ATKINS

Olympic Park
Dust and PM_{10} Monitoring Data

Summary Report

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CONTENTS

List of Tables

List of Figures

Appendices

1. INTRODUCTION

1.1 Atkins has prepared a summary report for dust and PM_{10} data collected at the Olympic Park site in accordance with section 5.5 of the Olympic Park Dust Monitoring Scheme (ODA Ref: REP-ATK-TE-ZZZ-XXX-ZZZ-E-0002).

1.2 The monitoring was undertaken by two Tier 1 contractors and their supporting consultants, namely Morrison Construction Ltd/Hyder Consulting Ltd. (MCL) managing the north side of the site and Edmund Nuttall Ltd/Halcrow (ENL) managing the south side of the site.

1.3 This report summarises all of the monitoring carried out over a period of 40 weeks; between February (week 25/01/2007 - 01/02/2007) until the last week of October (week 25/10/07 - 1/11/07). Monitoring data was provided by MCL and ENL as well as obtained from the National Air Quality Archive and the relevant local authorities.

1.4 The results characterise rates of soiling and concentrations of PM_{10} in the vicinity of the Olympic Park since the beginning of the monitoring effort. This report is intended to discuss “historic” data and will be complemented in the future by a series of ongoing monthly summary reports.

2. PARAMETERS

2.1 Dust is defined as all particulates with a diameter between 1 and 75 microns (µm) (according to BS6069[1]) and comprises both suspended and deposited dust. Broadly speaking, dust particles above around 10 microns are too large to be inhaled but can cause eye, nose and throat irritation and lead to deposition on cars, windows and property.

Suggested Guideline

2.2 No statutory criteria for deposited dust or soiling are currently published in the United Kingdom. Although there are no statutory criteria, some guidance is provided in publications such as the UK Department of the Environment document "The Environmental Effects of Dust from Surface Mineral Workings" (1991) and more recently the Environment Agency Guidance note M17 "Monitoring of particulate matter in ambient air around waste facilities" (2004). All publications suggest guidelines for dust monitoring as both deposition rates and soiling.

2.3 These publications suggest a guideline of 200 milligrams per square metre per day ($mg/m^2/d$) for general dust deposition and a guideline for soiling or percentage of Effective Area Coverage per day (% EAC) of 0.2% as noticeable, 0.5% as a marginal nuisance, 2.0% as a probable nuisance and 5.0% as a severe nuisance. This is reiterated in the London Council's best practice guidance on the control of dust and emissions from construction and demolition.

Nuisance Dust

2.4 In the context of the proposed activities and UK law, dust emissions can result in a 'Statutory Nuisance' where there is failure to apply 'Best Practicable Means' (BPM) to control emissions. The law on Statutory Nuisance and relevant definitions are given in Part III of the Environmental Protection Act 1990 (EPA90). In practical terms, application of BPM essentially means the managed, diligent application of 'best practice' techniques to minimise emissions in the context of the receiving environment, changing conditions and cost.

[1] British Standards Institute, "BS6069 Part 2: Glossary of Terms", 1987

2.5 The EPA90 makes local authorities responsible for routine inspection and enforcement action to counter Statutory Nuisance. The EPA90 also enables the private individual to sanction action via the magistrates' court. The defence against Statutory Nuisance is BPM. Where the local authority or magistrates' bench are satisfied that BPM are being applied, then there can be no Statutory Nuisance.

2.6 Dust levels that are elevated above the norm can cause annoyance and ultimately Statutory Nuisance where the everyday legitimate activities of members of the public are disrupted. Evidence of a potential problem commonly first manifests itself in the form of complaint to the perceived perpetrator and/or the local authority. Dust nuisance in terms of Statutory Nuisance commonly relates to increased rates of dust deposition on exposed surfaces and/or soiling (discolouration/contamination) although, less commonly, the term may relate to levels that are *"prejudicial to health"* (EPA90), including airborne dust. 'Nuisance dust' – as it is commonly referred to - mainly comprises particles larger than 10 µm; noticeable accumulations of smaller particles are much less likely as these are less inclined to deposit and are more susceptible to being blown away.

2.7 A particular complication in determining whether or not nuisance dust levels constitute a Statutory Nuisance is the absence of a legislated standard. A limited number of academic studies in the UK have examined this issue by sampling public opinion to various 'dust levels', but have yet to define one or more threshold(s) above which Statutory Nuisance can be confidently determined. Examples of suggested thresholds to indicate likelihood of annoyance (complaints) are given in Table **2.1**.

2.8 Baseline conditions were not characterised in a directly comparable method over a sufficiently long exposure period to determine if there has been an incremental change in dust levels since commencement of construction operations. However, given the preliminary baseline monitoring by Capita Symons and the number and diversity of dust sources from both industrial premises and road network, it is highly probably that baseline conditions would frequently have exceeded one or both of the guideline criteria for dust deposition and soiling. As a guide, 2.0 %EAC/day is often described as the threshold for probable complaints and 5.0 %EAC/day for serious complaints.

