



LONDON LOW EMISSION CONSTRUCTION PARTNERSHIP

22nd September 2015

SUPPORTED BY
MAYOR OF LONDON



**TRANSPORT
FOR LONDON**



Supported by



ISLINGTON



10:30	Welcome	Adam Webber
10:35	Review of previous meetings minutes	David Green
10:45	LLECP Website update and launch	Daniel Marsh
11:00	NRMM database and website	Daniel Marsh
11:10	Industry Outreach	Daniel Marsh
11:15	Local Authority Construction Projects	Daniel Marsh
11:30	Project Plan update	David Green
11:45	Finance/Signing off work	David Green
11:50	AOB / Date of next meeting	All
12:00	Finish	All



London Low Emission
Construction Partnership
Website

LLECP Website update


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LONDON LOW EMISSION CONSTRUCTION PARTNERSHIP SUPPORTED BY MAYOR OF LONDON

What is my legal requirement?

From September 2015 the London Mayor will introduce new standards to reduce pollution emissions from the construction industry with tighter standards proposed for the start of the London Ultra Low Emission Zone in 2020.

[Read more...](#)



Working together to build a cleaner London

Are you a...

- Project manager
- Property developer
- Local resident
- Local authority officer

How do I find out about...

- Health advice
- Non Road Mobile Machinery

Air Pollution Forecast

Today

Moderate

[More information and health advice](#)

Tweets

Construction Dust UK @ConstructDust New #NRMM #emission standards cc #London from September 2015 - are #construction pic.twitter.com/9zJEck

Construction Dust UK @ConstructDust #Air #Pollution Linked To Stroke: High May Narrow The Arteries medicaldaily #construction #health @TheBHF


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LONDON LOW EMISSION CONSTRUCTION PARTNERSHIP SUPPORTED BY MAYOR OF LONDON

London Low Emission Construction Partnership

The London Low Emission Construction Partnership (LLECP) is a collaboration between the 'Cleaner Air Boroughs' in central London and King's College London. The project is funded by the Greater London Authority (GLA) and aims to reduce emissions from the construction industry.

[Read more...](#)



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How do I find out about...

- Health advice
- LLECP construction projects
- Non Road Mobile Machinery

Audience Overview

May 25, 2015 - Sep 18, 2015

Email Export Add to Dashboard Shortcut



All Sessions
100.00%

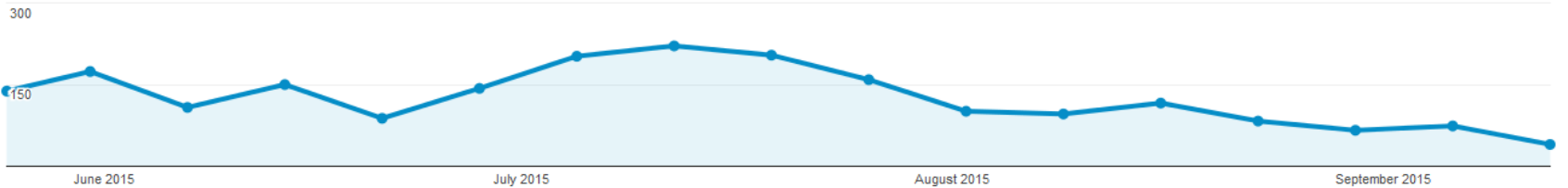
+ Add Segment

Overview

Sessions vs. Select a metric

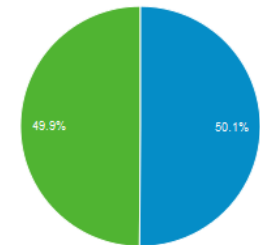
Hourly Day Week Month

Sessions



<p>Sessions</p> <p>2,163</p>	<p>Users</p> <p>1,143</p>	<p>Pageviews</p> <p>10,108</p>	<p>Pages / Session</p> <p>4.67</p>
<p>Avg. Session Duration</p> <p>00:07:13</p>	<p>Bounce Rate</p> <p>53.49%</p>	<p>% New Sessions</p> <p>50.12%</p>	

