

# **AIR QUALITY ASSESSMENT**

39b Consort Road, SE15 2PR

Produced by XCO2 for Bluecroft Peckham Ltd

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# AIR QUALITY ASSESSMENT

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### EXECUTIVE SUMMARY

An assessment has been undertaken to evaluate whether local air quality will pose a constraint to the construction of eight new residential dwellings and 150m<sup>2</sup> office space at Consort Road, Southwark.

Due to the small scale of the proposed development, impacts on local air quality arising during the construction and operational phases are considered to be negligible. The assessment has therefore focussed on a review of existing air quality to determine likely concentrations of NO<sub>2</sub> and PM<sub>10</sub> at the site.

It is considered that there is a risk that the long-term air quality standard for NO<sub>2</sub> will be exceeded at the proposed residential dwellings, therefore mechanical ventilation is recommended to protect future occupants.

Based on the results of the assessment and assuming the recommended mitigation measures are incorporated into the design of the development, it is considered that air quality would not pose a constraint to the development of the site as proposed.

## INTRODUCTION

The proposed scheme is a minor development consisting of eight residential dwellings and 150 m<sup>2</sup> office (B1) space. The location and proposed layout of the development site is presented in Figure 1.

The site falls within the London Borough of Southwark (LBS) Air Quality Management Area (AQMA), which was designated in 2003 due to measured exceedances of the short and long-term air quality objectives for nitrogen dioxide (NO<sub>2</sub>) and particulate matter (as PM<sub>10</sub>). The primary source of emissions of these pollutants in the borough is road traffic.

Due to the small scale of the proposed development, it is considered that the implementation of best practice dust control during the construction period will ensure that there are no significant impacts at neighbouring dwellings. A detailed assessment of construction dust impacts has therefore not been undertaken as part of the assessment.

The proposed development will be car-free, however a review of existing air quality in the area has been undertaken to determine whether the site is suitable for residential and office use, as proposed.