Table 2.1 - Suggested Threshold Indicating Perception of Nuisance Dust

Source	Environment	Technique/equipment and suggested threshold				
Beaman & Kingsbury[2]	All	Sticky pad soiling gauge (% Effective Area Coverage/day) Note: response depends upon colour and type of dust				
		Noticeable	Possible complaint	Objectionable	Probable complaint	Serious complaint
		0.2	0.5	0.7	2	5

Vallack & Shillito[3]	Open country	British standard deposit gauge (mg/m^2/day)		Dry Frisbee (foam) gauge (mg/m^2/day)	
		Complaints possible (90th percentile)	Complaints likely (95th percentile)	Complaints possible	Complaints likely
		80	100	100	140
	Residential areas and outskirts of towns	110	150	150	200
	Commercial centres of towns	150	190	200	260

Particulate Matter

2.9 The Government's Air Quality Strategy for England, Scotland, Wales and Northern Ireland (AQS[4]) provides details of national air quality standards and objectives for a number of local air pollutants, including PM_{10}. An exposure reduction objective for the finer $PM_{2.5}$ fraction has been introduced in the latest version of the strategy. This type of objective is designed to reduce average concentrations throughout an entire

[2] BEAMAN, A & KINGSBURY, R.W.S.M. (1981). Assessment of Nuisance from Deposited Particulates Using a Simple and Inexpensive Measuring System *Clean Air*, **11** 77-81.
[3] VALLACK, H.W. & SHILLITO, D.E. (1998). Suggested guidelines for deposited ambient dust. *Atmospheric Environment* **32**, 2737-2744.
[4] The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Defra, July 2007

urban background area, thus ensuring that the majority of people will benefit, rather than just those who live in a particular hotspot area.

2.10 The air quality criteria for particulate matter are detailed in Table 2.2.

Table 2.2 – Local Air Quality Criteria

Pollutant	Objective	Compliance date
PM_{10}	24-hour mean concentration should not exceed 50µg/m^3 more than 35 times a year	31 December 2004 [1 January 2005]
	Annual mean concentration should not exceed 40µg/m^3	
$PM_{2.5}$ Exposure reduction^	UK (except Scotland): annual mean concentration should not exceed 25 µg/m^3	2020
	Scotland: annual mean concentration should not exceed 12 µg/m^3	2020
	UK urban areas: target of 15% reduction in concentrations at urban background*	Between 2010 and 2020

Notes:
[ ] denotes EU Limit Value compliance date in UK Regulations
^ New European obligations for a target of 20% reduction are still under negotiation
* 25 µg/m^3 is a cap to be seen in conjunction with 15% reduction

3. TEST PROCEDURE

3.1 28 locations were selected by MCL and 18 locations by ENL for dust monitoring on the basis of security and distance from the site and sensitive receptors and also to ensure continuity with surveys previously undertaken by Capita Symonds Ltd. These sites were agreed with the client and Environmental Health Officer at the four relevant local authorities prior to monitoring equipment being installed. Monitoring of dust was undertaken using Fablon Sticky Pads.

3.2 Fablon is a proprietary self-adhesive material used in sheet form to collected coarse particulate material. The "pads" are wrapped around an upright item of street furniture such as a signpost to ensure 360 degree coverage. The relative degree of soiling at the desired bearing (generally north, south, east and west) is determined in the laboratory using a calibrated reflectance meter.

3.3 Three locations were selected for PM_{10} monitoring. Monitoring of PM_{10} was deployed using Osiris dust monitors, which are continuous analysers that operate on the principle of measuring light scattering proportionate to particulate concentration. This method is frequently used to measure particulates in real time.

3.4 The dust and PM_{10} monitoring sites selected and their descriptions are presented in Appendix A. These locations can be found on the site map in Appendix C of the Olympic Park Dust Monitoring Scheme (ODA Ref: REP-ATK-TE-ZZZ-XXX-ZZZ-E-0002. The data are collected by week, (1 – 40) beginning on 25/01/2007 and ending on 01/11/2007 (see Appendix B for a full list of week numbers with their corresponding dates).

3.5 Dust monitoring commenced in January 2007 and continues across the Olympic Park. The basis for this review focuses on the first 9 months (40 weeks) of monitoring up to the end of October 2007. The assessment will then continue on a monthly basis for the duration of the Enabling Works. The time-periods in the report are described by week numbers. The north sector, is managed by MCL and the south sector, by ENL, both "monitoring weeks" correspond to slightly different days in the week. Appendix B correlates each data week to a week number referred to in the report.

