



**Anderson**  
Acoustics

PLANNING CONDITION AIR QUALITY  
ASSESSMENT AND DUST MANAGEMENT PLAN

# ASPEN HOUSE, MAITLAND PARK ESTATE, CAMDEN

BOUYGUES UK

MARCH 2020

**PLANNING CONDITION AIR QUALITY  
ASSESSMENT AND DUST MANAGEMENT PLAN  
ASPEN VILLA, MAITLAND PARK ESTATE,  
CAMDEN**

Our Ref: **4622\_001R\_2-0\_AG**



**Client:** **Bouygues UK**  
Becket House  
1 Lambeth Palace Road  
London  
SE1 7EU

**Report by:** **Anderson Acoustics Limited**  
3 Trafalgar Mews  
15-16 Trafalgar Street  
Brighton  
BN1 4EZ

[www.andersonacoustics.co.uk](http://www.andersonacoustics.co.uk)

T: 02031767909

**Date:** **18 March 2020**

**Project No:** **4622**

**Status:** **First updated version**

---

<b>Author</b>	<b>Adam Glass</b> Principal Consultant	<b>18 March 2020</b>
---------------	---	----------------------

---

<b>Reviewed</b>	<b>Thomas Orbell Bailey</b> Consultant	<b>18 March 2020</b>
-----------------	---	----------------------

---

<b>Approved</b>	<b>Adam Glass</b> Principal Consultant	<b>18 March 2020</b>
-----------------	---	----------------------

This document has been prepared using all reasonable skill and care. Anderson Acoustics Ltd accepts no responsibility or liability for any third-party data presented in this report, or used for the basis of drawing any conclusions. This document is confidential to the named client above and Anderson Acoustics Ltd accepts no responsibility or liability resulting from third party use of this document or for a purpose other than for which it was commissioned.

## REVISION HISTORY

Version	Comments	Changes made by	Approved by
1.0	First Issued Version		AG
2.0	Updated version	AG	AG

**PAGE LEFT INTENTIONALLY BLANK**

## CONTENTS

1	INTRODUCTION	6
2	AIR QUALITY POLICY AND CRITERIA	8
3	SITE DESCRIPTION	13
4	AIR QUALITY ASSESSMENT	15
5	DUST RISK ASSESSMENT	18
6	AIR QUALITY NEUTRAL ASSESSMENT	22
7	CONCLUSIONS	24
	Appendix A - Dust and Air Quality Management Plan	
	Appendix B - Site Monitoring Location Photographs	

## 1 INTRODUCTION

Anderson Acoustics Ltd was commissioned by Bouygues UK to undertake an air quality assessment and dust management plan as part of the necessary information for the discharge of the planning condition 22 attached to the consent notice for application 2014/5840/P.

The details to discharge the condition are submitted under application 2019/6310/P for the consented development at the site of Aspen House, Maitland Park Gym and associated buildings at the Maitland Park Estate, London Borough of Camden.

A replacement condition was appended to the decision notice in 2015.

*REPLACEMENT CONDITION 22 (2015/*

*Prior to implementation, including demolition, of either the relevant phase of the development, or works in connection with the MUGA, a Construction Management Plan (CMP) including an Air Quality Assessment) shall be submitted to and approved by the local planning authority.*

*The CMP shall set out all measures that the Owner will adopt in undertaking the demolition of the existing buildings and the construction of the Development using good site practices in accordance with the Council's Considerate Contractor Manual.*

*Such plan shall include measures to for ensuring highway safety and managing transport, deliveries and waste (including recycling of materials) throughout the demolition and construction periods and which demonstrates consideration of and liaison with other concurrent developments in the wider area.*

*The plan shall also include details of a community working group involving local residents and businesses, a contractor complaints/call line and measures to be carried out to mitigate the impact of the noise arising from construction and demolition activities on local residents and businesses, a waste management strategy and means of monitoring and reviewing the CMP from time to time.*

*The measures contained in the Construction Management Plan shall at all times remain implemented during all works of construction and demolition. Where separate Construction Management Plans are submitted for the demolition and the construction phases the provisions of this condition will apply to both plans.*

*Reason: In order to protect the pedestrian environment and the amenities of the area generally and to ensure the continued free flow of traffic in the area in accordance with Policies CS5 and CS11 of the London Borough of Camden Local Development Framework Core Strategy and policies DP16, DP17 and DP26 of the London Borough of Camden Local Development Framework Development Policies.*

London Borough of Camden officer David Peres DiCosta further clarified the requirements in an email dated 09/01/20.

*"The Condition specifically requires an Air Quality Assessment (AQA). This should be undertaken. The AQA should include:*

- Operational impact of development on local area*
- Include AQ Neutral assessment*
- Operational impact on occupants*
- Construction impacts risk assessment".*

The larger scheme involves Provision of 112 residential units and replacement Tenants and Residents Association hall across two sites with associated multi-use games area, landscape and associated works, following demolition of Aspen House, gymnasium and garages at Maitland Park Villas and TRA Hall and garages on Grafton Terrace.

This assessment covers the elements relating the first phase at the Aspen House site. The dust and air quality management plan covers the demolition phase works

The air quality assessment will indicate if the development is in an area of poor air quality and if future occupants will be impacted upon by existing poor air quality associated with road traffic emissions, in

particular, that resulting from concentrations of nitrogen oxides (NO<sub>x</sub>) and particulate matter. Air quality neutral assessment and dust risk assessment is conducted to demonstrate compliance of the development with the “Air Quality Neutral” policy of the London Plan and the “Control of Dust and Emissions During Construction and Demolition” Supplementary Planning Document. A dust management plan based on the findings of the dust risk assessment has been produced.

Assessment of the potential effects on future occupants is achieved through assessing the location of the development against the existing NO<sub>2</sub> concentrations in the context of the air quality objectives and limit values.

This report presents the air quality assessment for site suitability identifies mitigation required, if any.

The dust and air quality management plan provides measures based on LBC and GLA guidance for the management of dust and air quality during demolition.

Air quality policy and criteria relevant to the assessment have been presented and briefly discussed in Section 2 of this report. A brief description of the site and proposed development is given in Section 3. The air quality assessment is presented in Section 4. The dust risk assessment is presented in Section 5. The air quality and dust management and mitigation plan forms an appendix to this document. The air quality neutral assessment is presented in Section 6. The conclusions are provided in Section 7. The dust and air quality management plan is presented in Appendix A.

## 2 AIR QUALITY POLICY AND CRITERIA

### 2.1 Air Quality – Pollutants for Consideration

The pollutants for consideration in London Borough of Camden (LBC) are nitrogen dioxide (NO<sub>2</sub>) and particulate matter (PM).

PM<sub>10</sub> is the fraction of PM that is 10 microns or less in size and PM<sub>2.5</sub> is the fraction of PM that is 2.5 microns or less in size. Both can be drawn into the lungs and can cause respiratory illness, cardiovascular illness and mortality. Oxides of nitrogen include nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>). NO<sub>2</sub> can cause inflammation of the lung and can lead to shortness of breath, coughing and can reduce immunity to infections of the lung such as bronchitis.

### 2.2 Air Quality Policy and Guidance

#### 2.2.1 European and National Air Quality Standards

Air Quality Directive 2008/50/EC<sup>1</sup> introduced legally binding “limit value” targets for the member governments to reduce air pollution to concentrations at which minimal effects on health are likely to occur.

The directive was transposed into law through the Air Quality (England) Standards Regulations<sup>2</sup> with air quality objectives and dates they were to be achieved by. The sensitive locations, at which the standards and objectives apply, are places where the population is expected to be exposed to the various pollutants over the averaging period in question. For objectives to which an annual mean standard applies, the most common sensitive receptor locations used to measure concentrations are areas of residential housing, since it is reasonable to expect that people living in their homes could be exposed to pollutants over such a period of time. For shorter averaging periods of between 15 minutes, 1 hour or 1 day, the sensitive receptor location can be anywhere where the public could be exposed to the pollutant over these shorter periods of time.

Table 2.1: Air Quality Objectives for PM<sub>10</sub>, PM<sub>2.5</sub> and NO<sub>2</sub>

Pollutant	Air Quality Objectives for Particulates and NO <sub>2</sub>		Date to be Achieved By
	Concentration	Measured as	
PM <sub>10</sub>	50 µg/m <sup>3</sup> not to be exceeded more than 35 times a year	24 hour mean	31 December 2004
	40 µg/m <sup>3</sup>	Annual mean	31 December 2004
PM <sub>2.5</sub>	25 µg/m <sup>3</sup>	Annual mean	2020 (but not in UKAQS)
	15% reduction urban background	Annual mean	2010-2020
NO <sub>2</sub>	40 µg/m <sup>3</sup>	Annual mean	31 December 2005
	200 µg/m <sup>3</sup> not to be exceeded more than 18 hours in a year	Hourly mean	31 December 2005

<sup>1</sup> Council Directive 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe

<sup>2</sup> DEFRA. 2010. The Air Quality Standards (England) Regulations.



The Environment Act 1995<sup>3</sup> introduced the requirement for local authority management of air quality. Part IV of this Act details the duties of local authorities in carrying out their local air quality management (LAQM) to tackle poor air quality. Part of the requirements is for the Review and Assessment of air quality and production of Updating and Screening Assessments (USA) and Status Reports. Where exceedance of these objectives is shown or anticipated the local authority is required to produce an Air Quality Action Plan to reduce emissions and pollutant concentrations.

### 2.2.2 National and Regional Planning Policy and Guidance

The **NPPF**<sup>4</sup> presents the Government’s planning policies for England and how these are expected to be applied, with the development of local and neighbourhood plans under the framework. Paragraph 170 e) of the NPPF identifies that the planning system should aim to conserve and enhance the natural and local environment by *“preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality...”*

Paragraph 181 states *“Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan”*.

**Planning Practice Guidance**<sup>5</sup> for air quality has been produced that gives indication of details the local authority may want to consider when there are concerns about air quality and special requirements such as the height of chimneys and securing mitigation measures through planning conditions and obligations. The PPG considers that dust can also be a planning concern for effects on local amenity. The guidance considers that assessments should be proportional to the nature and scale of development proposed and the level of concern about air quality. The mitigation of air quality impacts and effects is to depend on the proposed development and should be proportionate to the likely impact.

**The London Plan**<sup>6</sup> Policy 7.14 ‘Improving Air Quality’ recognises the importance of reducing air pollution and improving air quality to London’s development and the health and wellbeing of its people. The policy states that development proposals should minimise exposure to existing poor air quality, make provision to address local problems of air quality, particularly within AQMAs, and where development is likely to be used by large numbers of those particularly vulnerable to poor air quality, such as children or older people) such as by design solutions, buffer zones or steps to promote greater use of sustainable transport modes through travel plans.

Policy 7.14 requires developments to be at least ‘air quality neutral’ and not lead to further deterioration of existing poor air quality and ensure where provision needs to be made to reduce emissions from a development that this is made on-site where possible and where it is impractical to do so the measures should have clearly demonstrated equivalent air quality benefits and planning conditions should be used to ensure this, whether on a scheme by scheme basis or through joint area based approaches.

---

<sup>3</sup> Office of the Deputy Prime Minister. 1995. The Environment Act.