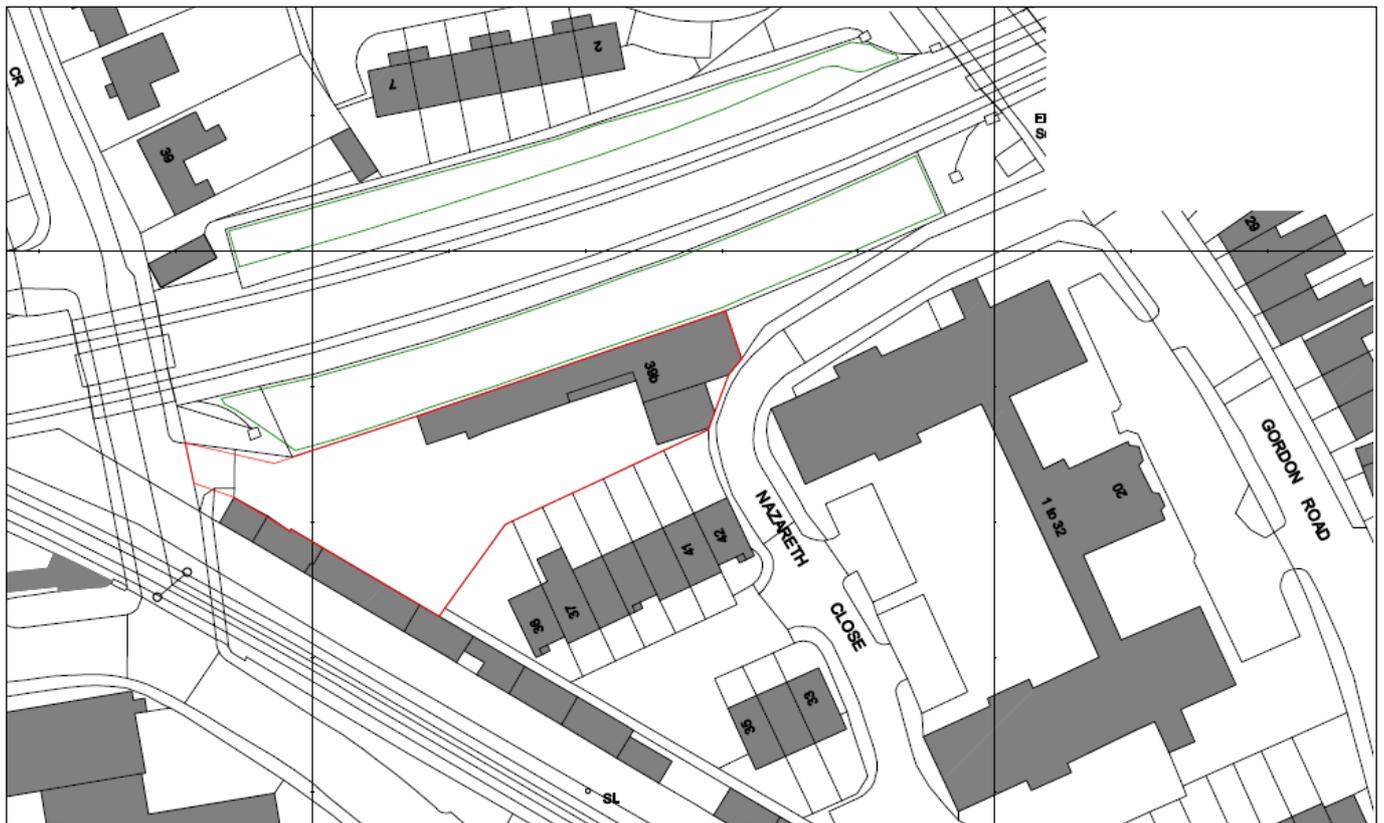


Figure 1: Site Location

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Figure 2: Ground-floor Layout

## POLICY CONTEXT

An overview of the relevant policy drivers for the assessment is provided in the following section.

## EUROPEAN LEGISLATION

Within the European Union, ambient air quality is currently regulated through the Ambient Air Quality Directive 2008/50/EC<sup>1</sup> and the Fourth Daughter Directive 2004/107/EC<sup>2</sup>. These directives set limit values and target values for ambient pollutant concentrations. The limit values are legally binding and must not be exceeded, whereas the target values are to be attained where it is cost-effective to do so.

The Ambient Air Quality Directive provides limit values for sulphur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), benzene (C<sub>6</sub>H<sub>6</sub>), carbon monoxide (CO), lead (Pb) and particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>)<sup>3</sup>. The Fourth Daughter Directive provides target values for arsenic (As), cadmium (Cd), nickel (Ni), benzo(a)pyrene (B(a)P), mercury (Hg) and polycyclic aromatic hydrocarbons (PAH)<sup>4</sup>.

The EU limit values have been adopted into UK law via the Air Quality Standards Regulations 2010<sup>5</sup>.

In the context of the proposed development, the primary pollutants of concern are NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> from traffic on roads close to the site. A summary of the European limit values for the protection of human health for these pollutants is presented in Table 1.

Table 1: European Limit Values for the Protection of Human Health

Pollutant	Averaging Period	Limit Value (µg/m <sup>3</sup> )	Comments
NO <sub>2</sub>	1-hour	200	Not to be exceeded more than 18 times per calendar year (equivalent to the 99.8 <sup>th</sup> percentile of 1-hour means)
	Calendar year	40	-
PM <sub>10</sub>	24-hour	50	Not to be exceeded more than 35 times per year (equivalent to the 90.4 <sup>th</sup> percentile of 24-hour means)
	Calendar Year	40	-
PM <sub>2.5</sub>	Calendar Year	25	Stage 1 LV (to be met by 01/01/15)
	Calendar Year	20	Stage 2 LV (to be met by 01/01/20)

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1 Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe.

2 Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air.

3 Particulate matter with an aerodynamic diameter below 10 µm and below 2.5 µm.

4 Polycyclic aromatic hydrocarbons other than benzo(a)pyrene.

5 The Air Quality Standards Regulations 2010, Statutory Instrument 2010 No. 1001, Environmental Protection.

### NATIONAL LEGISLATION

#### ***THE AIR QUALITY STRATEGY FOR ENGLAND, SCOTLAND, WALES AND NORTHERN IRELAND***

The Air Quality Strategy for England, Wales and Northern Ireland<sup>6</sup> was published in 2007 and sets out policy targets (objectives) for SO<sub>2</sub>, NO<sub>2</sub>, C<sub>6</sub>H<sub>6</sub>, CO, Pb, PM<sub>10</sub>, PM<sub>2.5</sub>, 1,3-butadiene (C<sub>4</sub>H<sub>6</sub>) and PAH. These objectives are generally in line with those set by the European Directives, although more stringent particulate and benzene objectives apply in Scotland (and in Northern Ireland for benzene).

The Air Quality Objectives (AQO) for NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> in England do not differ from those presented in Table 1.

