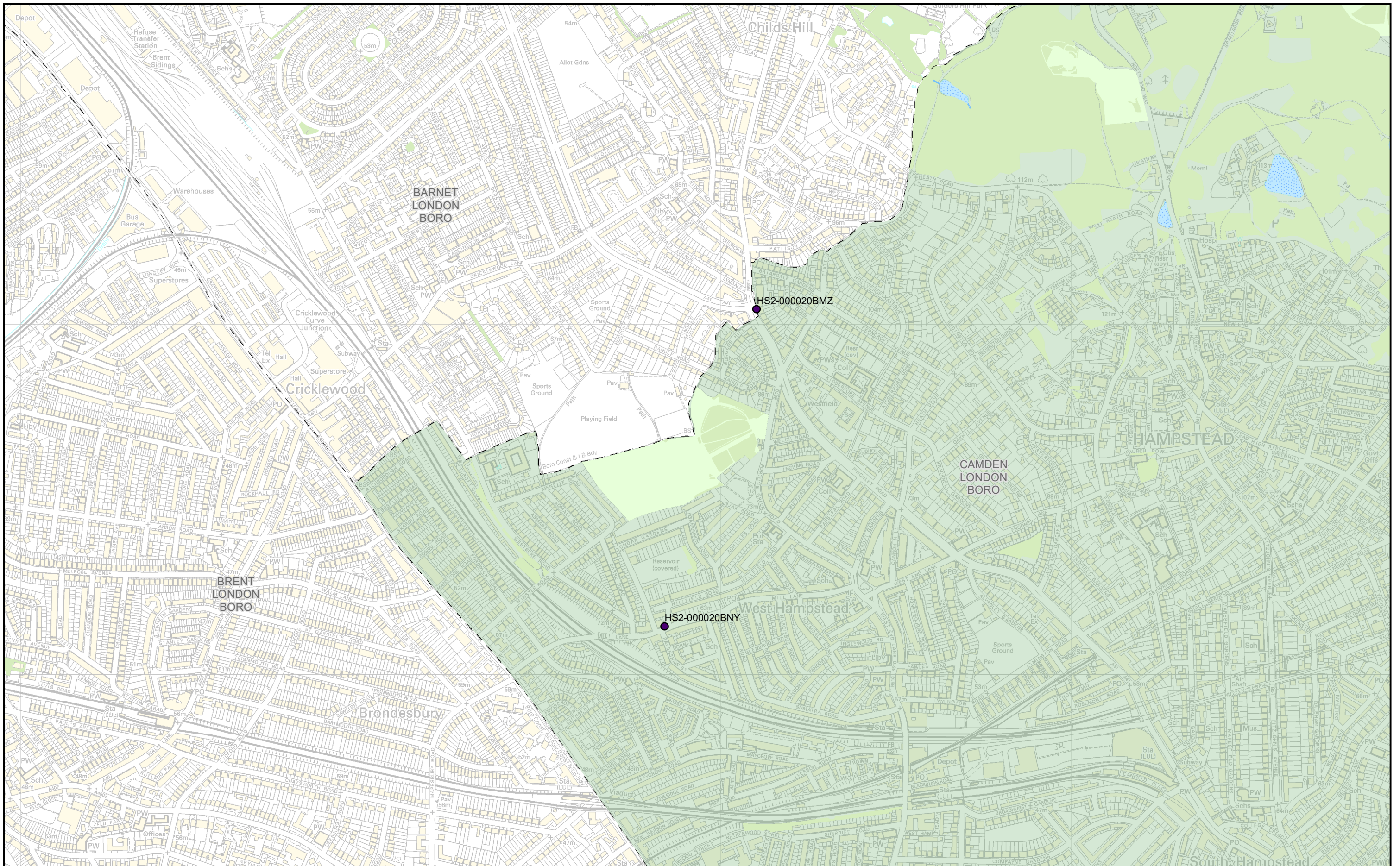
Figure Number  
 Figure Name  
**Nitrogen dioxide tube monitoring site locations (sheet 2)**  
 London Borough of Camden

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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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Scale at A3: 10,000