<sup>4</sup> Ministry of Housing, Communities & Local Government. 2019. National Planning Policy Framework.

<sup>5</sup> Department for Communities and Local Government. 2014. Planning Practice Guidance – Air Quality. Revision date March 2014

<sup>6</sup> Mayor of London. 2016. The London Plan: The Spatial Development Strategy for London Consolidated with Alterations Since 2011.

**The Mayor's Environmental Strategy**<sup>7</sup> continues the requirement for all new developments to be 'air quality neutral', to ensure no new development has a negative impact on local air quality. Policy 4.3.3 aims to phase out the use of fossil fuels to heat, cool and maintain London's buildings, homes and urban spaces, and reduce the impact of building emissions on air quality.

**Sustainable Design and Construction, The Mayor's Supplementary Planning Guidance**<sup>8</sup> states that all new gas boilers should produce low levels of NO<sub>x</sub> and developments should take measures to reduce and mitigate exposure to air pollution and details emissions benchmarks for building emissions to avoid increases in NO<sub>x</sub> and PM emissions across London as a whole and therefore be 'air quality neutral'. These are considered as minimum benchmarks that will be kept under review and updated in line with technological and commercial advances. The 'Air Quality Neutral' policy applies to all major developments and NO<sub>x</sub> and/or PM<sub>10</sub> emissions from the building and transport elements of the scheme need to be calculated and compared to the benchmarks. Where schemes do not meet the benchmarks, after mitigation has been implemented on site, the developer will be required to off-set emissions off site.

Offsetting measures where the schemes do not meet the 'air quality neutral' benchmark can include NO<sub>x</sub> and PM abatement measures in the vicinity of the development, working with the local authority and nearby property owners and secured by planning condition or s106 agreement. Any agreement for off-site measures, including financial contribution, need to be considered by any restrictions imposed by the Community Infrastructure Levy regulations. These measures can include:

- Green planting/walls with special consideration given to planting that absorbs or suppresses pollutants;
- Upgrade or abatement to combustion plant;
- Retrofitting abatement technology to vehicles and flues; and
- Exposure reduction

**The Control of Dust and Emissions During Construction and Demolition**<sup>9</sup>, the Mayor's supplementary planning guidance (SPG), seeks to reduce emissions of dust, PM<sub>10</sub> and PM<sub>2.5</sub> from construction and demolition activities in London. It also aims to manage emissions of nitrogen oxides (NO<sub>x</sub>) from construction and demolition machinery by means of a new non-road mobile machinery ultra-low emissions zone (ULEZ). The SPG considers that during the pre-application phase, boroughs should provide and advise on controlling dust and emissions and should set out their requirements for the planning application.

During the detailed application phase, the developer should submit an Air Quality and Dust Risk Assessment (AQDRA) which should confirm that an Air Quality and Dust Management Plan (AQDMP), following the guidance in the controlling dust and emissions SPG, will be submitted to the local authority prior to works commencing on-site.

The AQDRA provides a summary of the risk to soiling, health and the natural environment from demolition, earthworks, construction and trackout, and recommends emission control measures to be implemented as part of the scheme.

This document considers that the activities on construction sites can be divided into four types to reflect their different impact:

- demolition;
- earthworks
- construction: and
- trackout.

These activities can lead to three separate dust impacts:

- the risk of health effects due to an increase in exposure to PM<sub>10</sub>;

---

<sup>7</sup> Mayor of London. 2018. London Environmental Strategy.

<sup>8</sup> Mayor of London. 2014. Sustainable Design and Construction. Supplementary Planning Guidance

<sup>9</sup> Mayor of London. 2014. The Control of Dust and Emissions from Construction and Demolition Supplementary Planning Guidance

- annoyance due to dust soiling; and
- harm to ecological receptors.

### 2.2.3 Local Air Quality Guidance

The LBC Local Plan was adopted in 2015<sup>10</sup> and includes policy CC4 - Air Quality which seeks to “reduce the potential air quality impacts of development and promote improved air quality conditions across the borough, in line with the Air Quality Action Plan”.

Policy CC4 is for air quality aims to achieve this by:

*“The Council will ensure that the impact of development on air quality is mitigated and ensure that exposure to poor air quality is reduced in the borough.*

*The Council will take into account the impact of air quality when assessing development proposals, through the consideration of both the exposure of occupants to air pollution and the effect of the development on air quality. Consideration must be taken to the actions identified in the Council’s Air Quality Action Plan.*

*Air Quality Assessments (AQAs) are required where development is likely to expose residents to high levels of air pollution. Where the AQA shows that a development would cause harm to air quality, the Council will not grant planning permission unless measures are adopted to mitigate the impact.*

*Similarly, developments that introduce sensitive receptors (i.e. housing, schools) in locations of poor air quality will not be acceptable unless designed to mitigate the impact.*

*Development that involves significant demolition, construction or earthworks will also be required to assess the risk of dust and emissions impacts in an AQA and include appropriate mitigation measures to be secured in a Construction Management Plan”.*

Guidance on the policy states that “Air Quality Assessments must outline the predicted and forecast pollutant concentrations at the proposed development and the planned mitigations. The Air Quality Assessment should also consider wider cumulative impacts on air quality arising from a number of smaller developments”.

The whole of LBC (Shown in Figure 2.1) was declared as an AQMA for annual mean NO<sub>2</sub> and daily mean PM<sub>10</sub> in 2002 and the Air Quality Action Plan<sup>11</sup> was adopted by LBC to provide measures for improving air quality including through sustainable transport and the development control system.

Air quality focus areas are presented in the LAEI 2016 and have been derived from the modelled annual mean NO<sub>2</sub> concentrations from the LAEI are presented in Figure 2.2. The Maitland Park Estate is outside of the air quality focus areas and outside of the area modelled to be above the NO<sub>2</sub> objective of 40 µg/m<sup>3</sup> according to the LAEI predictions for 2016. The 2018 Annual Status Report<sup>12</sup> (ASR) provides measured concentrations from LBC’s monitoring and

London Borough of Camden have produced an air quality planning guidance<sup>13</sup> to provide technical advice on the assessment and management of planning applications.

<sup>10</sup> London Borough of Camden. Camden Local Plan. 2017.

<sup>11</sup> London Borough of Camden. Air Quality Action Plan 2019-2022. 2018.

<sup>12</sup> London Borough of Camden. Annual Status Report. 2019.

<sup>13</sup> London Borough of Camden. Camden Planning Guidance. Air quality. 2018

Figure 2.1. London Borough of Camden Air Quality Management Area

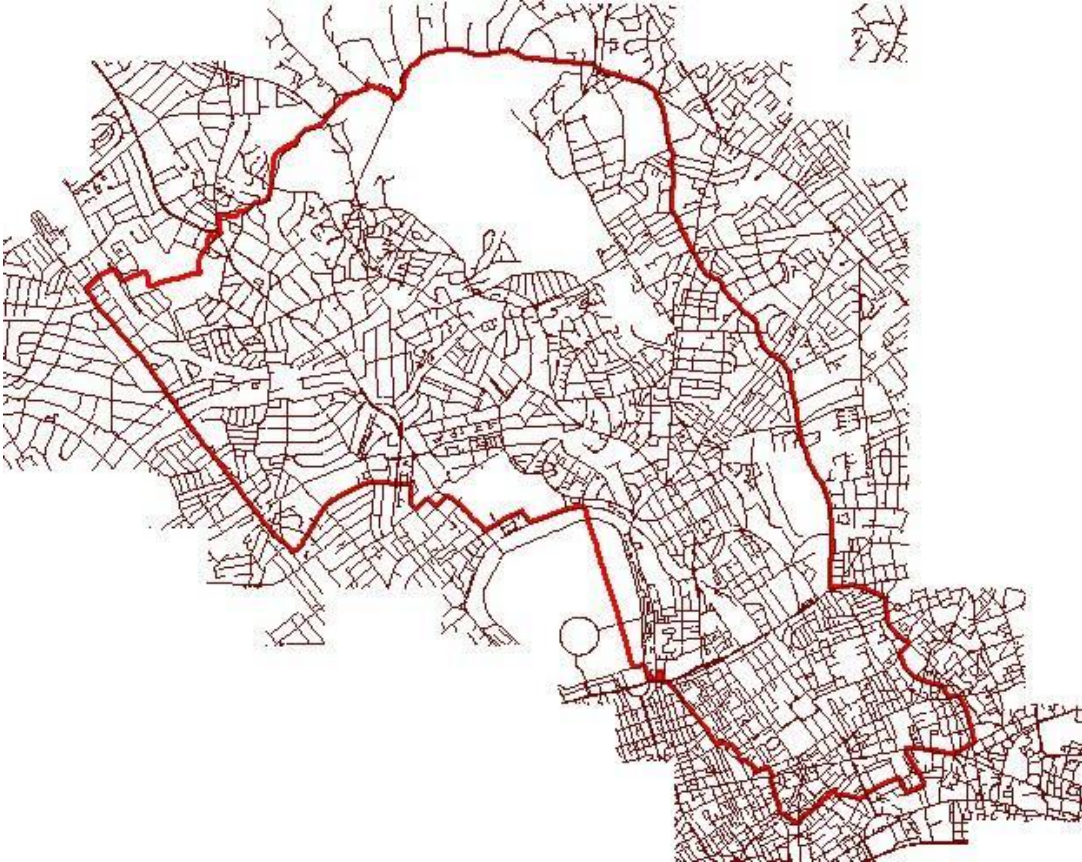
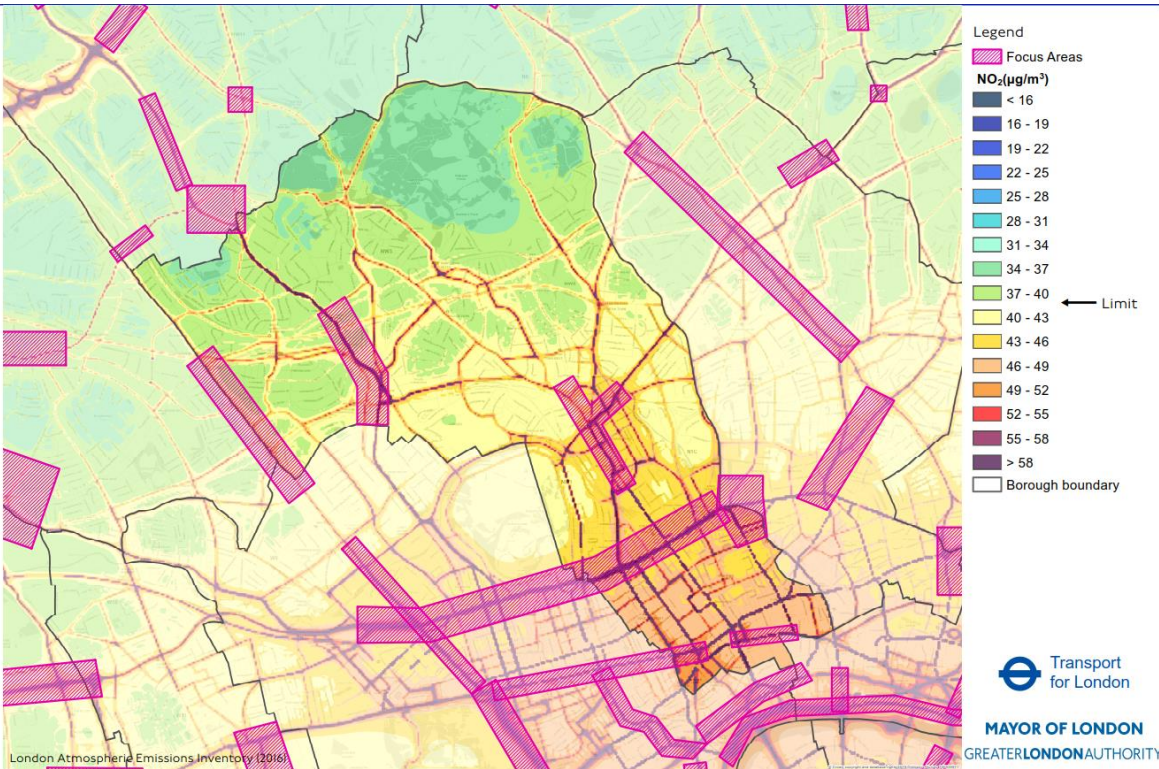


