



Air Quality Assessment

C10697

Swaythling Road
Southampton

Prepared for

Sennitt Planning
Newport Lane
Braishfield
Romsey
Hampshire
SO51 0PL

Omnia ref: C10697/1.0
March 2022



ISO Accredited Certification (UKAS)



Quality Assurance

Issue/revision	Issue 1	Revision 1	Revision 2	Revision 3
Remarks	Draft for comment			
Date	March 2022			
Prepared by	A. Barnett Redmore Environmental			
Contractor Report ref	5439r1			
Issued on behalf of Omnia	Elizabeth Samphier			
Signature				
Position	Principal Acoustic Consultant			
Project number	C10697 – 1r0			

North

Business First, Millennium
City Park, Millennium Road,
Preston
PR2 5BL
01772 963 024

Midlands

12 High Pavement,
Lace Market, Nottingham
NG1 1HN
0115 7043 492

South

3-6 The Quarterdeck,
Pork Solent, Portsmouth
PO6 4TP
01489 808 088

We are a UK wide, truly joined up and fully collaborative multi-disciplinary engineering and environmental consultancy.

Executive Summary

This report has been prepared to support a planning application for a residential development at 17 Swaythling Road, Southampton.

The proposals comprise the demolition of existing buildings and subsequent construction of a detached four-bedroom dwelling with associated parking facilities.

Eastleigh Borough Council have indicated concerns over the potential exposure of future residents to elevated pollution levels associated with local road traffic sources. An Air Quality Assessment was therefore undertaken in order to determine baseline conditions at the development and consider location suitability for the proposed end-use.

The potential for exposure of future residents to poor air quality was assessed based on the results of a desktop study. This indicated that pollutant concentrations are likely to be below the relevant criteria at the development location.

Based on the assessment results, the site is considered suitable for the proposed end-use from an air quality perspective without the requirement for mitigation.

Table of Contents

Quality Assurance	1
1.0 INTRODUCTION	4
1.1 Background	4
1.2 Proposed Development	4
1.3 Acronyms	4
1.4 Confidentiality	4
2.0 LEGISLATION AND POLICY	5
2.1 Legislation	5
2.2 Local Air Quality Management	6
2.3 National Planning Policy	6
2.4 National Planning Practice Guidance	7
2.5 Local Planning Policy	8
3.0 BASELINE	9
3.1 Introduction	9
3.2 Local Air Quality Management	9
3.3 Air Quality Monitoring	9
3.4 Background Pollutant Concentration Predictions	10
4.0 METHODOLOGY	11
5.0 ASSESSMENT	12
5.1 Introduction	12
5.2 AQMA Designation	12
5.3 Proximity to Significant Pollution Sources	12
5.4 Local Monitoring Results	12
5.5 Background Pollutant Concentration Predictions	13
5.6 Summary	13
6.0 SUMMARY	14
7.0 ABBREVIATIONS	15

APPENDICES

Appendix I	Drawings
------------	----------

1.0 INTRODUCTION

1.1 Background

This report has been prepared in support of a planning application for a residential development at 17 Swaythling Road, Southampton.

Omnia's partner consultant Redmore Environmental Ltd, completed works detailed herein as set out within the Quality Assurance Section of this document. Text has been reproduced with permission of the Author who completed the assessment as a sub consultant to Omnia.

The development may lead to the exposure of future residents to elevated pollution levels. As such, an Air Quality Assessment was undertaken in order to determine baseline conditions and consider site suitability for the proposed end-use.

1.2 Proposed Development

The site is located at 17 Swaythling Road, Southampton, at approximate National Grid Reference (NGR): 446098, 114670. Reference should be made to Figure 1 for a map of the site and surrounding area.

The proposals comprise the demolition of existing buildings and subsequent construction of a detached four-bedroom dwelling and associated parking facilities. Reference should be made to Figure 2 for the location of the proposed dwelling.

