



LONDON LOW EMISSION
CONSTRUCTION PARTNERSHIP

10th September 2018

SUPPORTED BY
MAYOR OF LONDON



THE ROYAL BOROUGH OF
**KENSINGTON
AND CHELSEA**



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10:30	Welcome and introductions	Frances Evans
10:35	Review of previous meetings minutes	Frances Evans
10:40	LLECP Project overview	David Green
10:45	LLECP work update	David Green / Daniel Marsh
10:55	Best in Class Guidance	David Green / Daniel Marsh
11:05	Funding Borough Construction Work	All
11:30	Construction Monitoring	Daniel Marsh
11:50	AOB / Date of next meeting	All
12:00	Finish	All



LONDON LOW EMISSION
CONSTRUCTION PARTNERSHIP

Phase 1: 2014-16
Phase 2: 2016-19

Industry Outreach

- Raising awareness of industry impacts on local air quality
- Encourage uptake of 'cleaner' mitigation measures
- Present case studies with cost benefit for low emission solutions

Testing

- Measure 'real world' emissions
- Emission reduction trials
- Improve pollution monitoring and quality of data

NRMM

- LEZ enforcement
- Policy support
- NRMM database

LLECP Key Project Deliverables 2018 / 19

1. End of funding cycle outputs:
 - a) Construction Industry 'Best in Class' Guidance Document
 - b) Seminar
2. Continue...
 - a) Outreach meetings
 - b) Existing case studies (Lewisham CLP)
 - c) New case studies (Thames Tideway, HS2)
 - d) LA and industry support to NRMM

Key Progress since last meeting

- ⦿ Outreach
- ⦿ BIC Guidance – delivery plan
- ⦿ Existing Projects:
 - Lewisham Construction Logistics Plan
 - HS2 PEMS / Mini PEMS / Exposure Project
- ⦿ NRMM Support

Guidance Document

- ‘Best in Class’ Guidance Document for local authorities. This will aim to
 - condense all the information and learnings from both rounds of the LLECP
 - Provide information for LA officers (planning and environment)
 - Provide information for industry seeking to reduce emissions
 - publish in one of the Institute of Civil Engineering Journals.
 - integrate this into the website
 - Delivered in Feb 2019
 - Remain a live document (updated through additional funding?)

*Best in
Class*



Introduction

- Purpose of this guidance document/how to use
- What is the LLECP - A brief overview of the project (historical/funding etc)
- Aims and Objectives outline purpose of the project
- LLECP Members
- **Impact of construction industry on local air quality**
 - Why tackle construction emissions?
 - LAEI 2013/GLA projected EI
 - What are the pollutants of concern?

Best in Class Approaches

Monitoring

- Indicative monitors (limitations)
- MCERTS
- Where to site monitors
- Best in class calibration/flow checks/inlet temperatures/co-location
- Low concentration/weekend comparison

Site boundary threshold

- Historical
- HS2 work
- What to do when there is an exceedance (flow chart for LA's/developers)
- Template report