Figure 2.2. London Borough of Camden Air Quality Focus Areas



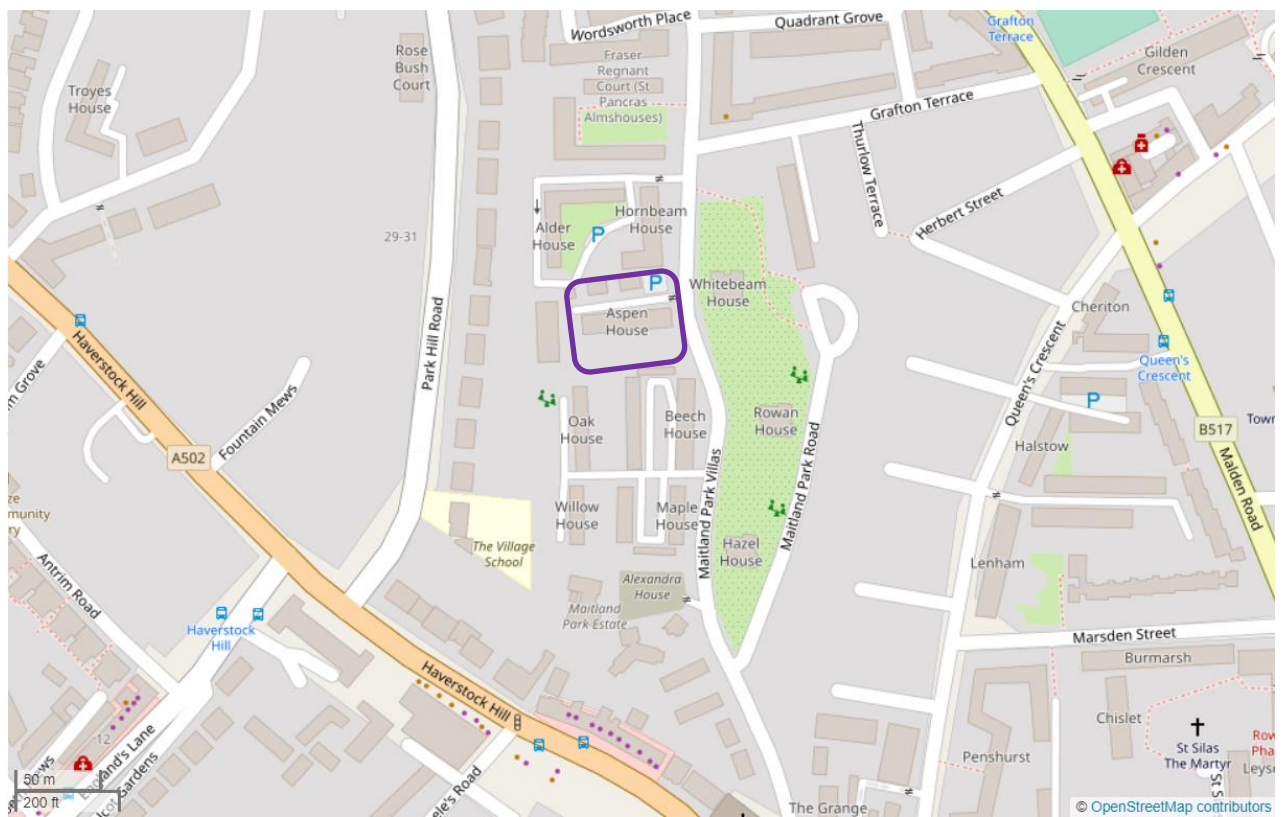
### 3 SITE DESCRIPTION

#### 3.1 Existing Site

The development site is located within the Maitland Park Estate near the Chalk Farm area of London Borough of Camden. The A502 Haverstock Hill is around 165m to the southwest and the B517 Malden Road is around 245m to the east. The site is immediately bound by residential uses and school, care home, community and commercial uses in the wider area. There are no identified sources of fugitive emissions nearby.

The development site area was previously Aspen House, Maitland Park Gym, storage areas, road areas, parking areas and amenity areas. The site location is shown in Figure 3.1 below.

Figure 3.1: Map showing development site location



Key:  Proposed Development Site

#### 3.2 Proposed Development

The works conducted by Bouygues are the enabling works and demolition works to redevelop the site to provide 7-storey residential block (Aspen Villa), a separate block of single storage garages/storage units and a single storey recreation building to replace the Maitland Park Gym. This assessment also includes Aspen Court which will also be developed to the east of the site. The buildings to be demolished are shown in Figure 3.2. The demolitions covered by this assessment and application are shown in the development site area (purple outline). The ground floor layout of the proposed development is shown in Figure 3.3.

Figure 3.2 Buildings to be demolished




Key:  Proposed Development Site

Figure 3.3 Ground floor layout of consented development



## 4 AIR QUALITY ASSESSMENT

### 4.1 Introduction

To scope the content of the air quality assessment the impact of the development on the local area needs to be considered, along with the impact of existing sources of pollution in local area on the proposed development.

The proposed development is a major development but does not meet the criteria (within the “*Land-use Planning & Development Control: Planning for Air Quality*”<sup>14</sup> guidance) for the need to assess the impact of the development on air quality in the local area the change in traffic flows is anticipated to be less than 100 AADT vehicle movements.

The proposed development is in an Air Quality Management Area (AQMA) and there are existing sources of air pollutant emission in the local area from . Therefore the assessment is concerned with the impact of the existing sources of pollution on the proposed development rather than the impact of the development itself. The development itself does not generate enough AADT vehicle movements from the 2 blue badge parking spaces to need to assess the impact of the development from traffic generation. The size of the development and uses air source heat pumps and mains electricity for means the impact of building emissions does not need to be assessed as there is no combustion plant for the consented development.

### 4.2 Methodology

The air quality assessment uses published pollutant concentrations that are supplied by the Greater London Authority in the London Atmospheric Emissions Inventory 2016<sup>15</sup> for the site of the proposed development.

These concentrations have been evaluated using the “Simple” assessment procedure in the “planning for air quality” guidance. The receptors considered are those introduced by the proposed development, on the ground floor at the closest façade as a worst case. The criteria in Table 4.1 has been used to describe the impact of introduction of receptors by the proposed development.

**Table 4.1 Assessment Criteria Impact Descriptors for Individual Receptors**

Annual Mean pollutant concentration in assessment year	% Change in concentration relative to Air Quality Assessment Level (AQAL) – NO <sub>2</sub> and PM <sub>10</sub> annual mean			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% or less of AQAL	Negligible	Slight	Moderate	Moderate
95-102% or less of AQAL	Slight	Moderate	Moderate	Substantial
103-109 % or less of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

Note: Where the predicted change is less than 0.5% the impact descriptor is negligible.

<sup>14</sup> Institute of Air Quality Management. Land-Use Planning & Development Control: Planning For Air Quality. 2017.

<sup>15</sup> <https://data.london.gov.uk/dataset/london-atmospheric-emissions-inventory--laei--2016>

### 4.3 Impacts

With 2 parking spaces (for blue badge users) the development does not meet the IAQM screening criteria for further assessment and is considered to result in a predicted change in NO<sub>2</sub> concentrations of less than 0.5% and so the impact of the development is considered as **“Negligible”**.

An annual mean NO<sub>2</sub> concentration of below 28 µg<sup>m</sup><sup>-3</sup> in 2020 at ground floor level at the location of the consented development has been modelled. The LAEI 2016 modelled concentrations are shown in Figure 4.1. The modelled NO<sub>2</sub> concentrations at the development site are well below the annual mean NO<sub>2</sub> objective of 40 µg<sup>m</sup><sup>-3</sup>. As such the location of the proposed development is considered suitable for the introduction of new human receptors (people in dwellings and users of the MUGA and recreation building). As the annual mean NO<sub>2</sub> objective is not exceeded the hourly mean NO<sub>2</sub> objective is also considered highly unlikely to be exceeded and so the amenity areas also considered to be in an area with suitable air quality in relation to the hourly NO<sub>2</sub> mean objective.

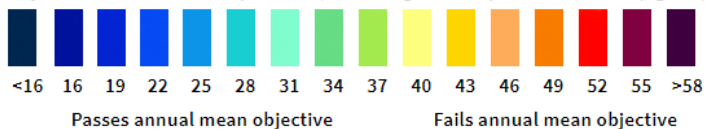
The impact descriptor for the individual sensitive receptors introduced by the development proposal is **“Negligible”**.

PM<sub>10</sub> concentrations are well below the annual mean PM<sub>10</sub> objective. PM<sub>10</sub> maps are presented as Figure 4.2 and the annual mean PM<sub>10</sub> concentration is well below the annual mean objective, being modelled to be below 25 µg<sup>m</sup><sup>-3</sup> in 2020.