#### ***LOCAL AIR QUALITY MANAGEMENT***

The framework for Local Air Quality Management (LAQM) in the UK was introduced by the Environment Act 1995<sup>7</sup>. Local Authorities are required to regularly review and assess air quality to establish whether there are any locations where pollutant concentrations exceed the relevant air quality objectives or EU limit values. Where an exceedance is identified the local authority is obliged to declare an Air Quality Management Area (AQMA) and prepare an Action Plan setting out measures to improve air quality and achieve compliance with the objective(s).

#### ***THE NATIONAL PLANNING POLICY FRAMEWORK***

The National Planning Policy Framework (NPPF)<sup>8</sup> sets out the Government's policies for planning and how these should be applied. With regard to air quality, the NPPF states that local "Planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should "ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan."

The National Planning Policy Guidance (NPPG)<sup>9</sup>, published in March 2014, outlines the principles upon which the planning process can take account of air quality impacts associated with new developments. It outlines the role of Local Plans in promoting sustainability and providing limitations on development in areas of poor air quality. An emphasis is placed on consultation with the planning authority to determine whether there are any local issues with the potential to affect the scope of an air quality assessment. Typical air quality mitigation measures are outlined highlighting the use of planning conditions and funding obligations to offset any significant impacts.

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6 The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Department for Environment, Food and Rural Affairs in partnership with the Scottish Executive, Welsh Assembly Government and Department of the Environment Northern Ireland, July 2007.

7 Part IV of the Environment Act 1995

8 National Planning Policy Framework, Department for Communities and Local Government, March 2012.

9 <http://planningguidance.planningportal.gov.uk/blog/guidance/air-quality/>

## REGIONAL POLICY

### *THE LONDON PLAN*

Policy 7.14 of the London Plan<sup>10</sup> sets out the Mayor of London's commitment to improving air quality and public health. It states that development proposals should 'minimise increased exposure to poor air quality' by:

- Promoting sustainable transport;
- Promoting sustainable design and construction;
- Being air quality neutral, particularly in AQMAs;
- Ensuring that where a potential impact on air quality is identified, appropriate mitigation measures are proposed which demonstrate a clear benefit to local air quality; and
- Providing detailed air quality assessments for non-transport sources such as on site biomass boilers and combined heat and power (CHP) plants to assess the potential impact of emissions on air quality.

### *THE MAYOR OF LONDON'S AIR QUALITY STRATEGY (2010)*

The Mayor of London's Air Quality Strategy<sup>11</sup> outlines the Mayor's commitment to improving air quality in London. The objective of the plan is to significantly reduce NO<sub>2</sub> and PM<sub>10</sub> concentrations through a number of measures including:

- Ensuring all buses meet Euro IV emission standards;
- Introducing age limits for taxis and Private Hire Vehicles to remove older, more polluting vehicles from the roads;
- Including large vans and minibuses in the Low Emission Zone (LEZ);
- Introducing a new NO<sub>x</sub> standard in the LEZ; and
- Working with Borough to implement traffic management strategies to reduce congestion.

The Mayor of London's Sustainable Design and Construction SPG<sup>12</sup> was published in April 2014 and sets out the requirements for undertaking impact assessments in accordance with the policies set out in the London Plan and the Mayor of London's Air Quality Strategy.

An additional planning support document was issued in April 2014<sup>13</sup>, which provides guidance on the implementation of the 'air quality neutral' policy for 'major developments' (over 10 residential dwellings or 1,000 m<sup>2</sup> floor area).

## LOCAL POLICY

### *THE LONDON BOROUGH OF SOUTHWARK REVIEW AND ASSESSMENT OF AIR QUALITY*

LBS undertake frequent review and assessments of air quality within the area and produces annual reports in accordance with the requirements of Defra.

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10 The London Plan, The Spatial Development Strategy for London Consolidated with Alterations Since 2011, March 2015

11 Clearing the Air, The Mayor's Air Quality Strategy, December 2010.

12 Sustainable Design and Construction Supplementary Planning Guidance, Mayor of London, London Plan 2011 Implementation Framework, April 2014

13 Air Quality Neutral Planning Support Update, GLA 80371, April 2014

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Routine monitoring of NO<sub>2</sub> and PM<sub>10</sub> concentrations within the Borough have identified a large number of areas where the air quality objectives are exceeded. As a consequence, in 2003 the Council declared an AQMA which encompasses the entire northern part of the borough, extending from Rotherhithe to Walworth and Camberwell and up to the boundary on the River. An Air Quality Action Plan was developed which outlines the Council's commitment to improving local air quality.

