

Air Quality Impact Assessment

Site Address:
441-447 Ewell Road
Surbiton
KT6 7ES

Client
RAA1 LTD

Report Reference
AQIA-2023-000007

Prepared by
STM Environmental Consultants Ltd

Date
19/01/2024



**CONSULTING GEO-ENVIRONMENTAL
ENGINEERS AND SCIENTISTS**

Phase 1 Contaminated Land Desk Studies, Geo-Environmental Site Investigations, Environmental Due Diligence, Flood Risk Assessments, Surface Water Management Strategies (SuDS), Ecology, Noise and Air Quality Assessments, Environmental Management Systems, GIS & Data Management Systems

1 TABLE OF CONTENTS

1	TABLE OF CONTENTS	2
2	DOCUMENT CONTROL	5
3	DISCLAIMERS.....	6
4	ABBREVIATIONS.....	6
5	EXECUTIVE SUMMARY	7
6	INTRODUCTION	8
6.1	Commissioning.....	8
6.2	Development Proposal.....	8
6.3	Report Objectives.....	8
7	SITE DESCRIPTION	8
7.1	Site Location and Context.....	8
7.2	Site Current Use	8
7.3	Surrounding Land Uses	8
8	LEGISLATIVE CONTEXT	10
8.1	Legislative Context.....	10
8.1.1	European Directives	10
8.1.2	Environment Act 1995	10
8.1.3	Air Quality (England) Regulations 2000	10
8.1.4	Air Quality (Standards) Regulations 2010.....	10
8.1.5	Environmental Permitting (England and Wales) Regulations (2010).....	11
8.1.6	Section 79 of Part III of the Environmental Protection Act (1990).....	11
9	POLICY CONTEXT	12
9.1	National Planning Policy Framework.....	12
9.2	Local Planning Policy.....	12
9.2.1	The London Plan	12
9.2.2	The Control of Dust and Emissions During Construction and Demolition SPG	14
9.2.3	Royal Borough of Kingston Council Local Plan	14
9.2.4	Royal Borough of Kingston Council Local Air Quality Action Plan	14
10	SUMMARY OF BASELINE CONDITIONS	15
10.1	Air Quality Management Area.....	15
10.2	Air Quality Monitoring.....	15
10.3	Air Quality focus Areas	15
10.4	Background Pollutant Concentrations.....	16

11	CONSTRUCTION PHASE DUST RISK ASSESSMENT	17
11.1	Step 1: Screening of the Need for a Detailed Assessment	17
11.2	Step 2: Assessment of the Risk of Dust Impacts	18
12	OPERATIONAL PHASE IMPACTS	19
12.1	Impacts of Increase in Road Traffic Vehicular Movements on Local Air Quality	19
12.2	Future Exposure	20
12.3	Air Quality Neutral Assessment	22
12.3.1	Building Emissions	23
12.3.2	Transport Emissions	24
13	AIR QUALITY MITIGATION MEASURES	24
13.1	Construction Phase Measures	24
13.2	Operational Phase Measures	24
14	CONCLUSIONS	24
15	APPENDICES	26
15.1	Appendix 1 – Details of Proposed Development	26
15.1.1	Proposed Plans	26
15.2	Appendix 2 – Air Quality Monitoring Data	27
15.3	Appendix 3 – Site Photographs	28
15.4	Appendix 4 – Air Quality Neutral benchmarks	29
16	REFERENCES	31

LIST OF TABLES

Table 1: Summary of surrounding land uses 8
 Table 2: Air quality objectives..... 11
 Table 3: Summary of monitoring stations within AQMA 3. 15
 Table 4: Step 2a and 2b - Assessment of Impacts of Potential Dust Emissions..... 18
 Table 5: Summary Construction Phase Dust Risk Assessment..... 18
 Table 6: Summary of Results Stage 1 Operational Air Quality Impact Assessment 19
 Table 7: Summary of Results Stage 2 Operational Air Quality Impact Assessment 19
 Table 8: Air Pollution Exposure Criteria (APEC)C 22
 Table 9: Internal Areas of Main Land Uses Associated with the Proposed Development 23
 Table 10: Calculated Building Emission Benchmarks 23
 Table 11: Comparison of Calculated Building Emissions with Benchmarks 23
 Table 13: NO₂ Continuous Monitor Results: Annual Mean NO₂ Monitoring Results (µg m³) 27
 Table 14: NO₂ Diffusion Tube Monitor Results: Annual Mean NO₂ Monitoring Results (µg m³) 27
 Table 15: Air Quality Neutral' Emissions Benchmarks For Buildings 29
 Table 16: Air Quality Neutral' Emissions Benchmarks For Transport..... 29
 Table 17: Average Distance Travelled by Car per Trip 29
 Table 18: Emission Factors 30

LIST OF FIGURES

Figure 1: Maps showing location of site and aerial 9
 Figure 2: Map showing Air Quality Focus Areas in Kingston and surrounding areas (showing annual mean NO₂ concentrations in 2013)..... 16
 Figure 3: Dust Risk Assessment Methodology 17
 Figure 4: LAEI Modelled Concentrations of NO₂..... 21
 Figure 5: LAEI Modelled Concentrations of PM₁₀ 21

2 DOCUMENT CONTROL



AIR QUALITY IMPACT ASSESSMENT



Site Address:	441-447 Ewell Road Surbiton KT6 7ES
Site Coordinates:	519748, 166100
Prepared for:	RAA Planning Ltd
Report Reference:	AQIA-2023-000007
Version No:	1.0
Date:	19/01/2024
Report Author:	██████████ (BSc) Environmental Consultant
Authorised by:	██████████ (MSc) Director

3 DISCLAIMERS

This report and any information or advice which it contains, is provided by STM Environmental Consultants Ltd (STM) and is solely for use by RAA Planning Ltd (Client). Any other party using or placing reliance upon any information contained in this report, do so at their own risk.

STM has exercised such professional skill, care and diligence as may reasonably be expected of a properly qualified and competent consultant when undertaking works of this nature. However, STM gives no warranty, representation or assurance as to the accuracy or completeness of any information, assessments or evaluations presented within this report. Furthermore, STM accepts no liability whatsoever for any loss or damage arising from the interpretation or use of the information contained within this report.

Due to budgetary and physical constraints, sampling and in-situ testing was not possible over the entire site during the ground investigation. Therefore, we can offer no guarantee as to the validity of the data in any areas other than those investigated.

It should also be noted that some of the findings presented in this report are based on information obtained from third parties (i.e. laboratory). Whilst we assume that all information presented is accurate we can offer no guarantee as to the validity.

4 ABBREVIATIONS

Table 1: Abbreviations used in the report

ABBREVIATION	DESCRIPTION
AADT	Annual average daily traffic
AQS	Air Quality Standard
AQMA	Air Quality Management Area
DEFRA	Department of the Environment, Food and Rural Affairs
GLA	Greater London Authority
HDV	Heavy Duty Vehicle
IAQM	Institute of Air Quality Management
LAEI	London Atmospheric Emissions Inventory
LAQM	Local Air Quality Management
LDF	Local Development Framework
LDV	Light Duty Vehicle
NO ₂	Nitrogen dioxide
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance
PM ₁₀	Particulate matter less than 10 microns in diameter
PM _{2.5}	Particulate matter less than 2.5 microns in diameter
TEB	Transport Emission Benchmark
TfL	Transport for London
RBK	Royal Borough of Kingston

5 EXECUTIVE SUMMARY

SECTION	SUMMARY
Site Location And Size	The site is located at 441-447 Ewell Road, Surbiton, KT6 7ES and is centred at national grid reference 519749, 166101. The site has an area of approximately 0.1ha.
Current Use	The site currently comprises a vacant former dance studio.
Proposed Development	The development proposal is for the demolition of vacant former dance studio and erection of a new 3-storey building with part basement housing a mix of 11no. residential dwellings with associated bins, cycle provision and formation of drop kerbs to provide 2no. disabled parking spaces.
Baseline Air Quality	The whole of RBK was declared an Air Quality Management Area in 2003 due to exceedances of the National Air Quality Standards for NO ₂ and PM ₁₀ .
Construction Phase Dust Risk Assessment	Fugitive dust emissions from the construction phase were assessed in using the methodology laid out in the Mayor of London's Supplementary Planning Guidance. The main risk of adverse dust impacts was considered to be associated with the demolition phase of the construction. However, provided the mitigation measures laid out in the Mayor's SPG are implemented, any potential air quality impacts from dust are considered likely to be minimal.
Operational Phase Risk Assessment	<p>Potential impacts during the operational phase were assessed. Based on the information available to date and based on the IAQM/EPUK guidance, the air quality impacts resulting from any increase in vehicles movements are likely to be negligible as the development is car-free. No further assessment is considered to be required.</p> <p>An assessment was made of the potential operational exposure of future users of the development to air pollutants. The LAEI model data indicates that pollution levels across site are below the relevant AQS objectives and that the site can be classified as APEC-A.</p> <p>An Air Quality Neutral Assessment was carried out for the site. As the site is 'car free' and will utilise combination gas boilers with NO_x emissions of 40mg/kWh or below, both Building and Transport related emissions were shown to be very unlikely to exceed the calculated benchmarks. As such, mitigation measures to offset emissions are not considered to be required.</p>
Conclusions	On the basis of the assessment carried out, the proposed development is considered unlikely to adversely affect air quality. As such, it is considered to be in compliance with the local and London-wide planning policies and the NPPF.

