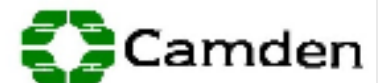


Air Quality and Construction

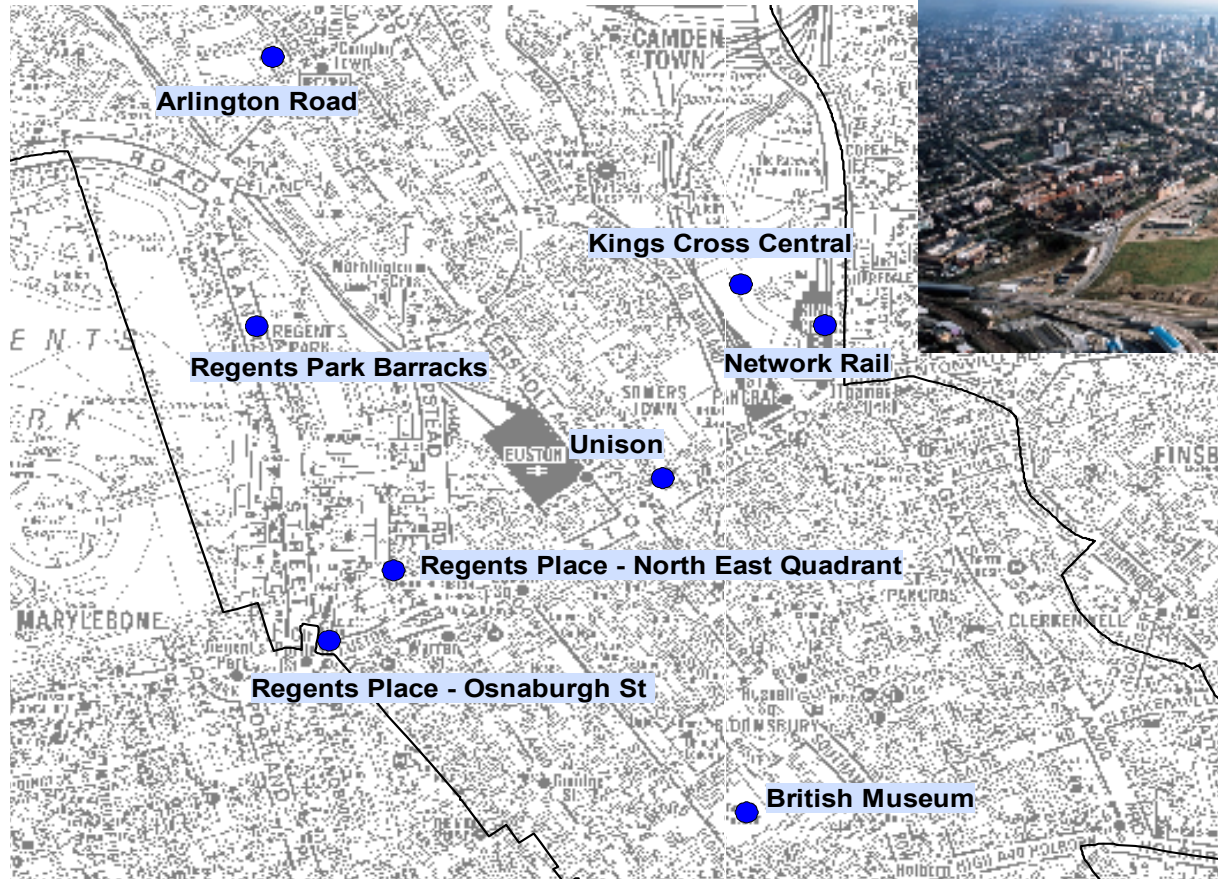
London Air Quality Network Seminar
King's College London – 24 April 2009



Gloria Esposito
London Borough of Camden



Construction & Air Quality in Camden



LBC exceeds 24 hr PM10
Air Quality Objective

Significant influence of
road traffic emissions

High level of development
south of the borough

Impact of construction
sites on AQ important

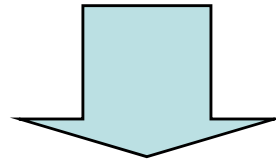
Historical Issues – Planning & Air Quality

- LBC produced Contractor's Guidance references London Best Practice Guidance
- Construction Management Plans important - Dust control measures standard, omit certain actions such as use of low sulphur diesel
- Dust monitoring usually involves hand held monitors or Frisbees
- Variations in frequency of data downloading, checking & reporting
- No mention of analyser maintenance
- Monitoring locations inappropriate
- Difficult for AQ officer to monitor effectiveness of dust control measures, quickly identify problems & understand local impacts