New Visitor Returning Visitor



Demographics

Language

Country

Language

Language	Sessions	% Sessions
1. en-gb	969	44.80%
2. en-us	919	42.49%



Non-road mobile machinery website

London's LEZ for NRMM

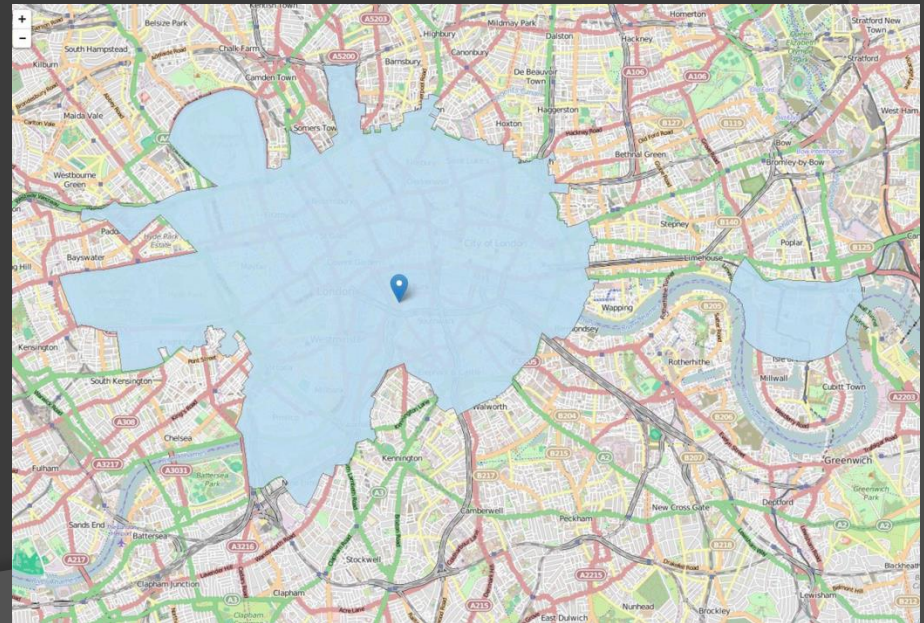
1st September 2015

NRMM used across the 'central activity zone' & Canary Wharf will be required to meet stage IIIB of the directive as a minimum

NRMM used on the site of any major development within Greater London will be required to meet stage IIIA of the directive as a minimum

1st September 2020

Tighter emission standards for CAZ, Canary Wharf and Greater London introduced



Non-road mobile machinery website

- Website to inform developers and contractors about which equipment will be compliant for use within the NRMM low emission zone
- Require registration of NRMM details from all major developments within the CAZ and Canary Wharf
- Allow for NRMM LEZ exemption application
- It will allow for local authority remote enforcement of GLA policy

- ⦿ It will create a unique data resource that will add to the understanding of what NRMM equipment is currently being used and allow later assessment to demonstrate the uptake of higher emission standards
- ⦿ It will allow for a more accurate London Atmospheric Emission Inventory (LAEI) to be developed
- ⦿ It will allow for GLA policy change updates

nrmm.london

What are you required to do?

- ⦿ Local authorities need to register for an user account

<http://nrmm.london/nrmm/how-use/local-authority>

- ⦿ Engage with your planning departments to make sure that NRMM LEZ compliance is included in planning conditions
- ⦿ Talk to your developers, raise awareness of the policy and its requirements

Industry Outreach Programme

15 th July 2015	Energy Solutions and Energy and Oxygen Combustion Ltd	Discuss NOx/PM reduction solution for delivering stage 4/5 compliant generators	Potential to integrate into new or existing trials
20 th August 2015	Cross Rail Environmental Managers Forum		
4 th September 2015	NRMM retrofit EST, EIC, GLA	Working Group with retrofit industry trade bodies – DPFs/Biofuels	
14 th September 2015	Old Oak Park Royal Redevelopment, Urban Innovation Centre	Air Quality strategy, feasibility, monitoring and impact workshop	
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.	

Additional 'phone meetings' with low emission technology solution providers including ESE energy Ltd, Diesel Dynamics, Green B+ (paraffinated bio fuels), GreenUrban, BioEnergy (biogas)

FOCUS ON SUSTAINABILITY



AIR QUALITY

SEPT 2015

Everyone at Mace can help improve air quality in our cities. This first edition of 'Focus on Sustainability' provides information, ideas and links to help you take action.

Construction contributes to air pollution through dust, vehicle emissions, and the use of Non-Road Mobile Machinery. Outside work, we all contribute to air pollution through our daily commute and use of chemicals at home.

LONDON'S ULTRA LOW EMISSION ZONE

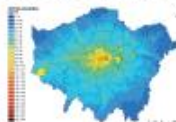
9,500

people die each year in London because of air pollution

A recent study by Kings College London found air pollution related deaths in London are primarily caused by fine particulates of dust and nitrogen dioxide. Non-Road Mobile Machinery (NRMM) used in construction was found to contribute a significant proportion of these pollutants.

From September 2015 in London, NRMM is required to meet new standards in accordance with EU Directive 97/68/EC. The new standards apply to NRMM between 37kW and 560kW. The requirements will be enforced via project planning condition.

They impact all Mace people responsible for procuring kit, ensuring kit on site is compliant, and advising clients.



All sites must register via <http://nrmm.london/> and keep a schedule of all plant used on site. [Link 1](#)



FIND OUT MORE:

Contact our pollution champion: Omar.Rouchdy@macegroup.com

To feedback on any of the issues raised please email: sustainability@macegroup.com

WHAT YOU CAN DO AT MACE

Construction Supervision

- See our control of dust toolbox talk. [Link 2](#)
- Ensure NRMM requirements are met and plant schedule is kept. [Link 1](#)

Procurement

Make sure London NRMM and best practice air quality requirements are specified and bought.

Client advisory

Communicate to clients the requirements, risks, benefits and consequences of following London NRMM and best practice.

WHAT YOU CAN DO AT HOME

- Walk, cycle or take public transport to reduce local air pollution by driving less.
- Where possible buy household products free of toxic chemicals.
- Plants improve air quality so get involved in growing more at home. In your community or with London Wildlife Trust. [Link 3](#)

'BREATHE FREELY' PARTNERSHIP

This recently launched initiative tackles occupational lung disease in construction workers by helping employers better understand and control the exposures which cause it. [Link 4](#)

Mace is holding an information event at 155 Moorgate on 23 September at 16:30.

