Rangepay Ltd

Proposed Residential Development,

Chalton Road, Camden, London

Air Quality DMRB Screening Assessment

Summer 2018 Update

Executive Park, Avalon Way, Anstey, Leicester, LE7 7GR
Tel: +44 (0)116 234 8000
Email: nigel.mann@wyg.com

Document Control

Project:	Proposed Residential Development, Chalton Street, Camden
Client:	Rangepay Ltd
Job Number:	A101288
File Origin:	O:\Acoustics Air Quality and Noise\Active Projects

Document Checking:

Prepared by:	Hannah Pearson *Environmental Consultant*	Initialled:	HP
Contributor:	Samantha Lewis *Environmental Consultantt*	Initialled:	SL
Contributor:	Rebecca Jeffs *Environmental Consultant*	Initialled:	RJ
Checked by:	Daniel Clampin *Principal Environmental Consultant*	Initialled:	DC
Verified by:	Sam Moran *Associate Environmental Consultant*	Initialled:	SM

Issue	Date	Status
1	19th December 2016	First Issue
2	27th July 2018 (Summer 2018 Update)	Second Issue – Updated Site Layout
3		

Contents Page

Figures

Executive Summary

An air quality DMRB screening assessment has been undertaken for the proposed residential development at Chalton Road, Camden, London.

Assessment results of air quality impacts during the construction phase indicate that dust emissions associated with the construction phase are not predicted to be significant following the implementation of the mitigation measures detailed in Section 7.

During the operational phase, the magnitude of the effects of changes in traffic flow as a result of the proposed development, with respects to NO_2 and PM_{10} exposure, is determined to 'negligible'.

Taking into the consideration the assessment methodology criteria established in section 3, air quality baseline conditions and the DMRB screening assessment result, it has been determined that the proposed development site does not require a detailed air quality assessment.

1. Introduction

Rangepay Ltd commissioned WYG Planning and Environment (WYG) to prepare an Air Quality DMRB Screening Assessment for the proposed development at Chalton Road, Camden.

1.1 Site Location and Context

The approximate United Kingdom National Grid Reference of the site is 529785, 182836. It is bounded in all directions by mixed use developments for business and residential purposes. Reference should be made to Figure 1 for a map of the proposed development site and surrounding area.

The following assessment stages have been undertaken as part of this assessment:

- Baseline air quality evaluation;
- Assessment of Air Quality Impacts - Construction Phase; and
- DMRB Screening Assessment.

The DMRB screening assessment of the potential air quality impacts that are associated with the proposed development has focused on the predicted impact of changes in ambient nitrogen dioxide (NO_2) and particulate matter (PM_{10}) as a result of the development traffic at key local receptor locations. The changes have been referenced to EU air quality limits and UK air quality objectives and the magnitude and significance of the changes have been referenced to non-statutory guidance issued by Environmental Protection UK.

The results of the assessment are detailed in the following sections of this report.

2. Policy and Legislative Context

2.1 Documents Consulted

The following documents were consulted during the undertaking of this assessment:

Legislation and Best Practice Guidance

- National Planning Policy Framework, Department for Communities and Local Government, (Revised) July 2018;
- Planning Practice Guidance: Air Quality, March 2014;
- The Air Quality Standards Regulations Amended 2016
- The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, 2007
- The Environment Act, 1995
- Local Air Quality Management Technical Guidance LAQM.TG(16), Defra, 2018
- Design Manual for Roads and Bridges, Volume 11, Section 3, Part 1, HA 207/07 - Air Quality, Highways Agency, 2007
- Land-Use Planning & Development Control: Planning For Air Quality, EPUK & IAQM, 2017.
- The Control of Dust and Emissions from Construction and Demolition – Best Practice Guide, Greater London Authority and London Councils, 2006
- Guidance on the Assessment of Dust from Demolition and Construction (Institute of Air Quality Management, 2014)
- Defra Local Air Quality Management Note on Projecting NO_2 concentrations (April 2012)

Websites Consulted

- Google maps (maps.google.co.uk)
- The UK National Air Quality Archive (www.airquality.co.uk)
- Department for Transport Matrix (www.dft.go.uk/matrix)
- emapsite.com
- MAGIC (http://magic.defra.gov.uk/)
- Planning Practice Guidance (http://planningguidance.planningportal.gov.uk/)
- London Borough of Camden Council (http://www.camden.gov.uk)

Site Specific Reference Documents

- Camden Local Plan, Adopted 3rd July 2017; and,
- London Borough of Camden Air Quality Annual Status Report for 2016, 4th May 2017.

2.2 Air Quality Legislative Framework

European Legislation

European air quality legislation is consolidated under Directive 2008/50/EC, which came into force on 11th June 2008. This Directive consolidates previous legislation which was designed to deal with specific pollutants in a consistent manner and provides new air quality objectives for fine particulates. The consolidated Directives include:

- **Directive 1999/30/EC** – the First Air Quality "Daughter" Directive – sets ambient air limit values for nitrogen dioxide and oxides of nitrogen, sulphur dioxide, lead and particulate matter;
- **Directive 2000/69/EC** – the Second Air Quality "Daughter" Directive – sets ambient air limit values for benzene and carbon monoxide; and,
- **Directive 2002/3/EC** – the Third Air Quality "Daughter" Directive – seeks to establish long-term objectives, target values, an alert threshold and an information threshold for concentrations of ozone in ambient air.