Controlling Dust & Emissions At Construction Sites

Construction Management Plans

(Required in s106 agreement)



Control of dust & emissions in accordance with the London Best Practice Guidance & risk rating of the site

Identify dust generating activities

Timetable of construction and demolition work

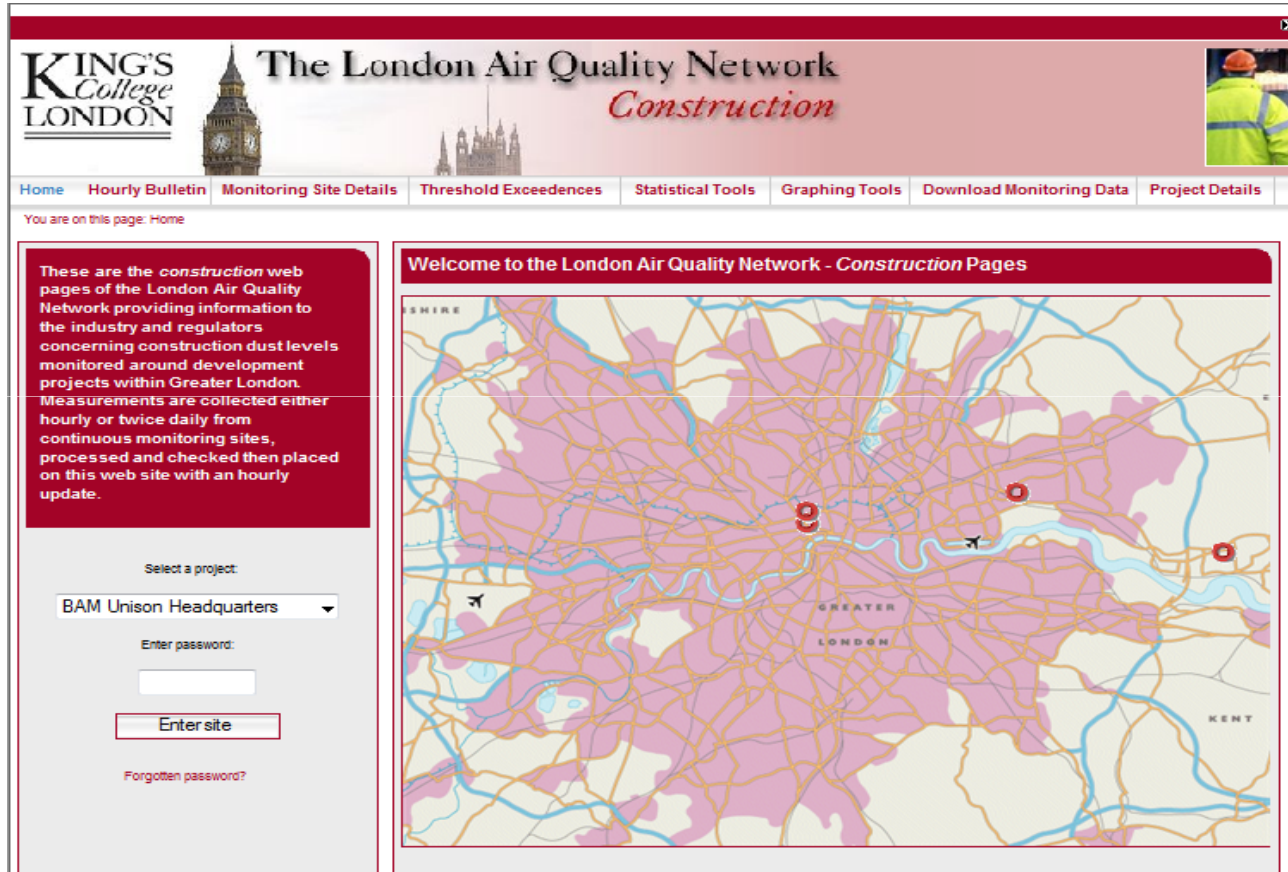
PM10 monitoring & reporting protocol

Complaints Procedure

PM10 Monitoring Protocol

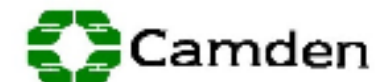
- Medium Risk - Two continuous monitors located on construction site boundary, across a transect in line with the predominant wind direction. (High Risk – 4-6 monitors at receptors includes FDMS). Co-located anemometer.
- PM10 data automatically polled, via GSM modems, on an hourly frequency
- System of QA/QC including maintenance contract for monitors
- Trigger Action Level of 250 $\mu\text{g}/\text{m}^3$ PM10 as 15 minute mean
- SMS text messages and/or e-mails to be sent to all on-site alert recipients following a breach of the trigger action level.
- **An e-mail specifying details of any alert sent out to LB of Camden the hour following any breach of the trigger action level.**
- **PM10 monitoring data to be made accessible to LBC via a website which identifies breaches of the trigger action level**
- In the event of the breach staff should carry out a visual inspection of dust generating activities to determine the cause of excess emissions. The activity should be stopped and the problem mitigated as soon as practicable. Construction activities shall not resume until dust emissions are mitigated.
- Report submitted to the Council every 3 months identifying date & times of trigger action breaches & remediation

LAQN – Construction Website



The screenshot shows the homepage of the London Air Quality Network (LAQN) Construction website. The header features the King's College London logo and the text "The London Air Quality Network Construction". A navigation menu includes links for Home, Hourly Bulletin, Monitoring Site Details, Threshold Exceedences, Statistical Tools, Graphing Tools, Download Monitoring Data, and Project Details. A sidebar on the left contains a welcome message, a project selection dropdown menu (currently showing "BAM Unison Headquarters"), a password field, and an "Enter site" button. The main content area displays a map of Greater London with several monitoring sites marked by red circles. The map also shows the River Thames and surrounding areas like Essex and Kent.