6 INTRODUCTION

6.1 Commissioning

STM Environmental Consultants Limited were commissioned by RAA Planning Ltd (Client) to undertake an Air Quality Impact Assessment (AQIA) at a site known as 441-447 Ewell Road, Surbiton, KT6 7ES (the Site). The works are required to inform the proposed redevelopment of the Site.

6.2 Development Proposal

The development proposal is for the demolition of vacant former dance studio and erection of a new 3-storey building with part basement housing a mix of 11no. residential dwellings with associated bins, cycle provision and formation of drop kerbs to provide 2no. disabled parking spaces.

The proposed development plans of the proposed development are available in [Appendix 1](#).

6.3 Report Objectives

The aim of this report is to assess the potential impacts of the proposed development on local air quality.

7 SITE DESCRIPTION

7.1 Site Location and Context

The site is located at 441-447 Ewell Road, Surbiton, KT6 7ES and is centred at national grid reference 519749, 166101. The site has an area of approximately 0.1ha. The site lies within the jurisdiction of Royal Borough of Kingston Council in terms of the planning process. Maps showing the location of the site are available in Figure 1 below.

7.2 Site Current Use

The site currently comprises a vacant former dance studio.

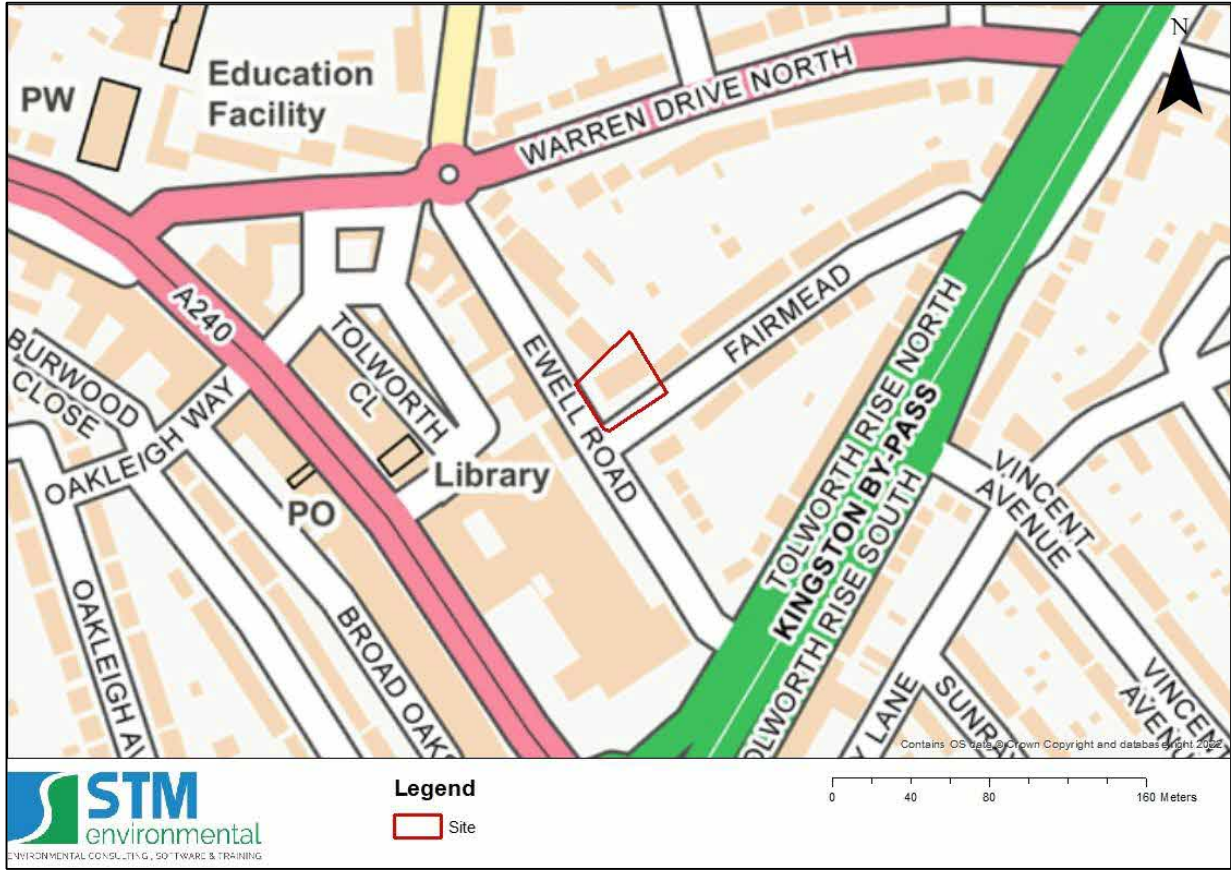
7.3 Surrounding Land Uses

A description of current land uses surrounding the boundaries of the site is given below in Table 1 below.

Table 1: Summary of surrounding land uses

Boundary	Land Use Description
Northern	Residential
Eastern	Fairmead/Residential
Southern	Ewell Road/Ambulance Station/Residential
Western	Residential

Figure 1: Maps showing location of site and aerial



8 LEGISLATIVE CONTEXT

8.1 Legislative Context

8.1.1 European Directives

Air quality standards are set in European Union (EU) Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe and the Fourth Daughter Directive² (2004/107/EC). These Directives require all Member States to undertake air quality assessment, and to report the findings to the European Commission on an annual basis and also make the information available to the public. The Directives set 'limit values', 'target values' and 'long-term objectives' for ambient concentrations of pollutants.

8.1.2 Environment Act 1995

Part IV of the Environment Act 1995 sets provisions for protecting air quality in the UK and for local air quality management. It requires the Secretary of State to publish a national Air Quality Strategy and established the system of local air quality management (LAQM), for the designation of air quality management areas. The Air Quality Strategy for England, Scotland, Wales and Northern Ireland was first published in March 1997. The Strategy established objectives for eight key air pollutants.

Section 82 of the Environment Act 1995 provides that every local authority shall review the air quality within its area, both at the present time and the likely future air quality. Section 83 requires local authorities to designate an air quality management area where air quality objectives are not being achieved, or are not likely to be achieved within the relevant period, as set out in the Air Quality (England) Regulations 2000 Regulations. Once an area has been designated Section 84 requires the local authority to carry out an assessment and then to develop an Action Plan for the air quality management area that details the measures, they intend to take to reduce air pollution.

Currently, over 700 active AQMAs have been designated across UK local authorities, the majority for Nitrogen Dioxide (NO₂). Action Plans have been put in place to address air quality, including any exceedances. Local Authorities are expected to report on NO₂, PM₁₀ and SO₂ as well as progress with the Action Plans in Annual Status Reports (ASRs). Government does not expect local authorities to report annually on Benzene, 1, 3-butadiene, Carbon Monoxide and Lead as objectives for these pollutants have been met for several years and are well below limit values.

In addition to the objectives set in Regulations, Local Authorities are expected to work towards reducing emissions and concentrations of PM_{2.5}.

8.1.3 Air Quality (England) Regulations 2000

The Air Quality (England) Regulations 2000, as amended by the Air Quality (England) (Amendment) Regulations 2002 set out air quality objectives (i.e. maximum concentrations or limit values) for key pollutants as well as attainment dates for meeting the objectives.

8.1.4 Air Quality (Standards) Regulations 2010

The provisions of the Air Quality Directive and Fourth Daughter Directive were transposed by the Air Quality Standards Regulations 2010 in England, the Air Quality Standards (Scotland) Regulations 2010 in Scotland, the Air Quality Standards (Wales) Regulations 2010 in Wales and the Air Quality Standards Regulations (Northern Ireland) 2017. All the provisions made by the Directives are therefore incorporated into UK legislation. The Air Quality Objectives are listed in Table 2 below.

