



LONDON LOW EMISSION CONSTRUCTION PARTNERSHIP

8th December 2015

SUPPORTED BY
MAYOR OF LONDON



10:30	Welcome	Adam Webber
10:35	Review of previous meetings minutes	David Green
10:45	LLECP Website update	Daniel Marsh
11:00	Industry Outreach	Daniel Marsh
11:05	Local Authority Construction Projects	Daniel Marsh
11:25	MAQF R2 – update	David Green
11:35	Project Plan update	David Green
11:40	Finance/Signing off work	David Green
11:45	AOB / Date of next meeting	All
11:50	Finish	All



London Low Emission
Construction Partnership
Website

LLECP projects area update

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Projects Map



Laign O'Rourke - Nine Elms NLE

This map shows projects where measurements are available. Select a project from the list or map to show details. Access beyond this page is restricted to authorised users.

Go back to the projects overview



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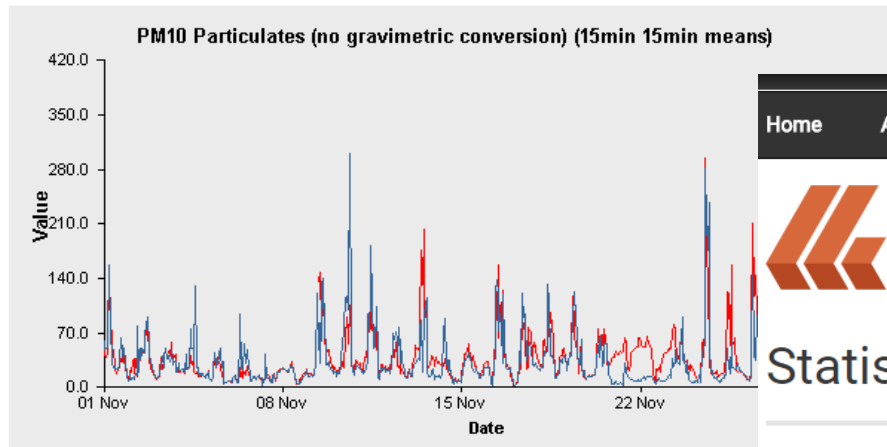
Graphing tools

replot the graph

Warning: Data from Ealing - Derlins for selected period have not been ratified **Warning:** Data from Ealing - Hansons for selected period have not been ratified

Note: Ratification information is shown below. Results based on provisional data must be considered with care. Why?

View Period » 1-nov-2015 to 1-dec-2015



Key: Ealing - Derlins Ealing - Hansons



Statistical tools

Results of Statistics Query » maximum 15 minute mean PM10 concentration in $\mu\text{g}\cdot\text{m}^{-3}$ (no conversion) between 01-nov-2015 and 01-dec-2015.

Site Code	Site Name	Result ($\mu\text{g}\cdot\text{m}^{-3}$ (no conversion))
QE2	Ealing - Derlins	375.6
QE4	Ealing - Hansons	342.4

Note: Ratification information is shown below. Results based on provisional data must be considered with care. Why

LAEI PM₁₀ emissions (t/annum) 2010



Industry Outreach Programme

29 th September 2015	Omar Rouchdy Mace	Mace have a 'pollution champion' which delivers back to their business units. Looking at future working potential as well as current practice.
1 st October 2015	Richard Lines Canary Wharf Contractors South Bank regeneration project	LLECP/NRMM presentation and reviewing possible project options for MAQF R2
6 th October 2015	Simon Leek Sir Robert McAlpine - 10 Fenchurch Avenue	LLECP/NRMM presentation and reviewing possible project options for MAQF R2
7 th October 2015	Old Oak Park Royal Redevelopment, Urban Innovation Centre	HyperCatCity / OPDC Smart Strategy Clean & Green Environment Workshop Climate Change work shop
16 th October 2015	Canary Wharf Contractors	Site tour and discussion of potential projects and Southbank Place development (Shell building)
5 th November 2015	Lend Lease, Keltbray and Morrisroe	LLECP/NRMM presentation to management team
18 th November 2015	Association London Environmental Health Managers (ALEHM)	Low Emission Construction for London – presentation
4 th December 2015	Emissions Analytics	Discussions to help improve PEMS on NRMM and potential for project collaboration
11 th January 2016	City of London Developers Forum	14 Major development groups signed up to attend so far

Industry Outreach Campaign

- 14 large developers and contractors visited for presentations to raise awareness
- 4 conference / seminar presentations
- LLECP website
 - > 1200 unique visitors since the launch in July
 - 5:27 average session duration is currently reflecting that multiple pages are being viewed
- @ConstructDustUK Twitter feed
 - >1000 followers within the target industry
 - >1680 tweets

And some developer feedback...

- ◉ *“I was wondering if you could help me with regards to the Hybrid Generators you discussed when we met a while back. We are beginning to look into them as part of our Carbon reduction strategy and I wondered if you had any facts/figures that may of use?”*
S. Leek, Sustainability Advisor, Sir Robert McAlpine
- ◉ *“Have you managed to get the results back for the diesel additive being used in Expanded’s machine? As I said our sustainability advisor would be keen to see whether this is something that could be implemented on other sites.”*
J. Baird, Graduate Site Manager, Berkeley Group
- ◉ *“... to introduce myself I hold a national role with Hanson on environmental management and would just confirm our interest in this work. We have other sites where the technique may be applicable.”*
M. Crow, Senior Sustainability Manager Hanson UK
- ◉ *“...yes, we would be delighted to take part. I’ve copied in my colleague Omar who is our Pollution Champion. A very timely email since we just issued the attached Newsletter on this subject (produced by Omar) to all our Business Units in the Mace Group. We look forward to hearing more about the project and the next steps.”*
S, Taylor, Sustainability Senior Manager, Mace Group
- ◉ *“... I understand you have been supporting Keltbray with work on energy data reporting. We are currently working on an announcement to reassure our employees, clients and regulators that we are now compliant with the new emission rules in London and I wonder if you would be willing to provide a quote about our work in this area as an integral part of this announcement. “*
Marit Meyer-Bell, Head of Communications, Keltbray Ltd

National Air Quality Awards – Best Air Quality Communications Campaign



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LONDON LOW EMISSION CONSTRUCTION PARTNERSHIP

Construction Dust UK
@ConstructDustUK

Monitoring, assessment & 'best in class' mitigation to reduce dust & emissions from the construction & demolition industry Via @LondonAir

London, UK
llec.org.uk
Joined November 2013

73 Photos and videos

TWEETS 1,684 FOLLOWING 1,256 FOLLOWERS 1,060 LIKES 578 LISTS 1

Tweets Tweets & replies Photos & videos

Pinned Tweet

Construction Dust UK @ConstructDustUK · Oct 23

Are you aware of the impacts on local #airquality and #health from #construction site emissions? #NRMM