Developed in partnership between King's College ERG and London Borough of Camden



LAQN – Construction Website

You are logged into the HBG Unison Headquarters project (logout)

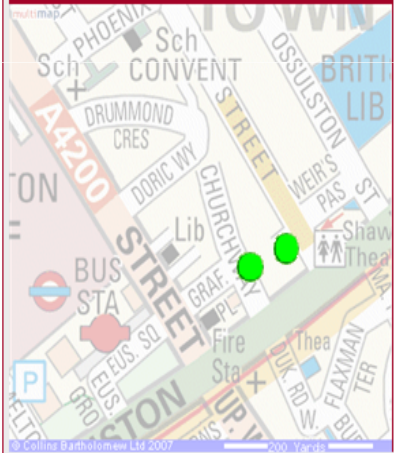
home contacts help accessibility site map

KING'S College LONDON The London Air Quality Network *Construction*


Home Hourly Bulletin Monitoring Site Details Threshold Exceedences Statistical Tools Graphing Tools Download Monitoring Data Project Details

You are on this page: Bulletin Maps » BAM Unison Headquarters

BAM Unison Headquarters Pollution Levels



[Bulletins](#) [Site Details](#) [Alert Exceedences](#)






 bam

This map shows the latest PM10 particulate measurements downloaded from the BAM Unison Headquarters project dust monitors compared against threshold concentrations. Data have undergone automatic validity checks.

You can find out more information about each monitoring site and recorded concentrations by clicking on its dot on the map. Once selected you can find out further information by clicking the 'Site Details' link above.

[Show latest daily bulletin \(Tuesday\)](#)

PM10 levels recorded on Wednesday 22 April 2009, 13:00-14:00EST

		
Below Threshold	Approaching Threshold	Above Threshold
		
No Data	Closed	

Any breaches of the Trigger Action Level are shown on a map of the construction area using a 'traffic light' system.

Statistical Tools

You are logged into the HBG Unison Headquarters project (logout)

home contacts help accessibility site map

KING'S College LONDON The London Air Quality Network Construction

Home Hourly Bulletin Monitoring Site Details Threshold Exceedences Statistical Tools Graphing Tools Download Monitoring Data Project Details

You are on this page: Statistical Tools

Statistical Tools

Results of Statistics Query » a list of exceedence days of 15 minute mean PM10 greater than $0\mu\text{g m}^{-3}$ (no conversion) between 1-1-2009 and 1-04-2009.

If there were no exceedences, no result will be shown.