USEFUL LINKS:

- [1 NRMM requirements](#)
- [2 Control of dust - tool box talk](#)
- [3 London Wildlife trust volunteering page](#)
- [4 Breathe freely website](#)

CASE STUDY

DUST SUPPRESSION BY DUSTBOSS



DustBoss spraying mist at South Bank Tower



The DustBoss creates a fine water mist that captures airborne dust particles and drives them to the ground. The largest DustBoss unit rotates automatically and can cover an area of up to 26,000m².

Dust from demolition activities can cause air quality problems on our sites. In drier conditions during summer months the negative impacts can be greater.

The DustBoss has been used at Mace's Chelsea Barracks site to combat the risk of airborne particles becoming a nuisance in its highly sensitive residential location. The DustBoss at Chelsea is located near the site boundary spraying both stockpiles and haulage roads.

The DustBoss creates a fine mist over a large areas that makes it very effective in reducing dust problems, whilst using the same amount of water as one hose. This results in greatly reduced man hours when compared to using manually controlled water hoses.

Where dust is found to be a potential risk on a Mace project, it is strongly recommended that early communication with trade contractors takes place to discuss dust mitigation measures such as the DustBoss.

BENEFITS REALISED

COST	COMMUNITY	SAFETY	ENVIRONMENTAL	QUALITY
Reduced man hours compared to hoses.	Reduced dust problems, and complaints.	Reduced particulate matter in the air on site.	Reduced water consumption due to wider coverage.	Proactive approach to dust mitigation.
Uses less water.			Reduced dust.	

Twitter campaign

- Using 'Buffer' software to schedule message delivery – currently 10 per day
- Analyses Twitter use to send during peak periods and hit larger audience
- Positive response with retweets allowing us to reach larger audience
- Mixed LLECP and NRMM LEZ messages
- Success measured through retweets and inclusion in industry media (i.e. DemolitionDaily etc)

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

62 Photos and videos

TWEETS 1,476 FOLLOWING 1,180 FOLLOWERS 966 FAVOURITES 451 LISTS 1

Tweets Tweets & replies Photos & videos

Pinned Tweet

Construction Dust UK @ConstructDustUK · Jul 28

The @LDN_environment #London low #emission zone #NRMM register is now online at nrmm.london #construction #demolition #emissions

1

Construction Dust UK @ConstructDustUK · 7 hrs

#NRMM fleet renewal is key to reducing

Who to follow · Refresh · View all

- Gareth Rowe @GprRowe ×
Followed by Greg Nasarczuk...
Follow
- DIGBITS @DIG_BITS ×
Followed by CEA and others
Follow
- Transport Scotland @trans... ×
Followed by CEEQUAL and ...
Follow

Find friends

966 industry based followers
Almost 1500 tweets so far.....



LLCEP construction projects

Targeted construction sites

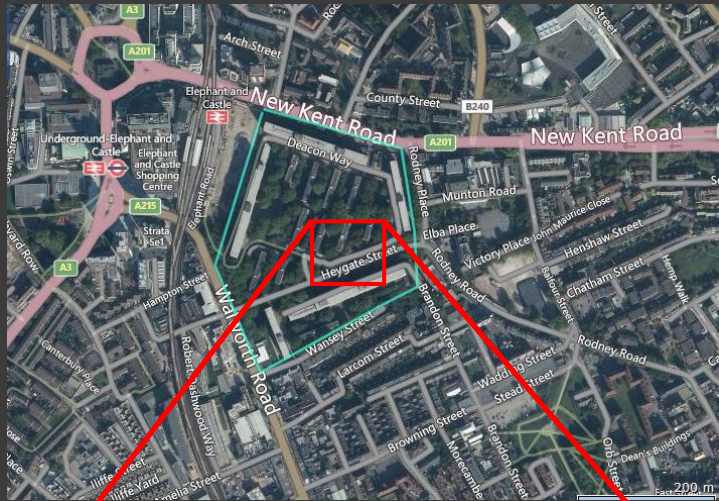


London Borough of Camden

- 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



Application dust suppressant

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.

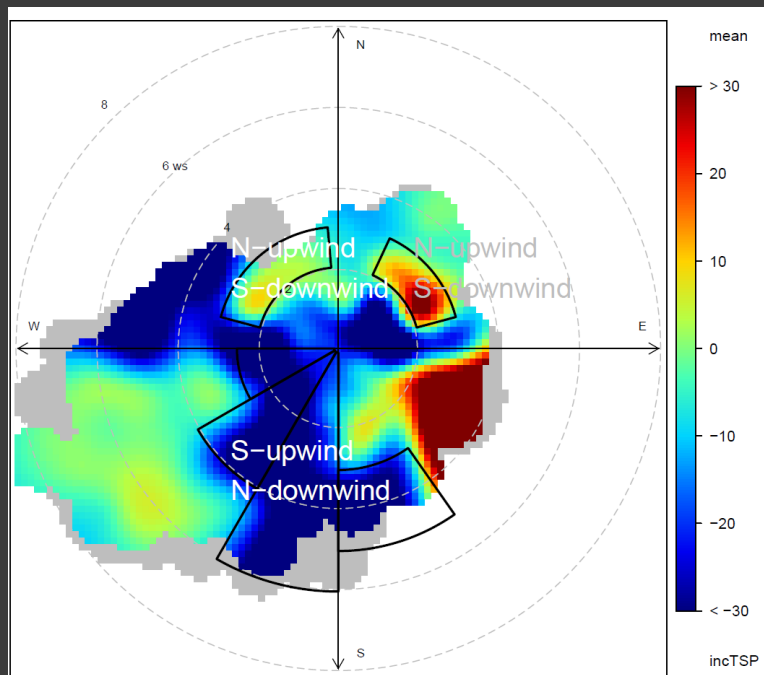
DUST suppressants
to reduce PM
emissions:

- Water
- CMA
- 2xCMA

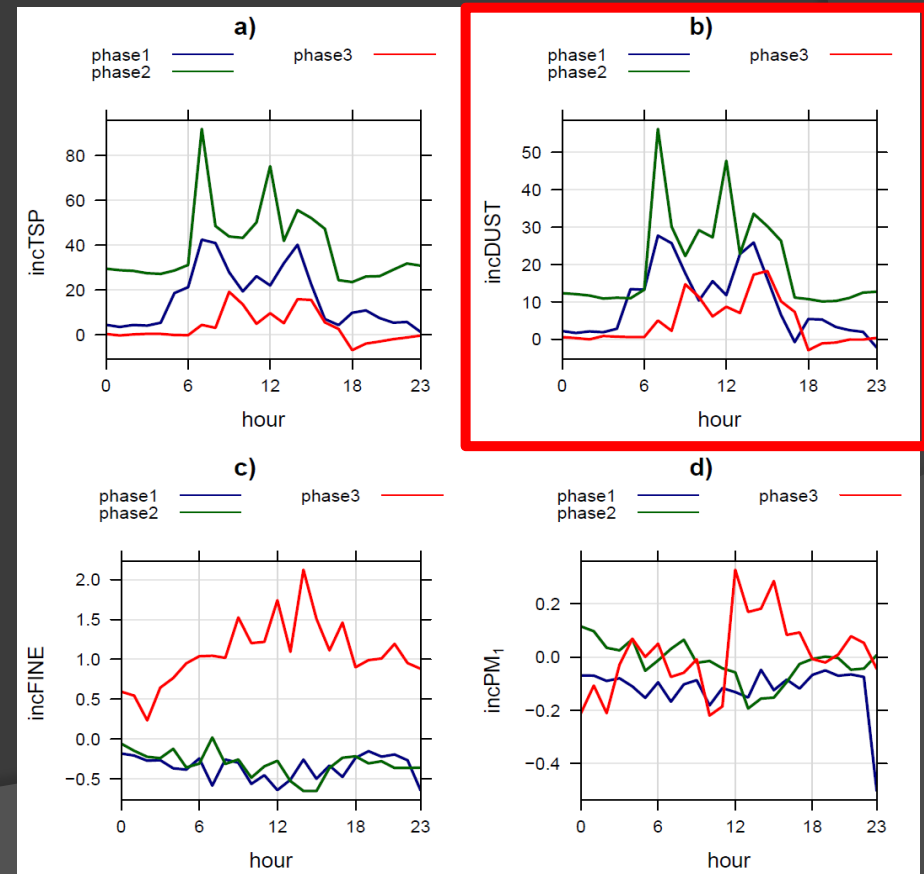
Increments of PM_x

$$\text{inc}PM_x = (C PM_x)_{\text{downwind}} - (C PM_x)_{\text{upwind}}$$