The fourth daughter Directive was not included within the consolidation and is described as:

- **Directive 2004/107/EC** – sets health-based limits on polycyclic aromatic hydrocarbons, cadmium, arsenic, nickel and mercury, for which there is a requirement to reduce exposure to as low as reasonably achievable.

UK Legislation

The Air Quality Standards Regulations (Amended 2016) seek to simplify air quality regulation and provide a new transposition of the Air Quality Framework Directive, First, Second and Third Daughter Directives and also transpose the Fourth Daughter Directive within the UK. The Air Quality Limit Values are transposed into the updated Regulations as Air Quality Standards, with attainment dates in line with the European Directives. SI 2007 No. 64 Regulation 14 extends powers, under Section 85(5) of the Environment Act (1995), for the Secretary of State to give directions to Local Authorities (LAs) for the implementation of these Directives.

The UK Air Quality Strategy is the method for implementation of the air quality limit values in England, Scotland, Wales and Northern Ireland and provides a framework for improving air quality and protecting human health from the effects of pollution.

For each nominated pollutant, the Air Quality Strategy sets clear, measurable, outdoor air quality standards and target dates by which these must be achieved; the combined standard and target date is referred to as the Air Quality Objective (AQO) for that pollutant. Adopted national standards are based on the recommendations of the Expert Panel on Air Quality Standards (EPAQS) and have been translated into a set of Statutory Objectives within the Air Quality (England) Regulations (2000) SI 928, and subsequent amendments.

The AQOs for pollutants included within the Air Quality Strategy and assessed as part of the scope of this report are presented in Table 2.1 along with European Commission (EC) Directive Limits and World Health Organisation (WHO) Guidelines.

Table 2.1 Air Quality Standards, Objectives, Limit and Target Values

Pollutant	Applies	Objective	Concentration Measured as[10]	Date to be achieved and maintained thereafter	European Obligations	Date to be achieved and maintained thereafter	New or existing
PM_{10}	UK	50µg/m^3 by end of 2004 (max 35 exceedances a year)	24-hour mean	1st January 2005	50µg/m^3 by end of 2004 (max 35 exceedances a year)	1st January 2005	Retain Existing
	UK	40µg/m^3 by end of 2004	Annual mean	1st January 2005	40µg/m^3	1st January 2005	
$PM_{2.5}$	UK	25µg/m3	Annual Mean	31st December 2010	25µg/m3	1st January 2010	Retain Existing
Nitrogen Dioxide	UK	200µg/m^3 not to be exceeded more than 18 times a year	1 Hour Mean	31st December 2005	200µg/m^3 not to be exceeded more than 18 times a year	1st January 2010	Retain Existing
	UK	40µg/m^3	Annual Mean	31st December 2005	40µg/m^3	1st January 2010	

Local Air Quality Management

Under Section 82 of the Environment Act (1995) (Part IV) LAs are required to periodically review and assess air quality within their area of jurisdiction under the system of LAQM. This review and assessment of air quality involves assessing present and likely future air quality against the AQOs. If it is predicted that levels at the façade of buildings where members of the public are regularly present (normally residential properties) are likely to be exceeded, the LA is required to declare an Air Quality Management Area (AQMA). For each AQMA the LA is required to produce an Air Quality Action Plan (AQAP), the objective of which is to reduce pollutant concentrations in pursuit of the AQOs.

2.3 Planning and Policy Guidance

National Policy

The National Planning Policy Framework (NPPF), revised July 2018, principally brings together and summarises the suite of Planning Policy Statements (PPS) and Planning Policy Guidance (PPG) which previously guided planning policy making. The NPPF states that:

> *'Planning policies and decision should sustain and contribute towards compliance with relevant limit values or national objectives for pollutant, taking into account the presence of Air Quality Management Areas or 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 or 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'

The Planning Practice Guidance (PPG) web-based resource was launched by the Department for Communities and Local Government (DCLG) on 6 March 2014 to support the National Planning Policy Framework and make it more accessible. A review of PPG: Air Quality identified the following guidance:

'When deciding whether air quality is relevant to a planning application, local planning authorities should consider whether the development would:

Significantly affect traffic in the immediate vicinity of the proposed development site or further afield. This could be by generating or increasing traffic congestion; significantly changing traffic volumes, vehicle speed or both; or significantly altering the traffic composition on local roads. Other matters to consider include whether the proposal involves the development of a bus station, coach or lorry park; adds to turnover in a large car park; or result in construction sites that would generate large Heavy Goods Vehicle flows over a period of a year or more.

Introduce new point sources of air pollution. This could include furnaces which require prior notification to local authorities; or extraction systems (including chimneys) which require approval under pollution control legislation or biomass boilers or biomass-fuelled CHP plant; centralised boilers or CHP plant burning other fuels within or close to an air quality management area or introduce relevant combustion within a Smoke Control Area.

Expose people to existing sources of air pollutants. This could be by building new homes, workplaces or other development in places with poor air quality.

Give rise to potentially significant impact (such as dust) during construction for nearby sensitive locations.