Figure 4.1. LAEI 2016 modelled annual mean NO<sub>2</sub> concentrations for 2020



Key: Annual mean NO<sub>2</sub> air pollution, in microgrammes per metre cubed (ug/m<sup>3</sup>)




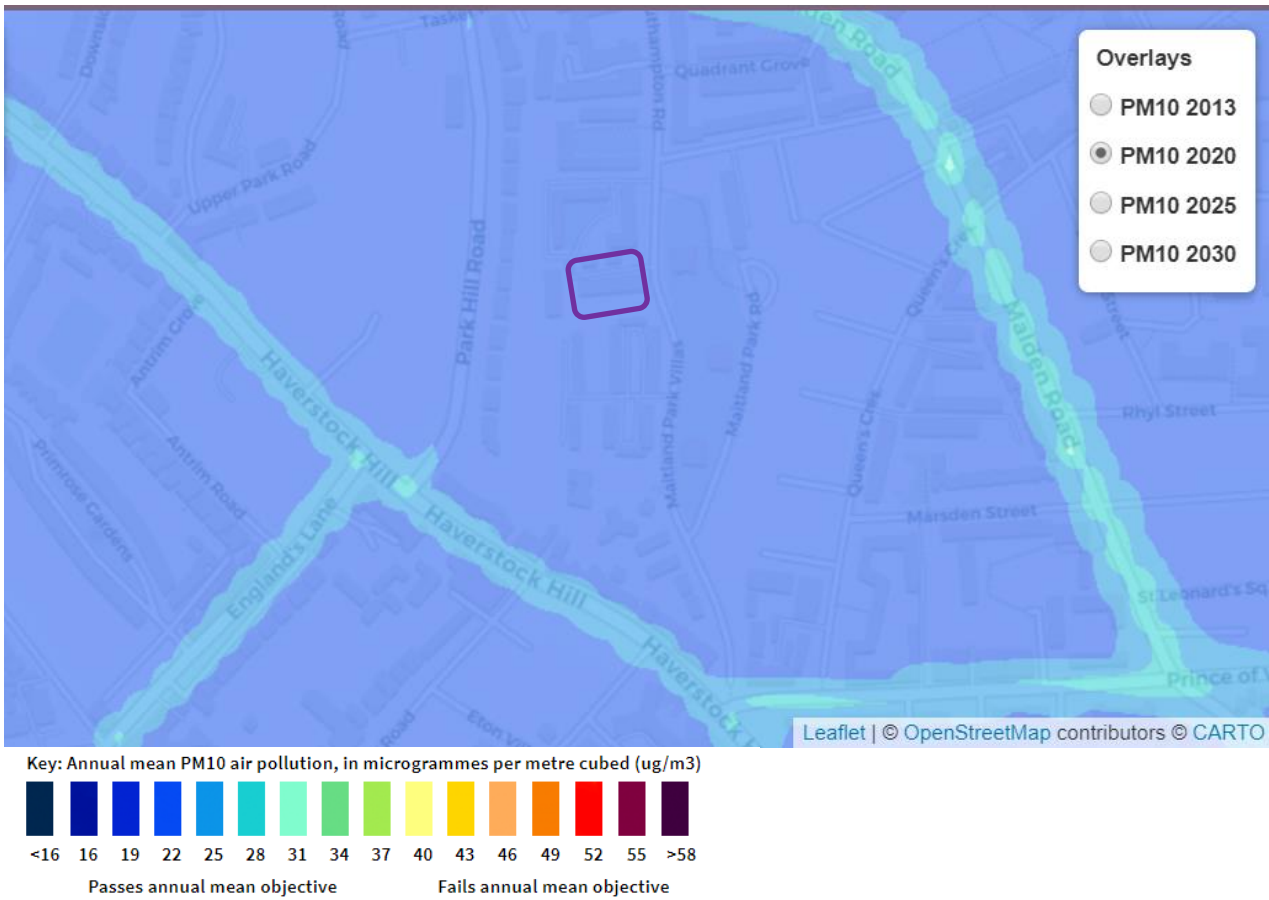
Key:  Proposed development site



Figure 4.2. LAEI 2016 modelled annual mean PM<sub>10</sub> concentrations for 2020



#### 4.4 Significance of Air Quality Impacts and Effects

It is noted that the modelled concentrations used are for ground level exposure and are well below the NO<sub>2</sub> and PM<sub>10</sub> annual mean objectives for the LAEI 2020 modelled concentrations. The effect of the introduction of the human health sensitive receptors through proposed residential development is considered as a “**Not Significant**” effect and that the site is considered suitable for residential and MUGA development in terms of air quality. The effect of the impact of the development on existing receptors is considered as “**Not Significant**” as the emissions are below the scoping criteria for assessment.

The cumulative effect from other developments is considered as not significant given the distance from busy roads and the limited effect of the proposed development.

#### 4.5 Mitigation

The annual mean NO<sub>2</sub> concentrations are below the national objective and as such no mitigation for the impact of the environment on the development is required. To minimise the impact of the development on the environment the consented development uses air source heat pumps to remove the need for combustion plant.

## 5 DUST RISK ASSESSMENT

### 5.1 Introduction

The purpose of this assessment is to identify the category of risk from dust emission associated with the demolition and construction phases, and to put in place a suitable mitigation strategy to ensure negative impacts and adverse effects are controlled and reduced.

Dust from demolition processes contains a range of particle types and material sizes which can cause adverse effects. The pollutant of concern in this assessment is particulate matter (PM<sub>10</sub>), defined as a mass fraction of airborne particulates with an aerodynamic diameter of 10 microns or less. Particulate matter less than 2.5 microns (PM<sub>2.5</sub>) and nitrogen dioxide (NO<sub>2</sub>) are also considered.

PM<sub>10</sub> and PM<sub>2.5</sub> are respirable and can be drawn deep into the lungs and cause health problems. The fraction of dust that is larger than 10 µm is filtered by the nose and throat. PM<sub>10</sub> and PM<sub>2.5</sub> can cause respiratory and cardiovascular illness and even death. NO<sub>2</sub> inflames the lining of the lung and can lead to shortness of breath and coughing and can reduce immunity to lung infections like bronchitis. Dust can also cause soiling of surfaces and materials.

This assessment follows the procedure in the GLA's "Control of Dust and Emissions During Construction and Demolition"<sup>16</sup> SPG, Camden's air quality assessment guidance, "Guide for Contractors Working in Camden"<sup>17</sup> and "Camden's Minimum Requirements"<sup>18</sup>.

The construction works are assessed for four phases:

- Demolition;
- Earthworks;
- Construction; and
- Trackout.

The first step of the assessment is to conduct screening to establish if there is need to proceed to detailed assessment. A dust risk assessment usually proceeds to detailed assessment if there is a human receptor within 50 m of the boundary of the site or 50 m of the routes used by construction vehicles on the public highway, up to 500 m from the site entrances (for large sites).

The main steps are as follows:

- identify magnitude of dust emission for each of the phases the worksite;
- Identify the sensitivity of the receptors;
- Identify the sensitivity of the area;
- determine potential risk category of each works phase; and
- outline how each risk will be mitigated.

There are human and soiling receptors within 20 m of the Aspen House worksite and so the assessment proceeded to a detailed assessment and is described in the following sections.

### 5.2 Dust Emission Magnitude

#### Demolition

The demolition phase involves:

<sup>16</sup> Greater London Authority. The Control of Dust and Emission During Construction and Demolition. 2014.

<sup>17</sup> London Borough of Camden. Guide for Contractors Working in Camden. 2008.

<sup>18</sup> London Borough of Camden. Camden's Minimum Requirements.

- demolition activities being below 20 m in height;
- a building volume of less than 20,000 m<sup>3</sup> ;
- works involving a potentially dusty material (bricks and concrete);
- on-site crusher for concrete and bricks

The demolition phase dust emission magnitude is considered as **Large**.

Earthworks

The site is underlain by made ground, the London Clay Formation deposits (clay, silts and sands) that have a medium potential for dust.

The earthworks phase involves:

- a site area less than <5000 m<sup>2</sup> ( around 4000m<sup>2</sup>);
- moderately dust soil type;
- <5 heavy earth moving vehicles; and
- <10,000 tonnes of material to be moved.

The earthworks phase dust emission magnitude is considered as **Medium**.

Construction

The construction phase involves:

- potentially dusty construction material (concrete);
- piling; and
- total building volume <25,000 m<sup>3</sup>.

The construction phase dust emission magnitude is considered as **Large**.

Trackout

The trackout phase involves:

- Less than 50 HDV outward movements (during the excavation phase);
- Unpaved road length <50 m; and
- Surface material with low potential for dust release (existing hardstandings will be used).

The Trackout phase dust emission magnitude is considered as **Small**.

The summary of the dust emission magnitude is presented in Table 5.1.

Table 5.1 Dust Emission Magnitude

Phase	Dust Emission Magnitude
Demolition	Large
Earthworks	Medium
Construction	Large
Trackout	Small

### 5.3 Sensitivity of the Area

The next step of the assessment is to define the sensitivity of the area. The sensitivity of the area takes into account a number of factors, including:

- Specific sensitivities of receptors in the area
- The proximity and number of receptors

- Background PM<sub>10</sub> concentrations
- Site specific factors such as topography

The sensitivity is defined for:

- Dust soiling effects
- Human health effects of PM<sub>10</sub>
- Ecological effects

High sensitivity receptors for dust soiling in the vicinity of the site include dwellings, care homes and schools. High sensitivity receptors for health effects of PM<sub>10</sub> include receptors in residential areas such as Whitebeam House and Hornbeam House and school receptors such as The Village School.

Ecological effects are not considered further in this assessment as there are no dust sensitive designated ecological receptors within 50m of the site boundary or construction route or within 500m of the site entrance.

For dust soiling effects there are potentially over 100 high sensitivity receptors within 20 m of the site boundary and so the sensitivity of the area is defined as “High” for soiling effects.

For human health effects the baseline annual mean PM<sub>10</sub> concentration needs to be considered. The baseline conditions are described in section 4.2. For the purpose of the dust risk assessment background PM<sub>10</sub> concentrations have been assumed as below 24 µgm<sup>-3</sup> based on the measured PM<sub>10</sub> concentrations reported for Camden in the 2018 ASR and the LAEI modelled concentrations for 2019. With the background PM<sub>10</sub> concentration of below 24 µgm<sup>-3</sup> and potentially over 100 high sensitivity residential receptors within 20 m the site the sensitivity of the area is considered as “Low” for human health effects.

The sensitivity of the area is summarised below in Table 5.2.

Table 5.2 Sensitivity of the area

Receptor Sensitivity	Sensitivity of the surrounding area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	High
Human Health	Medium	Medium	Medium	Medium

## 5.4 Risk of Impacts

When the dust emission magnitude is combined with the sensitivity of the area the risk of impacts with no mitigation applied can be determined. The summary of the risk assessment is presented below in Table 5.3. In summary, the site is considered a **High Risk** site for dust soiling and human health effects during demolition and construction and a **Medium Risk** site during earthworks and **Low Risk** for trackout. The dust risk is used to define the amount of site-specific mitigation that is required. The mitigation is described in the Air Quality and Dust Management Plan appended to this document.

Table 5.3 Dust Risk Summary

Summary	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High Risk	Medium Risk	High Risk	Low Risk
Human Health	High Risk	Medium Risk	High Risk	Negligible

## 5.5 Demolition, Earthworks, Construction and Trackout Dust and Air Quality Mitigation

The air quality and dust management and mitigation measures are proposed in the air quality and dust management plan appended to this document.

## 5.6 Non-Road Mobile Machinery

Non-road Mobile Machinery (NRMM) will comply with the standards set within the GLA's Control of Dust and Emissions During Construction and Demolition SPG. All NRMM of net power 37 kW to 560 kW used on the site of a major development in Greater London must meet Stage IIIB of EU Directive 97/68/EC (Directive 97/68/EC of the European Parliament and of the Council, 1997) and its subsequent amendments as a minimum, from the 1<sup>st</sup> of September 2020. The site is outside of the Central Activity Zone.

## 6 AIR QUALITY NEUTRAL ASSESSMENT

### 6.1 Introduction

The purpose of the air quality neutral assessment is demonstrate that proposed development is compliant with the air quality neutral policy of not exceeding the transport and building emissions minimum benchmarks. The air quality neutral policy benchmarks are provided in the Air Quality Neutral Report<sup>19</sup>.