Table 2: Air quality objectives

Pollutant	Air Quality Objective		Deadline Date	Status
	Concentration (ug/m ³)	Measured As		
Benzene	16.25	Running Annual Mean	31.02.2003	Objective met
	5.0	Annual Mean	31.12.2010	
1,3 Butadiene	2.25	Running Annual Mean	31.12.2003	Objective met
Carbon monoxide	10.0	Maximum daily running 8-hour mean	31.12.2003	Objective met
Lead	0.5	Annual Mean	31.12.2004	Objective met
	0.25	Annual Mean	31.12.2008	
Nitrogen Dioxide (NO ₂)	200 (not to be exceeded more than 18 times a year)	1 hour mean	31.12.2005	Objective not met
	40	Annual mean	31.12.2005	
Particles (PM ₁₀)	50 (not to be exceeded more than 35 times a year)	24 hour mean	31.12.2004	Objective not met
	40	Annual mean	31.12.2004	
Sulphur Dioxide (SO ₂)	350 (not to be exceeded more than 24 times a year)	1 hour mean	31.12.2004	Objective not met
	125 (not to be exceeded more than 3 times a year)	24 hour mean	31.12.2004	
	266 (not to be exceeded more than 35 times a year)	15 minute mean	31.12.2005	

8.1.5 Environmental Permitting (England and Wales) Regulations (2010)

Industrial processes which may range from large industrial plant to dry cleaners and paint spraying workshops are regulated by the Environment Agency (Part A1 processes) and the borough (Part A2 and Part B processes). The planning regime must assume that the permitting regime will ensure the processes comply with their permits and the Act. The planning regime can, however consider whether a land use is appropriate and it must consider the exposure to pollutants. For developments requiring planning applications this is done at the planning application stage, and for existing processes it is an ongoing review through Air Quality Action Planning.

8.1.6 Section 79 of Part III of the Environmental Protection Act (1990)

Section 79 of Part III of the Environmental Protection Act (1990) is used by Local Authorities to control dust, smoke and fumes emanating from premises such as construction and other sites that are not regulated under the Environmental Permitting Regulations. In order for an Authority to be able to enforcement the legislation, the dust smoke or fumes must be prejudicial to health or constitute a statutory nuisance.

9 POLICY CONTEXT

9.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF) The National Planning Policy Framework sets out national planning policies and principles for England and how these are expected to be applied. The Framework includes specific policies in relation to air quality and air quality management areas. It states that:

"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."

To support the Framework, [planning practice guidance on air quality](#) has been published which provides guiding principles on how planning should take account of the impact of new development on air quality.

9.2 Local Planning Policy

9.2.1 The London Plan

The London Plan 2021 is the Spatial Development Strategy for Greater London, setting out an integrated economic, environmental, transport and social framework for the development of London over the next 20–25 years. The London Plan policies relating to air quality are set out below.

Policy SI 1 - Improving air quality which is the main policy governing air quality can be found in Chapter 9 (Sustainable Infrastructure). It states as follows:

Policy SI 1 - Improving air quality

A - Development Plans, through relevant strategic, site-specific and area-based policies, should seek opportunities to identify and deliver further improvements to air quality and should not reduce air quality benefits that result from the Mayor's or boroughs' activities to improve air quality.

B - To tackle poor air quality, protect health and meet legal obligations the following criteria should be addressed:

- 1) Development proposals should not:
 - a) lead to further deterioration of existing poor air quality
 - b) create any new areas that exceed air quality limits, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits
 - c) create unacceptable risk of high levels of exposure to poor air quality.
- 2) In order to meet the requirements in Part 1, as a minimum:
 - a) development proposals must be at least Air Quality Neutral
 - b) development proposals should use design solutions to prevent or minimise increased exposure to existing air pollution and make provision to address local problems of air quality in preference to post-design or retro-fitted mitigation measures
 - c) major development proposals must be submitted with an Air Quality Assessment. Air quality assessments should show how the development will meet the requirements of B1
 - d) development proposals in Air Quality Focus Areas or that are likely to be used by large numbers of people particularly vulnerable to poor air quality, such as children or older people should demonstrate that design measures have been used to minimise exposure.

C - Masterplans and development briefs for large-scale development proposals subject to an Environmental Impact Assessment should consider how local air quality can be improved across the area of the proposal as part of an air quality positive approach. To achieve this a statement should be submitted demonstrating:

- 1) how proposals have considered ways to maximise benefits to local air quality, and
- 2) what measures or design features will be put in place to reduce exposure to pollution, and how they will achieve this.

D - In order to reduce the impact on air quality during the construction and demolition phase development proposals must demonstrate how they plan to comply with the Non-Road Mobile Machinery Low Emission Zone and reduce emissions from the demolition and construction of buildings following best practice guidance*.

E - Development proposals should ensure that where emissions need to be reduced to meet the requirements of Air Quality Neutral or to make the impact of development on local air quality acceptable, this is done on-site. Where it can be demonstrated that emissions cannot be further reduced by on-site measures, off-site measures to improve local air quality may be acceptable, provided that equivalent air quality benefits can be demonstrated within the area affected by the development.

* The Control of Dust and Emissions During Construction and Demolition SPG

Other policies in the plan that are relevant to air quality include:





- Planning for Good Growth Policy GG3(F) - To improve Londoners' health and reduce health inequalities, those involved in planning and development must seek to improve London's air quality, reduce public exposure to poor air quality and minimise inequalities in levels of exposure to air pollution.
- Policy SD2 Collaboration in the Wider South East (WSE) - The Mayor will work with WSE partners to find solutions to shared strategic concerns such as: barriers to housing and infrastructure delivery (including 'smart' solutions – see also paragraph 9.6.9); factors that influence economic prosperity; the need to tackle climate change (including water management and flood risk); improvements to the environment (including air quality, biodiversity and green infrastructure), waste management, and the promotion of Circular Economies; wider needs for freight, logistics and port facilities; and scope for the substitution of business and industrial capacity where 8 mutual benefits can be achieved.
- Policy SD4 The Central Activities Zone (CAZ) - Taking account of the dense nature of the CAZ, practical measures should be taken to improve air quality, using an air quality positive approach where possible (Policy SI 1 Improving air quality) and to address issues related to climate change and the urban heat island effect.
- Policy D1 London's form, character and capacity for growth - Boroughs should undertake air quality area assessments to define the characteristics, qualities and value of different places within the plan area.

The Mayor is committed to making air quality in London the best of any major world city, which means not only achieving compliance with legal limits for Nitrogen Dioxide as soon as possible and maintaining compliance where it is already achieved, but also achieving World Health Organisation targets for other pollutants such as Particulate Matter.

The aim of this policy is to ensure that new developments are designed and built, as far as is possible, to improve local air quality and reduce the extent to which the public are exposed to poor air quality. This means that new developments, as a minimum, must not cause new exceedances of legal air quality

standards, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits.

For major developments, a preliminary Air Quality Assessment should be carried out before designing the development to inform the design process. The aim of a preliminary assessment is to assess:

-  The most significant sources of pollution in the area
-  Constraints imposed on the site by poor air quality
-  Appropriate land uses for the site
-  Appropriate design measures that could be implemented to ensure that development reduces exposure and improves air quality.

For large scale developments, development design teams should identify opportunities to deliver an air quality positive development in combination with addressing other requirements of London Plan policies at an early stage, such as those relating to transport and energy.

9.2.2 The Control of Dust and Emissions During Construction and Demolition SPG

The Control of Dust and Emissions During Construction and Demolition SPG requires that the developer produces a Dust Risk Assessment (DRA) as part of the Air Quality Assessment.

9.2.3 Royal Borough of Kingston Council Local Plan








Adopted in April 2012, the [Core Strategy Development Plan Document](#) is a plan for the future of the Royal Borough of Kingston (RBK) until 2025. However, the theme of Air Quality does not play a major part in this plan. The Core Strategy is however currently in the process of being updated.

9.2.4 Royal Borough of Kingston Council Local Air Quality Action Plan

The Air Quality Action Plan (AQAP) from 2021 outlines the actions the Council will take to improve air quality in RBK between July 2021 and June 2026.

The Action Plan reflects the primary source of pollutants by including measures to reduce the pollution emitted from vehicles on the roads, promoting alternative more sustainable sources of transport. As the Borough enters a phase where residential development is likely to be significant, the Plan ensures developers and employers consider these aspects.