## Appendix C – Monitoring data

### Construction dust

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

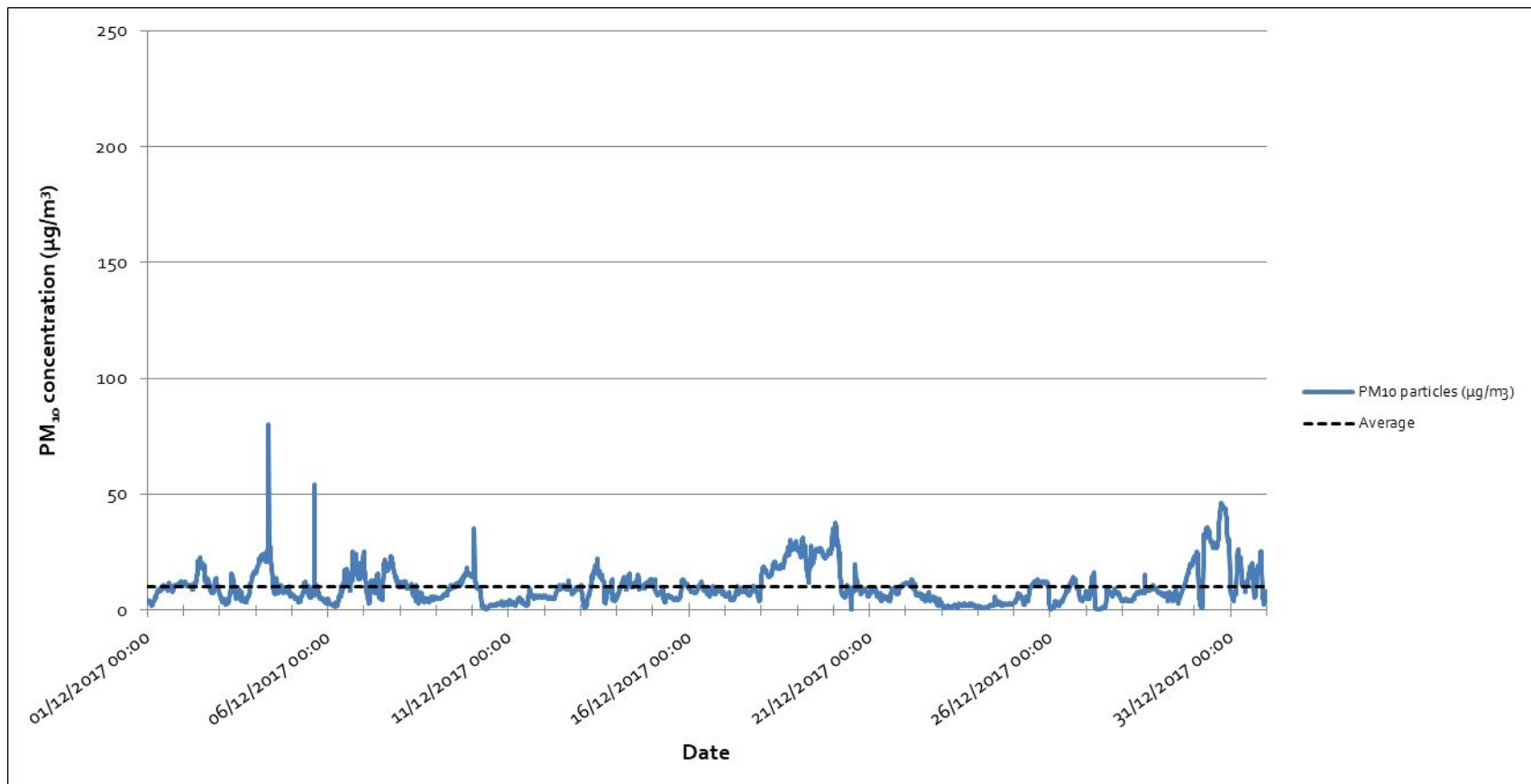
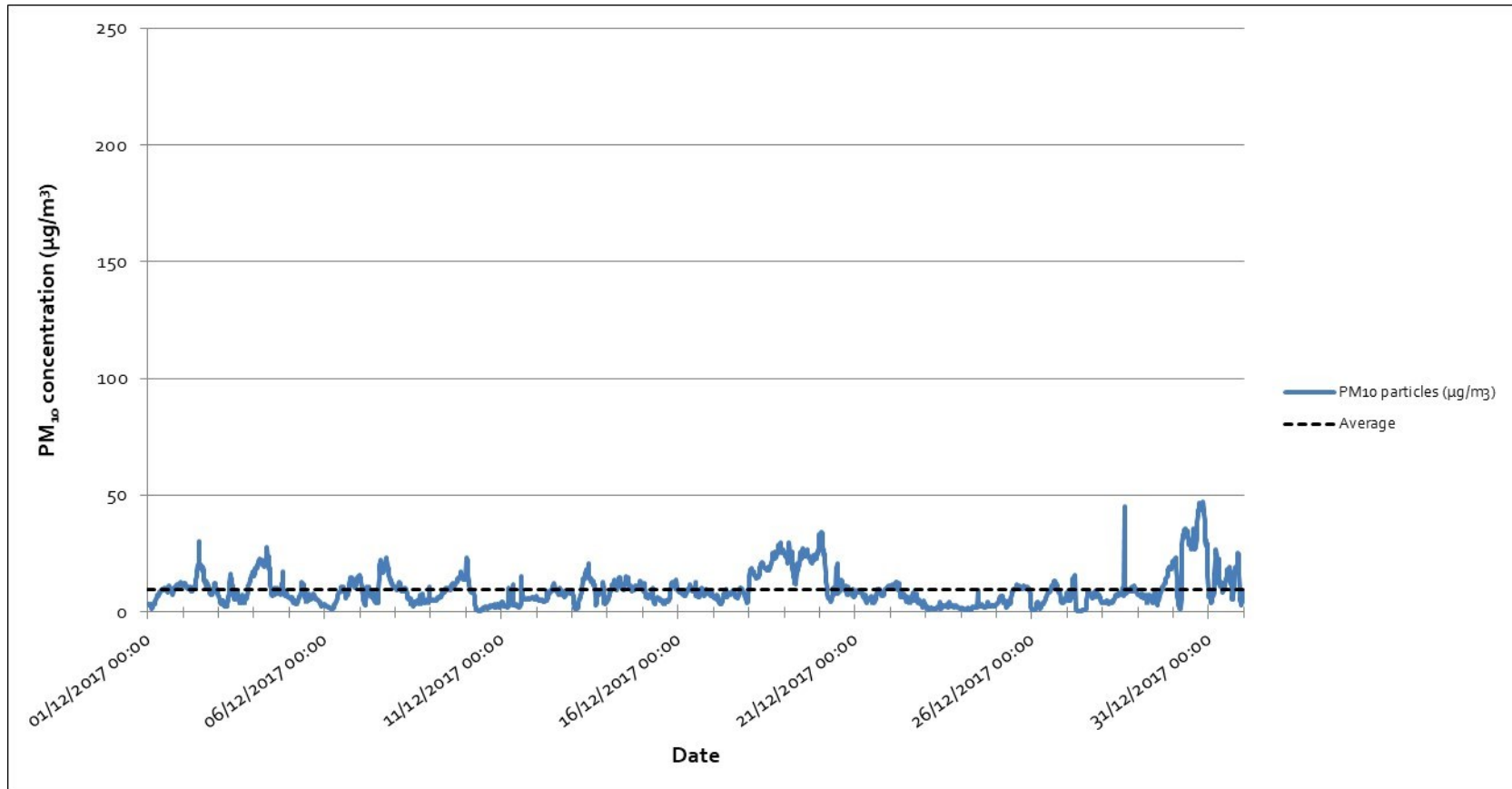