Selection of upwind/downwind site



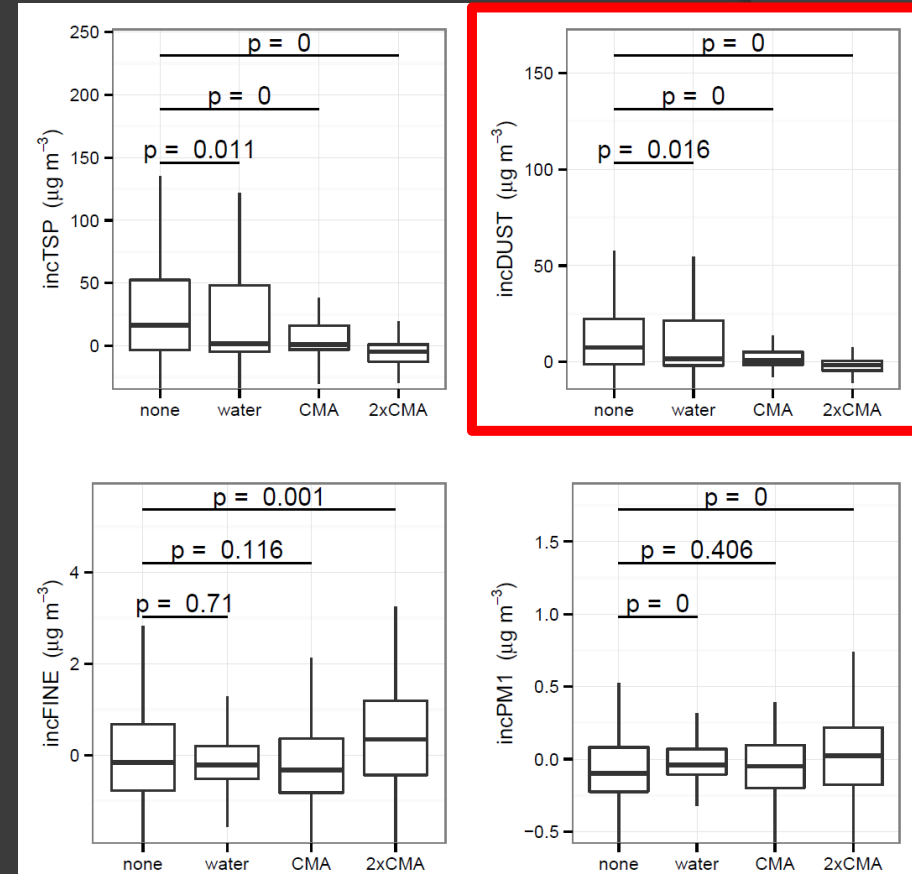
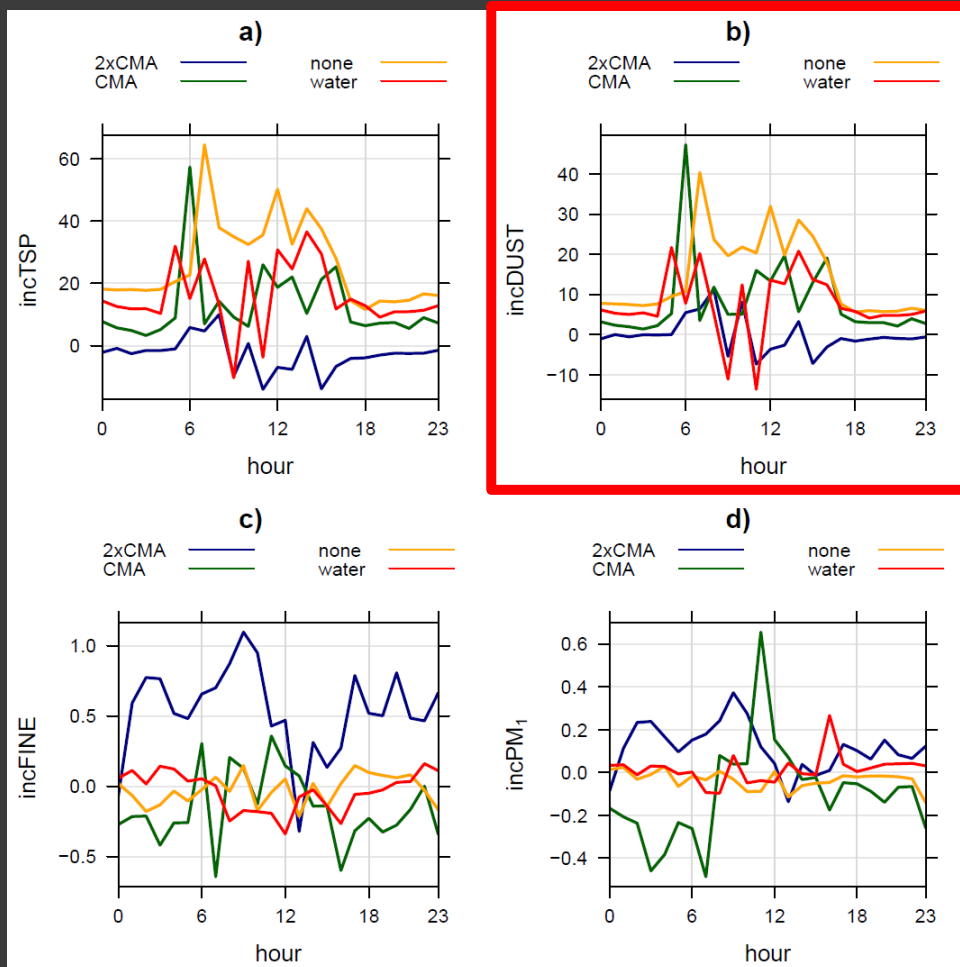
Diurnal variation of PM_x increments