### 6.2 Transport Emissions Assessment

The Transport Emission Benchmarks (TEB) is calculated using default NO<sub>x</sub> and PM<sub>10</sub> emission factors per square metre or per dwelling. The Air Quality Neutral Report gives a benchmark NO<sub>x</sub> emission rate of 558 g/dwelling/annum and a PM<sub>10</sub> emission rate of 100 g/dwelling/annum in Inner London. For the proposed 51 dwellings at Aspen Court and 39 dwellings at Aspen House this would give benchmark NO<sub>x</sub> transport emissions of 50.22 Kg NO<sub>x</sub> and 9.00Kg for PM<sub>10</sub>.

The proposed development has 2 blue badge parking spaces for the 90 dwellings and MUGA. Given the low number of parking spaces for the number of dwellings the proposed development can be considered as “air quality neutral” for transport emissions.

### 6.3 Buildings Emissions Assessment

The Buildings Emission Benchmark (BEB) is calculated using the Gross Internal Area (GIA) for the land use and multiplied by the default emission factor for the land use. For land use class C3 (Residential) the NO<sub>x</sub> BEB is 26.2 g/m<sup>2</sup> and the GIA of the proposed residential development is around 4000m<sup>2</sup> for Aspen Court and 2500 m<sup>2</sup> for Aspen Villa, giving a GIA of around 6500m<sup>2</sup>. This gives benchmarked NO<sub>x</sub> emissions of 170.3 Kg NO<sub>x</sub>. No assessment of PM<sub>10</sub> is required as the heating and power are from national grid mains electricity supplies. A summary of the dwellings and internal areas is presented in Figure 6.1

The space heating is provided by air source heat pumps and mains electricity supplies are used for water heating. The development can be considered as “air quality neutral” for building emissions.

---

<sup>19</sup> Air Quality Consultants. Air Quality Neutral Planning Support. GLA80371. 2014

Figure 6.1 Schedule of Areas

ASPEN COURT						
SOCIAL RENT						
Drawing Reference	Unit Size	NIA (m <sup>2</sup> )	NdSS (m <sup>2</sup> )	Unit No	Total NIA (m <sup>2</sup> )	Bed Spaces
4500	1b2p	51.1	50	4	204.4	8
4501	1b2p	50.6	50	4	202.4	8
4502	1b2p	50.6	50	4	202.4	8
4503	1b2p	53.7	50	1	53.7	2
4520	2b3p Wheelchair	75.8	61	2	151.6	6
4521	2b4p	77.8	70	8	622.4	32
4522	2b4p	73.7	70	8	589.6	32
4523	2b4p	76.0	70	4	304.0	16
4524	2b4p	76.0	70	4	304.0	16
4525	2b4p	75.0	70	2	150.0	8
4530	2b4p Wheelchair	92.6	70	2	185.2	8
4532	2b3p Wheelchair	72.0	61	1	72.0	3
4540	2b4p Wheelchair	86.7	66	1	86.7	4
4533	3b5p	92.7	66	6	556.2	24
<b>SUB TOT</b>				<b>51</b>	<b>3684.6</b>	<b>181</b>
*Wheelchair Housing				6	(not including plant or cores)	
ASPEN VILLAS						
PRIVATE						
Drawing Reference	Unit Size	NIA (m <sup>2</sup> )	NdSS (m <sup>2</sup> )	Unit No	Total NIA (m <sup>2</sup> )	Bed Spaces
4550	1b2p	50.6	50	10	506.0	20
4551	1b2p	50.7	50	10	507.0	20
4552	1b2p	50.6	50	2	101.2	4
4555	2b4p*Adaptable	75.3	70	4	301.2	16
4560	2b4p	75.3	70	8	602.4	32
4561	2b4p	72.8	70	5	364.0	20
45X1	Plant	87.2	-	-	87.2	/
45X1	Caretakers' facility	15.7	-	-	15.7	/
45X2	Bike Store	28.7	-	-	28.4	/
45X3	Bin Store	28.7	-	-	21.4	/
<b>SUB TOT</b>				<b>39</b>	<b>2381.8</b>	<b>112</b>
*Wheelchair Housing				0	(not incl. plant, internal bike/bin stores, caretakers or cores)	
*Adaptable Housing				4		

## 7 CONCLUSIONS

Anderson Acoustics Ltd was commissioned by Bouygues UK to undertake an air quality assessment for the consented development for the Aspen House site at the Maitland Park Estate, London Borough of Camden. The impact of the development on existing receptors is considered “**Negligible**” and the effect is “**Not Significant**”. Air quality mitigation proposed includes air source heat pumps and mains electricity supplies for space and water heating.

The LAEI modelled NO<sub>2</sub> and PM<sub>10</sub> concentrations for the site indicate that concentrations at the site of the proposed development are well below the annual mean NO<sub>2</sub> and PM<sub>10</sub> objectives for 2020. The effect of the introduction of the new receptors is considered as “**Not Significant**”. The site is therefore considered as having acceptable air quality for residential development. The cumulative effect with other developments is considered as not significant given the distance from busy roads and the phased nature of the development.

The dust risk assessment shows the site to be “**High Risk**” during demolition and “**Medium Risk**” for the earthworks and construction phases. The air quality and dust mitigation measures are presented in the Air Quality and Dust Management Plan.

The air quality neutral assessment indicates the development can be considered as “*air quality neutral*”.



# APPENDIX A - DUST AND AIR QUALITY MANAGEMENT PLAN

## A1- INTRODUCTION

The purpose of this Dust Management Plan (DMP) is to provide Bouygues UK and their subcontractors is to provide the measures for the effective management of dust. Section A2 details Camden's requirements for dust management and mitigation. Section A3 presents the demolition phase methodology and mitigation measures. Section A4 presents the monitoring regime.

## A2- CAMDEN'S REQUIREMENTS FOR DUST MANAGEMENT AND MONITORING

Camden's requirements for management and monitoring of dust and air pollutant emissions are presented in the following documents and these requirements are presented below:

### Camden Minimum Requirements

This document presented Camden's Minimum Requirements:

*"Referring to visible dust, it is imperative to prevent statutory nuisance arising from the demolition, construction works or dusty activities. Therefore a philosophy of the prevention of dust formation in the first place shall be adopted. Dealing with dust should be in the following fashion:*

- 1. Prevention*
- 2. Suppression*
- 3. Containment*

*These three principles are well established and are central to the control strategies to control dust. They follow a hierarchy to control the emissions. and establish the best available techniques are required to control dust emissions. The identified dusty operations shall be recorded. Fugitive dust emissions should be prevented whenever practicable. When this is not practicable emissions should be controlled at source. Examples include correct storage of raw materials, organising the process in such a way that spillage is avoided, and maintaining high standards of internal and external housekeeping. Consideration should be given to the siting of aggregate stockpiles, based upon such factor as the prevailing winds, proximity of site boundary and proximity of neighbours. Minimisation of drop height is very important in stockpiling to reduce wind whipping of particulates. When designing storage bays, internal walls separating storage bays should be at least ½ metre lower than external walls of the bays.*

- Areas where there is vehicular movement should have a consolidated surface which should be kept in good repair;*
- The main principles for preventing dust emissions are containment of dusty processes and suppression of dust using water or proprietary suppressants. Suppression techniques need to be properly designed, used and maintained, in order to be effective. For example, where water is used for dust suppression, processes require an adequate supply of water and all water suppression systems need adequate frost protection;*
- Where there is evidence of airborne dust from the building construction/demolition activities the site, the contractor should make their own inspection and assessment, and where necessary undertake ambient monitoring with the aim of identifying those process operations giving rise to the dust. Once the source of the emission is known, corrective action should be taken without delay;*
- Effective preventative maintenance should be employed on all aspects of the construction/demolition works including all plant, vehicles, buildings and the equipment concerned with the control of emissions to air;*

- *Important management techniques for effective control of emissions include; proper management, supervision and training for process operations; proper use of equipment; effective preventative maintenance on all plant and equipment concerned with the control of emissions to the air; and it is good practice to ensure that spares and consumables are available at short notice in order to rectify breakdowns rapidly. This is important with respect to arrestment plant and other necessary environmental controls. It is useful to have an audited list of essential items”.*

## **Camden Guide for Contractors**

The Camden Guide for Contractors makes the following requirements with regard to dust and air pollutant emissions:

- Before work starts, you must take all necessary precautions to prevent machinery and vehicles from producing smoke and fumes. Petrol and diesel engines used to power equipment and machinery must not produce dark smoke once the running temperature of the engine has been reached, and you must regularly check and maintain them to prevent smoke and fumes.*
- You must not light bonfires on the site at any time. You must spray any rotten timber with a suitable fungicide or insecticide before it is taken off the site in a covered skip or lorry.*
- You must aim to locate haul routes away from sensitive sites such as houses, schools or hospitals.*
- Engines of stationary machinery on or off site, including lorries, must be well maintained and regularly serviced to reduce the amount of visible smoke they produce.*
- Engines must not be left running unnecessarily. Machinery and vehicles must not be parked in a position which could cause a nuisance from exhaust fumes.*
- You must position exhausts at a height to disperse fumes.*
- You must take precautions to prevent stored fuel oil producing fumes for safety and potential nuisance reasons.*
- Contractors must carry out a regular air quality-monitoring programme where there is evidence of volatile or airborne materials and take necessary corrective action.*
- Use alternative fuels in contraction vehicles such as LPG, CNG or bio-methane.*
- Ensure construction vehicles meet the current Euro Standards thereby reducing NO<sub>x</sub> and PM<sub>10</sub> emissions.*
- Use low emission fuels in vehicles and on site power generators. At a minimum you must use ultra low sulphur diesel (ULSD) where practicable. The government has a programme to reduce the sulphur content in red diesel and ULSD is now available from main suppliers when ordered in bulk. You must also consider options such as natural gas or liquid petroleum gas for power generators*
- Fit abatement technology to machinery such diesel particle traps and oxidation catalysts to reduce exhaust emissions.*

### **Crushing Machine Units**

*Mobile crushing units are sometimes used on development sites during the demolition phase to crush and screen minerals, bricks, tiles, concrete and construction materials to a more useful size. The material is then either used on the site or transported off the site to be used in other projects. Without proper controls, this can be an extremely dusty process.*

*Under the Pollution Prevention and Control Regulations 2000, mobile crushing and screening is classified as ‘Part B activity’ for controlling air pollution. Operators of mobile crushing and screening plant must apply to the Council for a Part B Permit and operate in accordance with the best available techniques for controlling particulate matter emissions stipulated in the Permit. A typical Permit will cover the following conditions:*

- Emission limits and controls: You will need to regularly assess the amount of dust that is produced, keep written records and take appropriate and immediate action in circumstances where problems are identified.*
- Process operations: You need to make sure that a suitable water supply is provided to the mobile equipment at all times. It is important that you work with Thames Water well before the machinery is brought onto the site to make sure that the existing water supply is maintained, or to restore a supply which has already been cut.*
- Handling materials: You need to be clear what material you may store in the open. You need to manage these materials, including loading them onto road or rail vehicles for transportation elsewhere.*
- General operations. You need to maintain and use equipment properly, and train staff with particular emphasis on start-up, shutdown and unexpected conditions.*

The Permit is specific to the machinery (identifiable by the manufacturer's serial number) and cannot be transferred to another piece of kit.