The latest LBS Air Quality Action Plan<sup>14</sup> has four key objectives:

- Reduce emissions from vehicular transport;
- Tackle emissions from existing fixed sources;
- Reduce emissions from new development; and
- Protect public health and monitor air quality.

A wide range of measures are proposed in order to achieve these objectives including:

- Encourage the use of car-club schemes;
- Encourage sustainable travel choices (e.g. walking and cycling);
- Implement energy efficiency measures in council buildings and encourage non-polluting renewable energy generation;
- Ensure developers adhere to best practice guidance to minimise emissions from construction sites;
- Requiring an air quality assessment to be submitted for all major developments in the borough; and
- Continuing to monitor air quality both automatically and via a network of passive NO<sub>2</sub> diffusion tubes.

The Action Plan draws on European and National legislation in conjunction with national, regional and local policy to manage and improve air quality across the Borough.

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<sup>14</sup> Air Quality Improvement Strategy 2012 – 2017 and Action Plan 2012 – 2017, May 2012

# POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT ON LOCAL AIR QUALITY

The potential impact on local air quality of emissions associated with the proposed development during the construction and operational phases is identified in this section.

## CONSTRUCTION DUST

Due to the small scale of the proposed development, it is considered that the implementation of best practice dust control during the construction period will ensure that there are no significant impacts at neighbouring sensitive receptors, including the adjacent sensitive wildlife site. A detailed assessment of construction dust impacts has therefore not been undertaken as part of the assessment.

## CONSTRUCTION TRAFFIC

Construction traffic will contribute to existing traffic levels on the surrounding road network. However, the temporary increase in traffic is considered unlikely to be significant in terms of total flow or construction duration.

All non-road mobile machinery (NRMM) will comply with the emission standards specified in the Mayor of London's Control of Dust and Emissions during Construction and Demolition SPG.

The impact of vehicular emissions of NO<sub>2</sub> and PM<sub>10</sub> from construction traffic and on-site machinery on local air quality is therefore considered to be negligible.

## OPERATIONAL TRAFFIC

The proposed development will be car-free and therefore an assessment of operational traffic impacts has not been undertaken as part of the assessment.

## BUILDING-RELATED EMISSIONS

Heat and water will be supplied to the proposed dwellings by individual low-NO<sub>x</sub> gas boilers, which will be compliant with the SPG emission limit of 40 mg NO<sub>x</sub>/kWh.

## DEVELOPMENT CONSTRAINTS

A review of air quality in the area around the proposed development site has been undertaken to determine whether there are any constraints to the use of the site for residential and office purposes.

The proposed development site is in a suburban location, bound on two sides by raised railway tracks. The northern boundary is screened from the railway by a densely planted embankment which is a locally designated site of nature conservation. Access to the site will be one way from Consort Road through to Nazareth Close. The proposed residential dwellings will be a minimum of 20m from Consort Road and therefore existing pollutant concentrations at the site are expected to be close to background-levels.

LBS monitor urban background NO<sub>2</sub> and PM<sub>10</sub> concentrations automatically at Elephant and Castle, approximately 25m from the A3. The A3 is a very heavily trafficked road (approximately 50,0000 daily vehicle movements) compared with Consort Road and therefore the measured concentrations are considered to provide a conservative estimate of existing air quality at the proposed development.

A summary of long and short-term concentrations measured between 2013 and 2016 is presented in Table 2. The monitoring site is affiliated to the London Air Quality Network (LAQN); therefore, the data are subject to high levels of quality assurance (QA) and quality control (QC).

Table 2: Background NO<sub>2</sub>, and PM<sub>10</sub> Concentrations Measured at the Elephant and Castle Automatic Monitoring Site

Statistic	2013	2014	2015	2016
Annual Mean NO <sub>2</sub> (µg/m <sup>3</sup> )	42 (a)	37	41 (a)	39
Number of Predicted Exceedances of the 1-Hour Mean AQO for NO <sub>2</sub> of 200 µg/m <sup>3</sup>	0 (a)	0	0 (a)	0
Annual Mean PM <sub>10</sub> (µg/m <sup>3</sup> )	20	19	20 (a)	26 (a)
Number of Predicted Exceedances of the 24-Hour Mean AQO for PM <sub>10</sub> of 50 µg/m <sup>3</sup>	0	1	1 (a)	21 (a)
(a) Data capture below 90%, therefore results should be treated with caution.				