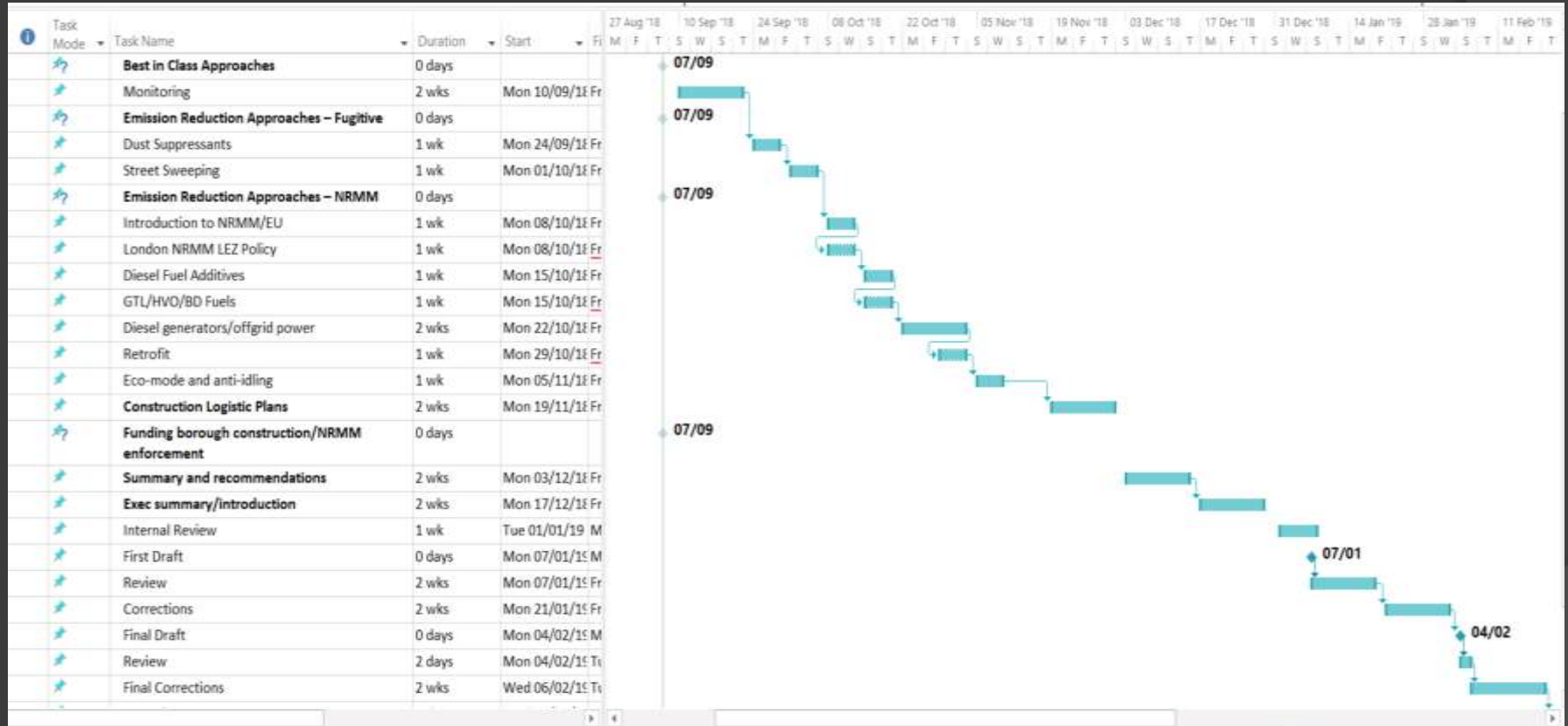
Emission Reduction Approaches - Fugitive

- ① Dust suppressants
 - CMA Chemical dust suppressants
 - Water
 - Geotextiles
 - Gorilla snot type applications
 - Seeding
 - Wind barriers
- ① Street Sweeping efficacy

Emission Reduction Approaches - NRMM

- Emission stages – brief history
- How to find/read emission plates
- ⦿ London NRMM LEZ Policy
 - Brief overview with links to GLA
 - nrmm.london
 - Future policy milestones
- ⦿ Off grid power
- ⦿ Diesel generators
 - Hybrid power
 - Retrofit SCR DPF
- ⦿ Early site electrification (UKPN flow chart of who/when to contact and how to accelerate process)
- ⦿ Other power – hydrogen/solar/gas
- ⦿ Diesel fuel additives
- ⦿ Retrofit

Project Plan update





Construction Dust Monitoring

Purpose of Monitoring

- To ensure that the construction activities do not give rise to any exceedances of the air quality objectives for PM₁₀ and/or PM_{2.5}, or any exceedances of recognised threshold criteria for dust deposition/soiling;
- To ensure that the agreed mitigation measures to control dust emissions are being applied and are effective;
- To provide an “alert” system with regard to increased emissions of dust, and a trigger for cessation of site works or application of additional abatement controls;
- To provide a body of evidence to support the likely contribution of the site works in the event of complaints;
- To identify specific activities on site that generate high concentrations of PM in order that appropriate action may be taken.

