HOARE LEA

Technical Note.

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Demolition Dust Monitoring.

Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
00	11/04/2024	First Draft	AJ	AD	AD
01	16/04/2024	First Issue	AJ	AD	AD
02	18/04/2024	Second Issue	AJ	AD	AD
03	09/05/2024	Third Issue	AJ	AD	AD
04	13/05/2024	Fourth Issue	AJ	AD	AD

1. Introduction.

Hoare Lea have been commissioned by Landsec U+I to provide a Technical Note regarding the demolition dust monitoring for the demolition of the Homebase store, Finchley Road, London, NEW3 6LU.

The Consented Development consists of the demolition of the O2 Finchley Centre and the construction of a residential-led mixed-use development (Planning Reference: 2022/0528/P). The first phase of demolition involves the demolition of the Homebase store. This phase is the phase considered in this Technical Note.

This Technical Note has been prepared in response to comments received from the London Borough of Camden (LBoC) for the Construction Management Plan (CMP).

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1.1 Site Context.

The Site currently consists of the O2 Centre and the Homebase Store, along with an associated car park. The Homebase Store is no longer in use. The Site is bound by an access road and the Thameslink Railway to the north; Blackburn Road, the Metropolitan and Jubilee lines which pass overground to the south; and Finchley Road to the east. The surrounding area comprises student accommodation to the west, along with residential properties to the north, east and south of the Site. The location of the Site is illustrated in Figure 1.

Figure 1: Location of the Site. Contains Google Maps Data (2024) [Retrieved 08/04/2024].

1.2 Requirements.

An Environmental Statement (ES) was produced by Plowman Craven, with an Air Quality Chapter drafted by Hoare Lea, and submitted to LBoC on the 10th of February 2022[1]. The overall Site was identified as 'High Risk' in the construction dust risk assessment, in line with the Greater London Authority (GLA) guidance[2]. As such, in line with the GLA guidance, dust monitoring must be undertaken on-site throughout the demolition and construction phases of the Consented Development. This has specified by LBoC in the Decision Note[3] which outlines the following condition regarding air quality dust monitoring:

"M19:

[1] Plowman Craven (2022) Finchley Road Environmental Statement –[online], (Last accessed: 08/04/2024), Available at: https://camdocs.camden.gov.uk/HPRMWebDrawer/Record/9447321/file/document?inline

[2] Greater London Authority (2014), The Control of Dust and Emissions During Construction and Demolition Supplementary Planning Guidance – [online] (Last Accessed08/04/2024), Available at: www.london.gov.uk/sites/default/files/gla_migrate_files_destination/Dust%20and%20Emissions%20SPG%208%20July%202014.pdf

[3] London Borough of Camden (2024) The O2 Masterplan Site Decision Notice –[online], (Last accessed: 08/04/2024), Available at: https://camdocs.camden.gov.uk/HPRMWebDrawer/Record/10353394/file/document?inline

No demolition, excavation, or other development shall commence on any development plot until all of the following have been complied with:

a) Full details have been submitted to and approved in writing by the local planning authority of air quality monitors, include the location, number and specification of the monitors, and confirmation they will be installed in line with guidance in the GLA's Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance (SPG), and the anticipated date when they will be installed.

b) A confirmation email shall be sent to airquality@camden.gov.uk no later than five day after the monitors have been installed in line with the approved details.

c) The monitors shall be installed in line with the approved details, and must have been in place for at least three months prior to the commencement of works. The monitors shall be retained and maintained on site for the duration of the development in accordance with the approved details.

Reason: To mitigate the impact of dust emissions from development on air quality in the area, and London as a whole, and to avoid irreversible and unacceptable damage to the environment, in accordance with policy A1 and CC4 of the Camden Local Plan 2017, and policy GG3 and SI1 of the London Plan 2021."

Additionally, LBoC provided further requirements for dust monitoring in response to the CMP:

"Q35: As well as the hourly average trigger level, please also use 15-minute averages: Amber 150µg/m^3 and Red: 250 µg/m^3

Q37: The air quality assessment from 'Plowman Craven' dated January 2022 has rated the demolition aspect of this development as high risk for dust impact, which would require four real-time AQ sensors, not two as has been stated by the CMP.

Q38: The sensor locations proposed do not look suitable to effectively monitor the impact of the works on local air quality. It appears that both monitors have been installed to the east of the site in the car park, rather than in a transect line across the site."