Affect biodiversity. In particular, is it likely to result in deposition or concentration of pollutants that significantly affect a European-designated wildlife site and is not directly connected with or necessary to the management of the site, or does it otherwise affect biodiversity, particularly designated wildlife sites.'

Local Policy

The Camden Local Plan was formally adopted following approval on the 3rd July 2017. The Local Plan, sets out a spatial vision for the area, and key strategic objectives and strategic policies for development.

Following a review of these policies, the following have been identified as being relevant from an air quality perspective:

Policy CC4 – Air Quality

"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."

3. Assessment Methodology

The potential environmental effects of the operational phase of the proposed development are identified, in so far as current knowledge of the site and development allows. The significance of potential environmental effects is assessed according to the latest guidance produced by EPUK and IAQM in January 2017.

The methodology used to determine the potential air quality impacts of the construction phase of the proposed development has been derived from the IAQM 'Guidance on the Assessment of the Impacts of Dust from Demolition and Construction' document and is summarised in Section 5.

3.1 Determining Significance of the Air Quality Effects

The significance of the effects during the operational phase of the development is based on the latest guidance produced by EPUK and IAQM in January 2017. The guidance lays a basis for a consistent approach that could be used by all parties associated with the planning process to professionally judge the overall significance of the air quality effects based on severity of air quality impacts.

The following rationale is used in determining the severity of the air quality impacts at individual receptors:

1. The change in concentration of air pollutants, air quality impacts, are quantified and evaluated in the context of air quality objectives. The impacts are provided as percentage of the Air Quality Assessment Level (AQAL), which may be an air quality objective, EU limit or target value, or an Environment Agency 'Environmental Assessment Level (EAL)';
2. The absolute concentrations are also considered in terms of the AQAL and are divided into categories for long term concentration. The categories are based on the sensitivity of the individual receptor in terms of harm potential. The degree of harm potential – to change - increases as absolute concentrations are close to or above the AQAL;
3. Severity of the impact is described as qualitative descriptors, negligible; slight; moderate or substantial, by taking into account in combination the harm potential and air quality impact. This means that a small increase at a receptor which is already close to or above the AQAL will have higher severity compared to a relatively large change at a receptor which is significantly below the AQAL, >75% AQAL.
4. The impacts can be adverse when pollutant concentrations increase or beneficial when concentrations decrease as a result of development.
5. The judgement of overall significance of the effects is then based on severity of impacts on all the individual receptors considered.
6. Where a development is not resulting in any change in emissions itself, the significance of effect is based on the impact of surrounding sources on new residents or users of the development, i.e., will they be exposed to levels above the AQAL.

Table 3.1 Significance of Effects

Long term average concentration at receptor in assessment year	% Change in concentration relative to AQAL			
	1	2-5	6-10	>10
≤75% of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109 of AQAL	Moderate	Moderate	Substantial	Substantial
≥110 of AQAL	Moderate	Substantial	Substantial	Substantial

In accordance with explanation note 2 of Table 6.3 of the EPUK & IAQM guidance. The Table is intended to be used by rounding the change in percentage pollutant concentration to whole numbers, which then makes it clearer which cell the impact falls within. The user is encouraged to treat the numbers with recognition of their likely accuracy and not assume a false level of precision. Changes of 0%, i.e. less than 0.5%, will be described as 'Negligible'.

3.2 DMRB Screening Assessment of Operational Phase

Air quality guidance issued by Environmental Protection UK also contains advice on the potential significance of changes in traffic flow on air quality. "Land-Use Planning & Development Control: Planning for Air Quality" states that an air quality assessment is likely to be necessary when any development will;

- Generate or increase traffic congestion;
- Significantly change traffic volumes, typically by either 5% of the AADT or peak hour flows on roads with flows more than 10,000 in an AQMA or 10% of the AADT or peak hour flows on roads with flows more than 10,000 outside an AQMA;
- Increase HGV movements by 200 movements or more per day;
- Proposals that include significant new car parking, 100 spaces outside an AQMA and 50 spaces inside an AQMA. Consideration should be taken into account for duration of car parking on traffic flows in and out of the car park (i.e., short term or long-term parking).

As recommended within DMRB methodology, if any of the following criteria above are met, then an air quality screening assessment should be undertaken to determine whether relevant Air Quality Objectives (AQO) of the identified pollutants of concern will be exceeded.

As part of the screening assessment, baseline, projected future year traffic (do minimum) and projected future year plus development traffic (do something) is obtained in order to assess the changes in traffic movements from the proposed development. Baseline conditions and initial DMRB screening calculations are also undertaken to determine existing pollution concentrations within the vicinity of the proposed development site.

The screening assessment conclusions consider the following; firstly, if the proposed development site generated traffic is likely to trigger the requirements as set under IAQM & EPUK methodology. Secondly, if baseline conditions and initial DMRB screening calculations show that the relevant Air Quality Objectives (AQOs) are likely to be exceeded. If the proposed development does not meet any of the conclusion criteria, then the site can be considered 'neutral' in terms of air quality and no further assessment is required.

3.3 Ecological Receptors

Air quality impacts associated with the proposed development have the potential to impact on receptors of ecological sensitivity within the vicinity of the site. The Conservation of Habitats and Species Regulations (2017) require competent authorities to review planning applications and consents that have the potential to impact on European designated sites (e.g. Special Protection Areas).