4. RESULTS AND DISCUSSION

DUST RESULTS

4.1 The complete results of the Fablon Sticky Pad monitoring at all sites are presented in Appendix C.

4.2 Table 4.1 below summarises the weeks when exceedences of the accepted thresholds were observed, as well as the relevant directional bearing. According to the guidance discussed an exceedence of the 2% EAC threshold corresponds to a 'probable complaint' and an exceedence of the 5% threshold corresponds to a 'serious complaint'.

4.3 These criteria are only approximate, and correlation between the data and actual complaint history will be required to be undertaken in future.

Performance against criteria

4.4 Typical levels found in an urban situation are between 0.3 – 0.4% and in an industrial situation levels would be around 0.8 – 1% (Beaman & Kingsbury (1981)). All sites, excluding the month of May at site 123 and 128A, show levels higher than 1% as may be expected in an area in which large-scale construction and demolition works are taking place.

4.5 The %EAC guideline for soiling refers to 0.2% per day as noticeable, 0.5% per day regarded as a marginal nuisance and 5.0% as severe nuisance. The sites are all above the threshold of 0.5% for 'marginal nuisance', and many are above the threshold of 2% for "probable complaints".

4.6 The bearing of the maximum % EAC can assist in determining the dust source. A review of the tables presented in Appendix D indicates that the majority of the soiling causing exceedences of the guideline criteria are predominantly from the west and south.

Table 4.1 – Exceedences of Guideline Threshold Values at Directional Dust Sticky Pads

Site Reference	Previous Reference	Direction							
		North		East		South		West	
		Weeks >2%EAC	Weeks >5% EAC	Weeks >2%EAC	Weeks >5% EAC	Weeks >2%EAC	Weeks >5% EAC	Weeks >2%EAC	Weeks >5% EAC
Dust_01	105A	14	n/a	n/a	n/a	15 , 34	n/a	15 , 35	n/a
	105B	14	n/a	n/a	n/a	8, 9 , 15	n/a	9	n/a
Dust_02	East	8, 14 , 23	n/a	14, 15, 25, 29, 35	n/a	15, 21, 23	n/a	14 , 23	n/a
Dust_03	108A	15	n/a	8 , 26	n/a	15, 29, 34 , 35	n/a	14	n/a
	108B	14	n/a	8	n/a	5	n/a	14	n/a
Dust_05	133	2, 5, 14, 22, 23, 28, 30, 33, 35	n/a	5, 10, 14, 21, 26	n/a	5, 6, 11, 23 , 28	8	5, 9, 12, 13, 17, 21, 22, 24, 27, 28, 32,	15, 23, 25, 26, 30, 34, 35,
	133A	22, 23, 26, 28, 29, 35	n/a	21 , 23	n/a	23	24	21, 22, 24, 26, 27, 28, 32, 40	23, 25, 29, 34, 35
Dust_06	25	14, 31, 35	32, 33	5, 13, 15, 23, 35	34	7, 13, 15, 25, 26, 28, 30, 40	29 , 35	5, 10, 14, 23, 24, 27, 28, 29, 31, 32, 34, 35, 40	33
	25A	39	n/a	8, 25, 28, 39	n/a	6, 13, 14, 26	n/a	28	n/a
	25b	23, 33, 34	n/a	14, 21, 23, 26, 28	n/a	21, 23, 28, 34, 40	n/a	5, 15, 18, 21, 22, 23, 27, 28, 29, 33	34
Dust_08	127	2, 8, 10, 12, 13, 16, 19, 21, 22, 23, 25, 27, 29, 32, 33, 34, 37	5, 14, 15, 26	8, 12, 13, 15, 17, 18, 19, 20, 22, 23, 27, 30, 31	4, 5, 6, 14, 21, 25, 26, 33, 34, 35	1, 2, 3, 4, 5, 6, 7, 12, 15, 17, 18, 19, 21, 22, 23, 25, 27, 28, 29, 32, 33, 34, 39	13, 26, 35	2, 3, 5, 6, 7, 10, 12, 14, 15, 18, 20, 23, 24, 25, 26, 27, 29, 30, 32, 33, 34, 35, 40	8, 28