Effects of the application of dust suppressants in PM_x

Mean diurnal profiles

Boxplots of hourly increments



London Borough of Hammersmith and Fulham



Earls Court demolition

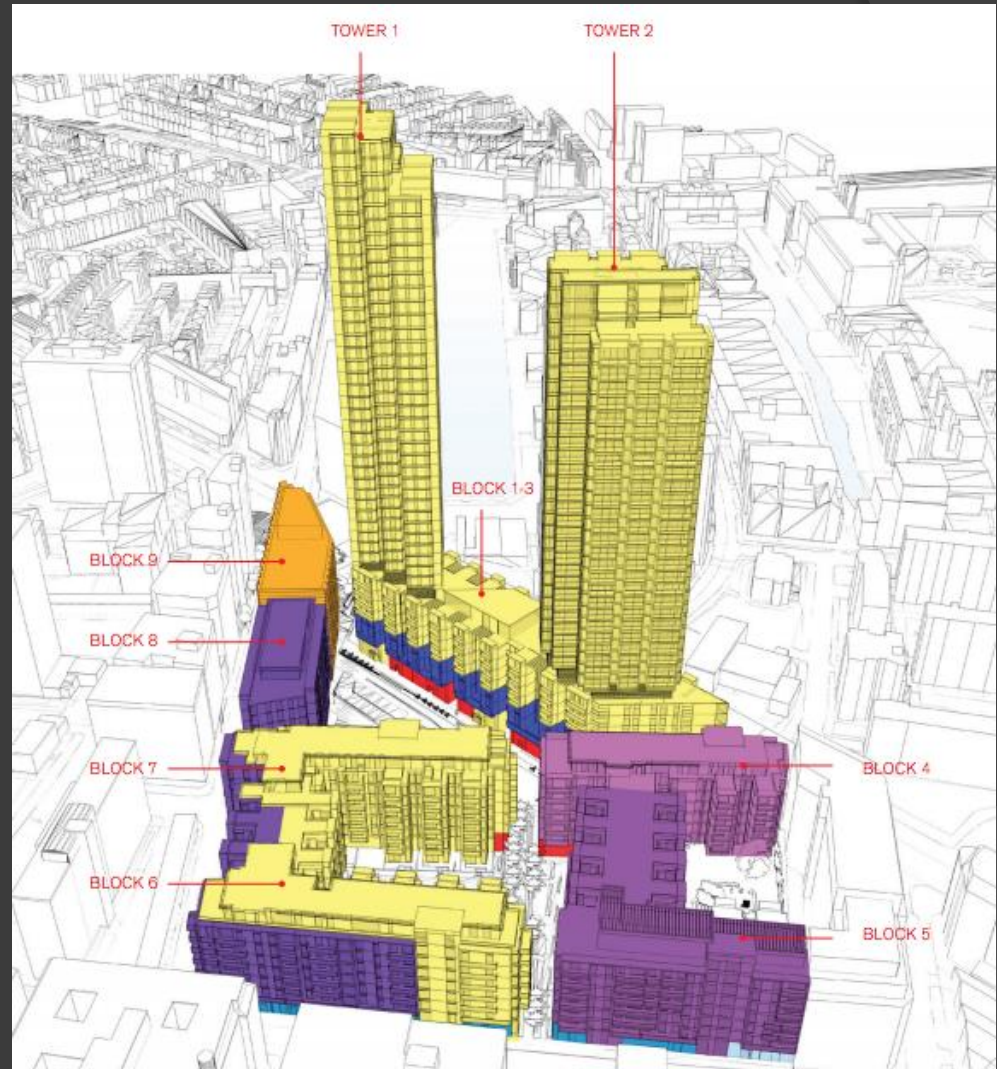


Black carbon measurements correlated with Komatsu on-board 'Komtrax' engine performance software during enforced anti-idling, eco-mode use and diesel fuel additive application during demolition at Earls Court, Kensington

London Borough of Islington

City Forum

250 City Road





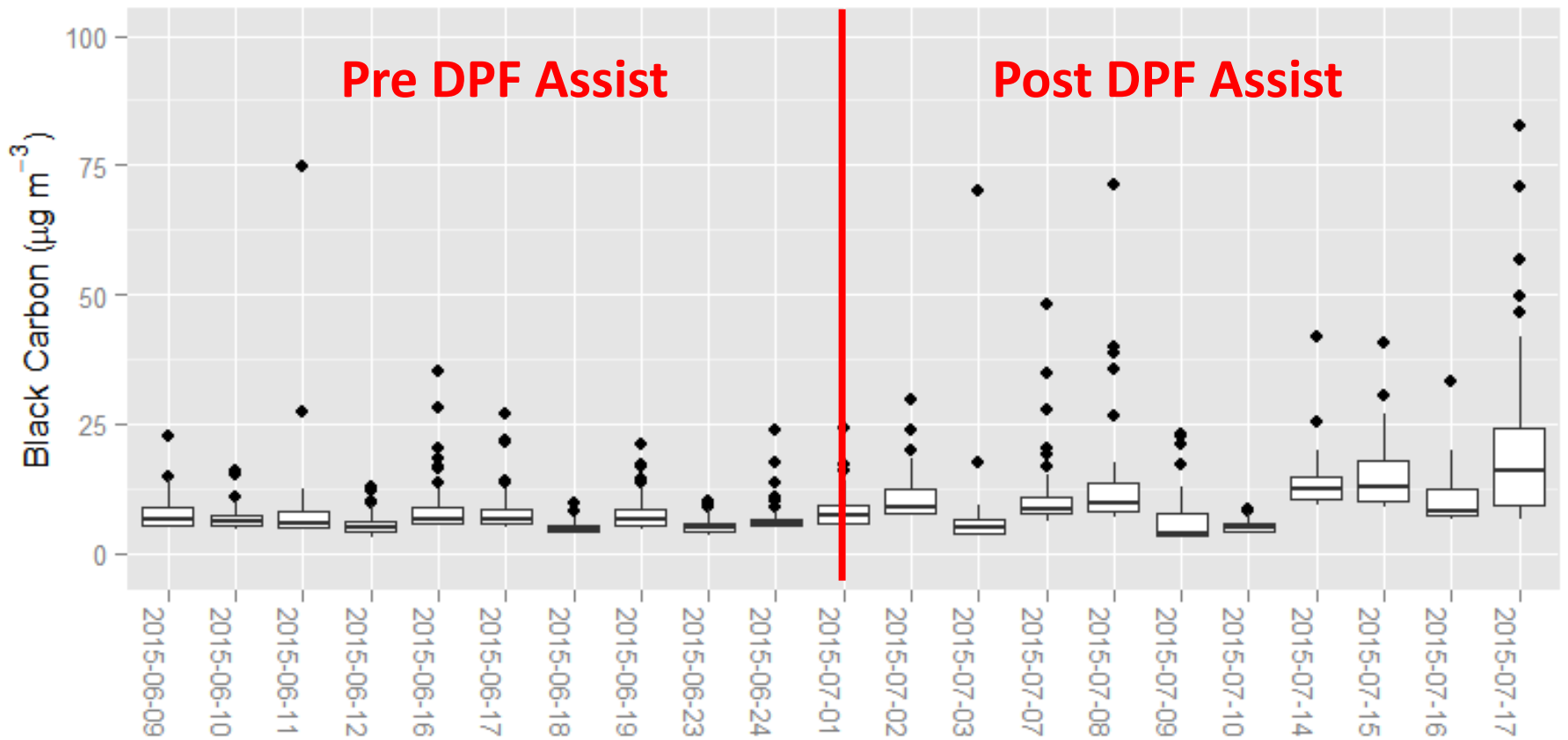
Black carbon concentrations being recorded with a microAeth attached to NRMM in Islington to measure the percentage reduction attainable through using a diesel fuel additive (DPF assist)