A planning application for the scheme was submitted to Eastleigh Borough Council (EBC) in December 2021 (ref: F/21/92102). A consultation response was subsequently received from the Pollution Control Officer at EBC. This indicated concerns over the potential exposure of future residents to elevated pollution levels as result of road traffic emissions associated with the A27, situated to the north-east of the site. An Air Quality Assessment was therefore undertaken in order to determine baseline conditions at the development and consider its suitability for the proposed end-use. This is detailed within the following report.

1.3 Acronyms

All acronyms used within this report are defined in the Abbreviations listings, set out in Section 7.

1.4 Confidentiality

This report has been prepared solely for the use of the Client. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from Omnia; a charge may be levied against such approval.

2.0 LEGISLATION AND POLICY

2.1 Legislation

The Air Quality Standards Regulations (2010) came into force on 11th June 2010 and include Air Quality Limit Values (AQLVs) for the following pollutants:

- Nitrogen dioxide (NO₂);
- Sulphur dioxide;
- Lead;
- Particulate matter with an aerodynamic diameter of less than 10µm (PM₁₀);
- Particulate matter with an aerodynamic diameter of less than 2.5µm;
- Benzene; and,
- Carbon monoxide.

Air quality target values have also been provided for several additional pollutants.

Part IV of the Environment Act (1995) requires UK government to produce a national Air Quality Strategy (AQS) which contains standards, objectives, and measures for improving ambient air quality. The most recent AQS was produced by the Department for Environment, Food and Rural Affairs (DEFRA) and published in July 2007¹. The AQS sets out Air Quality Objectives (AQOs) that are maximum ambient pollutant concentrations that are not to be exceeded either without exception or with a permitted number of exceedences over a specified timescale. These are generally in line with the AQLVs, although the requirements for the determination of compliance vary.

Table 1 presents the AQOs for pollutants considered within this assessment.

Table 1 Air Quality Objectives

Pollutant	Air Quality Objective	
	Concentration	Averaging Period
NO ₂	40	Annual mean
	200	1-hour mean, not to be exceeded on more than 18 occasions per annum
PM ₁₀	40	Annual mean
	50	24-hour mean, not to be exceeded on more than 35 occasions per annum

Table 2 summarises the advice provided in DEFRA guidance² on where the AQOs for pollutants considered within this report apply.

Table 2 Examples of Where the Air Quality Objectives Apply

Averaging Period	Objective Should Apply At	Objective Should Not Apply At
Annual mean	All locations where members of the public might be regularly exposed Building façades of residential properties, schools, hospitals, care homes etc.	Building façades of offices or other places of work where members of the public do not have regular access Hotels, unless people live there as their permanent residence

¹ The AQS for England, Scotland, Wales and Northern Ireland, DEFRA, 2007.

² Local Air Quality Management Technical Guidance (TG16), DEFRA, 2021.

Averaging Period	Objective Should Apply At	Objective Should Not Apply At
		Gardens of residential properties Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term
24-hour mean	All locations where the annual mean objective would apply, together with hotels Gardens of residential properties	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term
1-hour mean	All locations where the annual mean and 24 and 8-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets) Those parts of car parks, bus stations and railway stations etc which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer	Kerbside sites where the public would not be expected to have regular access

2.2 Local Air Quality Management

Under Section 82 of the Environment Act (1995) (Part IV) Local Authorities (LAs) are required to periodically review and assess air quality within their area of jurisdiction under the system of Local Air Quality Management (LAQM). This review and assessment of air quality involves comparing present and likely future pollutant concentrations against the AQOs. If it is predicted that levels at locations of relevant exposure, as summarised in Table 2, 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 National Planning Policy

The revised National Planning Policy Framework³ (NPPF) was published in July 2021 and sets out the Government's planning policies for England and how these are expected to be applied.