If you want to set up a mobile crushing unit on a site within the borough, you must contact the Air Quality Policy Officer in writing and send copies of the Permit issued by your residence local authority at least 48 hours before you bring the machinery onto the site. This will allow Camden's local officers to work with the local authority which has issued the Permit in relation to the process operation. We will not hesitate to take formal action if you fail to follow good practice in relation to any aspect of the Permit.

Mud on roads is considered to be one of the main environmental nuisance problems arising from demolition and construction sites. Dust carried on wheels and the body of road vehicles can deposit on the road and once re-suspended contribute to poor air quality. The Council can take enforcement action in this respect. You must thus put in place strict measures to reduce this problem. This will include, but is not necessary limited to the following:

- a. You must ensure that the site, footpaths and the surrounding area affected by the work are clear from mud, spillage, litter and any unnecessary rubbish.
- b. You must provide facilities for washing wheels to prevent dirt and dust from being spread onto roads near the site. It is important to locate these facilities away from sensitive local sites.
- c. You must provide easy-to-clean hardstandings for vehicles that enter and leave the site, and the developer must provide suitable wheel-washing and vehicle-spraying equipment at site entrances and exits. Washing and spraying must be carried out in an area with suitable drainage to avoid creating large amounts of mud. The Culture and Environment Directorate can provide street cleaning and power-washing services at competitive rates.
- d. You must also meet the requirements relating to dust".

#### **Camden Air Quality Assessment Guidance**

The Camden Air Quality Assessment Guidance makes requirements with regard to the monitoring regime.

*"We may require monitoring, before and during the construction and demolition phases, dependent upon the scale of the proposed development. Medium risk schemes usually require a minimum of two real-time monitors, while high risk schemes usually require four. The choice of locations and positions must clearly be demonstrated on the basis of identified nearby receptors, the prevailing atmospheric conditions, off-site emission sources, local topography, and the relevant dust-generating site activities. Baseline monitoring would normally be required for at least three months (ideally 6-12 months) prior to commencement, and the results used to inform interpretation of construction phase monitoring and any actions required to be taken to avoid exceedances".*

#### **Shadow s.61 agreement**

The shadow s.61 agreement first schedule contains legally agreed requirements to control and minimise NO<sub>x</sub>, PM<sub>10</sub>,

*"A method statement shall be prepared and adopted as part of the Construction Management Plan to minimise gaseous and particulate matter emissions generated during the Construction Phase. The method statement shall identify the specific measures which will be implemented to control air pollution emissions during each of the following stages of the Construction Phase: (a) demolition; (b) ground breaking; and (c) construction/build.*

*The Construction Phase shall be carried out in accordance with the Best Practise Guidance Note "Control of dust and emissions from construction and demolition" published by London Councils, 2006. The risk rating of the site shall be defined in the method statement and determined using the risk assessment methodology in the Best Practise Guidance. Techniques to control dust from construction activities and emissions from vehicles and plant, and undertake air quality monitoring, shall conform to the 'medium' or 'high' risk categories outlined in the Best Practice Guidance.*

The following best practise measures shall be included as a minimum in the method statement:-

#### *A - Techniques to control PM<sub>10</sub> and NO<sub>x</sub> emissions from vehicles and plant*

- a) *Low emission plant fitted with catalysts, diesel particulate filters or similar devices shall be used;*

- b) *Plant shall be well maintained, with routine servicing of plant and non-road mobile machinery (NRMM) to be completed in accordance with the manufacturers recommendations;*
- c) *Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment;*
- d) *Non-road mobile machinery (NRMM) shall use ultra low sulphur tax-exempt diesel and be fitted with appropriate exhaust after-treatment such as catalysts, diesel particulate filters as stated on the approved list managed by the Energy Saving Trust. Details of the plant and control equipment shall be included in the method statement.*
- e) *All construction vehicles shall comply with the Euro 4 emissions standard and where possible use low emission fuels and alternative technology.*
- f) *Plant and vehicles shall be located way from the closest receptors or house in closed environments where possible.*

**B - Techniques to control dust emissions from construction and demolition**

- a) *Keep site fencing, barriers and scaffolding clean using wet methods;*
- b) *Buildings to be demolished shall be wrapped*
- c) *Provide easily cleaned hard standing for vehicles and clean using wet sweeping methods;*
- d) *Provide the use of wheel-wash facilities near the site exit. Fit wheel-washes with rumble grids to dislodge accumulated dust and mud prior to leaving the site to avoid carrying dust or mud off the site;*
- e) *Inspect internal haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable;*
- f) *Routinely clean the Public Highways and accesses using wet sweeping methods especially during dry periods;*
- g) *Impose and signpost maximum speed limits of 10 mph on surfaced haul routes and work areas within the Site;*
- h) *Ensure all vehicles carrying loose or potentially dusty material to or from the site are fully sheeted;*
- i) *Store materials with the potential to produce dust away from site boundaries;*
- j) *Sheet, seal or damp down stockpiles of excavated material held on site;*
- k) *Any loose materials brought onto the site shall be protected by appropriate covering*
- l) *The site shall be dampened down during the working day and again at the end of the day to reduce the amount that is re-suspended dust.*
- m) *Ensure water suppression is used during demolition operations;*
- n) *Ensure mobile crushing and screening plant and cement batching plant which are regulated under the Local Air Pollution Prevention and Control regime operate in compliance with a Part B Permit. This shall be submitted to the local authority prior to operation.*
- o) *Site personnel shall be trained in dust mitigation and a manager shall be present for managing dust on site.*

**C - Air Quality Monitoring**

- a) *Throughout the Construction Phase continuous particulate matter (PM10) monitoring shall be undertaken. Two instruments will be deployed at the site boundary in a transect orientated to the prevailing wind direction, with a third monitor located at the nearest sensitive receptor. One monitor shall be co-located with an anemometer.*
- b) *Adequate quality assurance/quality control procedures shall be in place including monitor maintenance and calibration as well and data checking. PM<sub>10</sub> data shall be collected automatically on an hour basis.*
- c) *A trigger action level for PM<sub>10</sub> concentrations of 200µg.m<sup>-3</sup> (15 minute average) shall be used to identify incidences of elevated dust emissions at the site boundary. The development site shall comply with the trigger action throughout the demolition and construction phases.*
- d) *An on-site alert system (email or SMS) shall be in place to notify appropriate staff that the trigger action level has been reached. Immediate and appropriate measures can be put in place to rectify abnormal particulate emissions. A procedure shall be established to deal with abnormal dust emissions. All incidences of abnormal particulate emissions leading to breaches of the trigger action level, shall be documented in the site log book (date and time), with details of the action take to remediate dust emissions.*
- e) *An e-mail specifying details of any alert to be sent out to the Council's air quality officer as soon as practicable following any breach of the site trigger action level.*

- f) *An electronic report shall be submitted to the Council's air quality officer every three months summarising the following information from each monitoring site – 24 hour average PM10 concentration, date and time of any breach of the trigger action level with the 15 minute mean concentration, prevailing wind direction and details of the cause of elevated dust emissions and mitigation measures.*
- g) *The Council shall be notified of any changes to the location and operation of dust PM10 monitoring instrumentation.*
- h) *A 24-hour phone hotline shall be set up so that residents can complain about high dust or PM10 levels directly to the developer.*

*The following items shall be included in the method statement:*

- a) *A specific timetable identifying the start and finish dates of each phase, including dust generating activities and PM<sub>10</sub> monitoring.*
- b) *An inventory of stationary and fugitive dust, PM<sub>10</sub> and NO<sub>x</sub> emission sources with an explanation of how these will be mitigated in accordance with the London Council's Best Practise Guidance.*
- c) *A map identifying the location of dust generating activities, plant equipment associated with emissions to air and PM<sub>10</sub> monitors.*
- d) *An air quality monitoring protocol prepared in accordance with the requirements of section A3".*

## A-3 DEMOLITION PHASE METHODOLOGY AND MITIGATION MEASURES

### Demolition Phase Methodology

The demolition methodology has been developed to minimise the emissions of dust and air pollutants. The demolition methodology is described below. It is noted that the construction methodology will be subject to a separate dust management plan.

The following activities are identified in the Demolition Management Plan<sup>20</sup>:

- i. Investigation works to rear wall of recreation building
- ii. Asbestos removal
- iii. Soft strip
- iv. Scaffolding erection
- v. Structural demolition of garages/stores
- vi. High reach demolition of apartment block
- vii. Removal of all ground slabs and foundations
- viii. Crushing all concrete & masonry to a certified 6F2 aggregate
- ix. Reduce level dig
- x. Installation of a pile mat across the site

#### Site-setup, hoarding and scaffolding

Deliveries to site will be made through the existing roads and hard standing. The stores and site layout is presented in Figure A.1. The cabin will be lifted into position using hydraulic lifting equipment. Site hoarding will be erected around the perimeter of the site. Scaffolding will also be erected around Aspen House with Monarflex sheeting, to contain dust. The scaffolding will be struck down level by level as the demolition progresses.

#### Asbestos removal and soft strip

The asbestos will be removed by asbestos removal operatives. Soft strip of doors, partition walls, windows, furnishings and other materials will take place internally within the building and any biological debris bagged and removed.

#### Demolitions

The demolition of Aspen House will be commenced using an excavator with a pulveriser\shear attachment to remove the roof. Once the roof has been removed the brick walls will be removed and the scaffold will be struck down to the level of the brick walls.

Once the brick arisings from its demolition have been removed the demolition of the reinforced concrete areas will take place. The reinforced concrete will be munched out using a pulveriser attachment. The first element to be munched out will be the roof slab. Once a section has been removed arisings will be removed as produced to ensure the floor below to ensure it is not overloaded. Once the first floor has been opened the excavator will access the lower ground floor and the arisings from the munching process will be used to create a pad which the excavator will work from. Where the basement slab needs to be removed drill and burst or coring will be used to break up the basement slab. Arisings will be loaded from the excavator straight to the stockpile or an attendant dumper will be used for the movement.

#### Concrete Crusher – High Risk Activity

<sup>20</sup> Downwell Group. Demolition Management Plan.2019.

On site crushing will take place as all of the concrete and masonry created during the demolition is to remain on site. Prior to the crusher coming to site the LBC will be informed and an environmental permit for the crusher submitted to them.

The crusher is to be positioned as centrally to the site as possible and away from any residential boundaries and taking into account the prevailing wind direction (i.e. from the southwest). An adequate water supply will be made available in advance of the start of the crushing. It must be adequate enough to be fed into the crusher and to dampen both the stockpile of material and the finished aggregate as it is being moved about.

If water spray is insufficient the area may still be dusty and if this is the case a dust suppression unit or fog cannon will be used to ensure dust concentrations are below the site action levels.

An excavator will load and unload the material from stockpile. The stockpiles will be regularly damped down and stockpiles that are not being actively used will be covered to prevent wind whipping of dust.