Figure 5– Construction dust 15-minute mean indicative PM<sub>10</sub> concentration for monitor AQ002.



## Air quality around highways

Table 7 - 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 2017	Feb 2017	Mar 2017	Apr 2017	May 2017	June 2017	Jul 2017	Aug 2017	Sep 2017	Oct 2017	Nov 2017	Dec 2017	Mean
HS2-000020BM5	Junction of St Chad's Street and Grays Inn Road	73	57	56	Tube missing	53	53	49	48	56	53	61		56
HS2-000020BM6	Brunswick Square	61	53	55	50	51	53	40	45	44	54	66		52
HS2-000020BM7	Chalton Street	86	70	69	55	58	Tube missing	49	65	55	71	65		64
HS2-000020BM8	Junction of Euston Square and Grafton Place	78	60	57	61	64	66	57	66	82	65	62		65
HS2-000020BM9	Junction of Endsleigh Gardens and Upper Woburn Place	72	61	51	56	60	64	48	54	55	56	63		58
HS2-000020BMA	Junction of Euston Road and Gower Street	Tube damaged	Tube missing	68	67	69	65	Tube missing	66	64	65	78		68
HS2-000020BMB	Whitfield Street	73	55	53	45	49	45	30	45	42	45	58		49
HS2-000020BMC	Hampstead Road	77	71	68	65	71	63	46	65	66	68	68		66
HS2-000020BMF	Junction of Polygon Road and Ossulston Street	63	53	42	34	35	35	30	31	38	33	39		39