Site Reference	Previous Reference	Direction							
		North		East		South		West	
		Weeks >2%EAC	Weeks >5% EAC	Weeks >2%EAC	Weeks >5% EAC	Weeks >2%EAC	Weeks >5% EAC	Weeks >2%EAC	Weeks >5% EAC
Dust_09	102	5	14	18	14	n/a	n/a	9, 14, 15	n/a
Dust_10	103	n/a	n/a	14, 21	n/a	14, 21, 25, 26	n/a	n/a	n/a
Dust_11	128	8, 13, 14, 15, 23	n/a	8, 13, 14, 15, 23, 27, 29	n/a	23	n/a	14	n/a
	128A	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Dust_12	126	14, 15, 21, 35	n/a	9, 10, 13, 14, 15, 19, 23, 25, 29, 31	21	5, 6, 7, 10, 21, 22, 25, 26, 29, 35	15	3, 4, 7, 8, 15, 23, 25, 34, 35, 39	n/a
Dust_13	125	38	n/a	36, 37, 39, 40	n/a	39, 40	n/a	37	n/a
Dust_14	107	5, 8, 9, 10, 12, 14, 17, 20, 23, 28, 30, 31, 33, 34, 35, 37, 38, 39, 40	15	13, 15, 18, 21, 23, 24, 36	n/a	5, 7, 8, 15, 17, 21, 22, 223, 24, 25, 26, 27, 28, 34, 38, 40	35	5, 7, 10, 15, 17, 23, 24, 29, 32, 33, 34, 35, 39, 40	37
Dust_15	121	No data	No data	39	n/a	No data	n/a	n/a	n/a
Dust_16	120	No data	No data	36, 37, 38	n/a	No data	n/a	37	n/a
Dust_17	109	37	n/a	9, 10, 12, 14	n/a	No data	n/a	5, 6, 7, 13, 16, 17, 18, 21, 22, 27, 28, 36, 37	8, 15, 23, 24, 25, 26, 29, 32, 33, 34, 35
Dust_18	110	No data	No data	5, 6, 7, 13, 18, 20, 21, 29, 31, 32, 36, 37,	8, 9, 10, 12, 14, 19	36	n/a	17, 22, 23, 25, 27, 34, 35	15, 24
Dust_19	119	No data	No data	31, 32, 33	n/a	No data	No data	36, 37	n/a
Dust_20	111	No data	No data	15, 21	14	25	n/a	5, 7, 8, 10, 37	n/a
Dust_21	112	15, 24, 25 29,	n/a	10, 13, 21	14	n/a	n/a	5, 6, 7, 8, 9	n/a

Site Reference	Previous Reference	Direction							
		North		East		South		West	
		Weeks >2%EAC	Weeks >5% EAC	Weeks >2%EAC	Weeks >5% EAC	Weeks >2%EAC	Weeks >5% EAC	Weeks >2%EAC	Weeks >5% EAC
		32							
Dust_24	New Site	No data	No data	n/a	n/a	No data	No data	36, 38, 39, 40	n/a
Dust_25	114	n/a	n/a	n/a	n/a	No data	No data	n/a	n/a
Dust_26	New Site	n/a	n/a	n/a	n/a	No data	No data	n/a	n/a
Dust_27	West	10, 15, 29	n/a	8, 21	n/a	10, 14, 21, 26	n/a	10, 13, 15, 26, 35, 36	n/a
Dust_30	117	No data	No data	No data	No data	No data	No data	No data	No data
Dust_31	118	36, 37, 38, 40	n/a	n/a	n/a	No data	No data	37	n/a
Dust_33	127C	30, 32, 33, 34, 35	n/a	30, 35, 38, 39, 40	n/a	29, 32, 38, 40	30, 34, 35	29, 30, 33, 34, 35	n/a
Dust_34	127B	31, 32, 33, 35, 38	n/a	32, 36, 37, 39	n/a	29, 30, 33, 34, 39	35	32, 33, 34, 35	n/a
Dust_35	127A	32, 34	n/a	30, 34	29	29, 30	34	30, 32, 33, 34	n/a
Dust_36	126A	n/a	n/a	39	n/a	29, 33, 36, 37, 39	n/a	37, 40	n/a
Dust_37	126B	35, 40	n/a	No data	No data	No data	No data	No data	No data
Dust_38	123	13, 21, 25	n/a	No data	No data	No data	No data	No data	No data
Dust_39	136	40	n/a	40	39	18, 29, 39, 40	n/a	23, 39, 40	n/a
Dust_40	135	30, 33, 39, 40	n/a	15, 26, 32, 36, 38, 40	n/a	25, 27, 29, 32, 40	15, 34	22, 26, 32, 33, 36, 38	15
To be removed	137	23, 40	n/a	23, 24	n/a	22	23	22	23, 40
	137A	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Site Reference	Previous Reference	Direction							
		North		East		South		West	
		Weeks >2%EAC	Weeks >5% EAC	Weeks >2%EAC	Weeks >5% EAC	Weeks >2%EAC	Weeks >5% EAC	Weeks >2%EAC	Weeks >5% EAC
To be removed	138	33, 40	n/a	26	n/a	25, 29, 35, 40	n/a	22, 24, 27, 28, 30, 32, 35, 40	25, 29, 34

No in-period monitoring results are available at new sites Dust 22, 23, 28, 29 and 32; defunct sites 101, 106, 113, 115, 116, 124 and 129 (old number system); PM10 01-04 inclusive and BAM01.