RBK is committed to reducing the exposure of people in Kingston to poor air quality in order to improve health. The Council have developed actions that can be considered under seven broad topics:

-  Monitoring and other core statutory duties: maintaining monitoring networks is absolutely critical for understanding where pollution is most acute, and what measures are effective to reduce pollution. There are also a number of other very important statutory duties undertaken by boroughs, which form the basis of action to improve pollution;
-  Emissions from developments and buildings: emissions from buildings account for about 15% of the NO_x emissions across London so are important in affecting NO₂ concentrations;
-  Public health and awareness raising: increasing awareness can drive behavioural change to lower emissions as well as to reduce exposure to air pollution;
-  Delivery servicing and freight: vehicles delivering goods and services are usually light and heavy-duty diesel-fuelled vehicles with high primary NO₂ emissions;
-  Borough fleet actions: our fleet includes light and heavy-duty diesel-fuelled vehicles such as mini buses and refuse collection vehicles with high primary NO₂ emissions. Tackling our own fleet means we will be leading by example;
-  Localised solutions: these seek to improve the environment of neighbourhoods through a combination of measures; and
-  Cleaner transport: road transport is the main source of air pollution in London. We need to incentivise a change to walking, cycling and ultra-low emission vehicles (such as electric) as far as possible.

10 SUMMARY OF BASELINE CONDITIONS

10.1 Air Quality Management Area

Based on the results of the monitoring, RBK declared the whole of the borough an AQMA in 2003 due to exceedances of the national objectives for Nitrogen Dioxide NO₂ and Particulate Matter PM₁₀.

The proposed scheme is located within an AQMA and could therefore adversely impact local air quality. As a result, an Air Quality Assessment is required to determine baseline conditions and consider potential impacts as a result of the proposed scheme.

10.2 Air Quality Monitoring

RBK undertakes monitoring of pollutant concentrations using automatic and non-automatic techniques throughout the borough.

A review of the most recent Air Quality Annual Status Report (ASR) indicated 3no. continuous monitoring stations in 2020. The closest continuous monitoring station to the site is KT4 (Tolworth Broadway), located approximately 205m S of the proposed development. The continuous monitoring results for 2020 indicate an annual mean concentration of 32.8µg/m³ for NO₂ at this location, which falls below the air quality objectives (AQO) of 40µg/m³.



RBK also undertook diffusion tube monitoring of NO₂ at 40no. sites during 2020. The closest is Site ID 12 (136 Tolworth Broadway/Service Road), which is located 207m S of the site. During 2020, the annual mean NO₂ concentration at 12 was 32.96µg/m³, which falls below the AQO. A summary table is presented Table 3 below.

Table 3: Summary of monitoring stations within AQMA 3.

Site ID	Address	Monitoring Type	Concentration of NO ₂ in 2020 (µg/m ³)	Concentration of PM ₁₀ in 2020 (µg/m ³)	Approx. Distance and Direction from Site
KT4	Tolworth Broadway	Continuous	32.8	6	205m S
12	136 Tolworth Broadway/Service Road	Diffusion Tubes	32.96	-	207m S
11	53 Elgar Avenue	Diffusion Tubes	19.65	-	357m NW

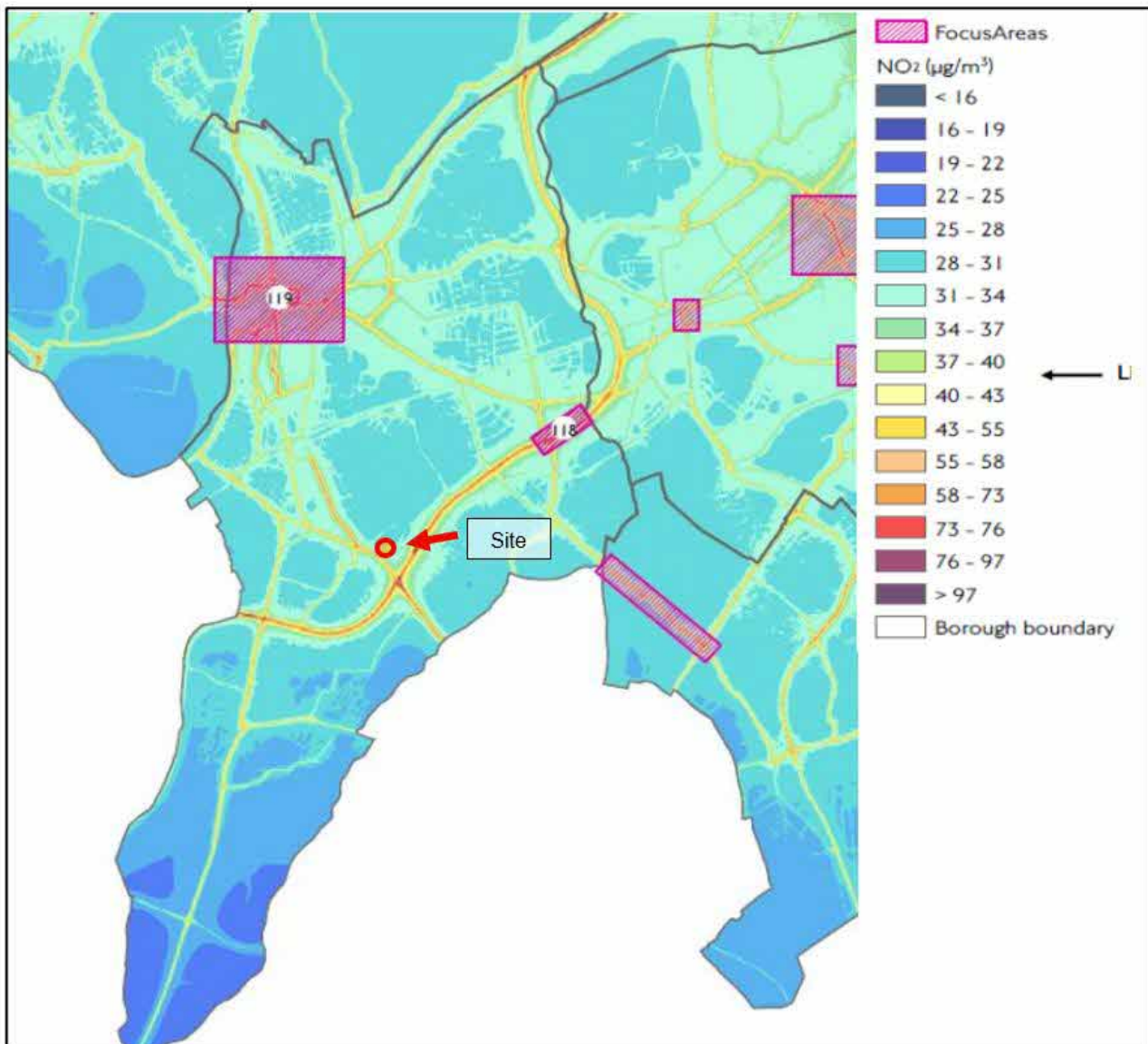
10.3 Air Quality focus Areas

Air Quality Focus Areas (AQFAs) are areas identified by Transport for London (TfL) and GLA as locations that exceed the AQS Objective annual mean for NO₂ where there are sensitive receptors. AQFAs allow those local authorities with borough-wide NO₂ based AQMAs to identify air quality hotspots. 2 Air Quality Focus Areas have been identified in Kingston. These are listed below.

-  Kingston Town Centre; and
-  A3 at the Malden Junction

A map showing the location of the air quality focus areas is available in Figure 2 below. As can be seen, the site is not located within any of the Focus Areas. It is however 2.06km from the A3 at the Malden Junction Focus Area.

Figure 2: Map showing Air Quality Focus Areas in Kingston and surrounding areas (showing annual mean NO₂ concentrations in 2013)



10.4 Background Pollutant Concentrations

DEFRA has made available [modelled background concentration maps](#) for a reference year and projected future years for a range of pollutants including oxides of nitrogen (NO_x), nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}).

The definition of the “background concentration” is the concentration that would remain if all the local sources of pollutants (i.e. roads, industrial emissions, chimneys) were removed, leaving only pollutants that are derived from sources that are outside of the district.

These indicate that the NO₂ and PM₁₀ concentrations at the site are 15.9µg/m³ and 15.0µg/m³ respectively. These values are projected to reduce to 12.3µg/m³ and 14.9µg/m³ respectively in 2030.