2. Methodology.

2.1 Guidance.

Appropriate guidance has been considered when determining the suitable equipment and location for construction dust monitoring at the Site.

2.1.1 Greater London Authority Guidance

Supplementary Planning Guidance (SPG) on the control of dust and emissions during construction and demolition has been published by the GLA[2]. The guidance provides protocols for on-site monitoring to manage the generation of particulate matter (PM_{10} and $PM_{2.5}$) and nitrogen oxides (NO_x) during construction activities. The monitoring approach has been undertaken with consideration of the GLA guidance.

2.1.2 Institute of Air Quality Management Guidance

The Institute of Air Quality Management (IAQM) has published Guidance on Monitoring in the Vicinity of Demolition and Construction Sites (2018)[4]. This document advises on monitoring dust and particulate matter and the quality assurance procedures that should be applied. The monitoring approach has been undertaken with consideration of the IAQM guidance.

2.1.3 LBoC Requirements for Real-Time Dust Monitoring on Demolition and Construction Sites

LBoC have provided guidance on the requirements for dust monitoring on demolition and construction sites within the borough (2021)[5]. This document details the methodology required in order for LBoC to approve a dust monitoring regime implemented to fulfil a planning condition. The monitoring approach has been undertaken with consideration of the LBoC requirements and guidance. Namely, the guidance outlines the key information required as follows:

i) Number of air quality/dust (PM_{10}) monitors being installed;
ii) Details of the proposed locations;
iii) Brief rationale for installing monitors at these locations;
iv) Manufacturer and model of the monitoring equipment; and
v) The dust (PM_{10}) trigger levels that will be used.

2.2 Site Considerations.

The Homebase Store consists of a lightweight warehouse structure, bound to the east and west by cark parking spaces; and the north and south by railway lines. Due to the structure and surroundings of the building, it is not anticipated that this phase of the demolition would be considered 'High Risk'. As such, a flexible dust monitoring plan has been considered due to the smaller scale of works. Therefore, at this stage, two monitors situated in close proximity to the Homebase store would be sufficient to observe peak changes in dust concentrations as a result of the demolition works.

The monitoring methodology outlined in the following sections describes the planned methodology solely the demolition of the Homebase store. Following phases of the Development, including the demolition of the O2 Centre, will include additional dust monitors and alternative locations closer to the active works. Future monitoring locations will be discussed with LBoC prior to the commencement of any further activities.

2.3 Monitoring Equipment.

Two Aeroqual Dust Sentry monitors have been installed to record PM_{10} and $PM_{2.5}$ concentrations. The equipment have been setup by Landsec U+I in accordance with the appropriate guidance and support

[4] Institute of Air Quality Management (2018) Guidance on Monitoring in the Vicinity of Demolition and Construction Sites –[online], (Last Accessed: 08/04/2024), Available at: https://iaqm.co.uk/text/guidance/guidance_monitoring_dust_2018.pdf

[5] London Borough of Camden (2021) Requirements for real-time dust monitoring on demolition and construction sites (updated April 2021)

from Hoare Lea air quality professionals. The Aeroqual Dust Sentry is an MCERTS Certified Indicative Ambient Particulate Monitor[6] and is used for the purposes of demolition and construction dust monitoring across the UK. The specification sheet for the Zephyr has been provided in Appendix 1.

Due to the anticipated dust impact associated with the demolition of the Homebase Store, two monitoring locations is considered appropriate and reasonable at this stage. Further monitors are intended to be setup for later phases of the Development.

2.4 Monitoring Locations.

2.4.1 Baseline Monitoring

Baseline air quality monitoring took place at two locations in the centre of the Site. Both monitors were located on CCTV poles in the O2 Centre car park. The first location was to the west of the O2 car park near the Homebase store (Monitor 1) and the second location was in the centre of the car park (Monitor 2). Both Monitor 1 and Monitor 2 were placed 3.5 m above ground level and equipped to monitor the concentrations of Particulate Matter (PM_{10} and $PM_{2.5}$). These locations are illustrated in Figure 2. Photographs of these locations are illustrated in Appendix 2.