4.7 Sites Dust05, Dust08 and Dust17 returned the greatest number of exceedences of the more stringent 5.0% criterion (over 7, 10 and 7 weeks respectively). The majority of the other sites displayed readings above the 5.0% criterion for at least one week on at least one bearing, but sites 5, 8 and 17 stand out as the most frequently and heavily soiled.

Trends

4.8 The trend of dust monitoring over the 40 weeks which have been reviewed is presented in Appendix D and summarised in Table 4.2 below. An increasing trend is presented with a "+", a decrease with a "-", a neutral trend with a "n/a" and where no data was available the cell is left blank.

4.9 Nine sites show a general increase in dust levels at all bearings and eight sites show a general slight decrease in dust levels at all bearings. Significant trends were not observed and most sites either did not show a changing trend or had a mixed trend at different bearings. For example, site Dust40 shows a slightly increasing trend at the north and east bearing but a decreasing trend at the south and west bearing.

4.10 It has been generally observed that sites located near to each other tend to show a similar if not identical trend, as would be expected from a large and diffuse number of sources on site.

4.11 All sites at the east side of CZ13 (Dust33, 34, 35, 8, 12 and 9) show a trend towards reduction in soiling levels over the 40 weeks. The other sites near Oly5 show either reduction or no trend; however, two sites at the south of CZ 5 (Dust36 and 37) show an increasing trend.

4.12 Dust_17, 18, 20 and 21 are located south of CZ 9 and 1, are all showing a decreasing trend or no trend.

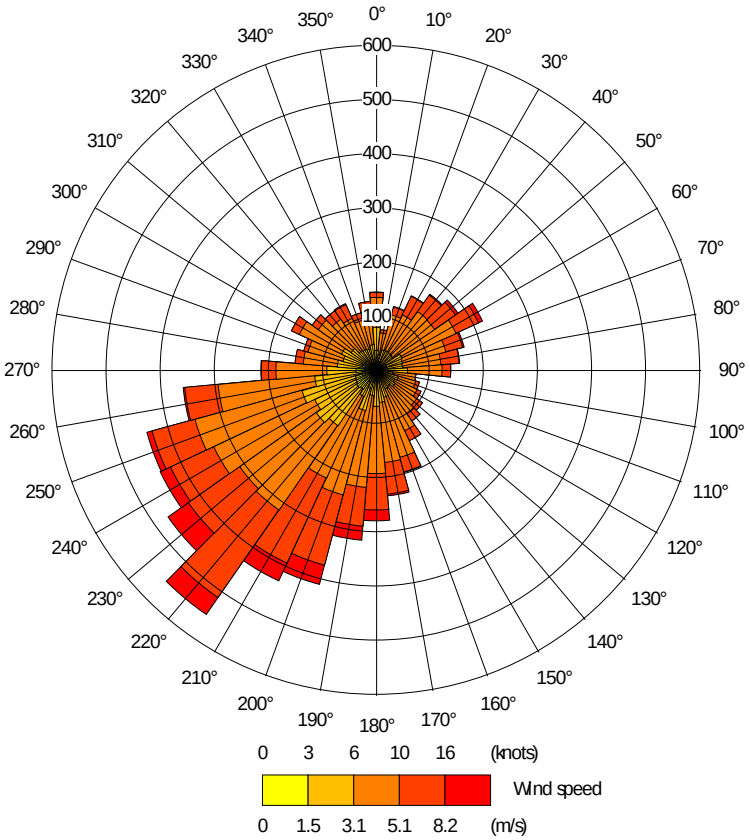
Table 4.2 – 40 Week Trends at Directional Dust Sticky Pads

New Ref No.	Old ref No.	North	East	South	West
Dust_01	105 A	n/a	n/a	n/a	n/a
	105B	+	+	+	+
Dust_02	East	+	+	+	+
Dust_03	108A	n/a	n/a	n/a	n/a
	108B	+	+	+	+
Dust_05	133	-	-	-	+
	133A	+	+	+	+
Dust_06	25	+	+	+	+
	25A	n/a	n/a	-	n/a
	25B	+	-	+	n/a
Dust_08	127	-	-	-	-
Dust_09	102	-	-	+	-
Dust_10	103	n/a	n/a	n/a	n/a
Dust_11	128	n/a	n/a	n/a	n/a
	128A	+	+	+	+
Dust_12	126	-	-	-	-
Dust_13	125	+	+	+	n/a
Dust_17	109	n/a	n/a	n/a	n/a
Dust_18	110		-		-
Dust_20	111	-	-	-	-
Dust_21	112	-	n/a	n/a	-
Dust_27	West	-	-	-	-
Dust_33	127C	-	-	-	-
Dust_34	127B	-	-	-	-
Dust_35	127A	-	-	-	-
Dust_36	126A	+	+	+	+
Dust_37	126B	+	+	+	+
Dust_38	123	n/a	n/a	n/a	n/a
Dust_39	136	+	+	+	+
Dust_40	135	+	+	-	-
To be removed	137	+	-	-	+
To be removed	137A	n/a	n/a	n/a	n/a
To be removed	138	n/a	n/a	n/a	-