Site Code	Site Name	Date & Time	Result
UN1	Unison 1 - East	01/01/2009	36.5
UN1	Unison 1 - East	02/01/2009	36.8
UN1	Unison 1 - East	03/01/2009	20.8
UN1	Unison 1 - East	04/01/2009	17.3
UN1	Unison 1 - East	05/01/2009	26.1
UN1	Unison 1 - East	06/01/2009	31.8
UN1	Unison 1 - East	07/01/2009	222.4
UN1	Unison 1 - East	08/01/2009	69.9
UN1	Unison 1 - East	09/01/2009	55.1
UN1	Unison 1 - East	10/01/2009	412.4
UN1	Unison 1 - East	11/01/2009	35.4
UN1	Unison 1 - East	12/01/2009	73.5
UN1	Unison 1 - East	13/01/2009	357
UN1	Unison 1 - East	14/01/2009	73
UN1	Unison 1 - East	15/01/2009	164
UN1	Unison 1 - East	16/01/2009	69.4
UN1	Unison 1 - East	17/01/2009	45.5
UN1	Unison 1 - East	18/01/2009	27

Generates exceedence statistics for PM10 & different averaging periods (to allow comparisons to AQS bandings)

- No of exceedences
- Lists of exceedance days
- No of exceedance days

Graphing Tools

You are on this page: Graph Tools » Time Series Graphs » Unison 1 - East

Graph Tools » Time Series Graphs » Unison 1 - East

1. The following parameters are recorded by this site. You may select up to 8:

PM10 Particulate (by OSIR) ($\mu\text{g}/\text{m}^3$) PM10 Particulate (by OSIR) ($\mu\text{g}/\text{m}^3$) PM2.5 Particulate (by OSIR) ($\mu\text{g}/\text{m}^3$) Total Suspended Particulate (by OSIR) ($\mu\text{g}/\text{m}^3$)

2. Select time period: 1 Jan 2009 20 Apr 2009

3. Select averaging period: 15 Minute

[replot the graph](#)

Warning: Data for species DUST for selected period has not been ratified and must be considered with care. Why?

View Period » 1-jan-2009 to 20-apr-2009 Resize graph: [] [+]

Graph Tools » Pollution Wind Plot » Unison 1 - East

1. The following parameters are recorded by this site. You may select up to 8:

PM10 Particulate (by OSIR) ($\mu\text{g}/\text{m}^3$) PM10 Particulate (by OSIR) ($\mu\text{g}/\text{m}^3$) PM2.5 Particulate (by OSIR) ($\mu\text{g}/\text{m}^3$) Total Suspended Particulate (by OSIR) ($\mu\text{g}/\text{m}^3$)

2. Select time period: 1 Jan 2009 1 Mar 2009

3. Select wind data: Ealing 7 - Southall (high quality, data capture **%)

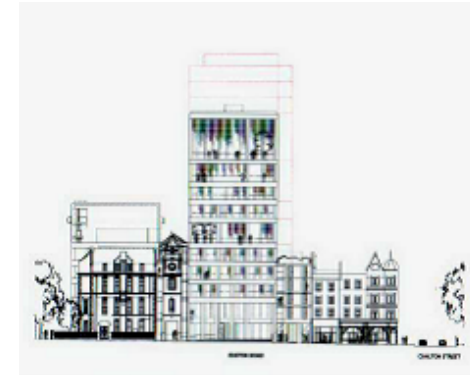
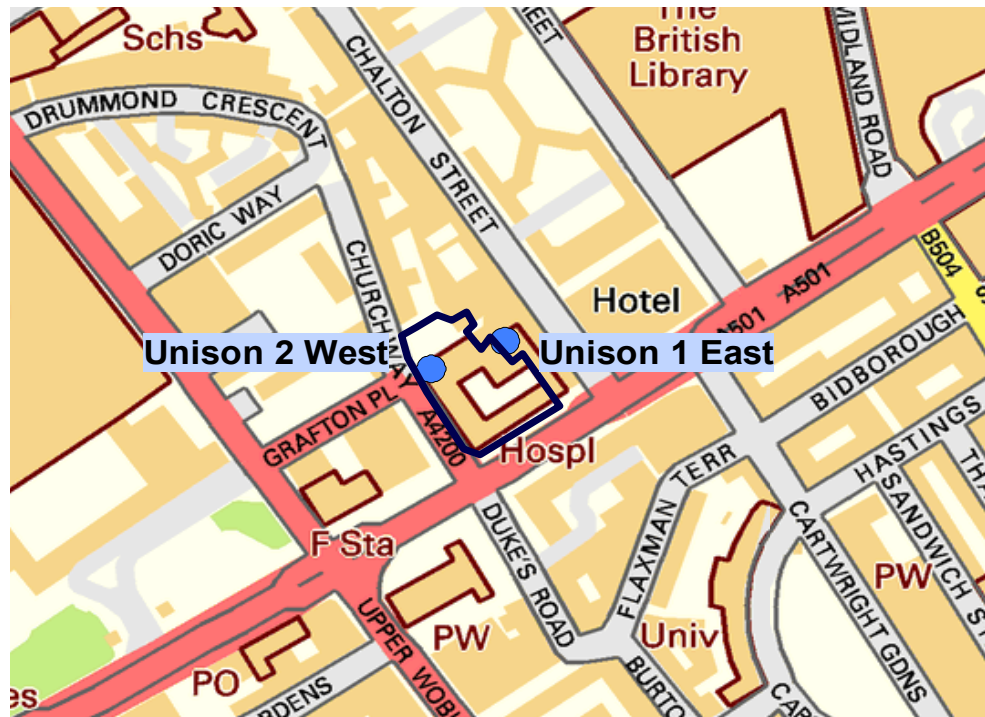
[replot the graph](#)