The purpose of the planning system is to contribute to the achievement of sustainable development. In order to ensure this, the NPPF recognises three overarching objectives, including the following of relevance to air quality:

"c) an environmental objective - to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."

³ NPPF, Ministry of Housing, Communities and Local Government, 2021.

Chapter 15 of the NPPF details objectives in relation to conserving and enhancing the natural environment. It states that:

"Planning policies and decisions should contribute to and enhance the natural and local environment by:

[...]

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality [...]."

The NPPF specifically recognises air quality as part of delivering sustainable development and states that:

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

The implications of the NPPF have been considered throughout this assessment.

2.4 National Planning Practice Guidance

The National Planning Practice Guidance⁴ (NPPG) web-based resource was launched by the Department for Communities and Local Government on 6th March 2014 and updated on 1st November 2019 to support the NPPF and make it more accessible. The air quality pages are summarised under the following headings:

1. What air quality considerations does planning need to address?
2. What is the role of plan-making with regard to air quality?
3. Are air quality concerns relevant to neighbourhood planning?
4. What information is available about air quality?
5. When could air quality considerations be relevant to the development management process?
6. What specific issues may need to be considered when assessing air quality impacts?
7. How detailed does an air quality assessment need to be?
8. How can an impact on air quality be mitigated?

⁴ <https://www.gov.uk/guidance/air-quality--3>.

These were reviewed and the relevant guidance considered as necessary throughout the undertaking of this assessment.

2.5 Local Planning Policy

The Eastleigh Borough Local Plan Review (2001 - 2011)⁵ was adopted by EBC on 25th May 2006. A review of the document identified the following policies of relevance to this report:

"Policy 32.ES

Proposals for uses which may generate air, land or water pollution, will only be permitted if the Borough Council is satisfied that they have been designed to control their impact to an acceptable level."

"Policy 33.ES

Where new development appears likely to have a significant impact on air quality in the locality, or future occupiers of the development may be subject to unacceptable air quality, the Council will require a suitable air quality assessment to be carried out prior to consideration of the application."

EBC are due to adopt the Eastleigh Borough Local Plan 2016 - 2036⁶ at a Full Council meeting on 25th April 2022. Review of the draft document and associated modifications⁷ identified the following policy of relevance to this report:

"Policy DM8, Pollution

Development will not be permitted if it is likely to cause loss of amenity or impact on public health or other unacceptable environmental impacts through:

- i. air pollution (including odours or particulate emissions)*

[...]

Development susceptible to particular forms of pollution will not be permitted:

- a. where it will be adversely affected by such pollution, unless measures can be taken that adequately mitigate the polluting effects; or*
- b. where it would inhibit existing economic or other activities giving rise to acceptable polluting effects."*

The above policies have been taken into consideration throughout the assessment.

⁵ Eastleigh Borough Local Plan Review (2001 - 2011), EBC, 2006.

⁶ Eastleigh Borough Local Plan 2016 - 2036, EBC, 2018.

⁷ Eastleigh Local Plan - Schedule of Main Modifications, The Planning Inspectorate, 2022.

3.0 BASELINE

3.1 Introduction

Existing air quality conditions in the vicinity of the proposed development site were identified in order to provide a baseline for assessment. These are detailed in the following Sections.

3.2 Local Air Quality Management

As required by the Environment Act (1995), EBC has undertaken Review and Assessment of air quality within their area of jurisdiction. This process has indicated that annual mean concentrations of NO₂ are above the relevant AQO within the council's administrative extents. As such, four AQMAs have been declared. The nearest of these to the development is AQMA No.1 (A335) and is described as follows:

"The AQMA encompasses an area extending 30m to either side of the A335 from the junction of Leigh Road and Bournemouth Road to Wide Lane (north of the roundabout with the M27 spur), and a 15m corridor each side of Woodside Avenue north from the junction with the A335 Leigh Road and Passfield Avenue to the railway bridge, Twyford Road north from the junction with Romsey Road and A335 Station Hill to the junction with St Catherines Road, and the B3037 Bishopstoke Road west from junction with the A335 Station Hill to and including the roundabout with Chickenhall Lane."