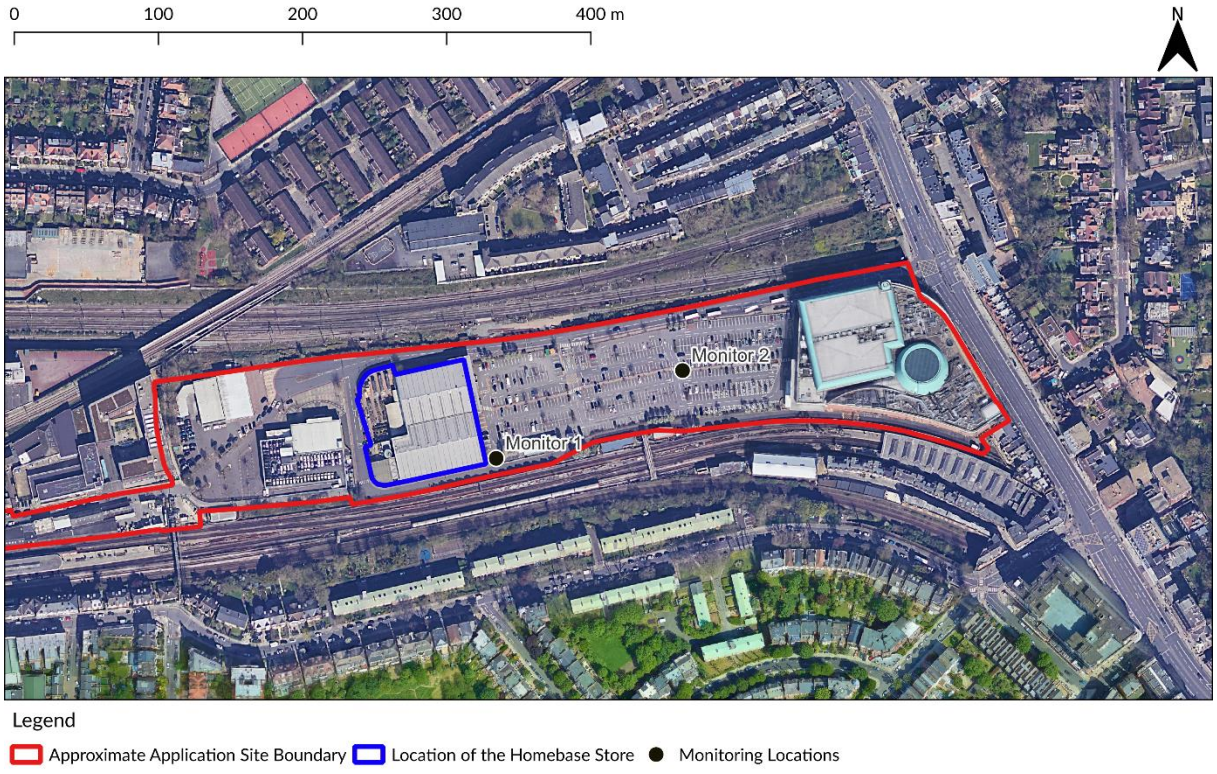

Figure 2: Baseline Monitoring Locations. Contains Google Maps Data (2024) [Retrieved 08/04/2024].

2.4.2 Demolition Monitoring

In line with the IAQM guidance and feedback from LBoC, dust monitors should be placed in a transect across the Site in the direction of the prevailing wind. Based on data from the meteorological station at Heathrow Airport as illustrated in Appendix 3, the prevailing wind direction is south westerly. As such,

[6] CSA Group (2023) MCERTS Certified Products: Indicative Ambient Particulate Monitors – [online] (Last accessed: 16/04/2024), Available at: MCERTS Certified Products: Indicative Ambient Particulate Monitors Archives - CSA Group

monitors are proposed to be located in the south west and north east corners of the Homebase store. These locations are illustrated in Figure 3.

Figure 3: Proposed Demolition Monitoring Locations. Contains Google Maps Data (2024) [Retrieved 08/05/2024].

It is considered that based on the anticipated risk of dust emissions from the demolition of the Homebase store the two established monitoring locations are sufficient to monitor changes in particulate matter concentrations during the demolition of the Homebase store. These locations are capable of robustly monitoring the effects and impacts associated with the removal of the light weight warehouse structure on-site.

2.5 Monitoring Schedule.

All demolition monitoring equipment will be setup prior to the start of any works on-site.

Six months of baseline monitoring has occurred on-site form the 1st of September 2022 – 2nd of March 2023 in order to establish compliance with the Air Quality Objectives (AQOs) and the World Health Organisation (WHO) guidelines.

Two monitors were installed in the baseline locations on the 5th of February 2024. However, due to feedback from LBoC these monitors have been taken down and will be relocated to the proposed demolition monitoring locations prior to the start of works.