GREENPEACE

Who to follow - Refresh · View all

Construction Trader @CTr...
Followed by NRMM Guru an...
Follow

Sari Mannonen @SariMann...
Follow

Find friends

Trends - Change

Grammy
1.11M Tweets

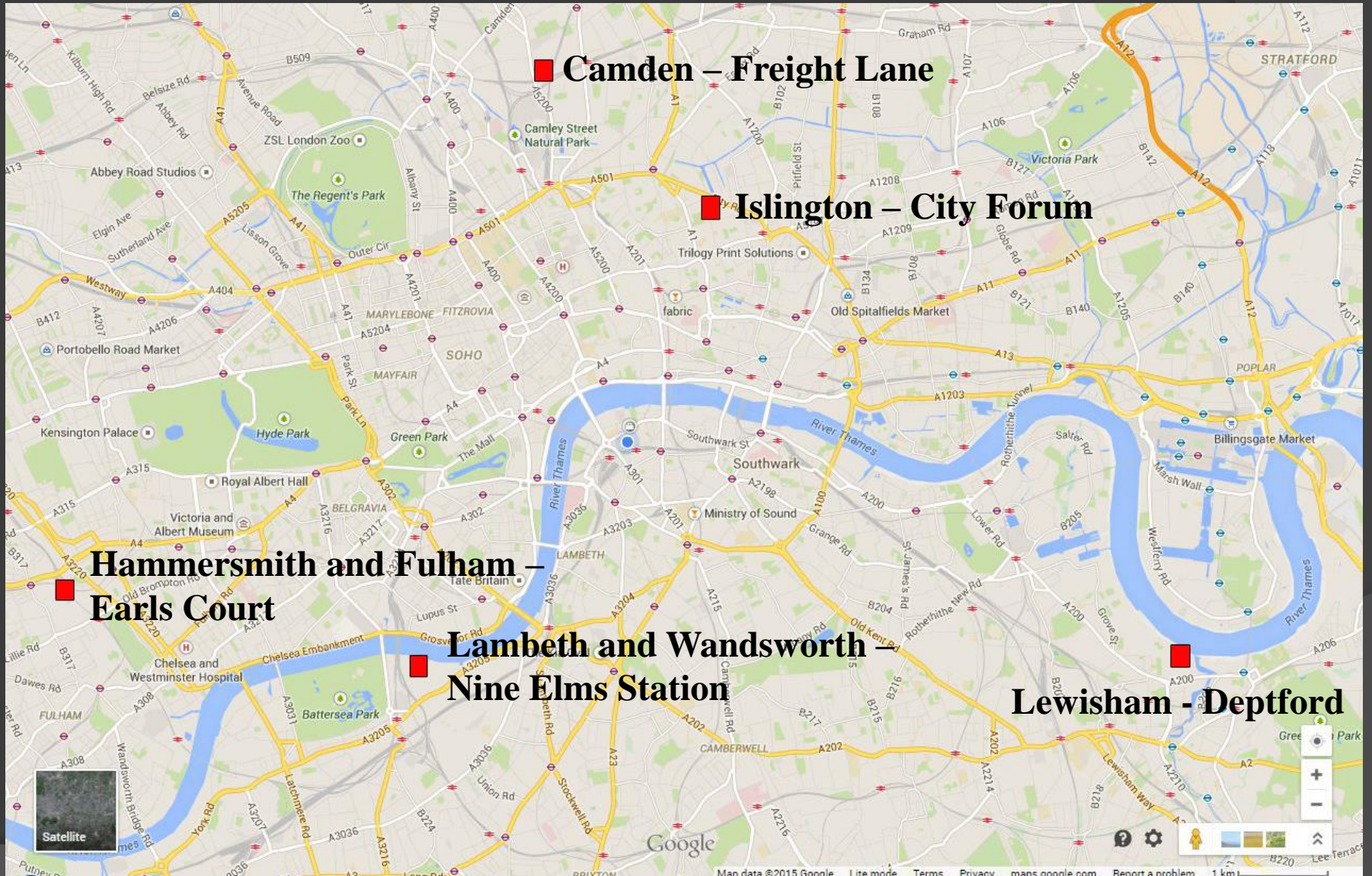
#AskTroye
29.4K Tweets

1060 industry based followers
Almost 1700 tweets so far.....



LLCEP construction projects

Targeted construction sites



London Borough of Camden

- Reducing trackout at two Cement Batching Plants using Calcium Magnesium Acetate (CMA) as a dust suppressant
- Assessing impact of CMA application
- Assessing seasonal variation on CMA impacts

Heygate construction site

Two Particulate Matter (PM) monitors at each side of Deacon Way (haulage road)



OSIRIS monitors
TSP, PM₁₀, PM_{2.5}
and PM₁

OSIRIS
monitors

Three phases:

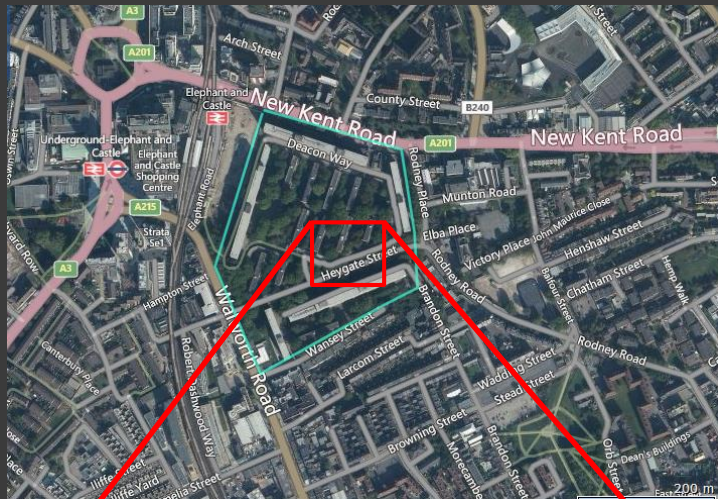
- 1) Phase-I: 15th Apr - 6th July 2014. Tarmac road; demolition activity taking place south of AQMS-S.
- 2) Phase-II: 7th Jul - 12th Dec 2014. Tarmac road.
- 3) Phase-III: 13th Dec 2014 - 26th Mar 2015. Unmade road.