Warning: Data for species DUST for selected period has not been ratified and must be considered with care. Why?

View Period » 1-jan-2009 to 1-mar-2009

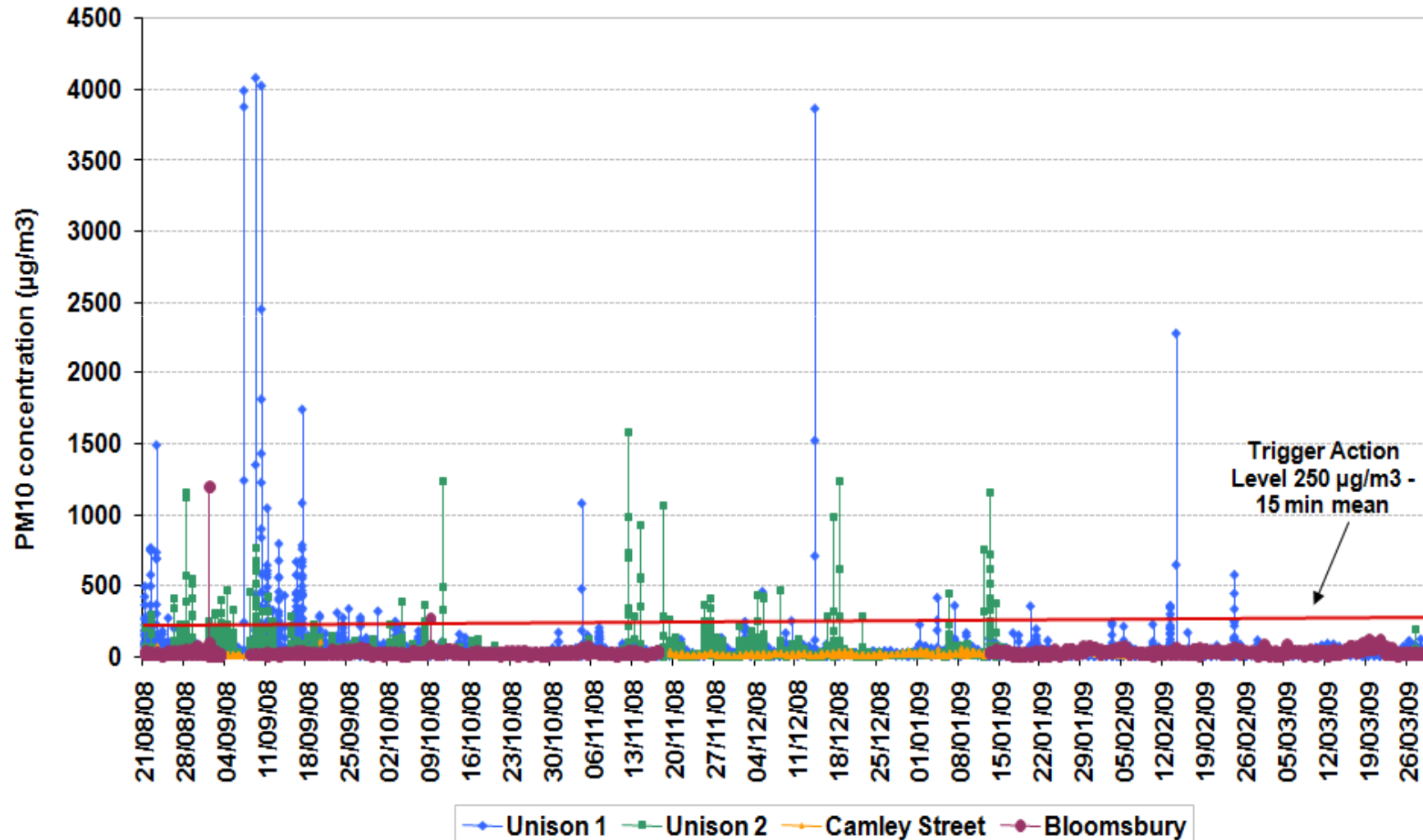
Allows users to graphically view as any specified time period for each site or selected species & creates wind roses