2.6 Trigger Levels.

In line with the IAQM guidance[4] and the requirements of the planning condition, trigger levels have been set for monitored PM_{10} concentrations on-site, above which steps must be taken to reduce and minimise the risk of dust-related impacts. In addition, based on comments received from LBoC on the CMP, further 'Amber' and 'Red' 15-minute average alerts have been included.

Notification of exceedances for these levels will be automatically received by email and the on-site team will be informed. The trigger level is set out in Table 1 and is based on the Site Action Level provided within

the most recent IAQM guidance[4]. Following analysis of the baseline data period, amber warning levels may also be determined to assist with providing an early warning system to on-site personnel,

Table 1: Trigger Level for PM_{10}.

Trigger Level	Concentration
Action Level (as a 1-hour average)	190 µg/m^3
Amber Level (as a 15-minute average)	150 µg/m^3
Red Level (as a 15-minute average)	250 µg/m^3

3. Monthly Reporting.

In line with the requirements set out by LBoC for dust monitoring on demolition and construction sites[5], monthly reports must be issued to the council and made publicly available throughout the duration of works on-site. These must be accessible online, with details of where to find them advertised to the local community through details presented on the site boundary in public view. These monitoring reports will include:

i) Details of the monitoring equipment;
ii) Site plan of the monitoring location and recent photographs;
iii) PM_{10} trigger levels used;
iv) Summary table of exceedances of the trigger levels;
v) Monthly average PM_{10} concentration;
vi) Time series graphs of PM_{10} concentration;
vii) Valid data capture percentages for the monitors;
viii) Details of works being undertaken on-site; and
ix) Dust mitigation measures implemented on-site.

These monthly reports will be produced each month throughout the monitoring period, including the baseline period.

4. Summary.

This Technical Note details the methodology for the demolition dust monitoring for the Homebase Store at Finchley Road, London, NEW3 6LU.

Monitoring equipment will be setup in the agreed locations prior to the start of any works on-site. Due to the small scale of the Homebase store demolition works, a robust monitoring strategy has been incorporated. As such two monitoring locations in close proximity to the Homebase store have been considered sufficient to observe peak dust concentrations as a result of the demolition works. Aeroqual Dust Sentry monitors have been setup in two locations considered sufficient for robustly monitoring the effects and impacts associated with the removal of the light weight warehouse structure on-site.

Monitors will be positioned in a transect across the Site, at the south west and north east corners of the homebase store. This will allow for comparisons of dust concentrations downwind of the Site. Further monitoring locations during later phases of the Consented Development will be discussed with LBoC to determine suitability.

It is recommended that additional monitoring locations be discussed with LBoC prior to subsequent phases of the Consented Development.

This methodology has considered the relevant GLA, IAQM and LBoC guidance and should therefore be considered compliant with the terms of condition M19. As such, the demolition of the Homebase store should be permitted to progress with the outlined dust monitoring in place.

Appendix 1 – Aeroqual Dust Sentry Specification Sheet.