Meteorology

4.13 The London City Airport meteorological station is located 5.5 kilometres to the south east of the site. Ideally a site-derived wind-rose showing prevailing wind speed and direction over the nine months would be used when discussing source apportionment, however in the absence of such data, the next most fit-for-purpose data were collected. At the present time, the London City Airport meteorological station is the closest meteorological station to the site assessed for which data are available. The 2006 London City windrose is illustrated in Figure 4.1.

Figure 4.1 - 2006 Windrose for London City Airport Meteorological Station



4.14 One year's data are not necessarily representative of another year's, but the windrose gives a good indication as to the prevailing wind direction.

4.15 Winds in 2006 are indicated to be predominantly blowing from south westerly directions. Soiling observed at the sites monitored in 2007 appeared to be predominantly coming from the south-west indicating that the main wind direction is broadly similar since the monitoring effort began.

PM10 RESULTS

4.16 PM_{10} monitoring measures airborne particulate concentration, rather than rates of soiling or deposition. Data from three Osiris analysers situated adjacent to the site at Clays Lane, Waterden Road and Gainsborough Road Primary School have been examined.

4.17 Data from local networked analysers run by Waltham Forest (Dawlish Close) and Newham Councils (Cam Road) has been collected in order to establish a baseline to which on- and near-site data can be compared. These are respectively downwind

and upwind of the site and though there are significant interferences, primarily the local road network, at both networked analysers; the data generated is very useful in differentiating between site-derived and London-wide episodes.

4.18 Clays Lane and Waterden Road analysers have been operational for different time periods. Clays Lane was operational between the 6th August and 18th October; Waterden Road started on the 1st October and is still currently running, as is Gainsborough Road Primary School which commenced on 6th July. An annual mean or 24 hour exceedence can not be calculated as the analysers have not been operational for a sufficiently long period. Nevertheless, whilst results are not directly comparable to Air Quality Objectives, they provide an indication of likelihood of compliance, the robustness of which increases in proportion to the size of the dataset. Gainsborough Road Primary School is hence most robust for compliance assessment purposes, and Waterden Road the least.

4.19 The mean concentrations for the operational period of the three Osiris Analysers have been derived. Mean concentrations have also been calculated for the local sites from the same period as the Osiris analysers.

4.20 There will be inherent differences in the Osiris and local network datasets due to the differing methods used by each. The consequences of this difference in methodology has yet to become apparent; but future work is planned to compare contemporaneous Osiris and Beta Attenuation Meter data, the latter being directly comparable to local network data.

Table 4.3 - PM_{10} Concentrations Measured at Continuous Analyser Sites

Site Name	Operator	Period	Period Mean *	Number of Exceedences **
Clays Lane	MCL	06/08/2007 to 18/10/2007 (74 days)	33.1	10
Cam Road _Stratford	Newham	06/08/2007 to 18/10/2007	24.4	1
Dawlish Road_Leyton	Waltham Forest	06/08/2007 to 18/10/2007	23.7	0
Waterden Road	MCL	01/10/2007 to 31/10/2007 (31 days)	48.5	14
Cam Road _Stratford	Newham	01/10/2007 to 31/10/2007	30.9	1
Dawlish Road_Leyton	Waltham Forest	01/10/2007 to 31/10/2007	27.5	0
Gainsborough Road Primary School	MCL	24/07/2007 to 31/10/2007 (102 days)	22.4	4
Cam Road _Stratford	Newham	24/07/2007 to 31/10/2007	24.7	1
Dawlish Road_Leyton	Waltham Forest	24/07/2007 to 31/10/2007	24.4	0

* Annual Mean Objective of 40 µg/m^3

** Objective is less than 35 exceedences of a 24 hour mean of 50 µg/m^3 per year

Annual means

4.21 Results show that during the periods of operation mean concentrations were higher at Clays Lane and Waterden Road than at the local networked analysers, whilst period mean concentrations at Gainsborough Road Primary School were comparable. Concentrations at Waterden are higher than the annual mean objective of 40 µg/m^3 during the one-month monitoring period. If these concentrations were to remain this high for a 12 month period then the AQS objectives would be exceeded. Period mean concentrations at Clays Lane and Gainsborough Road were well below 40 µg/m^3 during the period of operation and appear more likely to meet the annual mean objective.