A study was undertaken to identify any statutory designated sites of ecological or nature conservation importance within the extents of the dispersion modelling assessment. This was completed using the Multi-Agency Geographic Information for the Countryside (MAGIC) web-based interactive mapping service, which draws together information on key environmental schemes and designations. Following a search within a 1km radius of the site boundary one ecological receptor was identified as outlined in Table 3.2.

Table 3.2 Modelled Ecologically Sensitive Receptor

Ecologically Sensitive Receptor		UK NGR (m)	
		X	Y
ER1	Camley Street Nature Park (LNR)	529964	183463

4. Baseline Conditions

4.1 Air Quality review and Assessment

This section provides a review of the existing air quality in the vicinity of the proposed development site in order to provide a benchmark against which to assess potential air quality impacts of the proposed development. Baseline air quality in the vicinity of the proposed development site has been defined from a number of sources, as described in the following sections.

Air Quality Review

As required under section 82 of the Environment Act 1995, London Borough of Camden Council (LBCC) has conducted an ongoing exercise to review and assess air quality within its area of jurisdiction. The assessments have indicated that concentrations of NO_2 and PM_{10} are above the relevant AQOs at a number of locations of relevant public exposure within the Borough. LBCC has therefore designated one Air Quality Management Area (AQMA), which is described as:

- Camden AQMA – An area covering the whole borough of Camden.

The proposed development site is located within the Camden AQMA. It is therefore likely that traffic associated with the proposed development will influence existing flows within the AQMA.

Air Quality Monitoring

Monitoring of air quality within LBCC is undertaken through continuous and non-continuous monitoring methods. These have been reviewed in order to provide an indication of existing air quality in the area surrounding the proposed development site.

Continuous Monitoring

LBCC currently operates four continuous air quality monitoring stations. Annual mean concentrations of NO_2 monitored at the automatic monitoring sites are presented within Table 4.1.

Table 4.1 Monitored Annual Mean NO_2 and PM_{10} Concentrations

Site ID	UK NGR(m)		Site Type	NO_2 Annual Mean Concentration 2016 ($\mu g/m^3$)
	X	Y		
LB: London Bloomsbury	530120	182034	Urban Background	42.0
CD1: Swiss Cottage	526633	184392	Kerbside	66.0
CD3: Shaftesbury Avenue	530060	181290	Roadside	84.0
CD9: Euston Road	529878	182648	Roadside	88.0

Automatic monitoring station CD9 is 200 metres to the south of the proposed development and has such been used as part of the verification.

Non-Continuous Monitoring

LBCC also operates a network of diffusion tubes. The closest NO_2 diffusion tube monitoring results are presented in Table 4.2 below.

Table 4.2 Nitrogen Dioxide Monitoring Locations

UK NGR(m)		Location	Within AQMA	NO_2 Annual Mean Concentration 2016 ($\mu g/m^3$)
X	Y			
530110	182795	CA4: Euston Road	Yes	82.71
530430	182430	CA6: Wakefield Gardens	Yes	31.31
529880	182334	CA10: Tavistock Gardens	Yes	39.68
529914	183147	CA20: Brill Place	Yes	47.53

As Table 4.2 illustrates, all of the nitrogen dioxide diffusion tube monitoring sites, except Urban Background site CA6, exceeded the National Air Quality Objective of 40µg/m^3 in 2016. CA4 is approximately 340 metres south east of the proposed development and as such been used as part of the verification process.

4.2 Background Concentrations

The use of background concentrations within the modelling process ensures that pollutant sources other than traffic are represented appropriately. Background sources of pollutants include industrial, domestic and rail emissions within the vicinity of the study site.

Background concentrations were referenced from the UK National Air Quality Information Archive database based on the National Grid Co-ordinates of 1 x 1 km grid squares nearest to the development site. In November 2017 Defra issued revised 2015 based background maps for NO_X, NO_2, PM_{10} and $PM_{2.5}$ which incorporate updates to the input data used for modelling.

The updated mapped background concentrations used in the assessment, are summarised in Table 4.3 below.

Table 4.3 Published Background Air Quality Levels ($\mu g/m^3$)

UK NGR(m)		2016			
X	Y	NO_2	NO_x	PM_{10}	$PM_{2.5}$
529500	182500	46.022	83.097	21.091	13.385
530500	182500	44.953	80.703	21.216	13.465
529500	183500	36.682	61.570	20.156	12.819
530500	183500	37.736	63.876	20.346	12.880

5. Assessment of Air Quality Impacts - Construction Phase

5.1 Pollutant Sources

Other than negligible emissions from construction vehicles and equipment the main emissions during construction are likely to be dust and particulate matter generated during earth moving (particularly during dry months), or from construction materials. In respect of fires on site it should be noted that suitable management strategies will be in place to prevent burning of any material during the construction phase. The main potential effects of particulates/dust are:

- Visual – dust plume, reduced visibility, coating and soiling of surfaces leading to annoyance, loss of amenity, the need to clean surfaces;
- Physical and /or chemical contamination and corrosion of artefacts;
- Coating of vegetation and soil contamination;
- Health effects due to inhalation e.g. asthma or irritation of the eyes.