Specifications I Dust Sentry

Particle Module	Sizes	Range	Accuracy	Resolution	Lower Detectable Limit (2σ)
Nephelometer	PM_1, $PM_{2.5}$, PM_{10} or TSP	0 to 60,000 µg/m³	<±(2 µg/m³ + 5 % of reading)	0.1 ug/m³	<1 µg/m³
System Specifications					
Control System	Embedded fanless PC (Intel Celeron® N3350, 1.1GHz, dual core, 4GB RAM, 32GB SSD hard drive), Ubuntu Linux Operating System				
Communications[1]	Standard: WIFI, Ethernet (LAN) Optional modem: Cellular IP 3G HSPA or 4G LTE				
Software	**Aeroqual Connect** instrument operating system. **Aeroqual Cloud** instrument monitoring, management and technical support via secure cloud servers, accessed via web browser (IE, Firefox, Chrome, Safari). • Cloud standard features; configuration, calibration, diagnostics, remote technical support. • Cloud optional features; text (SMS) and email alerts, 3rd party sensor measurements, full data visualisation with charts, wind and pollution roses, data reporting with auto data export via FTP and API, full instrument event journal capture.				
Data logging	32 GB Hard Drive (> 5 years data storage)				
Outputs	2 x Relay (optional), 4 x 4-20 mA (optional)				
Averaging period	1 min, 5 min, 10 min, 15 min, 20 min, 30 min, 1 hr, 2 hr, 4 hr, 8 hr, 12 hr, 24 hr				
Power requirements[2]	100-260 VAC (standard): 30[a] W / 24.7[b] W, Regulated 12 VDC (if required): 33[a] W / 27.2[b] W				
Enclosure	Lockable IP65 GRP cabinet with integrated aluminum solar shield armor				
PM Sampling System	Inlet: Omni-directional 36 cm (14.1 inches) heated inlet; Optional sharp cut cyclones for PM_{10}, $PM_{2.5}$ or PM_1 size selection Pump: 12 V brushless DC diaphragm Optics: 670 nm laser, near-forward scattering nephelometer with sheath air protection				
Dimensions	483 H x 330 W x 187 D mm (19 H x 13 W x 7.4 D inches) Includes solar shield armor & mounting brackets				
Weight[3]	< 13 kg (28.6 lbs)				
Environmental operating range	-10 °C to +50 °C (14 °F to 122 °F)				
Mounting	Pole, tripod and wall mounting brackets included				
47mm Sample Filter (Optional)	47 mm filter for particle loading analysis				
Factory Integrated & Tested Sensors (Optional)	Gill WindSonic (ultrasonic wind sensor), Vaisala WXT536 (weather transmitter), Met One MSO (weather transmitter), Cirrus MK427 Class 1 (noise sensor), Novalynx Pyranometer (solar radiation), BSWA 308 (sound level meter) Met-One BC-1060 (black carbon monitor), Met-One E-BAM PLUS (Beta-Attenuation Mass Monitor)				

[1] 4G LTE not available in all markets.
[2,3] Configuration used for power and weight calculations: base unit, nephelometer, PM_{10} sharp cut, modem, heater on.
[a] Configured as per note 2, and incl. Moxa modem.
[b] Configured as per note 2, and incl. Sierra modem.
[4] Dimensions are for enclosure. PM sampling inlet with cyclone adds 360 mm (14.17") to total height.

MCERTS Sira MC130235/02

Appendix 2 – Photographs of the Baseline Monitoring Locations.

Figure 4: Photograph of Monitor 1.

Figure 5: Photograph of Monitor 2.

Appendix 3 – Wind Roses for Heathrow 2020, 2021, 2022

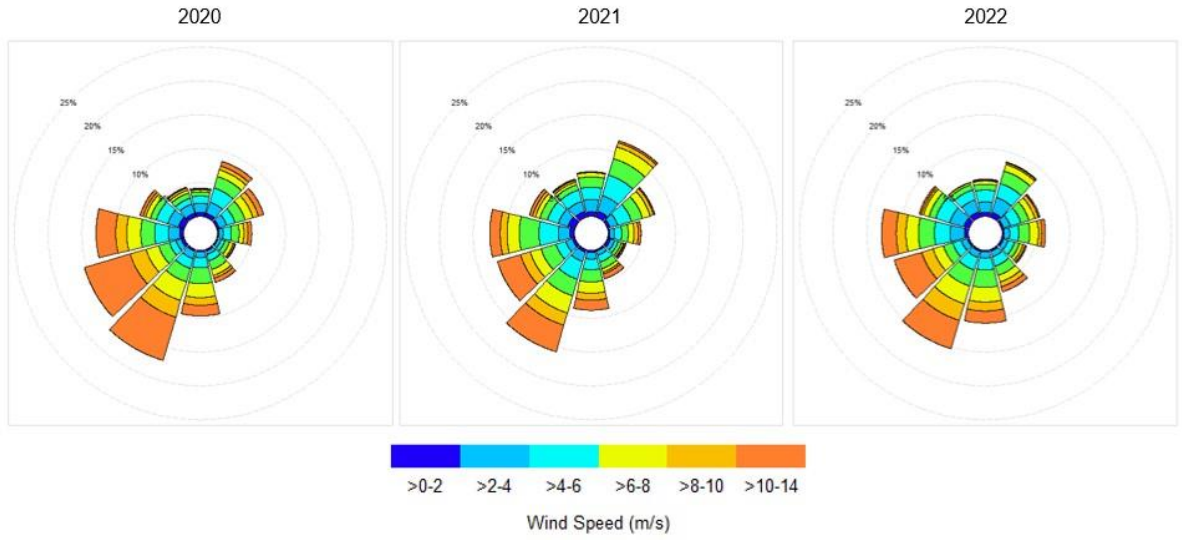

Figure 6: Wind roses from Heathrow Airport for 2020, 2021 and 2022.