Monitoring guidance

◎ IAQM guidance

- *Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction Sites (2012)*
- *2018 Update out for consultation*

◎ GLA SPG

- *The Control of Dust and Emissions from Construction and Demolition (2014)*

◎ European Directive 2008/50/EC

- *Microscale siting criteria*

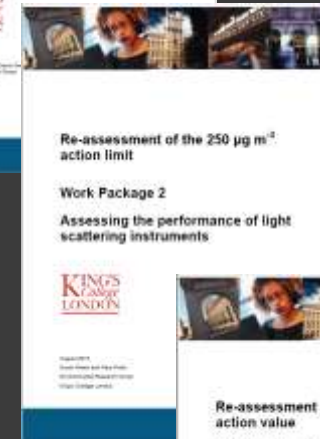
◎ Boroughs own guidance



Improving data quality

Site Action Levels

- Historical Site Action Level
 - 250 $\mu\text{g}/\text{m}^3$, measured as a 15-minute mean PM_{10} concentration (Fuller & Green 2004)
 - Limited data set
 - Adopted by IAQM/GLA
- New Site Action Level
 - 190 $\mu\text{g}/\text{m}^3$, measured as a 1-hour mean
 - Using reference-equivalent samplers
 - Analysis included 9 construction sites and 1.8 million data points
 - Adopted by IAQM



Improving data quality

- ◎ Improved QA/QC
 - Regular servicing
 - Regular operator visits for filter and flow checks
 - Adequate records kept
 - Heated inlet to reduce water vapour
 - Regular data download and checks to make sure that the instrument is operational and functioning correctly
 - Comparison with other local and regional instruments to check for accuracy and drift (non-working day comparisons)

Monitoring locations

There are a few basic guidelines as to where the monitors should be installed which fall in line with the microscale siting criteria according to European Directive 2008/50/EC, these include:

- ⦿ the flow around the inlet sampling probe shall be unrestricted (free in an arc of at least 270°)
- ⦿ without any obstructions affecting the airflow in the vicinity of the sampler (normally some metres away from buildings, balconies, trees and other obstacles and at least 0,5 m from the nearest building in the case of sampling points representing air quality at the building line),
- ⦿ in general, the inlet sampling point shall be between 1.5 m (the breathing zone) and 4 m above the ground.
- ⦿ The inlet probe shall not be positioned in the immediate vicinity of sources in order to avoid the direct intake of emissions unmixed with ambient air.

Monitoring locations

The following factors should also be taken into account:

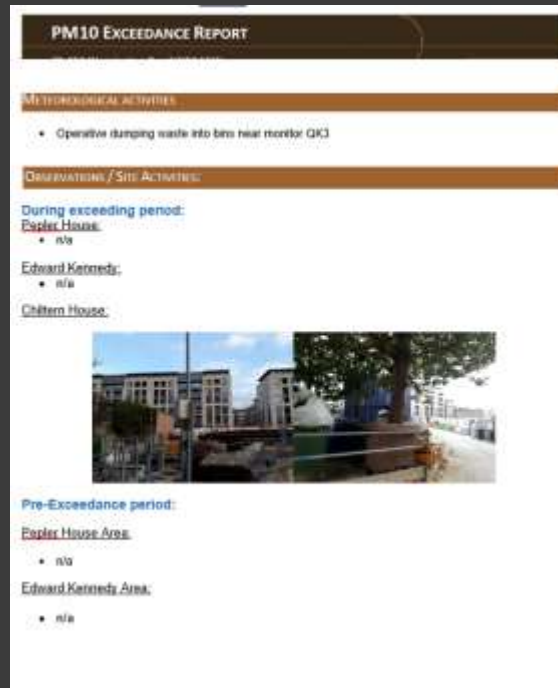
- Representative of potential exposure to local residents and people working in the surrounding area as well as any 'sensitive receptors', such as schools and hospitals.
- Number of monitors required
- Will they remain in the same location throughout the construction activity
- Interfering sources (including site access gates, mist canons and water suppression)
- Security
- Safe operator access (WAH regs)
- Availability of a permanent electrical power supply