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Monitoring Site ID	Location description	Jan 2017	Feb 2017	Mar 2017	Apr 2017	May 2017	June 2017	Jul 2017	Aug 2017	Sep 2017	Oct 2017	Nov 2017	Dec 2017	Mean
HS2-000020BMH	Nash Street	58	51	43	39	40	36	31	Tube missing	39	39	54		43
HS2-000020BMJ	Junction on Robert Street and Stanhope Street	64	47	42	39	39	38	32	40	39	40	51		43
HS2-000020BMK	Junction of Plender Street and Bayham Street	71	83	54	48	51	52	41	54	52	52	64		57
HS2-000020BML	Junction of Arlington Road and Mornington Crescent	63	48	43	39	38	35	27	34	39	44	47		42
HS2-000020BMM	Junction of Bayham Street and Pratt Street	79	69	80	73	59	68	62	65	83	88	91		74
HS2-000020BMN	Junction of Delancey Street and Albert Street	64	48	48	45	43	39	35	45	46	45	54		47
HS2-000020BMQ	Junction of Parkway and Delancey Street	72	59	53	49	62	52	39	49	53	47	58		54
HS2-000020BMR	Junction of Oval Road and Jamestown Road	63	50	44	45	44	39	30	37	35	42	56		44
HS2-000020BMS	Junction of Chalk Farm Road and Castlehaven Road	78	60	68	19	64	57	49	54	51	56	60		56

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Monitoring Site ID	Location description	Jan 2017	Feb 2017	Mar 2017	Apr 2017	May 2017	June 2017	Jul 2017	Aug 2017	Sep 2017	Oct 2017	Nov 2017	Dec 2017	Mean
HS2-000020BMT	Junction of Camden Road and Camden Street	100	78	68	88	82	85	Tube missing	56	49	58	64		73
HS2-000020BMU	Junction of Southampton Road and Fleet Road	Tube missing	Tube damaged	48	35	41	37	28	45	39	45	48		41
HS2-000020BMV	Primrose Hill Road	62	Tube damaged	44	Tube missing	38	38	27	37	39	42	58		43
HS2-000020BMW	Junction of Finchley Road and Hilgrove Road	81	55	61	57	56	54	48	66	61	66	69		61
HS2-000020BMZ	Junction of Finchley Road and Hendon Way	147	94	93	102	91	94	80	76	76	84	93		94
HS2-000020BNA	Junction of Regent's Park Road and Rothwell Street	66	43	48	37	37	37	28	37	40	43	46		42
HS2-000020BNB	Junction of Gloucester Gate Bridge and Park Village East	67	50	45	46	43	44	31	41	45	46	57		47
HS2-000020BNC	Junction of Outer Circle and Gloucester Gate	48	39	34	25	Tube missing	Tube missing	Tube found on floor. Data not reported	25	10 *Conc. low - not included in mean	33	37		35



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Monitoring Site ID	Location description	Jan 2017	Feb 2017	Mar 2017	Apr 2017	May 2017	June 2017	Jul 2017	Aug 2017	Sep 2017	Oct 2017	Nov 2017	Dec 2017	Mean
HS2-000020BNH	Junction of Parkway and Albert Street	57	46	49	47	43	44	31	39	42	45	52		45
HS2-000020BNN	Lincoln's Inn Fields	54	48	45	40	34	39	24	38	34	Tube missing	Tube missing		40
HS2-000020BNQ	Camley Street	70	Tube missing	43	34	38	36	Tube missing	Tube missing	40	44	54		45
HS2-000020BNY	Junction of Mill Lane and Hillfield Road	63	54	49	43	42	43	34	37	40	43	67		47
HS2-000020BNZ	Mansfield Road	55	43	47	44	32	35	25	37	35	44	55		41
HS2-000020BPo	Junction of Camden Road and Torriano Avenue	81	62	58	57	63	55	62	54	35	72	71		61
HS2-000020BP2	Junction of Grays Inn Road and Holborn	69	51	49	49	51	46	38	48	46	61	60		51
HS2-000020BPB	Camden High Street	79	74	71	76	Tube missing	67	59	71	77	Tube missing	81		73
HS2-000020BPC	Castlehaven Road	52	46	41	37	36	37	23	36	38	40	52		40
HS2-000020BPD	Prince of Wales Road	59	43	43	36	35	34	23	33	36	35	41		38
HS2-000020BPE	Haverstock Hill	63	48	48	Tube missing	45	52	35	47	45	50	54		49