### Reduced Level Dig

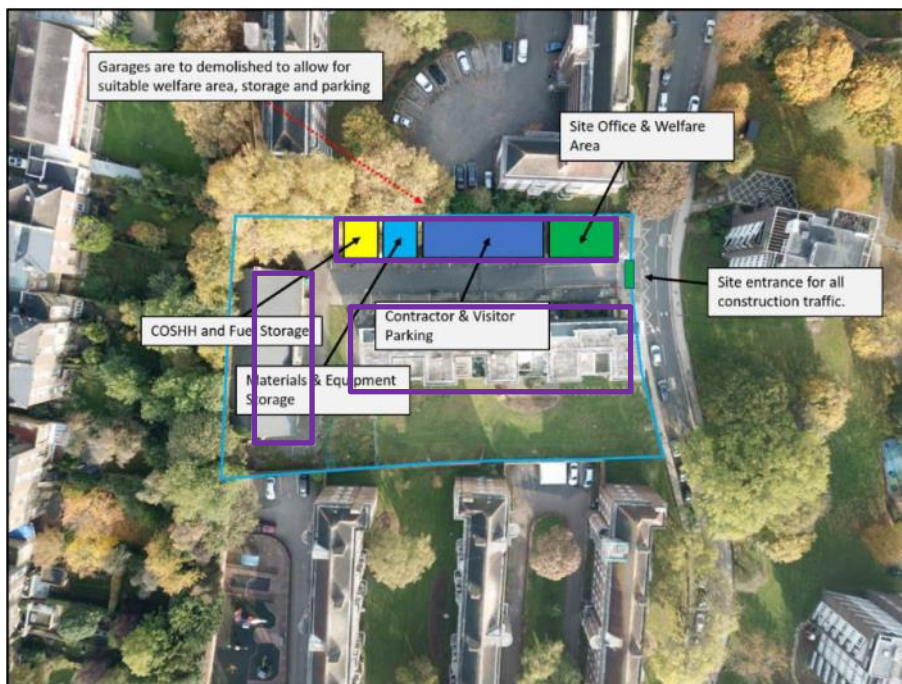
Following demolition and removal of slabs reduced level dig using an excavator to excavate material. The material will be transported to the stockpile by the excavator or loaded into an attendant dumper.


### Installation of Piling Mat

Following the reduced level dig the crushed demolition arisings from the stockpile will be used to form the piling mat. The material will be loaded from the stockpile into a dumper and tipped into the reduced level dig and levelled by an excavator.

The proposed site layout is shown in Figure A.1.

Figure A.1 Site Locations



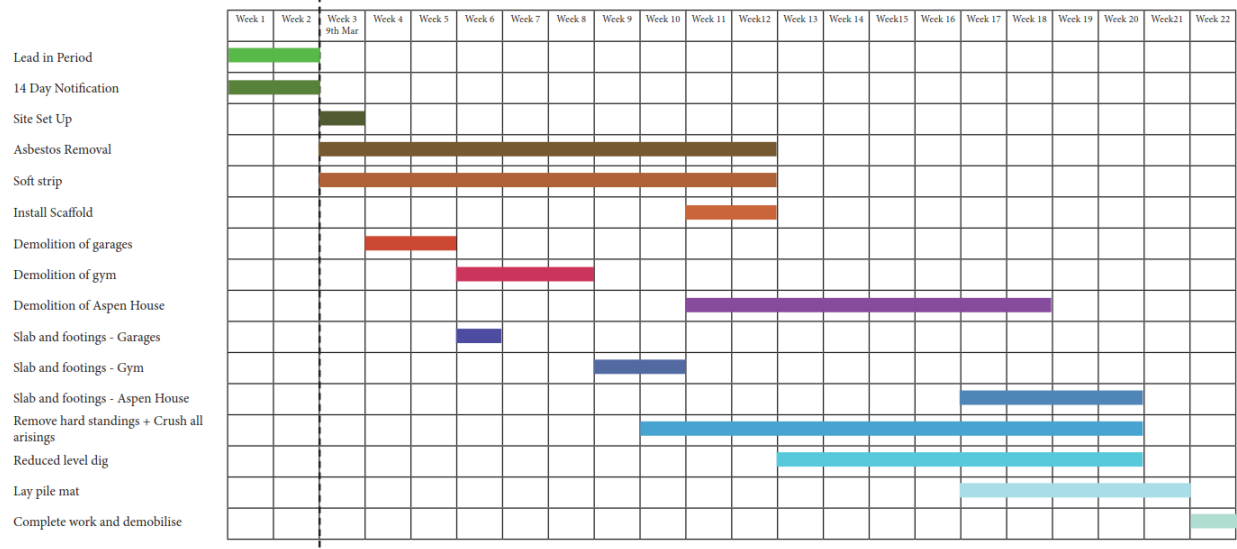
Key:  Demolition areas

## A4 - PROGRAMME

An indicative programme for the duration of the works is presented in Figure A.2. Demolition works will be occurring during the summer months and during periods of dry and/or windy weather the dust risk is greater and the measures detailed for dry and windy weather are to be implemented.

Figure A.2 Provisional Programme of Demolition Phase Works

Maitland Park Provisional Programme - week commencing 9th March



## A5 - WORKING HOURS

The working hours for the Aspen Villa worksite are the standard construction working hours in Camden:

- Monday – Friday: 08:00 – 18:00
- Saturday: 08:00 – 13:00
- No working on Sundays or Public Holidays

## A6 – DEMOLITION DUST EMISSION SOURCES

The demolition dust and particulate emission sources include:

- Mechanical demolition;
- Movement of arisings;
- Crushing of brick and concrete arisings;
- Wind whipping of stockpiles;
- Road vehicles, NRMM and static plant;
- Trackout

## A7 - DEMOLITION DUST MITIGATION MEASURES

The requirements of the Camden guidance in section A-2 will be followed along with the mitigation measures detailed in the GLA Control of Dust and Emissions From Construction and Demolition guidance. This includes:

- D1. Develop and implement a stakeholder communications plan that includes community engagement before work commences on site;



- D2. Develop a dust management plan. (This appendix);
- D3. Display the name and contact details of person(s) accountable for air quality pollutant emissions and dust issues on the site boundary;
- D4. Display the head or regional office contact information;
- D5. Record and respond to all dust and air quality pollutant emissions complaints;
- D6. Make a complaints log available to the local authority when asked;
- D7. Carry out regular site inspections to monitor compliance with air quality and dust control procedures, record inspection results, and make an inspection log available to the local authority when asked;
- D8. Regular dust soiling checks of buildings within 100m of site boundary and cleaning to be provided if necessary;
- D9. Increased frequency of site inspections by those accountable for dust and air quality pollutant emissions issues when activities with a high potential to produce dust and emissions are being carried out, and during prolonged dry or windy conditions;
- D10. Record any exceptional incidents that cause dust and air quality pollutant emissions, either on or off the site, and the action taken to resolve the situation is recorded in the log book;
- D11. Plan site layout: machinery and dust causing activities should be located away from receptors;
- D12. Erect solid screens or barriers around dust activities or the site boundary that are, at least, as high as any stockpiles on site;
- D13. Fully enclosure site or specific operations where there is a high potential for dust production and the site is active for an extensive period – Enclosure of Apsen House with Monarflex sheeting to contain dust during demolition;
- D14. Avoid site runoff of water or mud;
- D15. Keep site fencing, barriers and scaffolding clean using wet methods;
- D16. Cover, seed or fence stockpiles to prevent wind whipping.
- D17. Carry out regular dust soiling checks of buildings within 100m of site boundary and cleaning to be provided if necessary;
- D18. Agreed monitoring locations with LBC;
- D19. Where possible, commence baseline monitoring at least three months before demolition phase begins;
- D20. Four real-time dust and air quality pollutant monitors across the site and ensure they are checked regularly;
- D21. Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone;
- D22. All NRMM should meet Stage IIIB emission criteria. A schedule of NRMM will be maintained on site and issued to LBC Environmental Officers at regular Intervals or uploaded onto the NRMM register. Diesel sources will be recorded on the same document;
- D23. Non-road mobile machinery (NRMM) used on site will operate ultra-low sulphur diesel (meeting the specification within EN590:201421);
- D24. Ensure all vehicles switch off engines when stationary – no idling vehicles;
- D25. Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where possible;
- D26. Impose and signpost a maximum-speed-limit of 10mph on surfaced haul routes and work areas;
- D27. Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials;
- D28. Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing);
- D29. Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust);
- D30. Bagging and removal of any biological debris or damp down of material prior to demolition;

---

<sup>21</sup> European Committee for Standardisation. EN590:2014. Automotive fuels diesel requirements and test methods. 2014.

- D31. No blasting, use of mechanical demolition instead;
- D32. Monarflex sheeting will be used on the buildings to be demolished, to contain dust;
- D33. Use of fog cannon/dust suppression unit during the demolition phase, in particular during concrete crushing;
- D34. Damping down of surfaces, particularly during dry and windy weather;
- D35. Drop heights to be minimised wherever possible;
- D36. No burning of waste wood or other materials on-site;
- D37. A suitable method for immediate clean-up of spillages of dusty materials in place;
- D38. All loads entering and leaving site to be covered where appropriate;
- D39. Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems;
- D40. Use wet sweeping (not dry);
- D41. Ensure an adequate water supply on the site for effective dust/particulate matter mitigation (using recycled water where possible);
- D42. Use enclosed chutes, conveyors and covered skips;
- D43. Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate;
- D44. Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods;
- D45. Reuse and recycle waste to reduce dust from waste materials; and
- D46. Effective cleaning methods and retention of hard surfacing for site haulage route.

## A-8 GLA HIGHLY RECOMMENDED MEASURES FOR EACH PHASE

Question 37 of the CMP requires confirmation that the GLA ‘Highly Recommended’ measures for each activity phase are followed, by completion of the GLA checklist. The specific measures for demolition and Earthworks provided below in Table 8.1 and covers the measures applicable for the risk of the activity phase.

Table A.1 GLA Activity Specific Mitigation Measures for the Demolition Phase (and Trackout Associated with the Demolition Phase)

Activity	Specific mitigation measures
Demolition	<p>Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).</p> <p>Ensure water suppression is used during demolition operations.</p> <p>Avoid explosive blasting, using appropriate manual or mechanical alternatives.</p> <p>Bag and remove any biological debris or damp down such material before demolition.</p>
Earthworks	<p>Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces.</p> <p>Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil.</p> <p>Only remove secure covers in small areas during work and not all at once.</p>
Trackout	<p>Regularly use a water-assisted dust sweeper on the access and local roads, as necessary, to remove any material tracked out of the site.</p> <p>Avoid dry sweeping of large areas</p> <p>Ensure vehicles entering and leaving sites are securely covered to prevent escape of materials during transport.</p> <p>Record all inspections of haul routes and any subsequent action in a site log book.</p>

Retain hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems and regularly cleaned. Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

## A-9 MANAGEMENT PROCEDURE AND MONITORING REGIME

The approach to be undertaken by the site management to ensure that emissions of dust, air pollutant emissions and fumes are controlled and monitored and that any complaints are adequately addressed is .

### On-site Management

The site manager (or his designated delegate) will be responsible for ensuring the measures and principles of this management plan and the DMP are followed, in particular the mitigation measures detailed in the previous section.