24-hourly mean exceedences

4.22 If the part-year data collected at all three Osiris PM_{10} monitoring sites were taken as representative of an entire year, the annual number of expected exceedences of the 24 hourly mean Objective of 50 μg/m^3 not to be exceeded more than 35 times per year pro rata, would be as follows:

- Clays Lane: 49
- Waterden Road: 168
- Gainsborough Road: 14

4.23 None of the data sets are fit for direct comparison with the 24 hourly mean criterion of 35 exceedences of 50 μg/m^3 per year, particularly Waterden Road with only one month's duration, but the data suggests the strong possibility that this criterion may not be met at Waterden Road or Clays Lane.

4.24 Gainsborough Road School, as might be expected from an off-site monitoring location, appears more likely to comply with the 24 hour mean exceedence criterion. It appears likely that the off-site network analyser sites at Dawlish Close and Cam Road would also comply with the 24 hour mean criterion.

Episodes

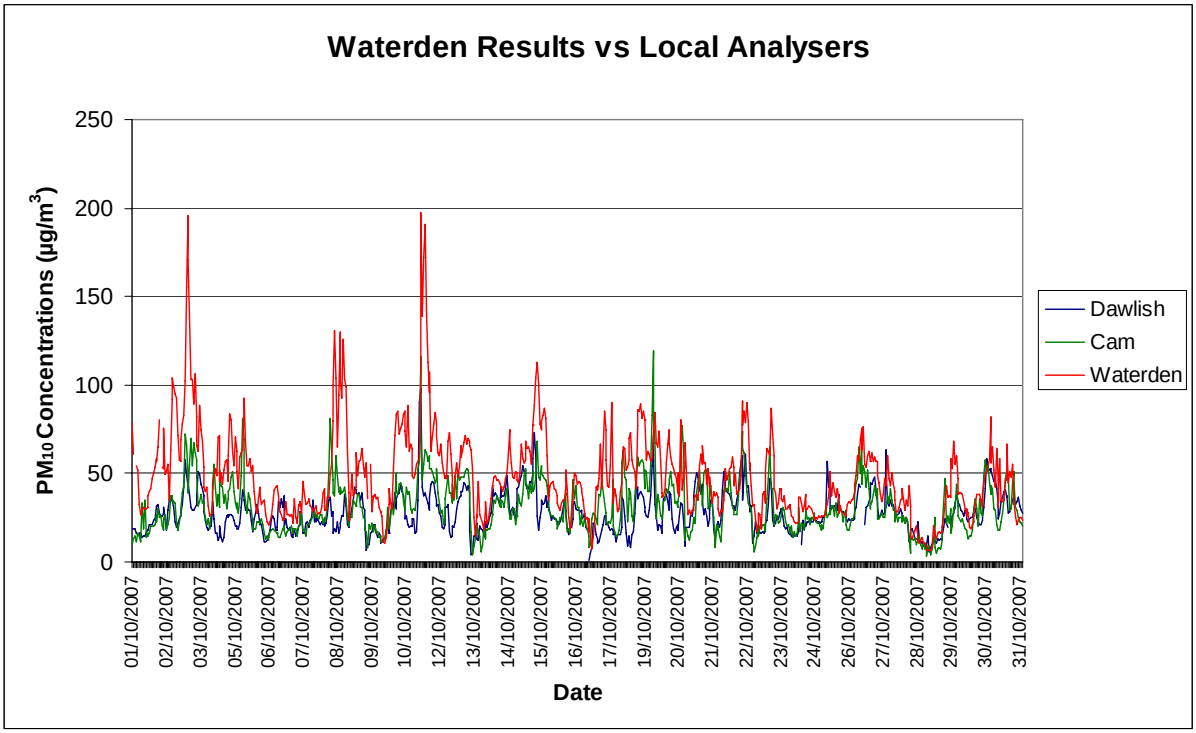
4.25 Figure 4.2 shows comparisons of validated hourly concentrations between the local sites, Clays Lane and Waterden Road during the periods of operation. Data from Gainsborough Road Primary School will be produced graphically in future monthly reports but had been collected in too inconsistent a format to readily manipulate as hourly blocks for episode analysis.