Exceedance alerts & incident reports

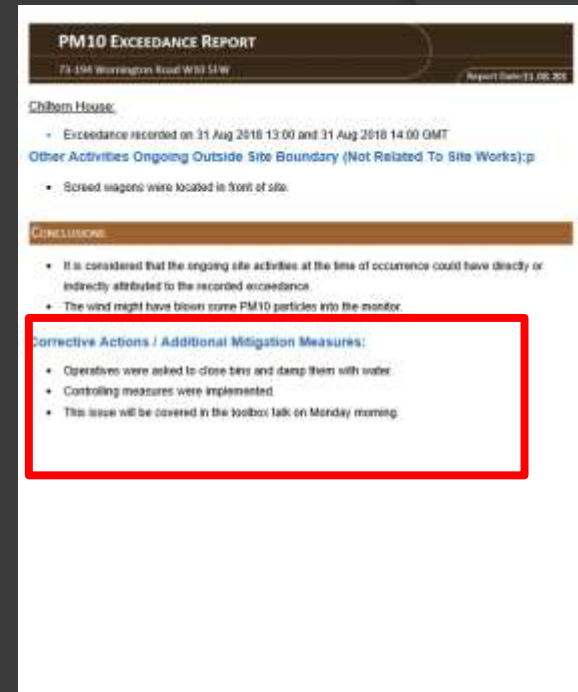
- ⦿ Monitoring should provide rapid alert to onsite staff responsible for dust control
- ⦿ In the event of an alert
 - Investigate and identify the cause as soon as possible
 - Stop activity until mitigation
- ⦿ Produce incident report for borough officers



Details of the pollution event



Evidence of investigation with cause identified



Details of remedial action taken including any additional mitigation

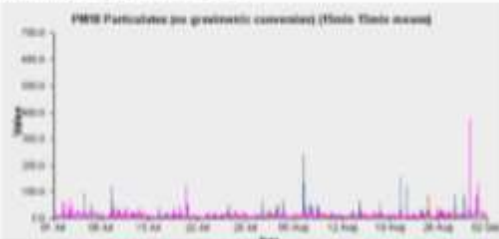
LLECP live construction data



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Graphing tools

Note: Pollution information is shown below. Results based on provisional data must be considered with care. Why?
View Period = 1-Jul-2018 to 2-Oct-2018



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Statistical tools

Results of Statistics Query = the number of exceedences of 15 minute mean PM10 greater than 200ug/m³ (no conversion) between 01-Jul-2018 and 01-Sep-2018.

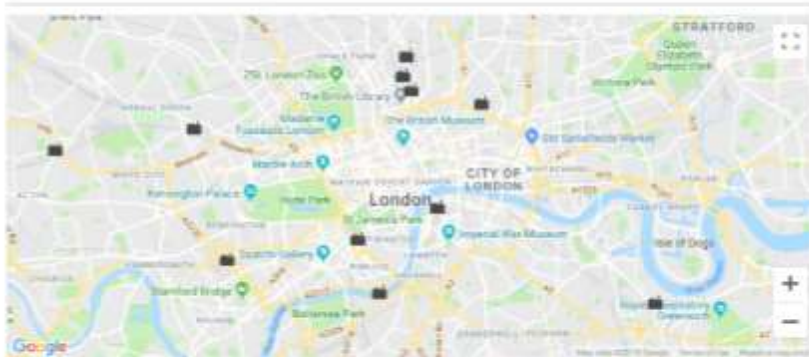
If there were no exceedences, no result will be shown.