UNISON Development



- Mixed use development
- 10,500 m²
- Proximity to sensitive receptors
- Medium Risk Site

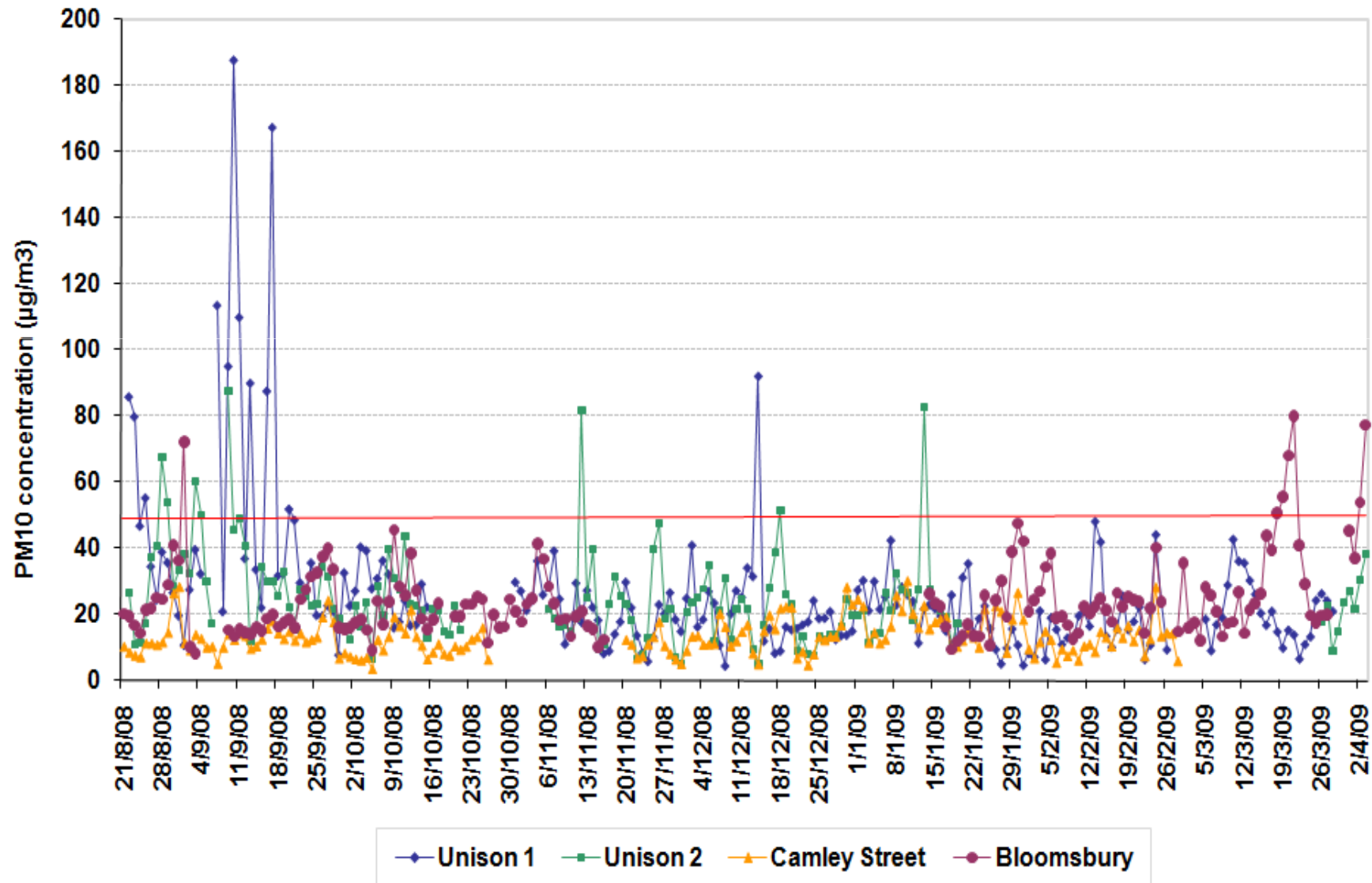
Trends in 15 min mean PM10 levels from UNISON construction site