A number of other factors such as the amount of precipitation and other meteorological conditions will also greatly influence the amount of particulate matter generated.

Construction activities can give rise to short-term elevated dust/PM_{10} concentrations in neighbouring areas. This may arise from vehicle movements, soiling of the public highway, demolition or windblown stockpiles.

5.2 Particulate Matter (PM_{10})

The UK Air Quality Standards seek to control the health implications of respirable particulate matter PM_{10} (a standard size fraction where the median diameter is 10 microns). However, the majority of particles released from construction will be greater than this in size.

Construction works on site have the potential to elevate localised PM_{10} concentrations in the area. On this basis, mitigation measures should still be taken to minimise these emissions as part of good site practice.

5.3 Dust

Particles greater than 10µm are likely to settle out relatively quickly and may cause annoyance due to their soiling capability. There are no formal standards or criteria for nuisance caused by deposited particles, however, a deposition rate of 200mg/m^2/day is often presented as a threshold for serious nuisance though this is usually only applied to long term exposure as people are generally more tolerant of dust for a short or defined period. Significant nuisance is likely when the dust coverage of surfaces is visible in contrast with adjacent clean areas, especially when it happens regularly. Severe dust nuisance occurs when the dust is perceptible without a clean reference surface.

Construction activities have the potential to suspend dust, which could result in annoyance of residents surrounding the site. Measures should be taken to minimise the emissions of dust as part of good site practice. Recommended mitigation measures proportionate to the risk associated with the development and based on best practice guidance are discussed in the following sections.

5.4 Methodology

The construction phase assessment utilises the IAQM Guidance on the Assessment of Dust from Demolition and Construction document published in February 2014.

Four construction processes are considered; these are demolition, earthworks, construction and trackout. For each of these phases, the significance of the potential dust impacts is derived following the determination of a dust emission magnitude and the distance of activities to the nearest sensitive receptor, therefore assessing worst case impacts. A full explanation of the methodology is contained in Appendix A.

5.5 Assessment Results

Based on the methodology detailed in Appendix A, the scale of the anticipated works has determined the potential dust emission magnitude for each process, as presented in the table below.

Table 5.1 Dust Emission Magnitude

Construction Process	Dust Emission Magnitude
Demolition	Small
Earthworks	Small
Construction	Small
Trackout	Small

The sensitivity of the surrounding area to each construction process has been determined following stage 2B of the IAQM guidance. The assessment has determined the area sensitivities as shown in the table below.

Table 5.2 Sensitivity of the Area

Source	Area Sensitivity		
	Dust Soiling	Health Effects of PM_{10}	Ecological
Demolition	Medium	Medium	Low
Earthworks	Medium	Medium	Low
Construction	Medium	Medium	Low
Trackout	Medium	Medium	Low

The dust emission magnitude determined in Table has been combined with the sensitivity of the area determined in Table 5.2, to determine the risk of impacts prior to the implementation of appropriate

mitigation measures. The potential impact significance of dust emissions associated with the construction phase, without mitigation, is presented below.

Table 5.3 Impact Significance of Construction Activities without Mitigation

Source	Summary Risk of Impacts Prior to Mitigation		
	Dust Soiling	Health Effects of PM_{10}	Ecological
Demolition	Low	Low	Low
Earthworks	Low	Low	Low
Construction	Low	Low	Low
Trackout	Negligible	Low	Low

Site specific mitigation measures are presented in Section 7. Following the adoption of these measures, the subsequent impact significance of the construction phase is not predicted to be significant.

6. DMRB Screening Assessment

An assessment of operational phase traffic flows has been undertaken to assess the potential impact of the proposed development with regards to increases in traffic flows along the local road network. Principal pollutants of concern considered within this assessment are nitrogen dioxide (NO_2) and particulate matter (PM_{10}).

The DMRB Screening Calculation Sheet V1.03c has been used to calculate pollutant concentrations. Screening receptor locations have been selected at existing property facades at locations where higher than average pollution concentrations are likely to be experienced, i.e. within the AQMA. Selecting receptors at such locations ensures a 'worst case scenario' prediction of pollutant concentrations. An assessment of the impact of existing air quality on proposed receptors has also been included.

Traffic data has been downloaded from the Department for Transport (DfT) website.

Table 6.1 Traffic Data

Link		2016 Baseline		
		AADT	%HGV	Speed (km/hr)
1	A501	81.63	3.56	48
2	Euston Road	78.25	3.64	48
3	Eversholt Road	81.63	3.26	48
4	A5202	78.25	2.51	48

6.1.1 Limitations of DMRB Screening

The following limitations have been identified with the DRMB Screening Assessment:

- The assessment has only considered the impact on the identified affected roads, namely those included in Table 6.1 and Table 3.2.
- Background concentrations have been used from UK National Air Quality Archive.
- The DRMB screening result outputs are unadjusted results.

6.2 Model Verification

Model verification involves the comparison of modelled data to monitored data in order to gain the best possible representation of current pollutant concentrations for the assessment years. The verification process is in general accordance with that contained in Annex 3 of the TG16 guidance note and uses the most recently available diffusion tube monitoring data to best represent this.