Trial method

- Baseline BC measurements taken from NRMM running under constant load
- Addition of Cerium Oxide as a diesel fuel additive
- Ongoing measurements to assess impacts and rate of reduction
- Potential to bring emission reductions to NRMM that is exempt from the GLA LEZ (piling rigs/tower cranes)

Top 50 1 min measurements



London Borough of Lewisham

- ④ **Deptford** based demolition and development of two tower blocks
- ④ Pre-planning access – start mid 2015
- ④ Site is under one developers control, Lend Lease, and they are still keen to assist the project
- ④ Possible trialling of new JCB hybrid NRMM for BC reduction with comparison to older NRMM

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

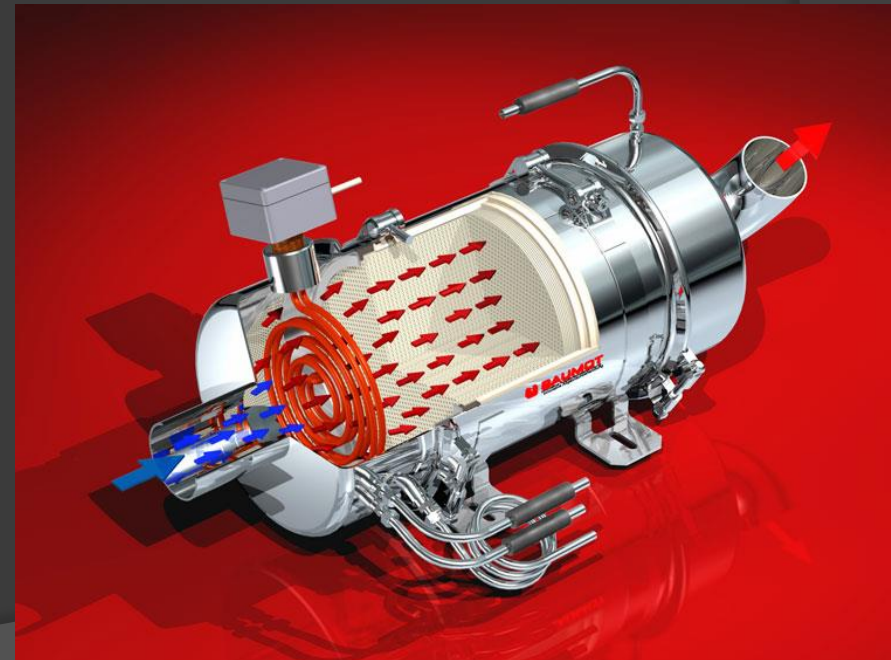
- Baseline BC and PM measurements taken from Aggreko generator Utilises microAeth and Osiris analysers
- Firefly Cygnus 4 Hybrid Power Generator controls load and reduces diesel generator use during low load periods and overnight
- Noise compliance as additional benefit
- Week on/off to measure emission reduction
- HPG diagnostics of load/fuel use operational hours etc supplied

Trial method – phase II

Work with GreenUrban to fit SCR (Selective Catalytic Reduction) DPF to generator to reach EU stage IIIB or greater

Targets both NO_x and PM for emission reduction

GreenUrban have loaned a microAeth to the LLECP as part of this trial

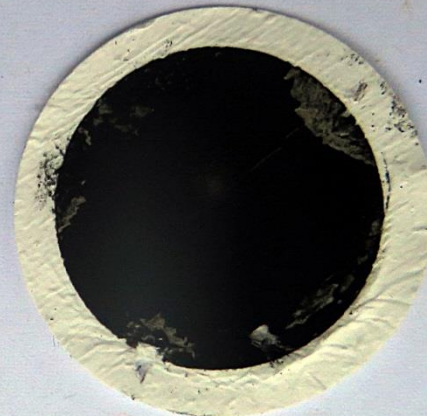




Filter removed from Osiris dust monitor
after 8 weeks sampling next to the offices at
Nine Elms Northern Line Extension



Blank



Exposed for 8 weeks

Future trials?