It is noted that the design and construction methodology is not yet finalised and the construction methodology will be finalised at a later date and the dust management plan updated for the construction phase CMP.

The measures to control dust and air pollutant emissions will be communicated to all site operatives through the site induction, start of shift briefings and tool box talks. All site operatives will be trained to ensure that mitigation measures and best practice are implemented at all times, and to show due consideration to the sensitive receptors.

Given the close proximity of sensitive receptors to the works, the process of public liaison and stakeholder consultation will be maintained throughout the demolition and construction process. The consultation will include briefing on site activities, mitigation measures and site constraints.

### Monitoring

Bouygues UK have put in place dust monitoring regime throughout the demolition works. The site has been identified as a high risk site as a result of the on-site crushing of concrete and brick. Four monitors have been installed in line with Camden's requirements for a high risk site.

The monitoring regime of four particulate monitors on site transects will help the site management keep within the dust site action levels. The monitoring systems proposed are "Live" systems that will issue alerts when trigger levels are exceeded to help the site manager avoid ongoing exceedances of trigger levels. The monitors will require a continuous power supply in order for the heated inlet to work effectively. One dust monitor will be collocated with an anemometer in order for the effect of the wind direction and speed to be considered when interpreting the measured particulate concentrations

Continuous monitoring will be undertaken at the locations listed below in Table A.2 and shown in Figure A.2 and reported on a monthly basis. The monitoring locations and heights have been agreed with LBC.

LBC have communicated the following requirements:

- The monitors are located in a clear, unobstructed position, and some metres away from any large structures (such as walls of buildings) that might interrupt airflow; immediately above should be open to the sky (free in an arc of at least 270°), with no overhanging trees or other structures;
- equipment must be MCERTS indicative for PM<sub>10</sub> as a minimum;
- Site action levels set at 250 µg m<sup>-3</sup> as a 15-minute mean or 190 as a one-hour average for concentrations of PM<sub>10</sub> (after correction for the volatile component of PM<sub>10</sub>) is suggested. We are happy with either but have a slight preference for the 190 as a one hour average.

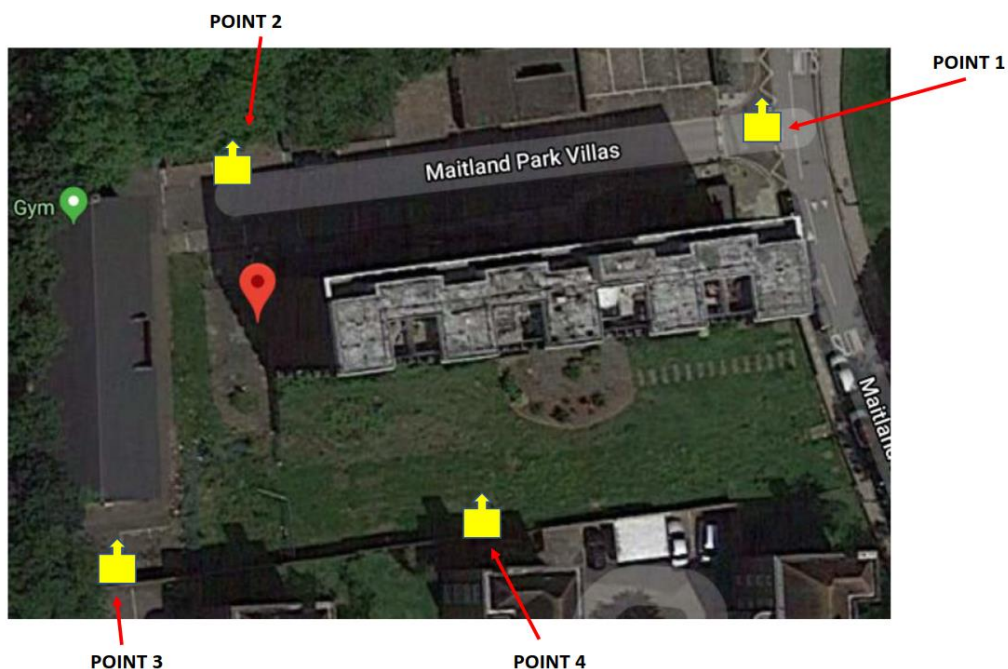
- Alert emails for the stated trigger level (above) should be sent automatically to [airquality@camden.gov.uk](mailto:airquality@camden.gov.uk);
- One dust monitor to be collocated with an anemometer;
- 150  $\mu\text{g m}^{-3}$  lower alert level for the contractor or developer that action may need to be taken.

Table A.2 Monitoring Location Details

Monitor ID	Representative Sensitive Receptors	Receptor Type	Monitor Type	Monitoring Position Description
D1 (Point 1)	Whitebeam House Hornbeam House	Residential (dust soiling and human health)	Dust/PM <sub>10</sub>	Monitor location on site hoarding near entrance gate. Currently the sampling inlet is not at the required height to give a 270° arc and will need to be raised.
D2 (Point 2)	Alder House Park Hill Road	Residential (dust soiling and human health)		Monitor location on site hoarding near boundary with Park Hill Road. Currently the sampling inlet is not at the required height to give a 270° arc and will need to be raised. The overhanging tree branches in the photograph have been removed.
D3 (Point 3)	Oak House Park Hill Road The Village School	Residential (dust soiling and human health) School		Monitor location on boundary wall with Oak House near Park Hill Road. Currently the sampling inlet is not at the required height to give a 270° arc and will need to be raised.
D4 (Point 4)	Chesnut House Beech House	Residential (dust soiling and human health)		Monitor location on boundary wall with Chesnut House. Currently the sampling inlet is not at the required height to give a 270° arc and will need to be raised.

The monitoring locations are shown in Figure A.3 and photographs of the monitors in situ shown in Appendix B. Currently the sampling inlet is not at the required height and will need to be raised.

Figure A.3 Monitoring Locations



The First Schedule section C of the s.106 agreement<sup>22</sup> for the proposed development includes the legal agreement of three PM<sub>10</sub> monitoring systems (one with anemometer) and a trigger level of 200 µgm<sup>-3</sup>. Daily (Monday to Friday) remote system checks will be made on the monitoring equipment to check status and that the equipment is functioning properly.

The monitoring locations provide coverage of the sensitive receptors around the site. The monitoring regime proposed is subject to agreement with LBC. On-going review of monitoring locations will be undertaken throughout the duration of the project in response to periods of intense work or following receipt of valid concerns raised by nearby sensitive receptors. The demolition dust monitoring will continue through to completion of demolition works.

Visual inspection of dust emission and soiling of dust soiling sensitive receptors within 100 metres will be conducted on a daily basis and more frequently during periods of dry and windy weather. The findings of the visual inspections for soiling and dust emission will also be logged and reported to LBC.

### Site Action Levels and Alerts

To evaluate the particulate concentrations and the adherence to best practice, site action levels are proposed to provide notification that action may be required and investigation and actions followed as identified below. When a site action level is exceeded an email alert and/or text message will be sent.

The proposed site action levels are presented in A.3 The site action levels will be agreed with LBC and reviewed periodically to help ensure the remain effective.

Volatile element correction is not proposed to be conducted as brick and concrete do not have a high volatile element component.

Table A.3 Site Action Levels

Dust Monitor	Site Action Level	
	Particulates	Amber
Red		15-minute PM <sub>10</sub> concentration of 250 µgm <sup>-3</sup> 1-hour PM <sub>10</sub> concentration of 190 µgm <sup>-3</sup>

When an alert is received the following actions will be undertaken:

- i. The site manager will identify the activity considered responsible for the exceedance;
- ii. Amber alerts will be investigated by the site manager who will note sources of emission that could be responsible for the alert, review BPM associated with that activity and source and consider whether working methods need to be adapted to avoid exceedance of a red alert;
- iii. The site manager will assess whether works can continue or if alternative methods or additional mitigation is required;
- iv. Where a red alert is received and caused by site activity the site manager will suspend the relevant activity whilst alternative methodologies or additional mitigation measures are considered and, where practicable, adopted; and
- v. When a red alert is received the details of the exceedance, the source of the exceedance and the remedial actions undertaken will be logged and reported to LBC.

<sup>22</sup> Agreement relating to relating to land bounded by Grafton Terrace, Maitland Park Villas and Maitland Park and land adjacent to Maitland Park Villas pursuant to Section 106 of the Town and Country Planning Act 1990 (as amended) and Section 278 of the Highways Act 1980.

## Reporting

Monitoring data will be available in an online system with stakeholder access to allow inspection of the data. The monitoring data will also be presented in a monthly report and include assessment against the site action levels. Validation of data will also be undertaken in the monthly reporting and anomalous measurements (such as insufficient power to the heated inlet) identified. Where site action levels have been exceeded site commentary will be provided on the works undertaken and the causes of exceedances and actions taken to prevent recurrence. A copy of the monthly monitoring reports will be issued to LBC air quality officers using the [airquality@camden.gov.uk](mailto:airquality@camden.gov.uk) email address.

LBC have communicated the following requirements (by email) for the monthly monitoring reporting:

- Details of the monitoring equipment used and dates of most recent servicing and calibration;
- Site plan of the monitoring locations and recent photographs of the monitors on-site in their current locations (during that monitoring period);
- PM<sub>10</sub> trigger levels used (and trigger levels for any other pollutants monitored);
- Summary table of exceedances of these trigger levels during the monitoring period;
- Average concentrations of PM<sub>10</sub> during the monitoring period, at each of the monitoring locations;
- Graphs of PM<sub>10</sub> concentrations during the monitoring period;
- Valid data capture during the monitoring period;
- Details of the works being undertaken on-site during the monitoring period (and especially if there have been any exceedances of the trigger levels), and
- Dust mitigation measures used for preventative and reactive dust mitigation

## Public Liaison

Proactive communication is required to inform neighbours and third parties who have interests in the project's progress and issues that need to be overcome. Community liaison measures will include:

- Community meetings on an at least quarterly basis. The frequency of the meetings will be increased where necessary;
- A monthly newsletter of work progress will be issued and include lookaheads of upcoming works and disruption that may be caused and mitigation measures put in place to minimise disturbance;
- The complaints and emergencies procedure will be issued to the local community and includes details of contact names and numbers; and
- Notification of any overruns.

## Complaints Procedure

All dust and fumes complaints will be investigated by the site manager. When a complaint is received outside of site hours the complaint will be investigated the following working day unless the complaint requires immediate response such as noise from an on-site alarm. The site-security will be briefed to respond to such issues which require immediate action.

On receipt of a complaint the site manager will perform an initial investigation to determine if the complaint is valid and check whether the dust and air quality management plan is being followed and assess a suitable remedial action. The details of the complaint and remedial actions taken will be logged and made available to LBC. To help prevent recurrence the corrective actions taken may be incorporated into the management plan. The complaint investigation may include interrogation of the monitoring data and in the event of ongoing complaints a dust and emissions audit may be conducted.

# APPENDIX B- MONITORING LOCATION PHOTOGRAPHS

Point 1/D1 Monitoring Location



Point 2/D2 Monitoring Location



Note: Overhanging trees have been removed from this location.



Point 3/D3 Monitoring Location



Point 4/D4 Monitoring Location