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Monitoring Site ID	Location description	Jan 2017	Feb 2017	Mar 2017	Apr 2017	May 2017	June 2017	Jul 2017	Aug 2017	Sep 2017	Oct 2017	Nov 2017	Dec 2017	Mean
HS2-000020BPF	Junction of Primrose Gardens and England's Lane	57	47	41	35	37	37	19	33	38	40	60		40
HS2-000020BPU	Junction of Gower Street and Grafton Way	74	59	57	65	59	58	41	50	43	57	69		57
HS2-000020BPV	Phoenix Road	55	49	43	34	36	35	28	34	39	42	Tube missing		39
HS2-000020BPW	Junction of Delancey Street and Arlington Road	58	50	48	46	48	49	35	42	46	45	54		48
HS2-000020BPX	Netley Street	53	46	41	36	39	37	30	34	36	38	41		39
HS2-000020BPY	Stanhope Street	56	44	28	34	22	30	21	30	37	40	44		35
HS2-000020BPZ	Albany Street	57	50	46	40	44	42	30	36	42	46	46		44
HS2-000020BQ0	Werrington Street	55	45	38	34	34	32	23	30	31	37	43		37
HS2-000020BQ1	Polygon Road	Tube missing	46	39	36	33	35	23	Tube missing	40	41	53		38
HS2-000020BQ2	Alexandra Place	54	37	39	31	29	27	19	31	35	33	41		34
HS2-000020BQ3	Harrington Square	69	55	49	49	48	53	38	42	50	55	61		52

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Monitoring Site ID	Location description	Jan 2017	Feb 2017	Mar 2017	Apr 2017	May 2017	June 2017	Jul 2017	Aug 2017	Sep 2017	Oct 2017	Nov 2017	Dec 2017	Mean
HS2-000020BQ4	Junction of North Gower Street and Starcross Street	60	54	46	39	43	39	32	35	31	44	51		43
HS2-000020BQ5	Adelaide Road	67	54	53	42	44	52	24	39	45	44	55		47
HS2-000020BQ6	Mornington Terrace	54	42	40	36	36	30	26	35	35	40	45		38
HS2-000020BQ7	Arlington Road	59	44	39	37	34	31	25	33	39	39	42		38
HS2-000020BQ8	Clarkson Row	50	45	35	35	39	32	27	36	37	Tube missing	48		38
HS2-000020BQ9	Park Village East	45	42	37	30	32	31	22	31	36	40	43		35
HS2-000020BQA	Eversholt Street	75	59	50	64	57	75	50	Tube missing	42	64	68		60
HS2-000020BQB	Junction of Harrington Street and Varndell Street	56	45	31	33	33	31	27	30	34	40	Tube missing		36
HS2-000020BQC	Junction of Robert Street and Hampstead Road	61	47	47	40	45	45	28	39	43	48	53		45
HS2-000020BQD	Drummond Crescent	66	58	48	44	39	42	34	38	43	48	39		45
HS2-000020BQJ	Grafton Way (installed at end of August)	-	-	-	-	-	-	-	New location	52	65	68		62

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Monitoring Site ID	Location description	Jan 2017	Feb 2017	Mar 2017	Apr 2017	May 2017	June 2017	Jul 2017	Aug 2017	Sep 2017	Oct 2017	Nov 2017	Dec 2017	Mean
									- tube placed					
HS2-000020BQK	Junction of Drummond Street and Cobourg Street (installed at end of August)	-	-	-	-	-	-	-	New location - tube placed	33	42	51		42
HS2-000020BQL	Delancey Street (installed at end of August)	-	-	-	-	-	-	-	New location - tube placed	51	59	68		59
HS2-000020BP4	Triplicate site on Finchley Road next to Swiss Cottage kerbside automatic monitoring station	98	All tubes missing	65	71	64	57 (x2 tubes missing)	49	65	All tubes missing	70	Tube missing		67
HS2-000020BP5	Triplicate site next to the Euston Road roadside automatic monitoring stations	107	89	84	75	79	99	71	83	84	81	81		85
HS2-000020BP9	Triplicate site in Russell Square next to Bloomsbury urban background automatic monitoring station	62	49	41	37	39	37 (x1 tube missing)	28	38	37	37	53		42

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