The development is located approximately 2.6km south of the AQMA. It is considered unlikely that the proposal would affect air quality over a distance of this magnitude.

EBC have concluded that concentrations of all other pollutants considered within the AQS are currently below the relevant AQOs. As such, no further AQMAs have been designated.

3.3 Air Quality Monitoring

Monitoring of pollutant concentrations is undertaken by EBC throughout their area of jurisdiction. Recent NO₂ results recorded in the vicinity of the development are shown in Table 3.

Table 3 Monitoring Results - NO₂

Monitoring Site		Monitored NO ₂ Concentration (µg/m ³)		
		2018	2019	2020
SWA	Swaythling Road	27.65	28.61	24.08

As shown in Table 3, annual mean NO₂ concentrations were below the relevant AQO of 40µg/m³ at the SWA - Swaythling Road monitor during recent years. Reference should be made to Figure 2 for a map of the survey position.

It should be noted that pollutant concentrations recorded during 2020 are lower than previous years due to a reduction in road traffic and associated emissions caused by the COVID-19 pandemic. The results should therefore be viewed with caution.

EBC do not undertake PM₁₀ monitoring within the vicinity of the proposed development.

3.4 Background Pollutant Concentration Predictions

Predictions of background pollutant concentrations on a 1km by 1km grid basis have been produced by DEFRA. These maps cover the entire of the UK to assist LAs in their Review and Assessment of air quality. The proposed development site is located in grid square NGR: 446500, 114500. Data for this location was downloaded from the DEFRA website⁸ for the purpose of the assessment and is summarised in Table 4.

Table 4 Background Pollutant Concentration Predictions

Pollutant	Predicted Background Pollutant Concentration (µg/m ³)	
	2019	2022
NO ₂	16.40	14.75
PM ₁₀	15.01	14.40

As shown in Table 4, predicted background NO₂ and PM₁₀ concentrations are below the relevant AQOs at the development site.

⁸ Local Air Quality Management Technical Guidance (TG16), DEFRA, 2021.

4.0 METHODOLOGY

The proposals have the potential to expose future residents to elevated pollutant levels due to the proximity of the development to the A27 and associated road traffic emissions. This has been assessed in accordance with the following methodology.

The proposed development includes residential land use, which is considered a location of relevant exposure for long-term and short-term AQOs in accordance with DEFRA guidance⁹ as summarised in Table 2. Existing air quality conditions at the site were therefore assessed through consideration of the following factors:

- AQMA designations;
- Proximity to significant pollution sources;
- Local monitoring results;
- 'NO₂ Fall-Off with Distance Calculator'; and,
- Background pollutant concentration predictions.

The findings were subsequently used to determine the potential for exceedences of the relevant AQOs at the development location. Should the assessment indicate significant uncertainty over air quality conditions at the site then further quantitative methods, such as detailed dispersion modelling, could be utilised to refine predictions.

⁹ Local Air Quality Management Technical Guidance (TG16), DEFRA, 2021.

5.0 ASSESSMENT

5.1 Introduction

The proposed development comprises land use sensitive to both long and short term pollutant concentrations. As such, the scheme has the potential to introduce new receptors into an area of elevated pollution levels. Existing conditions at the site are therefore considered in the following Sections.

5.2 AQMA Designation

The proposals are located approximately 2.6km east of AQMA No.1 (A335), which has been declared due to exceedences of the annual mean AQO for NO₂. The designation does not cover 1-hour mean concentrations of NO₂ or annual mean and 24-hour mean concentrations of PM₁₀, indicating exceedences of these AQOs have not been identified within the borough. As such, exceedences of the long and short term AQOs is considered unlikely at the development location.