In the two years in which the data capture exceeded 90% (2014 and 2016), the measured annual mean NO<sub>2</sub> concentrations were within the air quality objective of 40 µg/m<sup>3</sup>. There were no recorded exceedances of the hourly mean NO<sub>2</sub> objective over the time period presented and the measured PM<sub>10</sub> concentrations were also well within the short and long-term objectives.

The data presented in Table 2 suggests that existing annual mean NO<sub>2</sub> concentrations at the proposed development site are likely to be within the air quality objective. However, the concentrations are sufficiently close to the objective that, taking into account current trends in ambient NO<sub>2</sub> concentrations in London and likely traffic growth on the local road network, an exceedance at the site in the future cannot be ruled out.

### MITIGATION

The following mitigation measures are recommended during the construction and operational phases in order to minimise the air quality impacts arising from the development.

#### CONSTRUCTION PHASE

It is recommended that the following 'best practice' measures be implemented, as appropriate during the construction phase:

- ensure effective site planning locating layout machinery and dust causing activities away from sensitive receptors;
- erect solid screens or barriers around the site boundary;
- vehicles carrying loose aggregate and workings should be sheeted at all times;
- all vehicles should switch off engines when not in use i.e. no idling vehicles should occur at the site;
- no site runoff of water or mud should be allowed;
- stockpiles should be kept for the shortest time possible and if necessary, the use of sprinklers and hoses for dampening of exposed soil and materials should be employed;
- observation of wind speed and direction prior to conducting dust-generating activities to determine the potential for dust nuisance to occur, avoiding potentially dust-generating activities during periods when wind direction may carry dust into sensitive areas and avoiding dust-generating operations during periods of high or gusty winds;
- stockpiles of soils and materials should be located as far as possible from sensitive properties, taking account of prevailing wind directions and seasonal variations in the prevailing wind;
- completed earthworks should be covered or vegetated as soon as is practicable;
- regular inspection of local highways and site boundaries to check for dust deposits and, if necessary removal and cleaning of any deposits;
- visual inspection of site perimeter to check for dust deposition (evident as soiling and marking) on vegetation, cars and other objects and taking remedial measures if necessary;
- minimise surface areas of stockpiles (subject to health and safety and visual constraints regarding slope gradients and visual intrusion) to reduce area of surfaces exposed to wind pick-up;
- use of dust-suppressed tools for all operations;
- ensuring that all construction plant and equipment is maintained in good working order;
- no unauthorised burning of any material anywhere on site; and
- construction vehicles should be kept clean and sheeted when on public highways. Timing of large-scale vehicle movements to avoid peak hours on the local road network will also be beneficial.

It is recommended that liaison with the Local Authority be maintained throughout the construction process, and any incidents which lead to excessive elevation of dust deposition and/or PM<sub>10</sub> concentrations at neighbouring sensitive receptors are reported to the Environmental Health Department. If complaints are received from local residents, these will be documented in a diary or log held on site by the Site Manager. A nominated member of the construction team (e.g. Site Manager) will also act as a point of contact for residents who may be concerned about elevated deposition of dust.

The significance of potential dust impacts following appropriate best practice mitigation measures is considered to be 'negligible'.

### OPERATIONAL PHASE

A review of local air quality indicates a potential risk of exceedance of the annual mean air quality objective for NO<sub>2</sub> at the proposed residential dwellings. As a consequence it is recommended that whole house ventilation is installed to ensure that future occupants are not exposed to poor air quality.

The risk of an exceedance of the short-term air quality objective for NO<sub>2</sub> is, however, considered to be negligible; therefore natural ventilation is considered a suitable option for the proposed office space.

### SUMMARY AND CONCLUSIONS

An assessment has been undertaken to assess the potential impacts on local air quality associated with the construction and operation of the proposed development.

Through good site practice and the implementation of best practice mitigation measures, the impact of dust and PM<sub>10</sub> releases during the construction phases will be effectively minimised and the resultant impact on nearby sensitive receptors, including the adjacent habitat site are considered to be negligible.

A review of local air quality indicates that there is a potential risk of exceedance of the long-term air quality objective for NO<sub>2</sub> at the proposed residential dwellings and therefore mechanical ventilation is recommended to minimise the exposure of future occupants to elevated concentrations.

The risk of an exceedance of the short-term NO<sub>2</sub> objective or short/long-term PM<sub>10</sub> objectives at the site is considered to be negligible.

Based on the results of the assessment and assuming the recommended mitigation measures are incorporated into the design of the development, it is considered that air quality would not pose a constraint to the development of the site as proposed.

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