Comparison of monthly 15 min mean PM10 ranges

	UNISON 1	UNISON 2	Camley St	Bloomsbury
Aug-08	10 - 1489.4	4.8 - 1151.7	2.8 - 84.2	3.9 - 78
Sep-08	0.3 - 4087.5	3.5 - 771	2.7 - 114	1.3 - 1197.3
Oct-08	2.4 - 334.2	1.9 - 1228	0.9 - 53.5	2.6 - 266.5
Nov-08	1.9 - 1078.6	1.5 - 1575.7	1.8 - 46.6	3.9 - 68.9
Dec-08	0.9 - 3870.5	0.8 - 1231.4	0.7 - 42.6	no data
Jan-09	2 - 412.4	2.4 - 1152.6	2.2 - 51.2	2.6 - 75.4
Feb-09	0.3 - 2277.6	no data	0.2 - 39	2.6 - 72.8
Mar-09	1.4 - 574.1	3.3 - 190.2	1.3 - 72	1.3 - 117

Trends in 24 hour PM10 Levels

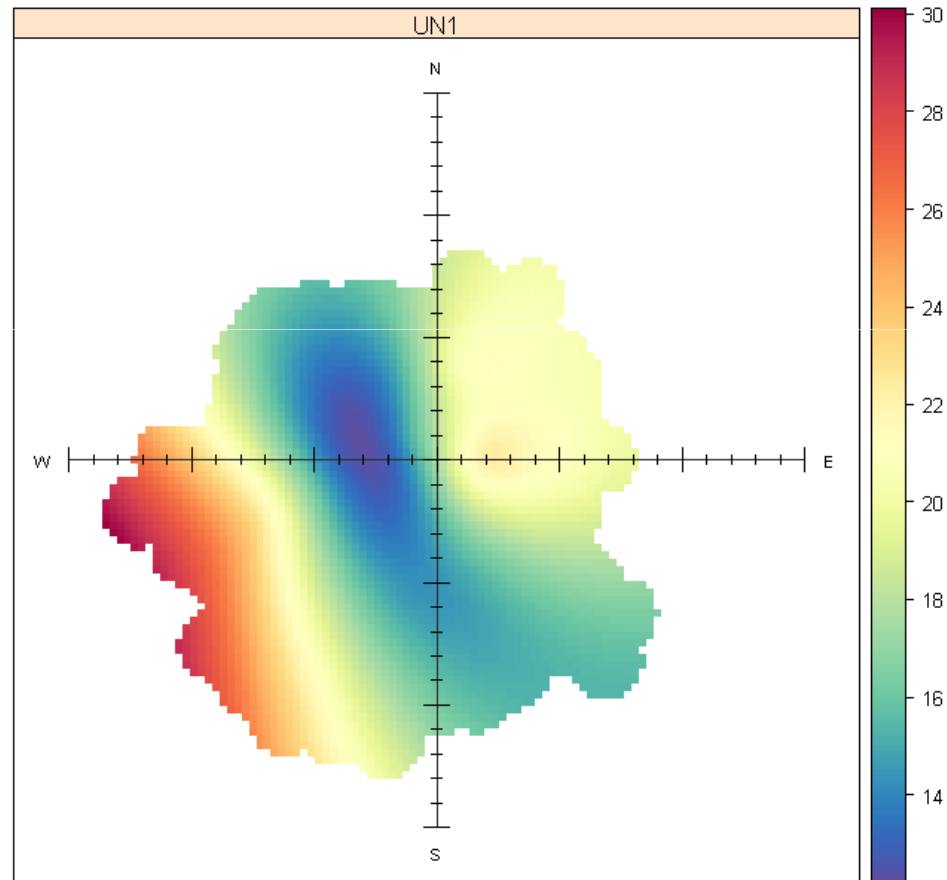


Trigger Action Level Exceedence Reports

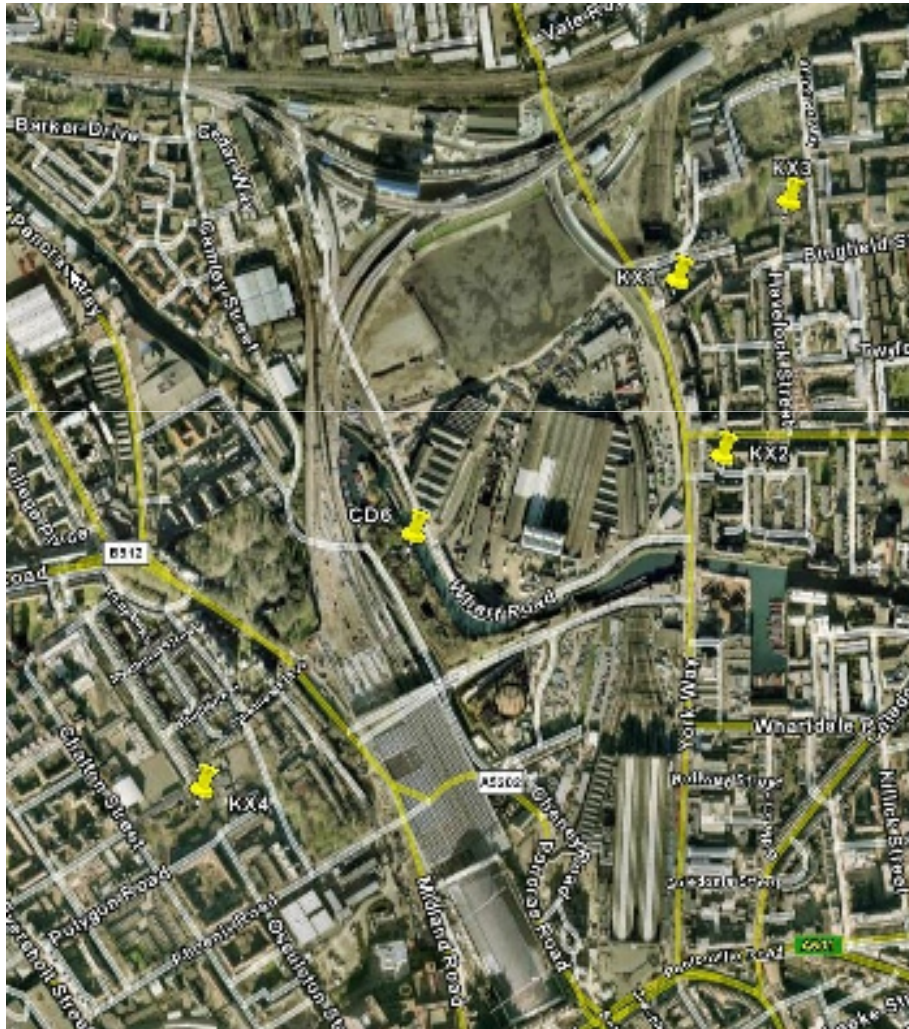
15 min exceedences (>250)		
Time Stamp	PM10 (ug/m3)	Comments
11/12/2008 15:15	455	dust (damped down),
20/12/2008 11:00	1521.6	dust (no action, site closed on Saturday),
10/01/2009 10:15	412.4	dust (no action, site closed on Saturday),
13/01/2009 15:45	357	dust (no action, site closed on Saturday),
19/02/2009 14:30	357.1	dust (damped down),
19/02/2009 15:15	348.4	wind creating dust (damped down),
19/02/2009 18:00	339.2	wind creating dust (damped down),
20/02/2009 16:15	2277.6	wind creating dust (damped down),
02/03/2009 10:30	574.1	machinery working adjacent under load (now off site),