The verification process consists of using the monitoring data and the published background air quality data in the UK National Air Quality Information Archive to calculate the road traffic contribution of NO_X at the monitoring locations. Outputs from the ADMS Roads model are provided as predicted road traffic

contribution NO_X emissions. These are converted into predicted roadside contribution NO_2 exposure at the relevant receptor locations based on the updated approach to deriving NO_2 from NO_X for road traffic sources published in paragraphs 2.22 to 2.27 of Local Air Quality Management TG16. The calculation was derived using the NO_X to NO_2 worksheet in the online LAQM tools website hosted by Defra.

The monitoring data from two diffusion tubes has been used in the verification process. This is due to these tubes being located close to the modelled links and therefore able to predict more accurately than monitoring locations at a greater distance and is more representative of onsite pollutant levels.

A model correction factor of 0.90 was applied to roadside predicted NO_X concentrations before converting to NO_2. This figure demonstrates that the model predictions were slightly overpredicting the road traffic emissions at the monitoring locations. Table 6.2 summarises the final model/monitored data correlation following the application of the model correction factor.

Table 6.2 Comparison of Roadside Modelling & Monitoring Results for NO_2

Tube location	NO_2 µg/m^3		
	Monitored NO_2	Modelled NO_2	Difference (%)
CD9	88.00	80.24	8.82%
CA4	82.71	76.92	7.00%

The final model produced data at the monitoring locations to within 10% of the monitoring results, as the requirement by TG16 guidance.

The final verification model correlation coefficient (representing the model uncertainty) is 0.83. The 'ideal value' correlation coefficient recommended in Box 7.15 of TG(16) is 1.00. The model is therefore considered to be verified and suitably representative of local emissions and exposures.

6.2.1 Screening Receptor Locations

Receptor locations have been identified to indicate the effects of the surrounding road network. The receptor locations are presented in Table 6.3 and reference should be made to Figure 1 for a visual representation.

Table 6.3 Screening Receptor Locations

Receptor		Distance from Link (m)			
ID	Location	From Link 1	From Link 2	From Link 3	From Link 4
R1	Saint Aloysius Roman Catholic Infant School	344	346	36	570
R2	Saint Aloysius Roman Catholic Infant School	518	523	46	624
R3	137 Euston Road	31	234	222	345
R4	Regent High School	700	745	267	572

Receptor		Distance from Link (m)			
ID	Location	From Link 1	From Link 2	From Link 3	From Link 4
R5	5 Chalton Street	19	184	160	398
ER1	Camley Street Nature Park (LNR)	880	913	675	174
PR1	Proposed Residential Receptor (Churchway)	224	269	158	284
PR2	Proposed Residential Receptor (Churchway)	207	259	158	277
PR3	Proposed Residential Receptor (Chalton Street)	199	239	137	293
PR4	Proposed Residential Receptor (Chalton Street)	194	260	176	255

6.2.2 DMRB Screening Results

Predicted annual mean ground level NO_2 and PM_{10} concentrations for the baseline are illustrated in Table 6.4 below.

Table 6.4 DMRB Nitrogen Dioxide and Particulate Matter Screening Results (µg/m³)

Receptor ID		Predicted Annual Mean NO_2 Concentration (µg/m³)	Predicted Annual Mean PM_{10} Concentration (µg/m³)
ID	Location	Baseline	Baseline
R1	Saint Aloysius Roman Catholic Infant School	83.63	21.27
R2	Saint Aloysius Roman Catholic Infant School	62.73	0.34
R3	137 Euston Road	86.35	22.16
R4	Regent High School	61.57	0.00
R5	5 Chalton Street	87.74	22.62
ER1	Camley Street Nature Park (LNR)	83.12	0.01
PR1	Proposed Residential Receptor (Churchway)	83.21	0.04
PR2	Proposed Residential Receptor (Churchway)	83.16	21.11
PR3	Proposed Residential Receptor (Chalton Street)	83.26	21.14
PR4	Proposed Residential Receptor (Chalton Street)	83.19	21.12

As illustrated in Table 6.4, the maximum annual average exposure to nitrogen dioxide, at the proposed development is 83.26 µg/m³. At nearby existing receptors, the maximum modelled annual average exposure is 87.74 µg/m³ at 5 Chalton Street (R5), this is predicted to be above the AQAL of 40 µg/m³.

The maximum predicted annual average exposure to particulate matter, at the proposed development is 21.14 µg/m³. At nearby existing receptors, the maximum modelled annual average exposure is 22.62 µg/m³ at 5 Chalton Street (R5).

The DMRB screening calculations have predicted that there will be an exceedance of AQOs for nitrogen dioxide at proposed receptors, therefore further mitigation will be necessary.

6.3 NO_2 Regression with Height

Using the results of WYG pollutant monitoring at sites comparable to the proposed development site, a linear decrease in pollutant levels from the ground floor upwards, in multi-storey buildings, has been identified as dropping by approximately 1µg/m³ per floor.

Using the modelled data, the correlation between the predicted ground level NO_2 concentrations and the concentration decrease from the ground floor upwards in multi-storey buildings, is illustrated in the Figure 2. A worst case scenario assumption of the concentration at the first floor being the same as the concentration on the ground floor has been applied in the assessment.