11 CONSTRUCTION PHASE DUST RISK ASSESSMENT

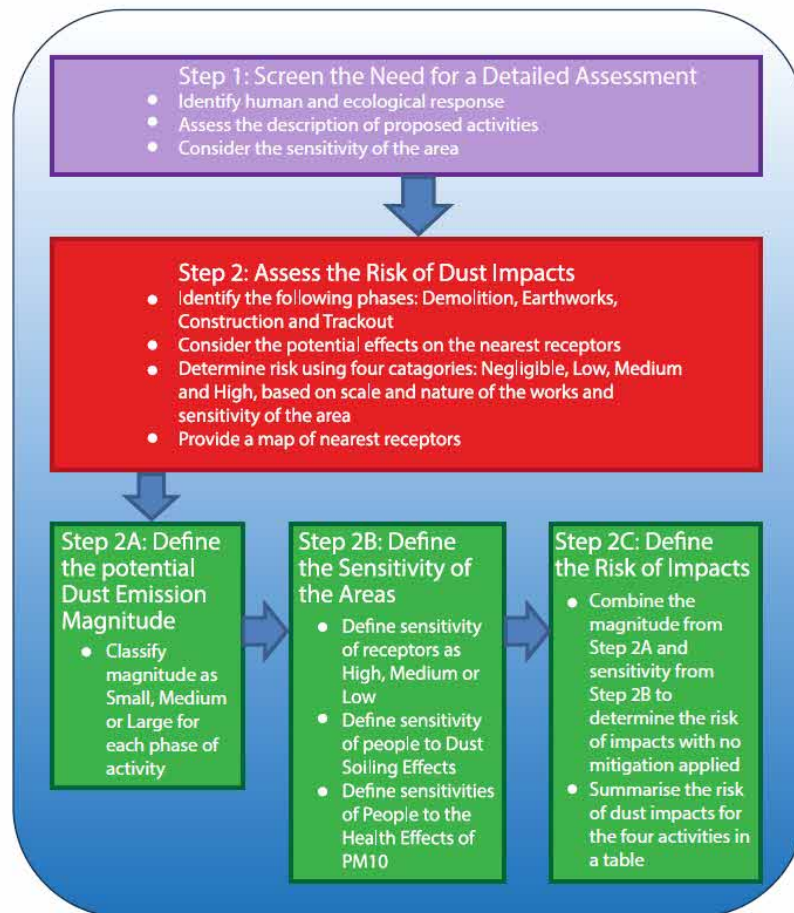
The Mayor of London's Control of Dust and Emissions During Construction and Demolition Supplementary Planning Guidance' provides a methodology for undertaking a construction phase Dust Risk Assessment (DRA) and for determining mitigation measures where necessary.

An AQDRA should include:

- A risk assessment for each phase of works (demolition, earthworks, construction, trackout), which evaluates risk and identifies suitable mitigation measures.
- Identification of whether each phase of activity on-site represents a low, medium or high risk.

The methodology is summarised in Figure 3 below.

Figure 3: Dust Risk Assessment Methodology



11.1 Step 1: Screening of the Need for a Detailed Assessment

Construction phase activities such as demolition, excavation, ground works and heavy vehicle movements have the potential to generate fugitive dust emissions which could impact both neighbouring residents as well as pedestrians.

The site is directly adjacent to residential dwellings on both the southern and western boundaries and is also on a relatively busy main road. As such it is considered that a detailed Dust Risk Assessment is required.

11.2 Step 2: Assessment of the Risk of Dust Impacts

Step 2 involves an assessment of the risk of potential dust impacts based on the scale and nature of the works, and the sensitivity of the area to dust impacts.

The dust emission magnitude (Step 2a) and receptor sensitivity assessment (Step 2b) for the proposed development are summarised in Table 4 below.

Table 4: Step 2a and 2b - Assessment of Impacts of Potential Dust Emissions

Activity	Dust Emission Magnitude	Comments	Receptor Sensitivity Dust Soiling	Receptor Sensitivity Human Health	Receptor Sensitivity Ecological
Demolition	SMALL	Total volume of building to be demolished <20,000m ³ . Construction material with low potential for dust release (e.g. metal cladding or timber). Demolition activities <10m above ground demolition during wetter months.	HIGH Approx. 10 -100 Residential dwellings within properties within 20m of site boundary.	HIGH 10 – 100 Residential Properties within 20m of site boundary.	LOW No ecological receptors identified
Earthworks	SMALL	Total site area <2,500m ² . <5 heavy earth moving vehicles active at any one time, formation of stockpile enclosures <4m in height. Total material moved <10,000 tonnes.			
Construction	SMALL	Total building volume <25,000m ³ ,			
Trackout	SMALL	<10 HDV (>3.5t) trips in any one day. Surface material with low potential for dust release. Unpaved road length <50 m.			

Table 5 below provides a summary of the risks of the potential impacts in the absence of mitigation measures. This is derived by combining the magnitude of the potential hazard with the sensitivity of the potential receptor.

Table 5: Summary Construction Phase Dust Risk Assessment

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium	Low	Low	Low
Human Health	Medium	Low	Low	Low
Ecological	Negligible	Negligible	Negligible	Negligible

12 OPERATIONAL PHASE IMPACTS

12.1 Impacts of Increase in Road Traffic Vehicular Movements on Local Air Quality

Given that the proposed development 11no. new residential dwellings, it could result in an increase in vehicle movements in the area which may impact upon local air quality. This potential impact was assessed using guidance contained in the document entitled 'Land-Use Planning & Development Control: Planning for Air Quality' by Institute of Air Quality Management and Environmental Protection UK (IAQM/EPUK).

The document suggests a two-stage approach with the first stage being intended to screen out smaller development and/ or developments where impacts can be considered to have insignificant effects. If the answers to any of the standard questions apply then it is necessary to proceed to stage 2.

The second stage relates to specific details regarding the proposed development and the likelihood of air quality impacts. Again, standard questions are asked and depending on the answers to these, a further more detailed assessment may or may not be required.

A Residential Travel Plan Statement (ref: Transport Plan Statement Revision -, October 2023) prepared by KRONEN was provided. The proposed development will be 'car free', with 2no. off-street disabled parking spaces. At the time the report was written, a travel survey could not be carried out.

A summary of the questions and responses to the Stage 1 and Stage 2 standard questions is given in the tables below.

Table 6: Summary of Results Stage 1 Operational Air Quality Impact Assessment

Question No.	Question/Criteria	Answer	Comments	Next Step
1	Does the proposed development involve 10 or more residential units or a site area of more than 0.5ha?	Yes	It involves 11no. new residential units	Proceed to Stage 2.
2	Does the proposed development involve more than 1,000 m ² of floor space for all other uses or a site area greater than 1ha	Yes.	The gross internal area is 1006m ² .	Proceed to Stage 2.
3	Will the development have more than 10 parking spaces	No.	The proposal is car free.	No Further Action.
4	Will the development have a centralised energy facility or other centralised combustion process	No.	-	No Further Action.

Table 7: Summary of Results Stage 2 Operational Air Quality Impact Assessment

Question/Criteria	Answer	Comments	Next Step
Will the development cause a change of LDV flows of: - more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an AQMA	No.	The scheme will be car free.	No Further Action.

Question/Criteria	Answer	Comments	Next Step
- more than 500 AADT elsewhere.			
Will the development cause a change of HDV flows of: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere.	No.	As above.	No Further Action.
Will the development require realignment of roads where the change is 5m or more and the road is within an AQMA	No.	-	No Further Action.
Will the development require the introduction of a new junction or removal of an existing junction near to relevant receptors?	No.	-	No Further Action.

Based on the information available to date and based on the IAQM/EPUK guidance, the air quality impacts resulting from any increase in vehicles movements are likely to be negligible and therefore no further assessment is required.

12.2 Future Exposure

There is a potential for future residents to be exposed to exceedances of the annual mean AQS objective for NO₂ and PM₁₀ as a result of road traffic exhaust emissions from surrounding busy roads. This was assessed based on Air Quality Guidance and criteria developed by the London Air Pollution Planning and the Local Environment (APPLE) working group (see Table 8 below).

This risk has been assessed using the London Atmospheric Emissions Inventory (LAEI) modelled concentrations for 2016. Using the 2016 modelled concentrations is considered to be a conservative approach as given the action plans currently in place, air quality is likely to continuously improve in coming years.

The LAEI data (see map in Figure 4 below) indicates that NO₂ levels are approximately 32.94µg/m³ in the centre of the site. The highest concentration is 34.11µg/m³, along the south eastern boundary of the site, adjacent Ewell Road and Fairmead. The average NO₂ concentration was calculated to be 33.3µg/m³. None of the NO₂ concentrations exceed the AQS.