DUST suppressants
to reduce PM
emissions:

- Water
- CMA
- 2xCMA

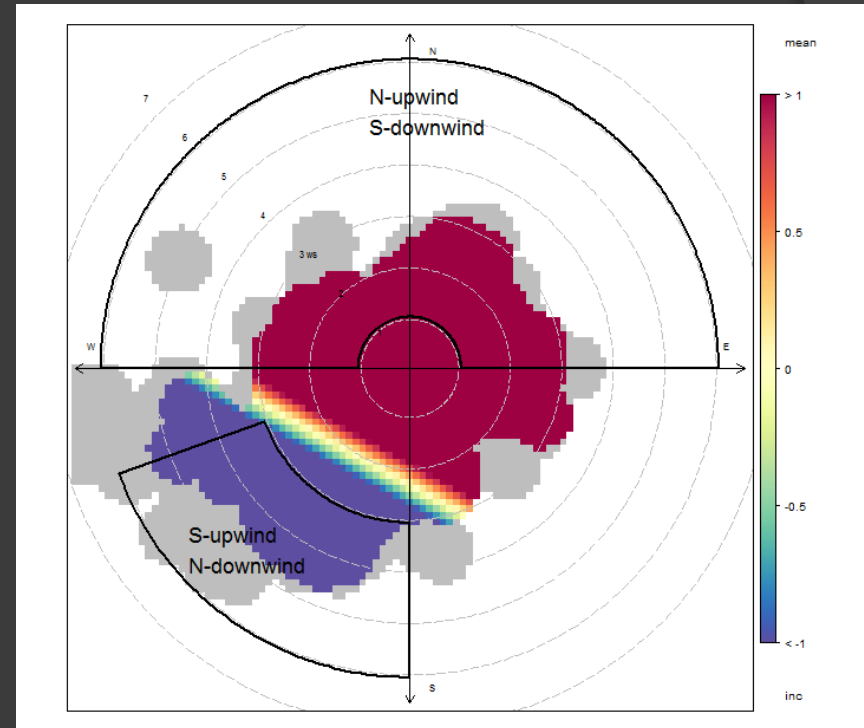
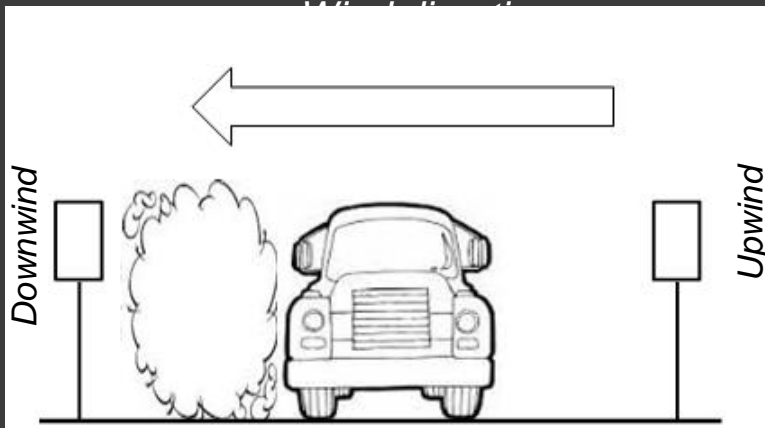