02/03/2009 11:15	333.2	piling rig working adjacent (now off site).

Source Apportionment Using Polar Plots

'local' PM10 concentrations at UN1 August 2008 to January 2009



Kings Cross Central



Site Ref.	Equipment	Description
CD6	Osiris/MET	Camley Street Nature Reserve
KX1	FDMS	Bingfield Road
KX2	Osiris	York Way Cut
KX3	Osiris	Bingfield Park
KX4	FDMS/Osiris	Open Space at Polygon Road

- Mixed use, construction – 15 yrs
- High risk site
- PM10 data disseminated by LBC via LAQN Construction Website
- Trigger Action Level set as 75 $\mu\text{g}/\text{m}^3$ as 1 hr-mean for FDMS

Next Stages

- Review suitability & effectiveness of LAQN construction website, developer's feed back useful
- Locate Osiris monitors at receptors 50 – 200m radius around medium and high risk sites
- Disseminate PM10 data via LAQM Construction website
- Comparison of Osiris and TEOM/FDMS – co-location study at Swiss Cottage
- Continue to request Construction Management Plans - ensure Non-Road Mobile Machinery fitted with exhaust after treatment at high risk sites
- Review BPG Trigger Action Level $250 \mu\text{g}/\text{m}^3$ as 15 min mean

BPG 15-min mean PM10 Trigger Alert Level Appropriate?