A similar scenario (see map in Figure 5 below) is observed in relation to PM₁₀ with levels of 20.6µg/m³ in the centre of the site. The highest concentration is 20.94µg/m³, along the south eastern boundary of the site, adjacent Ewell Road and Fairmead. The average PM₁₀ concentration was calculated to be 20.7µg/m³. None of these PM₁₀ concentrations exceed the AQS.

Figure 4: LAEI Modelled Concentrations of NO₂

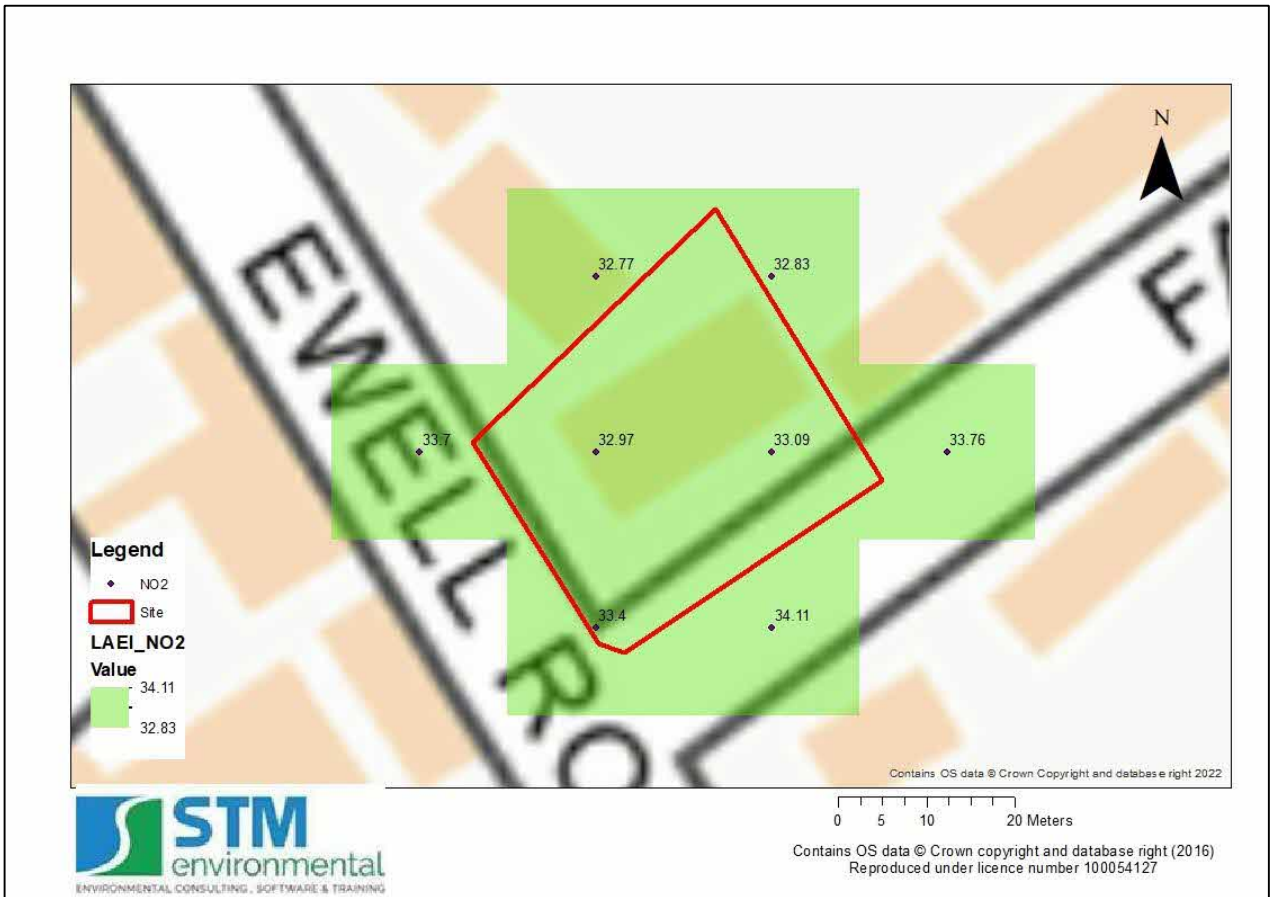
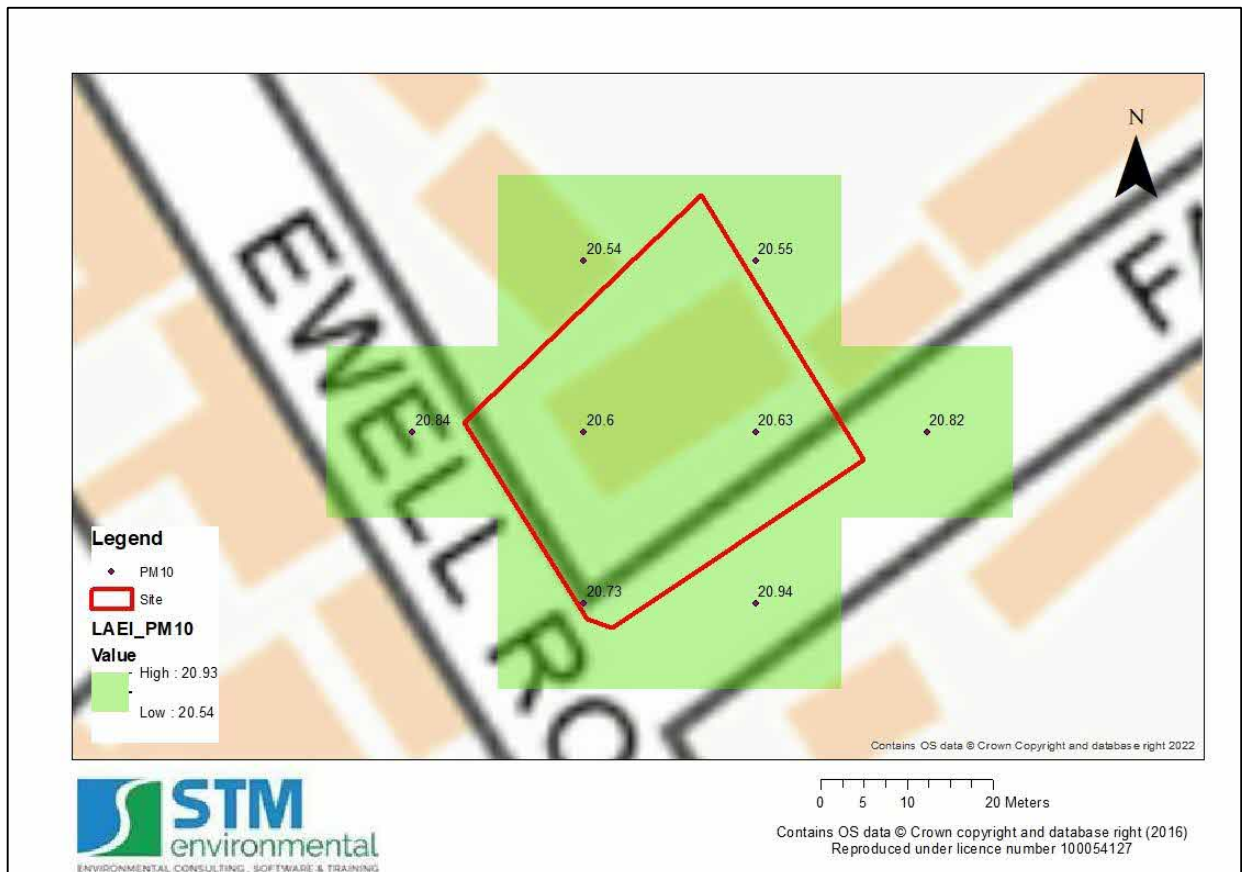


Figure 5: LAEI Modelled Concentrations of PM₁₀





The average concentrations of both NO₂ and PM₁₀ across the site are greater than 5% below the AQS so the site can be considered to fall into Air Pollution Exposure Criteria category A (APEC – A) in accordance with the London Councils Air Quality Guidance developed by the London Air Pollution Planning and the Local Environment (APPLE) working group (see Table 8 below). This indicates that the site is suitable for residential use without the inclusion of mitigation measures to protect future users from poor air quality.