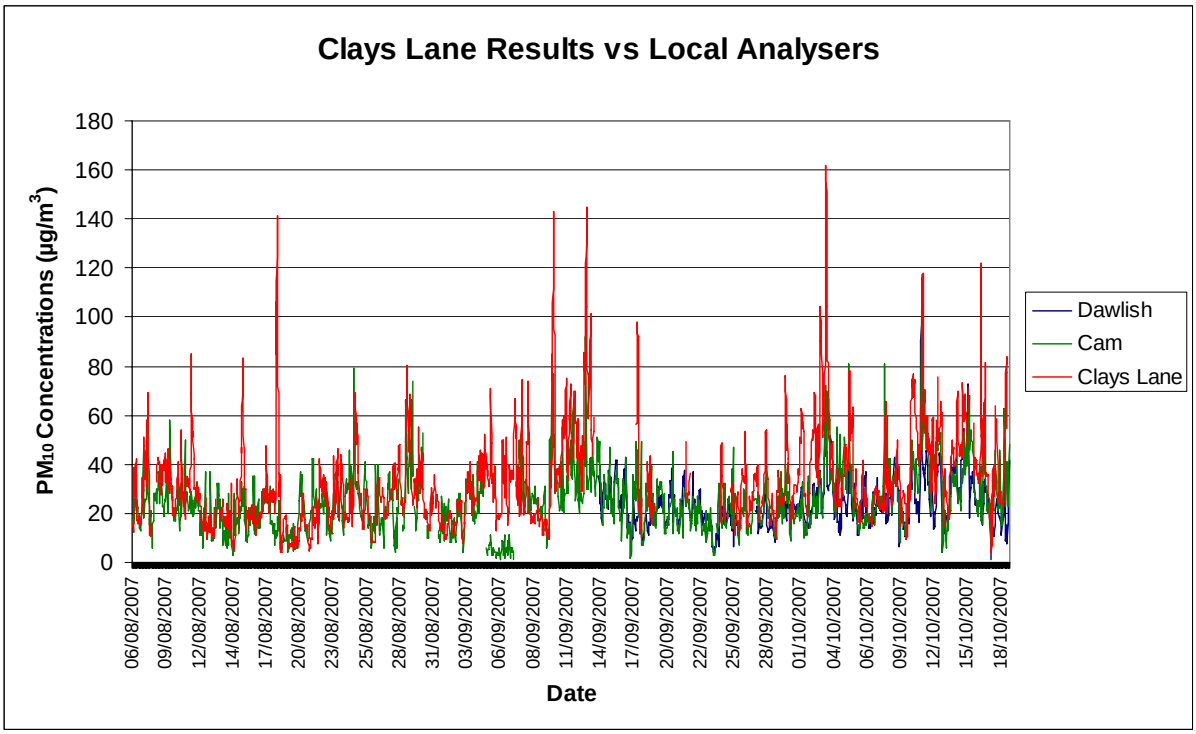
4.26 Results show that concentrations at Clays Lane are much greater than the local networked sites during six periods. These are on the 18/08, 10/09, 13/09, 03/10, 11/10 and the 16/10. During these dates, concentrations peaked at above 100 μg/m^3 which did not follow the trends of the local network sites.

4.27 Concentrations at Waterden Rood peaked on the 03/10, 11/10, 07/11 and 08/11. The peaks on the 3/10 and 11/10 were for the same time period as those seen at Clays Lane, although concentrations were not as high.

4.28 The peaks observed appear to be strongly influenced by on-site activities rather than being London-wide episodes.

Figure 4.2 – Graphs to Show Comparisons of Hourly Concentrations between Clay Lane, Waterden and the Local Network Analysers





5. CONCLUSIONS

5.1 Fablon Pad sampling sites Dust 06, Dust 08 and Dust 17 stand out as those most frequently subject to heavy soiling, though similarly frequent episodes of more moderate soiling occurred as Dust 06 and Dust14

5.2 The trends in relative soiling do not follow an obvious pattern and are better addressed on a monthly basis in conjunction with local site activities.

5.3 PM_{10} data were available for a period of three months and were therefore not directly comparable to Air Quality Objectives, which are assessed on an annual basis. However, results to date suggest that the statutory annual mean PM_{10} criterion may be exceeded at the Waterden Road site if concentrations remain similar for a twelve month period. The Clays Lane and Gainsborough Road Primary School sites appear more likely to meet this criterion. It should be appreciated, however, that Clays Lane no longer has any residential properties following their demolition and the relocation of Travellers' housing units. Redeployment of the Osiris meter will therefore take place.

5.4 The statutory maximum permitted number of 35 exceedences of the 24 hour mean concentration for PM_{10} appears likely to be exceeded at the Waterden Road and Clays Lane monitoring sites. It appears likely that this criterion will however be met at Gainsborough Road Primary School.

There were a number of peaks in the PM_{10} data at the Clays Lane and Waterden sites which did not follow the trends of the local authority network analyser sites. These two sites were only operating simultaneously during the period between the 1/10 and the 18/10. During this time both analysers measured pollution episodes (periods in which data peaked above local sites for greater than 2 hours) on the 3/10 and the 11/10. These peaks may have been due to on-site activities at this time as local network analysers at Cam Road and Dawlish Road show no record of any such episodes. No extraordinary activities, however, were recorded by the Tier 1 contractors.