Application dust suppressant

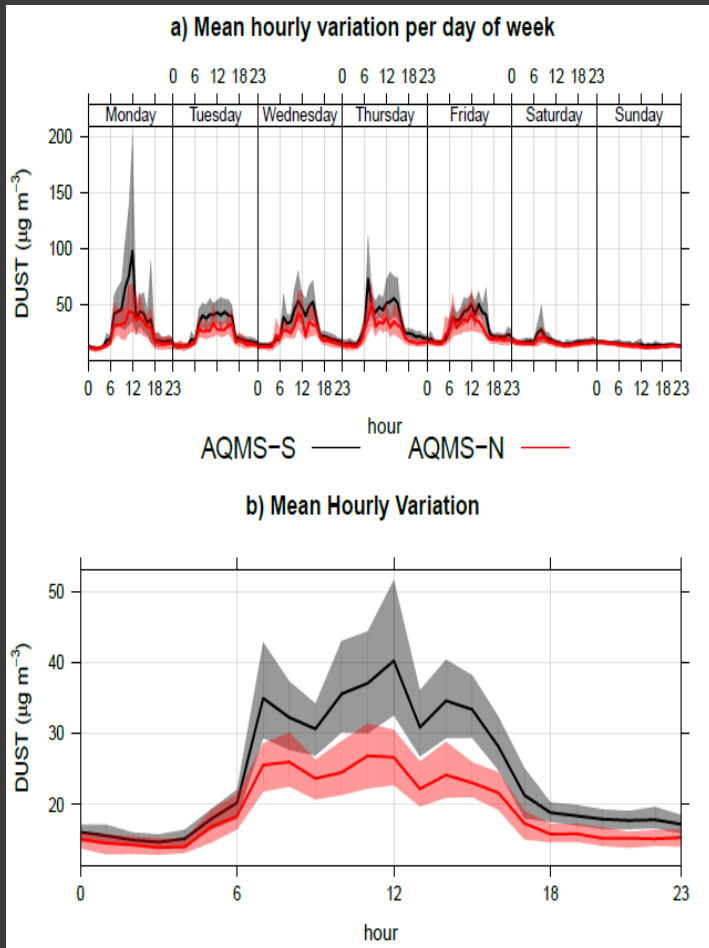


Defining the Increment

$$incDUST = (C\ dust)_{downwind} - (C\ dust)_{upwind}$$

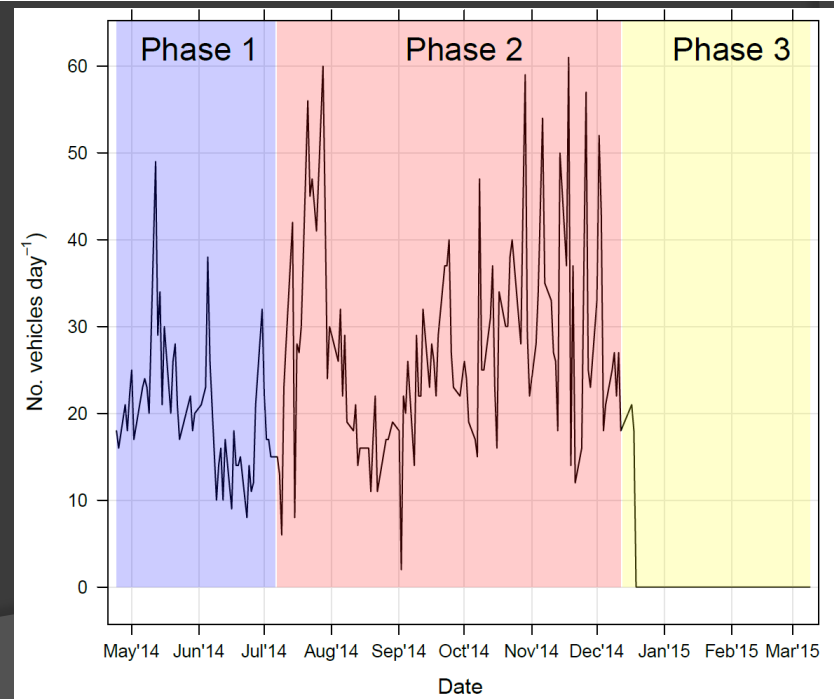


Data Summary



	AQMS-N dust ($\mu\text{g m}^{-3}$)		AQMS-S dust ($\mu\text{g m}^{-3}$)		Traffic (# vehicle day^{-1})
	mean \pm standard deviation	Median (25 th , 75 th percentiles)	mean \pm standard deviation	Median (25 th , 75 th percentiles)	mean \pm standard deviation
Phase 1	42.1 \pm 32.9	33.6 (19.7, 50.1)	47.1 \pm 41.5	36.4 (22.3, 57.2)	19 \pm 8
Phase 2	28.5 \pm 18.8	23.5 (17.9, 33.6)	45.0 \pm 59.6	31.9 (21.1, 48.4)	28 \pm 2
Phase 3	14.4 \pm 7.2	13.4 (9.4, 18.4)	15.0 \pm 7.9	13.6 (9.3, 18.8)	1 \pm 4

	AQMS-S	Control	Water	CMA	2xCMA
AQMS-N					
Phase 1	6	0	0	0	0
Phase 2	6	0	0	0	0
Phase 3	0	0	0	0	0
AQMS-S					
Phase 1	3	0	0	0	0
Phase 2	13	1	0	0	0
Phase 3	0	0	0	0	0

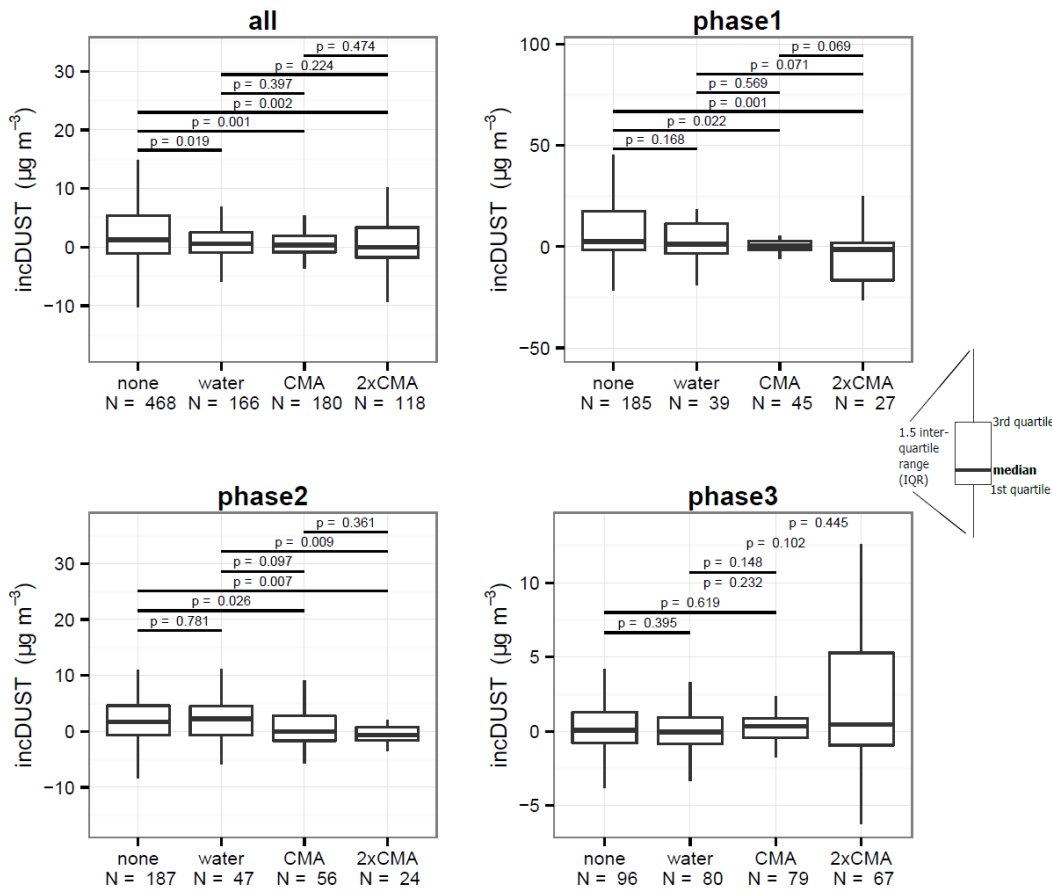


Increment Results

		Control	Water	CMA	2xCMA
All data	n	468	166	180	118
	incDUST	1.26	0.54*	0.31*	-0.06*
	($\mu\text{g m}^{-3}$)	(-1.11, 5.35)	(-0.97, 2.47)	(-0.87, 1.96)	(-1.75, 3.34)
Phase I	n	185	39	45	27
	incDUST	2.53	1.16	0.29*	-1.35*
	($\mu\text{g m}^{-3}$)	(-1.59, 17.51)	(-3.48, 11.36)	(-1.73, 2.68)	(-16.51, 1.92)
Phase II	n	187	47	56	24
	incDUST	1.69	2.23	-0.05*	-0.67*
	($\mu\text{g m}^{-3}$)	(-0.65, 4.60)	(-0.68, 4.50)	(-1.68, 2.74)	(-1.62, 0.70)
Phase III	n	96	80	79	67
	incDUST	0.09	-0.05	0.33	0.46
	($\mu\text{g m}^{-3}$)	(-0.79, 1.28)	(-0.82, 0.93)	(-0.43, 0.89)	(-0.94, 5.28)

* $p < 0.05$ distribution statistically different from control.