Table 8: Air Pollution Exposure Criteria (APEC)

Category	Applicable Range Nitrogen Dioxide Annual Mean	Applicable Range PM10	Recommendation
APEC - A	Below 5% of the annual mean AQO	Annual Mean: > 5% below national objective 24 hr: > 1-day less than national objective	No air quality grounds for refusal; however mitigation of any emissions should be considered
APEC - B	Between 5% below or above the annual mean AQO	Annual Mean: Between 5% above or below national objective 24 hr: Between 1-day above or below national objective.	May not be sufficient air quality grounds for refusal, however appropriate mitigation must be considered e.g. maximise distance from pollutant source, proven ventilation systems, parking considerations, winter gardens, internal layout considered and internal pollutant emissions minimised
APEC - C	Above 5% of the annual mean AQO	Annual Mean: > 5% above national objective 24 hr: > 1-day more than national objective.	Refusal on air quality grounds should be anticipated, unless the LA has a specific policy enabling such land use and ensure best endeavours to reduce exposure are incorporated. Worker exposure in commercial/industrial land uses should be considered further. Mitigation measures must be presented with air quality assessment, detailing anticipated outcomes of mitigation measures

12.3 Air Quality Neutral Assessment

In accordance with the London Plan, all major developments in Greater London must comply with the Air Quality Neutral policy (AQNP). Major developments are defined as:

-  For 10 or more residential dwellings (or where the number is not given, the site area is greater than 0.5ha); or
-  For all other uses, where the floor space is 1,000m² or more (or the site area is 1ha or more).

As the proposed scheme comprises more than 10 residential units, the Air Quality Neutral policy does apply.

Under the policy, Developers must calculate the NO_x and/or PM₁₀ emissions from the buildings and transport elements of their developments and compare them to benchmarks devised to ensure that developments do not lead to an incremental increase in background concentrations in London. Where schemes do not meet the 'air quality neutral' benchmarks, after mitigation measures have been implemented onsite, the developer will be required to off-set emissions off-site.

The benchmarks for buildings and transport have been calculated based on the type and magnitude of the land use classes the proposed development comprises of. The benchmarks are laid out in Table 14 and Table 15 in [Appendix 4](#). The relevant criteria are outlined in below.

The policy also requires that where individual and/or communal gas boilers are installed in commercial and domestic buildings they should achieve a NO_x rating of <40 mgNO_x/kWh.

The gross internal floor area was provided by the Client and is summarised in Table 9 below.

Table 9: Internal Areas of Main Land Uses Associated with the Proposed Development

Location	Land Use Class	Gross Internal Area (m ²)	Comments
Basement, Ground, 1st, 2 nd , 3 rd Floors – Residential	C3	1006	11no. residential dwellings

12.3.1 Building Emissions

The main emissions from the building will be associated with the heating plant. It is understood that that all the dwellings will be fitted with combination gas boilers. A ‘combi’ boiler is both a high efficiency water heater and a central heating boiler in a single compact unit.

The building emission benchmarks were calculated as shown in Table 10 below. PM₁₀ emissions were not included as, per guidance, they only need to be considered for oil and solid fuel use.

Table 10: Calculated Building Emission Benchmarks

Land Use Class	Description	Gross Internal Area (m ²)	NO _x Building TEB (g/m ²)	Total NO _x Building TEB (kg NO _x / Annum)
Class C3	Residential Dwellings	1006	26.2	26.36

As the NO₂ emission rate for the combi boiler is 40mg/kWh or below, it can be classified as a low NO_x boiler.

According to the Government document “Energy consumption in new domestic buildings 2015 – 2017 (England and Wales), the average house or flat used approximately 120 kWh/m² in one year. Using this information, an estimate of the total NO_x likely to be produced by the development was calculated as follows:

$$\text{Total NO}_x = 40\text{mg NO}_x/\text{KWh} * 120 \text{ kWh/m}^2 * 1006\text{m}^2 = 4.8\text{kgNO}_x/\text{Annum}$$

Furthermore, it should be noted that the NO_x emissions referred to above will be generated at the source of the electricity generation rather than locally.

The calculated Building Emissions were compared with the Total Building Emission Benchmarks as shown in Table 11.

Table 11: Comparison of Calculated Building Emissions with Benchmarks

	NO _x Emissions (kg / annum)
Total Calculated Building Emissions	4.8
Total Buildings Emissions Benchmark (TEB)	26.36
DIFFERENCE	-21.56

As can be seen the calculated building emissions from the proposed development are considerably less than the TEB. Therefore, no additional mitigation is considered to be required in order to offset NO_x emissions.

12.3.2 Transport Emissions

The proposed development will be 'car free' and no other vehicular parking will be provided for residents. As such, Total Transport Emissions will be insignificant and therefore do not need to be calculated.

13 AIR QUALITY MITIGATION MEASURES

13.1 Construction Phase Measures

The risks associated with potential construction phase dust impacts were considered to range from low to medium indicating that the implementation of some form of dust mitigation is required. The Mayor of London's Control of Dust and Emissions During Construction and Demolition SPG provides examples of measures that can be taken to reduce the potential construction phase dust impacts. The measures outlined include the following:

- Good site management – ensuring that the site is responsibly managed during the demolition and construction phases of the development. Involving stakeholders in planning and ensuring a responsible person can be contacted on site at all times.
- Good site layout - ensuring that dust generating activities are as much as possible kept away from sensitive receptors and installing solid screens or barriers around dust generating activities.
- Good site maintenance – Regular checks of buildings within 100m of the site boundary should be carried out to check for soiling due to dust. Regularly cleaning hoardings, fencing, barriers and scaffolding using wet methods. Implementing real-time dust and air quality pollutant monitors across the site and ensure they are checked regularly.
- Preventing spillages
- Reducing emissions from site vehicles - All vehicles associated with the demolition / construction should comply with the standards of the London Low Emission Zone. Keeping vehicle idling to a minimum.
- Planning Logistics to avoid congestions and delays
- Development of workplace travel plans which aim to reduce the emissions from workers and visitors travelling to and from the site.
- Use of renewable, mains or battery powered plant items
- Avoiding where possible, cutting, grinding and sawing by using prefabricated materials
- Use best available techniques in accordance with the Process Guidance note PG 3/16 (04)12 if intending on bringing mobile crushers onto the site.
- Avoid bonfires and burning of waste materials.
- Wash and clean vehicles – in particular wheels – before leaving the site.
- Ensure that hard surfaces or paving are used for all haul routes, even if routes are temporary.
- All vehicles carrying dusty materials should be securely covered before leaving the site.
- Keep an accurate log of complaints from the public, and the measures taken to address any complaints, where they were required
- Consider if monitoring of PM10 is necessary on site or at location of sensitive receptors.

The above list and the SPG will be reviewed prior to the commencement of construction works and if required a Construction Environmental Management Plan, will be implemented.

13.2 Operational Phase Measures

As described above, based on the LAEI modelled results for NO₂ and PM₁₀, the site is classified as APEC – A, which indicates that it is considered suitable for residential use without the requirement for mitigation measures.

14 CONCLUSIONS

STM was instructed by RAA Planning Ltd to prepare an Air Quality Impact Assessment for a proposed development located at 441-447 Ewell Road, Surbiton, KT6 7ES. The assessment was required to support a planning application for the demolition of vacant former dance studio and erection of a new

3-storey building with part basement housing a mix of 11no. residential dwellings with 2no. disabled parking spaces.

The whole of RBK was declared an Air Quality Management Area in 2003 due to exceedances of the National Air Quality Standards for NO₂ and PM₁₀. An Air Quality Assessment was therefore undertaken with the objective of assessing the potential negative air quality impacts associated with the development.

Fugitive dust emissions from the construction phase were assessed in using the methodology laid out in the Mayor of London's Supplementary Planning Guidance. The main risk of adverse dust impacts was considered to be associated with the demolition phase of the construction. These were considered to be Medium. Risks associated with Earthworks, Construction and Trackout were considered to be low. However, provided the mitigation measures laid out in the Mayor's SPG are implemented, any potential air quality impacts from dust are considered likely to be minimal.

Potential impacts during the operational phase of the proposed scheme may occur due to road traffic exhaust emissions associated with vehicles traveling to and from the Site. These have been assessed against the screening criteria provided within the IAQM/EPUK guidance. The proposed development is a car free development and will only have 2 parking places which will be reserved for disabled drivers. Therefore, the number of additional vehicle trips anticipated to be generated by the proposals, are considered to be very low and the potential air quality impacts are predicted to be negligible.