It can be seen that the NO_2 concentration decreases with the increase of the floor height. All of the receptor location on all floors are predicted to be above 40 µg/m³ and would all require mitigation as discussed in section 7.2.

Table 6.5 NO_2 Regression with Height

Floor	Modelled NO_2 (µg/m³)			
	PR1	PR2	PR3	PR4
Ground Floor	83.21	83.16	83.26	83.19
1st	82.21	82.16	82.26	82.19
2nd	81.21	81.16	81.26	81.19
3rd	80.21	80.16	80.26	80.19

6.4 Air Quality Neutral Assessment

6.4.1 Building Emissions Benchmark

The guidance on Air Quality Neutral Planning support states the following for Building Emissions Benchmarks (BEB):

"Two Building Emission Benchmarks (BEBs) have been defined, one for NO_x and one for PM_{10}, for a series of land-use classes. The benchmarks are expressed in terms of g/m²/annum. The gross floor area (GFA) is used to define the area. For developments classified as "one-off" (Sui Generis), it will be for the developer to provide convincing evidence that one of the derived BEBs should be used in those situations, or to provide an alternative approach."

There will be no additional centralized energy centre proposed for the site therefore the Building Emissions Benchmark (BEB) will be met.

6.4.2 Transport Emissions Benchmarks

The guidance on Air Quality Neutral Planning support states the following for Transport Emissions Benchmarks (TEB):

"Two Transport Emissions Benchmarks (TEBs) have been defined, one for NO_x and one for PM_{10}, for a series of land-use classes. For those land use types where a TEB has not been derived, it will be for the developer to select one of the TEBs derived for the nearest comparable category and provide convincing evidence to justify the choice, or to suggest an alternative approach. Where a TEB has not been derived, it will be possible to demonstrate that a development would meet the benchmark if the scheme-generated trip rate for a particular land-use class is below the benchmark trip rate, but if it is above the benchmark trip rate it is not possible to calculate the excess emissions at this stage.
To derive the TEBs for cars the following information is required:

- *Number of car trips associated with different types and sizes of development (i.e. trips/dwelling/annum or trips/m_2/annum);*
- *The typical distance travelled for each type of trip (i.e. km/trip); and*
- *The average emission per vehicle kilometre (i.e. g/km/annum)"*

As the site is not proposing any parking spaces and as such, there is not expected to be any development traffic being generated, the emissions are expected to be negligible and therefore the transport NO_x emissions and transport PM_{10} emissions are predicted to be below the relevant benchmarks during the operational phase of the proposed development. Therefore, the assessment can be considered 'neutral' in terms of Air Quality.

7. Mitigation

7.1 Construction Phase

The dust risk categories have been determined in Section 5 for each of the four construction activities. The assessment has determined that the potential impact significance of dust emissions associated with the construction phase of the proposed development is 'low risk' at the worst affected receptors.

Using the methodology described in Appendix A, site specific mitigation measures associated with the determined level of risk can be found in Section 8.2 of the IAQM Guidance on the Assessment of Dust from Demolition and Construction. The mitigation measures have been divided into general communications and dust management measures applicable to all sites, and measures applicable specifically to demolition, earthworks, construction and trackout. They are categorised into 'highly recommended' and 'desirable' measures.

The mitigation measures for the proposed development are detailed in Table 7.1 and Table 7.2 below:

Table 7.1 Highly Recommended Construction Phase Mitigation Measures

Communications
Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
Display the head or regional office contact information
Dust Management
Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
Make the complaints log available to the local authority when asked.
Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.
Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked
Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
Avoid site runoff of water or mud.
Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable
Ensure all vehicles switch off engines when stationary - no idling vehicles.
Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
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
Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
Use enclosed chutes and conveyors and covered skips
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
Avoid bonfires and burning of waste materials.

Demolition
Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.
Avoid explosive blasting, using appropriate manual or mechanical alternatives.
Bag and remove any biological debris or damp down such material before demolition.
Earthworks
No action required.
Construction
No action required.
Trackout
No action required.

Table 7.2 Desirable Construction Phase Mitigation Measures

Communications
No action required.
Dust Management
Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site. In London additional measures may be required to ensure compliance with the Mayor of London's guidance. The DMP may include monitoring of dust deposition, dust flux, real time PM_{10} continuous monitoring and/or visual inspections.
Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of site boundary, with cleaning to be provided if necessary.
Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period.
Keep site fencing, barriers and scaffolding clean using wet methods.
Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
Cover, seed or fence stockpiles to prevent wind whipping.
Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate)
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.
Demolition
Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
Earthworks
No action required.
Construction
Avoid scabbling (roughening of concrete surfaces) if possible.
Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
Trackout
No action required.

Following the implementation of the mitigation measures detailed in the tables above, the impact significance of the construction phase is not considered to be significant.

7.2 Operational Phase

Internal Mitigation

The proposed development will be installed with filtration mitigation to ensure that there will be no significant effects to human health at the proposed development. It has been confirmed that direct air quality mitigation in the form of filtered mechanical ventilation will be included in all of the properties at those receptor locations where an exceedance of the AQO was modelled and as such, there will be **no** exposure to elevated levels of pollutants. The mitigation will bring levels of Nitrogen Dioxide within the properties significantly below the National Objective of 40µg/m^3.