Increment results



- Increment concentrations are small ($1-2 \mu\text{g m}^{-3}$)
- All 3 methods successful
- Overall CMA no more successful than water
- On tarmac (phase 1&2), CMA effective but water was not
- Phase-3 concentrations too low

London Borough of Islington





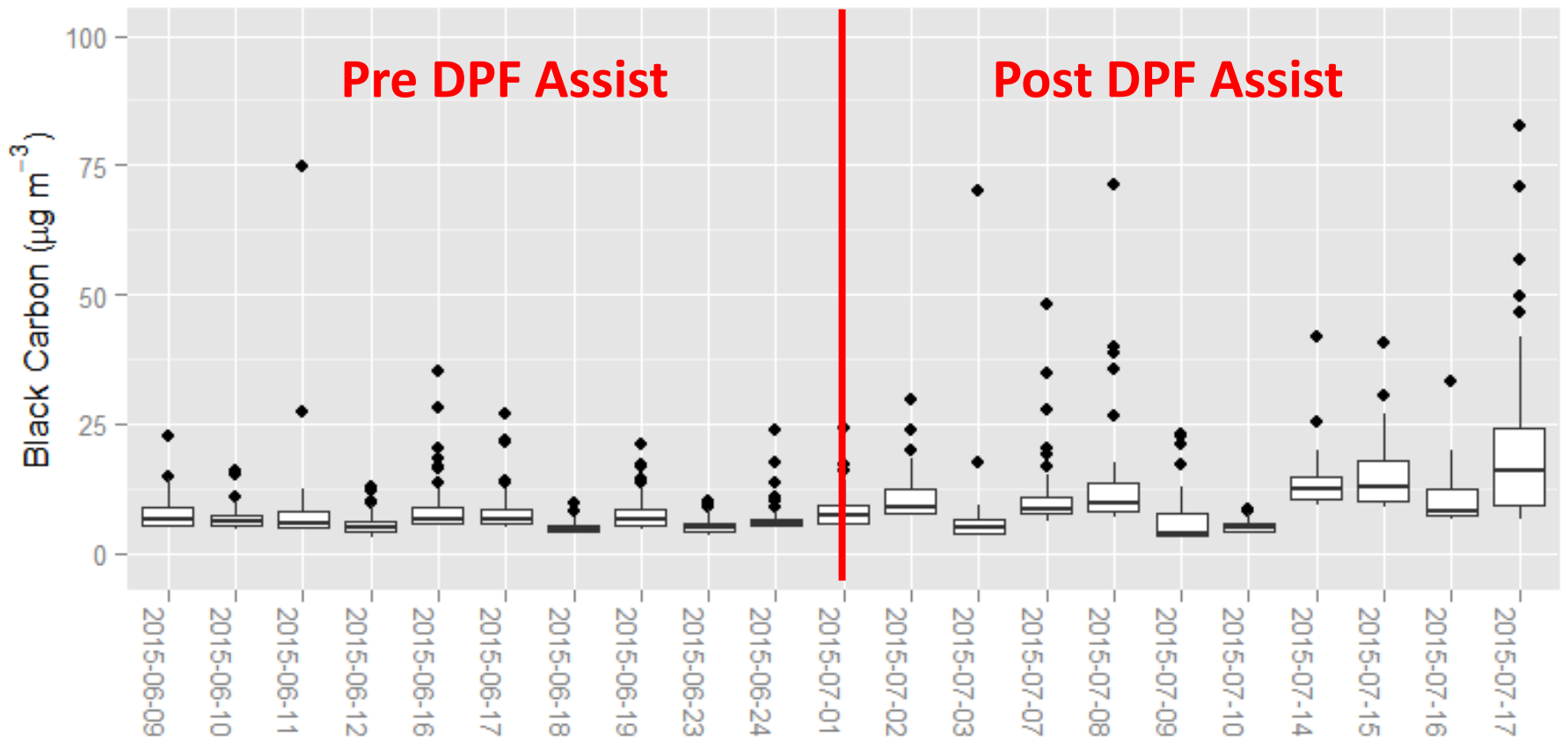
Black carbon concentrations being recorded with a microAeth attached to NRMM in Islington to measure the percentage reduction attainable through using a diesel fuel additive (DPF assist)



Trial method

- Baseline BC measurements taken from 9t dumper truck
- Addition of Cerium Oxide as a diesel fuel additive
- Ongoing BC measurements to assess impacts and rate of reduction
- Fuel samples taken and analysed in lab for CeO_2 content to check dosage

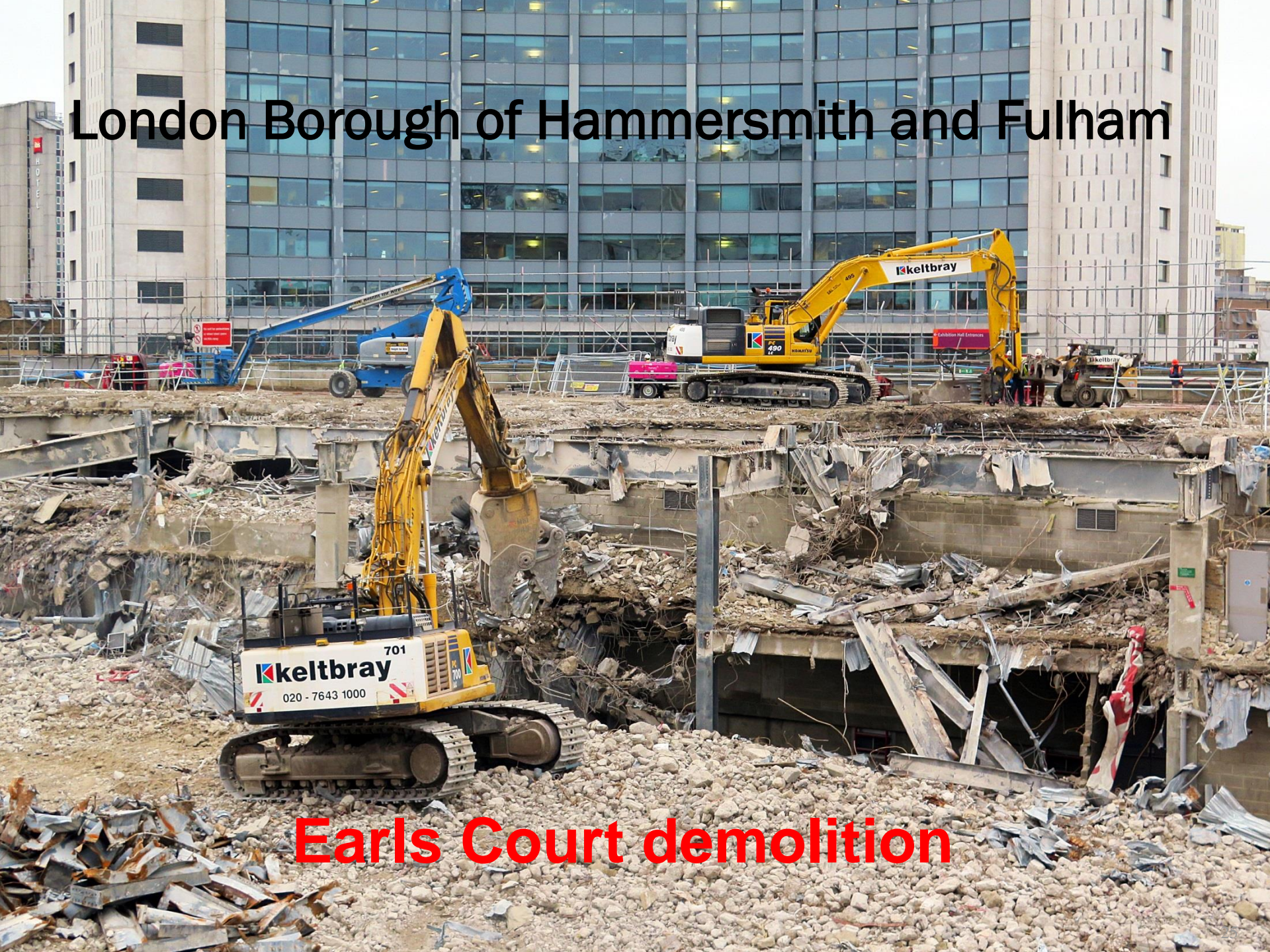
Top 50 1 min measurements



Next steps....