- New potential solution partners include alternative low emission fuels (biofuels, biogas), SCR DPF's, hybrid NRMM
- What other trials would you like to see?

Project plan / Finance

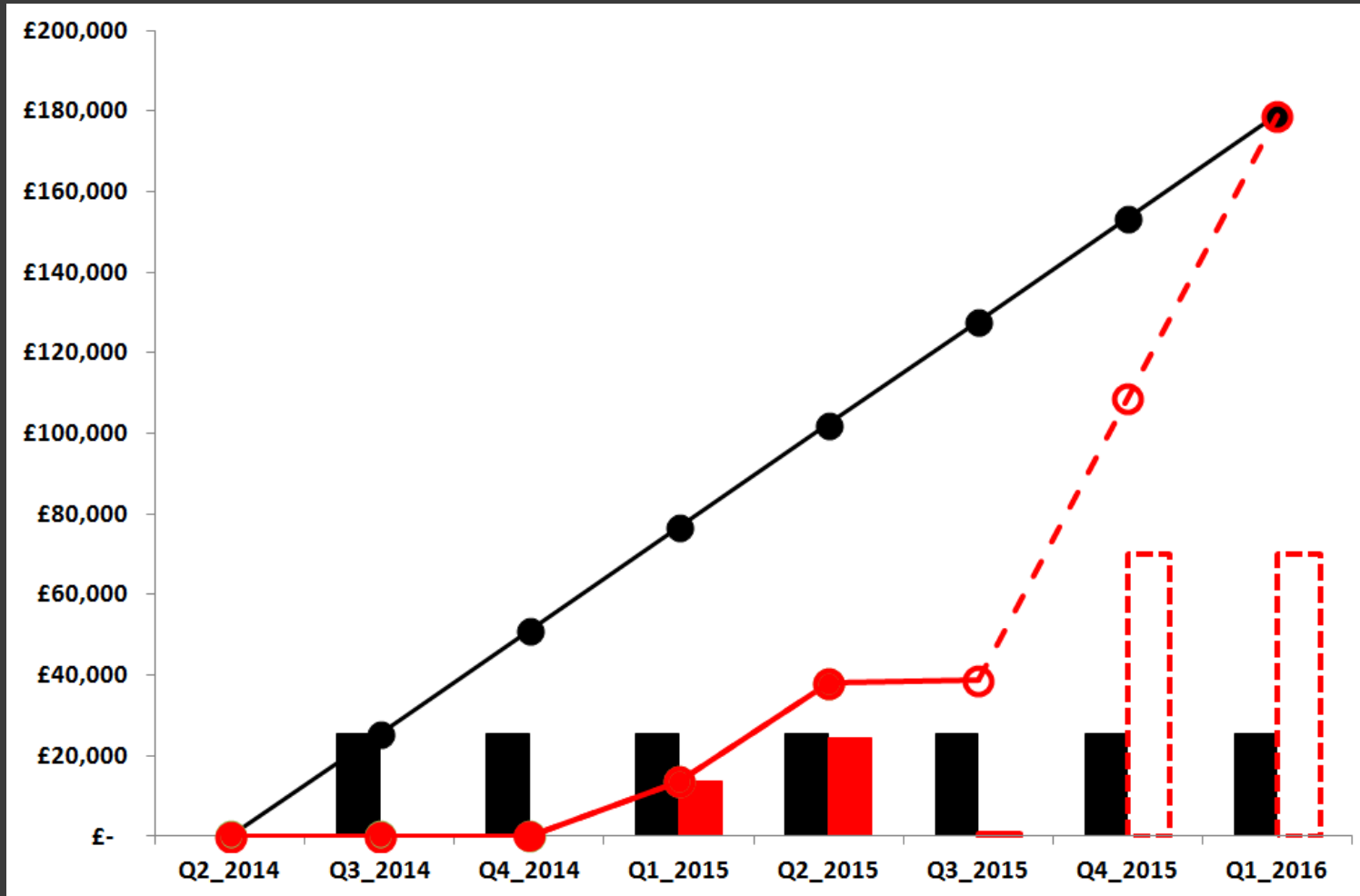
Updated Project Plan

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

Q3_2015	Budget		Forecast		Forecast Variance		Budget to Date		Actual to Date		Variance to Date	
Monitoring Staff	£	19,042	£	19,042	£	-	£	90,760	£	90,760	£	-
IT Staff	£	375	£	375	£	-	£	19,042	£	19,042	£	-
Developer communications materi	£	-	£	-	£	-	£	2,292	£	866	-£	1,425
Equipment maintenance	£	-	£	415	£	415	£	8,000	£	3,361	-£	4,639
Emissions abatement measures	£	25,563	£	821	-£	24,741	£	127,813	£	38,857	-£	88,962
Total	£	44,979	£	20,653	-£	24,326	£	247,906	£	152,880	-£	95,026

Projected Spend on measures



Any other business?

- MAQF Round II Bid
- Date of next meeting