An assessment was made of exposure of the potential exposure of future users of the development to air pollutants. The LAEI model data from indicates that pollution levels the site are below the relevant AQS objectives and that the site can be classified as APEC A. As such, the location is considered to be suitable for proposed residential use without the requirement for air quality mitigation measures.

An Air Quality Neutral Assessment was carried out for the site. This found that building related emissions are very unlikely to exceed the calculated benchmarks and that therefore no mitigation measures are required to offset emissions. The proposed development will be 'car free' and no other off-site vehicular parking is available for residents. As such, Total Transport Emissions will be insufficient and do not require to be calculated.

On this basis we consider the development to be in compliance with the local and London-wide planning policies and the NPPF.

15 APPENDICES

15.1 Appendix 1 – Details of Proposed Development

15.1.1 Proposed Plans

15.2 Appendix 2 – Air Quality Monitoring Data

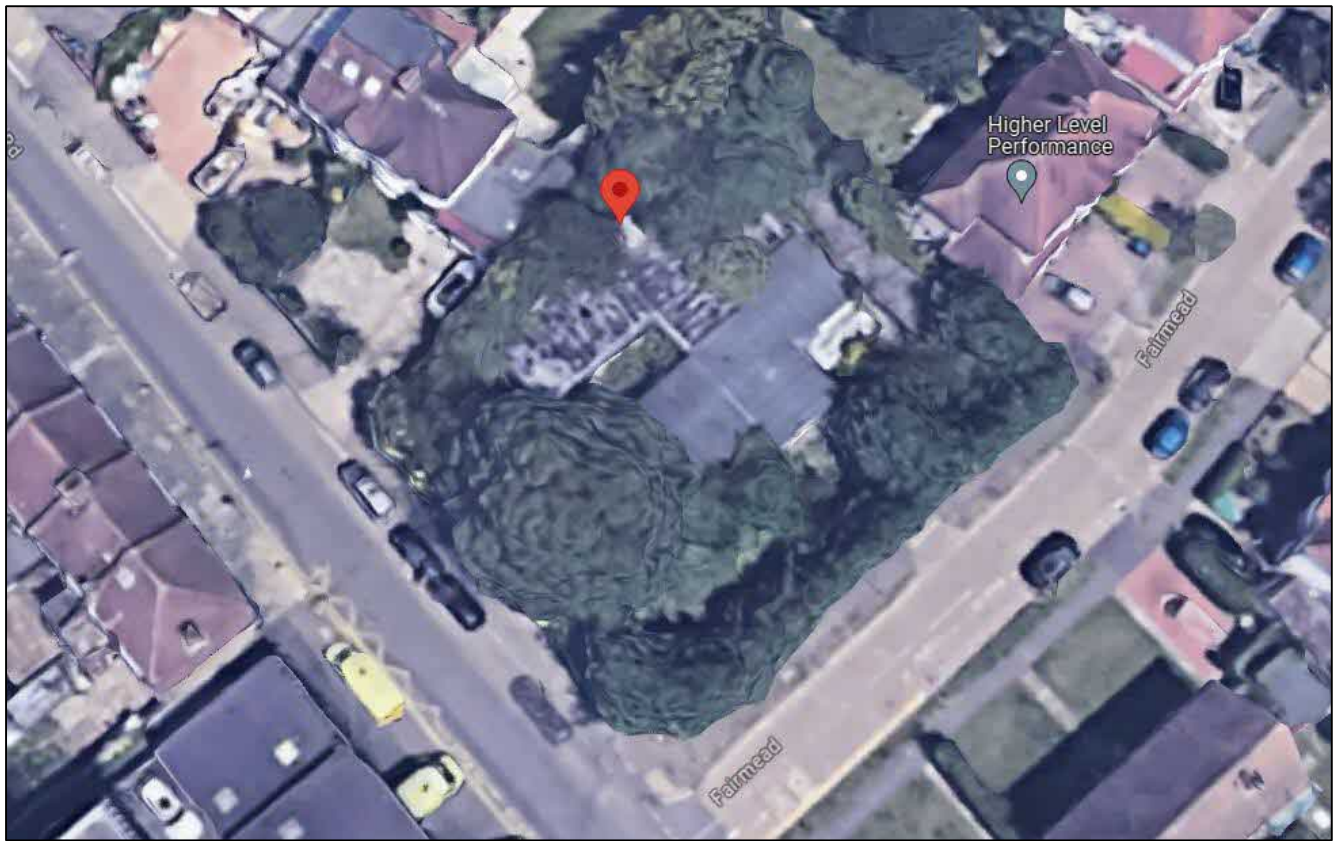
Table 12: NO₂ Continuous Monitor Results: Annual Mean NO₂ Monitoring Results (µg m³)

Site ID	Location	Number of Hourly Means >200µg/m ³					
		2015	2016	2017	2018	2019	2020
KT4	Tolworth Broadway	48.5	50.7	48.9	44	41.41	32.8

Table 13: NO₂ Diffusion Tube Monitor Results: Annual Mean NO₂ Monitoring Results (µg m³)

Site ID	Location	Number of Hourly Means >200µg/m ³						
		2014	2015	2016	2017	2018	2019	2020
11	53 Elgar Avenue	27.5	28.82	30.74	26.71	26.08	24.25	19.65
12	136 Tolworth Broadway/Service Road	58.7	67.18	55.22	51.28	43.75	40.69	32.96

15.3 Appendix 3 – Site Photographs



15.4 Appendix 4 – Air Quality Neutral benchmarks

Table 14: Air Quality Neutral' Emissions Benchmarks For Buildings

Land Use Class	Description	NO _x (g/m ²)	PM ₁₀ (g/m ²)
Class A1	Retail - Shops and retail outlets	22.6	1.29
Class A3 - A5	Restaurants - Food and drink/ hot food and takeaway.	75.2	4.32
Class A2 and Class B1*	Financial/Professional services/ business	30.8	1.77
Class B2 - B7	General & Special industrial use	36.6	2.95
Class B8	Storage or distribution centre	23.6	1.90
Class C1	Hotels, boarding houses, guest houses	70.9	4.07
Class C2	Residential Institutions - hospitals and nursing/care homes, Schools, colleges or training centres, care homes	68.5	5.97
Class C3	Residential Dwellings	26.2	2.28
D1 (a)	Medical and health services - Clinics, health centres	43.0	2.47
D1 (b)	Crèche/day nurseries, day centres	75.0	4.30
Class D1 (c -h)	Schools, libraries	31.0	1.78
Class D2 (a-d)	Assembly and Leisure - Cinemas, theatres	90.3	5.18
Class D2 (e)	Swimming pools, gymnasiums or areas for indoor or outdoor sports and recreations etc	284	16.3

*B1 was revoked and replaced by E in September 2020

Table 15: Air Quality Neutral' Emissions Benchmarks For Transport

Land use	Central Activity Zone (CAZ) & Canary Wharf	Inner	Outer
NO_x (g/m²/annum)			
Retail (A1)	169	219	249
Office (B1/E)	1.27	11.4	68.5
NO_x (g/dwelling/annum)			
Residential (C3)	234	558	1553
PM₁₀ (g/m²/annum)			
Retail (A1)	29.3	39.3	42.9
Office (B1/E)*	0.22	2.05	11.8
PM₁₀ (g/dwelling/annum)			
Residential (C3,C4)	40.7	100	267

*B1 was revoked and replaced by E in September 2020

Table 16: Average Distance Travelled by Car per Trip

Land Use	Distance (km)		
	CAZ	Inner	Outer
Retail (A1)	9.3	5.9	5.4
Office (B1/E)*	3.0	7.7	10.8
Residential (C3)*	4.3	3.7	11.4

*B1 was revoked and replaced by E in September 2020

*Based on the LTDS destination.

Note these distances are based on a straight line between the origin and destination of a trip, not the actual trip lengths.

Table 17: Emission Factors

Pollutant	g/vehicle (km)		
	CAZ	Inner	Outer
NOx	0.4224	0.370	0.353
PM10	0.0733	0.0665	0.0606

16 REFERENCES

1. Local Air Quality Management, Policy Guidance (PG16) , 2016 – DEFRA
2. GLA (2021), The London Plan
3. Land-Use Planning & Development Control: Planning For Air Quality - EPUK & IAQM
4. Control of Dust and Emissions During Construction and Demolition SPG - July 2014 – Mayor of London
5. Air Quality Neutral Planning Support Update: GLA 80371, April 2014
6. Annual Status Report – Royal Borough of Kingston – 2020
7. Air Quality Action Plan – Royal Borough of Kingston – 2021-2026