- ⦿ Inconclusive results so far
- ⦿ DPF Assist may have led to short-term increase in black carbon due to cleaning of residual deposits in engine and exhaust
- ⦿ Pre additive in June was quiet on site, July was busiest period so far – 3 Piling rigs, excavators, generators, pumps, 40+ wagons removing waste on turnaround
- ⦿ Reported results back to Berkeley Group who have invited the LLECP to repeat the trials on the same NRMM but with more information being recorded.

London Borough of Hammersmith and Fulham



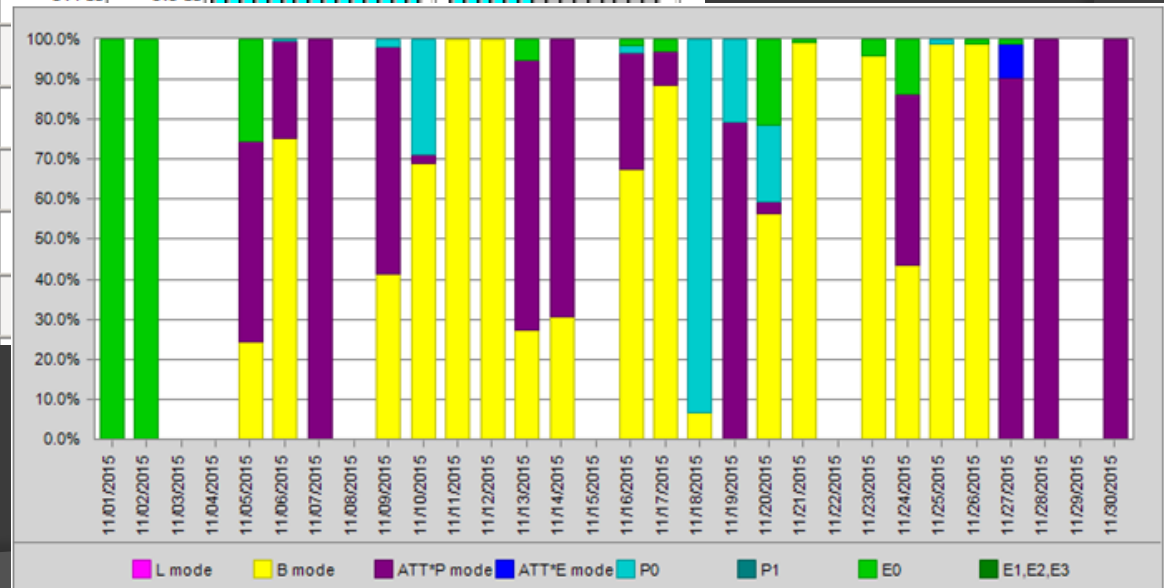
Earls Court demolition

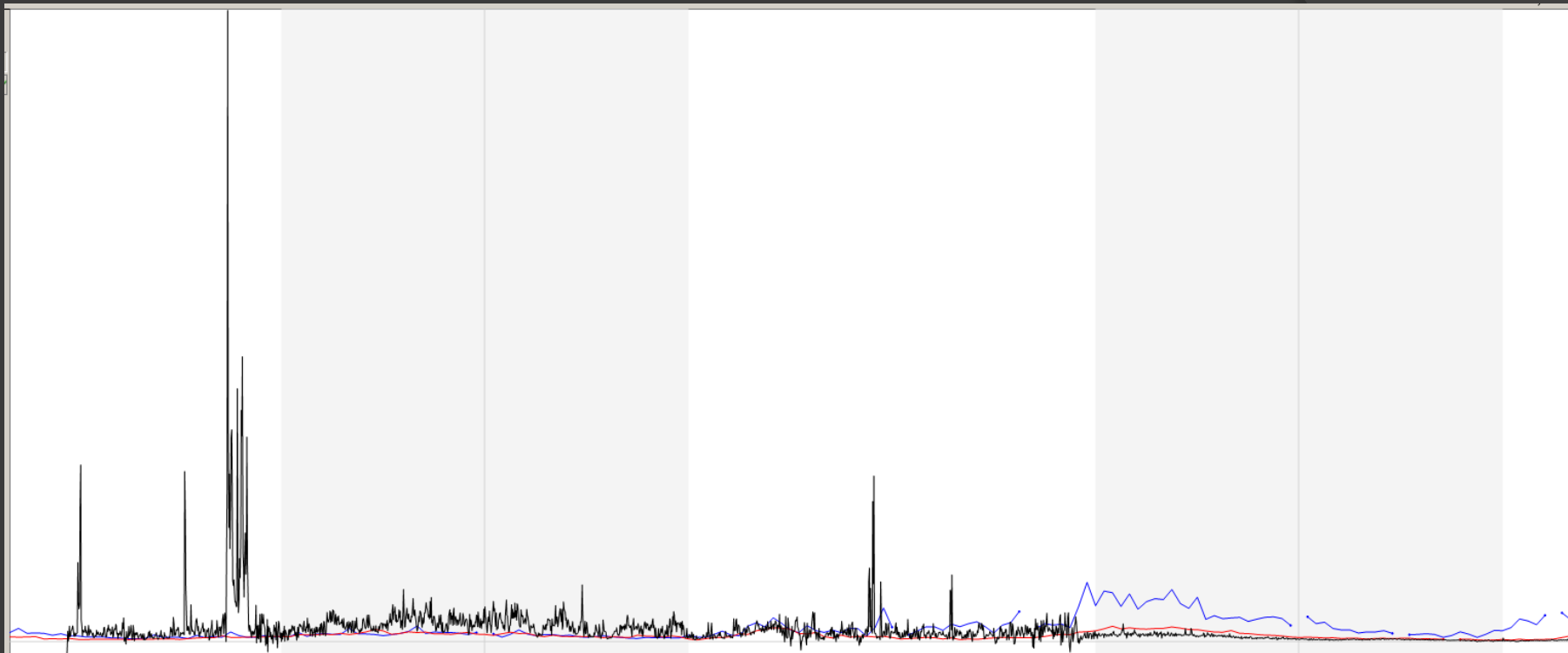


Komatsu PC 490 – 50t excavator
EU Stage IIIB compliant
Works in ‘isolation’ at high load
to run hydraulics