Site Code	Site Name	Result
OK3	Wormington Green - Chilton House	2
OK1	Wormington Green - East	5
OK4	Wormington Green - Poplar House	4



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Projects Map



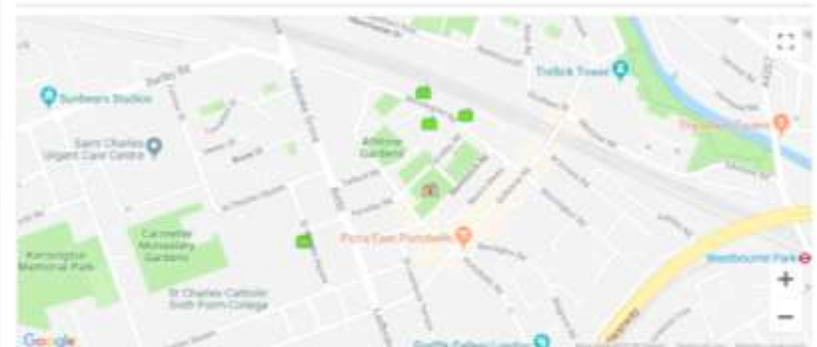
Argent - Kings Cross Central

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.



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Project Bulletin Map



Clear No Data New Threshold Approaching Threshold Alert Threshold

This map shows the latest PM10 particulate measurements downloaded from the Catalyst - Wormington Green dust monitoring component against threshold concentrations. Data have undergone automatic validity checks. Find out more information about each monitoring site and recorded concentrations by clicking its icon on the map.

Change to daily bulletin Project details Project sites Project alerts

Measurement method - Active

Gravimetric or reference equivalent

- i.e. FDMS/FIDAS/Bam or partisol
 - High accuracy
 - Allows direct comparison with DAQI index
 - Low time resolution (hourly) or requires lab analysis
 - Expensive
 - Often requires large enclosure and permanent power supply



Measurement method - Active

Indicative - Light scattering (nephelometer)
i.e Turnkey Osiris, TSI Dusttrak2,
Casella Guardian2

- Lower accuracy – indicative only (MCERTS)
- Higher time resolution
- Less expensive
- Small and easy to deploy
- Requires temporary (unmetered) power supply
- Allows addition of meteorological and noise sensors



Measurement method – Hand held



- Provide real-time information for several size fractions simultaneously.
- Can be easily deployed for walk-over surveys to check effectiveness of mitigation measures.
- Hand held samplers may be useful at low-risk sites, and at other sites to supplement data gathered from permanent monitoring.

Measurement method – Passive

Sticky pads and directional gauges i.e. DustScan

- Low cost
- No power required
- Requires substantial lab processing required
- No real time data or alert system
- Low time resolution



Examples of monitoring locations



Deciding on the locations for monitoring should be integral to the larger site plan.

This monitor was already installed in a 'well' with significantly restricted airflow but it was then further boxed in when the subcontractor placed a shipping container **directly** in front of it.

You should avoid installing monitors in the vicinity of trees.

This monitor formed part of a long term measurement campaign around a major area of redevelopment. It may have been installed during the winter months when there was little or no foliage on the trees. After being in place for several years it was shielded from the construction activity by the surrounding tree canopy.



This monitor was installed inside Heras security fencing along the site boundary. The contractor had built an enclosure to shield the monitor from the road but this also significantly restricted airflow around the sample head.



In this case moving the monitor up within the enclosure or extending the length of the sample inlet would improve the airflow around the inlet.

Monitors should be located in clear unobstructed positions away from walls or buildings.

This monitor has been installed very low on the lea side of a building, shielded from all construction related dust.





This monitor is correctly installed with the sample head extending above the hoarding to give 360 degree unrestricted airflow.



If there are no suitable options for installing a monitor at the location where it is required it is possible to create your own using a cage, which also provides a safe working area for the operator.



Another correctly installed monitor alongside a busy construction access road.

This monitor is mounted at approx. 2.7m to prevent any interference from the public or site workers and has a level area of hard standing for safe ladder access.



**Alternative site
solutions for dust
management!**

Any other business?

- GLA MAQF 2019-22
- JCB Electric excavator
- Date of next meeting