The residential dwellings will be provided with filtration via an "AAC Eurovent Nitrosorb" (or similar) unit which is combined with the MVHR mechanical ventilation.

The AAC unit is an independently tested NO_2 and NO_x removal solution which has been formulated to remove low concentrations (typically external concentrations of around 70µg/m^3 NO_2). This high quality solution delivers sustainable NO_2 and NO_x mitigation and is designed to improve indoor air quality in residential properties. The unit has been proven to mitigate levels of Nitrogen Oxides to 70-80% of their outside value.

The AAC unit offers very low pressure drops which are compatible with the MVHR Mechanical Ventilation system.

8. Conclusion

An air quality DMRB screening assessment has been undertaken for the proposed residential development at Chalton Road, Camden, London.

Assessment results of air quality impacts during the construction phase indicate that dust emissions associated with the construction phase are not predicted to be significant following the implementation of the mitigation measures detailed in Section 7.

Taking into the consideration the assessment methodology criteria established in section 3, air quality baseline conditions and the DMRB screening assessment result, it has been determined that the proposed development site does not require a detailed air quality assessment if the proposed mitigation methods outlined in section 7 are adhered to, i.e. the installation of mechanical ventilation at the proposed development.

Figures

Figure 1 Air Quality Assessment Area

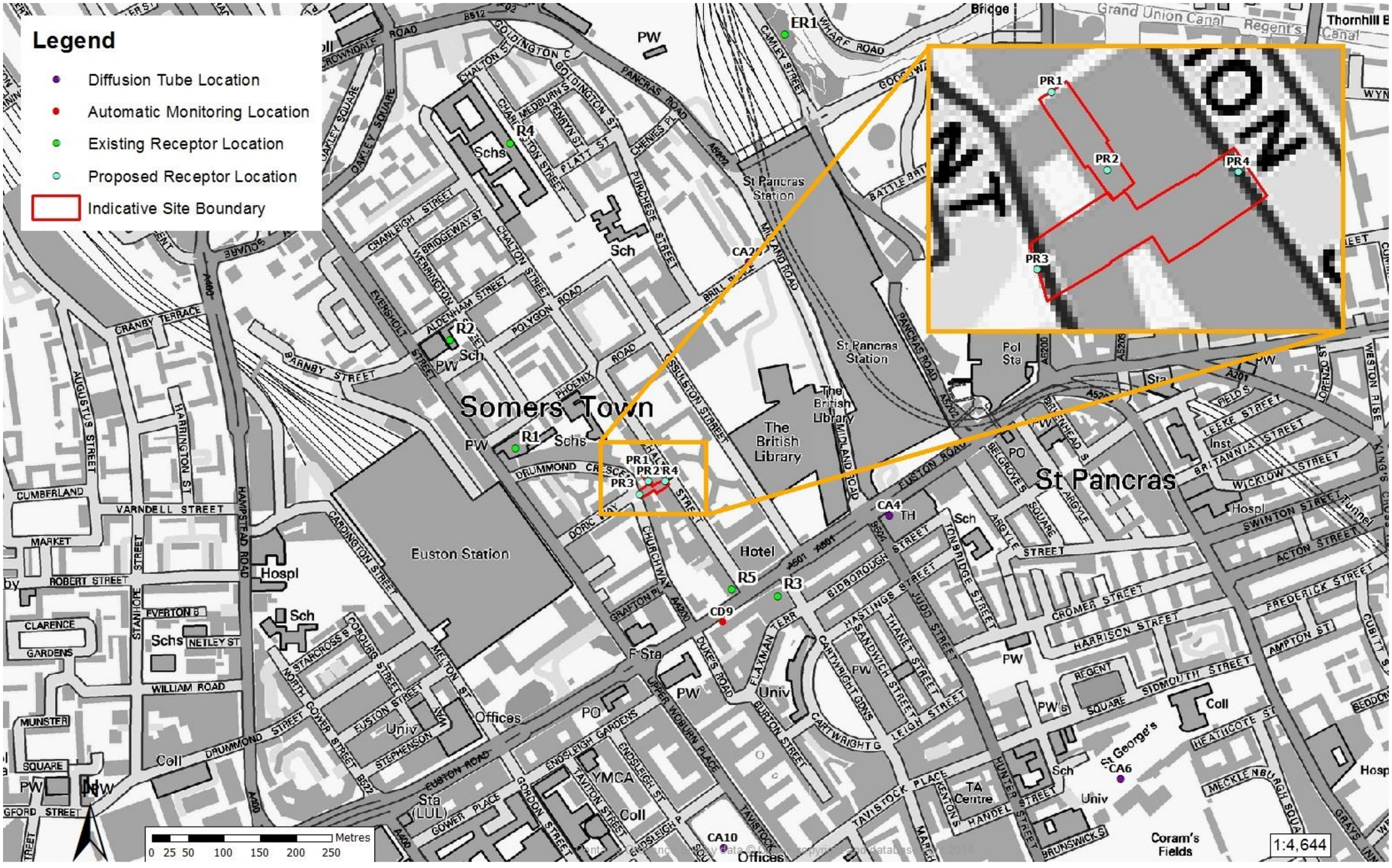

Figure 2: Regression with height for NO_2