Black carbon measurements correlated with Komatsu on-board 'Komtrax' engine performance software during enforced anti-idling, eco-mode use and diesel fuel additive application during demolition at Earls Court, Kensington

Date	Working Status	Working Hour	Actual Working Hours	ATT Working	Fuel	Water Temp.
11/30/2015		7.0 H	6.0 H	4.4 H		
11/29/2015		0.0 H	0.0 H	-		
11/28/2015		3.1 H	2.1 H	1.4 H		
11/27/2015		7.5 H	4.9 H	3.1 H		
11/26/2015		4.0 H	3.4 H	1.5 H		
11/25/2015		5.4 H				
11/24/2015		4.6 H				
11/23/2015		4.6 H				
11/22/2015		0.0 H				
11/21/2015		3.2 H				





10:00 25/11/15 Date and Time 08:00 27/11/15

QL3.CBLK x1,T,S	QL3.ATN x1,T,S	QL3.BATT x1,T,S	QL3.FLOW x1,T,S	QL3.STAT x1,T,S	QL3.T1MP x1,T,S	NK3.CBLK x1,T,S	MR3.CBLK x1,T,S
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Search Condition

Select Machine: After treatment device

Days: 3Day 5Day 7Day Period 11 / 1 / 2015 - 12 / 1 / 2015

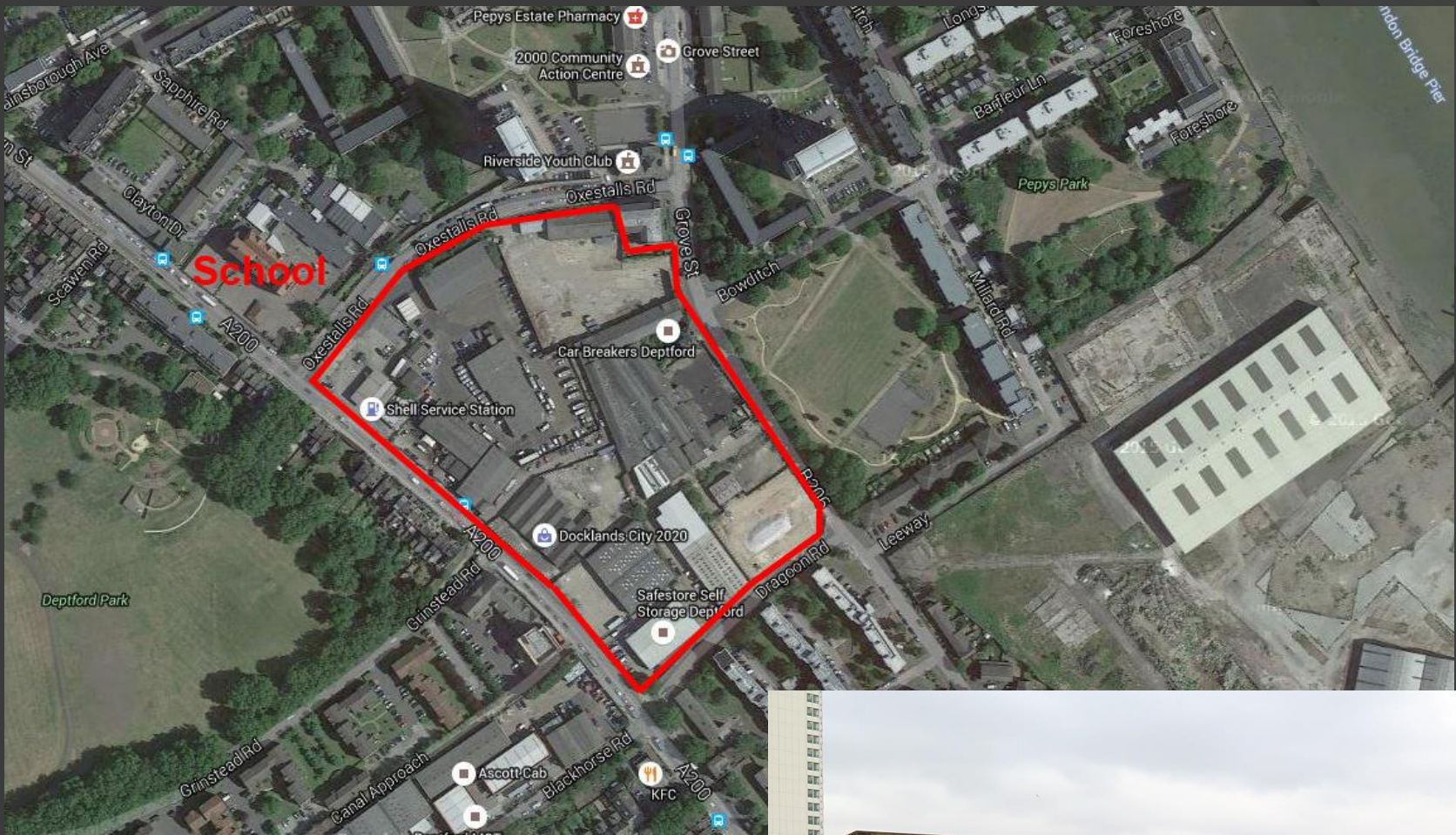
Conditions No Communication: 72 hours or more No GPS Report: 72 hours or more

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Model	PC490LC	Type	10	Serial No.	K60148
Update Time	Notice	Notice			
11/25/2015 17:01:33	After treatment device	KDPF regeneration information was received.			
11/05/2015 09:06:12	After treatment device	KDPF regeneration information was received.			
11/02/2015 15:31:13	After treatment device	KDPF regeneration information was received.			
11/02/2015 09:22:27	After treatment device	KDPF regeneration information was received.			
11/02/2015 07:41:26	After treatment device	KDPF regeneration information was received.			
11/01/2015 21:14:21	After treatment device	KDPF regeneration information was received.			
11/01/2015 20:34:46	After treatment device	KDPF regeneration information was received.			

London Borough of Lewisham

- **Deptford Wharves** development
- Pre-planning access – start early 2016
- Lend Lease are keen to assist the project
- Possible trialling of new EU stage IV diesel generator measuring for PM/NOx reductions



Mixed tenure new homes.
Flexible workspace.
General building heights between 3 and 12 storeys. Two taller buildings are up to 24 storeys.



London Boroughs of Lambeth and Wandsworth



Nine Elms Station – Northern Line Extension



Intelligent power solutions to reduce particulate matter, black carbon and CO2 emissions as well as reducing fuel costs at Nine Elms Northern Line Extension



Trial method – phase I

- Baseline BC and PM measurements taken from Aggreko generator
- Firefly Cygnus 4 Hybrid Power Generator controls load and reduces diesel generator use during low load periods overnight
- Day off /night on to give emission reduction
- HPG diagnostics of load/fuel use, operational hours etc supplied for cost benefit analysis
- Noise compliance as additional benefit

Future trials may include:

- New generation power generators (EU emission stage IV – not yet in mass production but delivering a 95% PM reduction and 85% NO₂)
- Hybrid NRMM (using on-board power storage to run 'parasitic' components whilst the main hydraulics are disengaged)
- Alternative fuels such as bio-fuels, emulsified fuels and biogas
- PEMS testing of NRMM with Emissions Analytics to inc. CO₂

Project plan / Finance

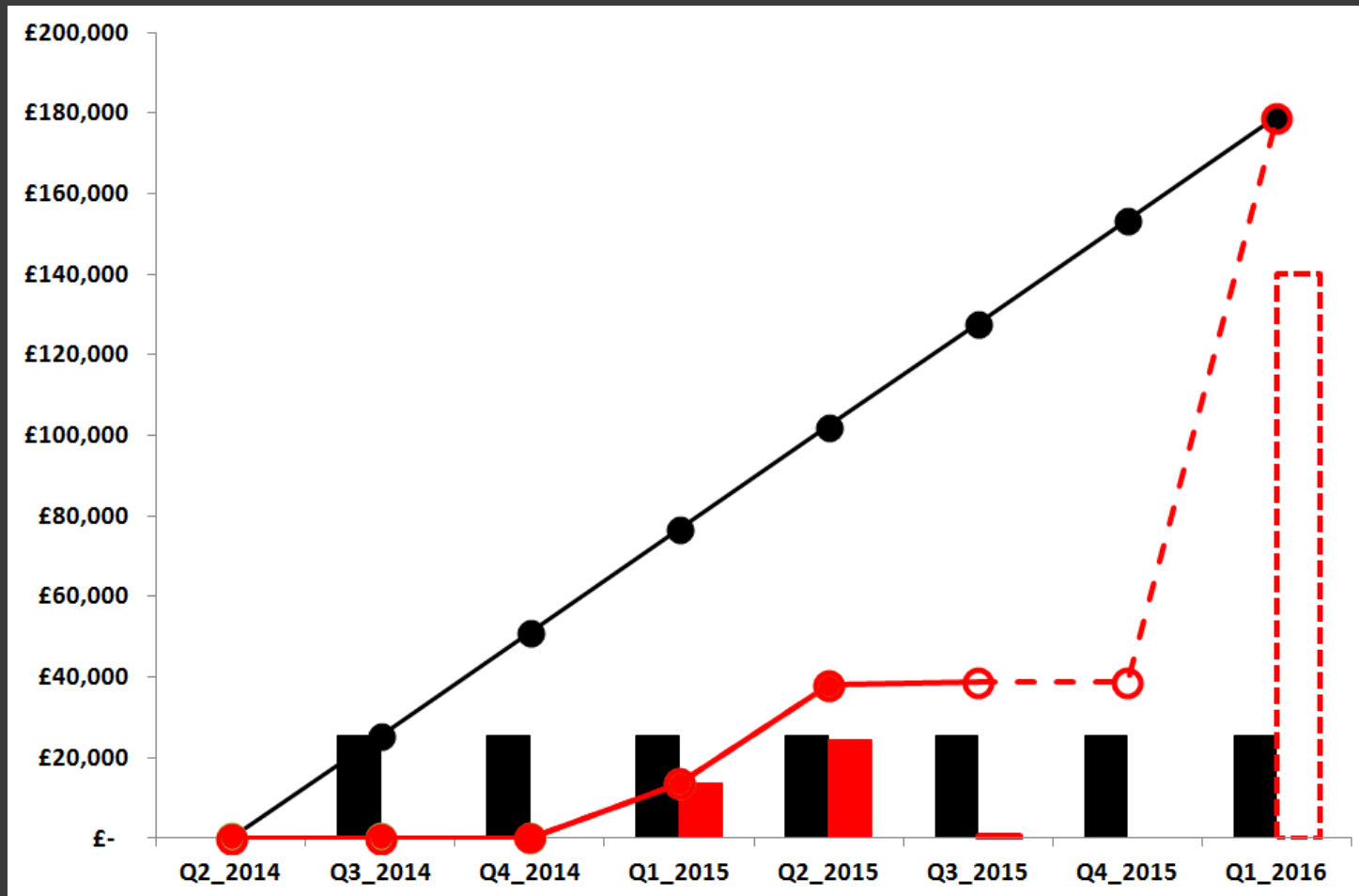
Updated Project Plan

Area	Name	May-14	Jun-14	Q2 2014	Q3 2014	Q4 2014	Q1 2015	Q2 2015	Q3 2015	Q4 2015	Q1 2016	Q2 2016
Project Monitoring	Kickoff meeting GLA/TfL											
Project Monitoring	Project Team Meeting											
Project Monitoring	Develop/review communications strategy for stakeholders											
Project Monitoring	Risk Mapping / review											
Measures	Identification and review evidence (ongoing)											
Measures	Prepare / update developer comms material											
Measures	Developer meetings											
Measures	Measurement site identification and installation											
Measures	Data collection and management											
Measures	Equipment maintenance											
Measures	Application Programme - Planning and management											
Measures	Application Programme											
Measures	Evaluation of impact											
Construction Hub	Scoping											
Construction Hub	Content											
Construction Hub	Build and test											
Construction Hub	Launch											

Q2 2014 Invoice

Q4_2015	Budget		Forecast		Forecast Variance		Budget to Date		Actual to Date		Variance to Date	
Monitoring Staff	£	17,323	£	17,323	£	-	£	108,083	£	108,083	£	-
IT Staff	£	375	£	375	£	-	£	19,417	£	19,417	£	-
Developer communications materi	£	-	£	-	£	-	£	2,292	£	866	-£	1,425
Equipment maintenance	£	-	£	1,209	£	1,209	£	8,000	£	4,570	-£	3,430
Emissions abatement measures	£	25,563	£	-	-£	25,563	£	153,375	£	38,857	-£	114,524
Total	£	43,260	£	18,907	-£	24,354	£	291,167	£	171,787	-£	119,380

Projected Spend on measures



Any other business?

- MAQF Round II Bid
- Date of next meeting