Due to the distance between the site and the AQMA, it is considered unlikely that exceedences of the annual mean AQO for NO₂ will occur at the proposed development

5.3 Proximity to Significant Pollution Sources

A desk-top study was undertaken in order to identify any significant pollution sources within the vicinity of the site. The findings are provided in Table 5.

Table 5 Significant Pollution Sources

Source	Distance to Proposed Dwelling (m)	Comment
A27 - Swaythling Road	15	Swaythling Road is classified as an A-road with an Annual Average Daily Traffic (AADT) flow of 14,606 and Heavy Duty Vehicle (HDV) proportion of fleet of 1.29% during 2019 ^(a)

Note: (a) Source: Department for Transport, <https://roadtraffic.dft.gov.uk/manualcountpoints/73607>

As shown in Table 5, there is one significant pollution source within the vicinity of the site. However, the proposed dwelling is set back from the A27 by 15.1m, as shown in Figure 2. As outlined in DEFRA¹⁰ guidance, pollutant levels decrease with distance from the roadside. Concentrations are therefore anticipated to be closer to background levels at the building façade.

5.4 Local Monitoring Results

Monitoring of NO₂ concentrations is undertaken by EBC at one location adjacent to the A27 in the vicinity of the site. As shown in Table 3, NO₂ levels recorded at the SWA - Swaythling Road monitor were below the AQO of 40µg/m³ in recent years.

The proposed dwelling is set back an additional 12.4m from the kerb than the A27 survey position. As such, existing conditions at the site were considered using the 'NO₂ Fall-Off with Distance Calculator'

¹⁰ Local Air Quality Management Technical Guidance (TG16), DEFRA, 2021.

(version 4.2). This spreadsheet utilises data from nearby monitoring locations, including the distance from the kerb and annual mean NO₂ concentrations, in order to predict air quality conditions at a specified receptor. The findings were subsequently used to determine the potential for AQO exceedance at the development location.

The relevant inputs for the calculation are outlined in Table 6. The receptor was defined as the closest proposed building façade to the kerb of Swaythling Road.

Table 6 NO₂ Fall-Off with Distance Calculator Inputs

Monitor	Distance (m)		NO ₂ Annual Mean Concentrations (µg/m ³)		
	Monitoring Site to Kerb	Receptor to Kerb	Background	Monitored at Site	Predicted at Receptor
SWA - Swaythling Road	2.7	15.0	16.40	28.61	23.3

As shown in Table 6, annual mean NO₂ concentrations were predicted to be below the AQO at the proposed building façade. As such, exposure of future residents to exceedences of the AQO is not considered likely.

EBC do not undertake monitoring of 1-hour NO₂ concentrations within the vicinity of the proposed development. However, as annual mean NO₂ concentrations were below 60µg/m³ at the SWA - Swaythling Road monitor, it is considered unlikely that the 1-hour mean AQO will be exceeded at the development location, in accordance with DEFRA guidance¹¹.

Based on the above, exceedences of the relevant AQOs for NO₂ is considered unlikely at the development location.

5.5 Background Pollutant Concentration Predictions

As shown in Table 4, predicted background NO₂ and PM₁₀ concentrations for the grid square containing the site were below the relevant AQOs during 2022. As such, exceedences of the relevant AQOs are considered unlikely at the development location.

5.6 Summary

It is considered unlikely that pollutant concentrations are above the relevant AQOs at the proposed development for the following reasons:

- The site is not located within an AQMA;
- The proposed dwelling is set back from the A27, the most significant source of pollution in the area;
- Local monitoring indicates the long and short term AQOs for NO₂ are unlikely to be exceeded at the development location; and,
- Predicted background pollutant concentrations are below the relevant AQOs.

Based on the assessment results, exposure of future residents to exceedences of the AQOs is not considered likely. As such, the site is considered suitable for the proposed end-use from an air quality perspective without the requirement for mitigation.

¹¹ Local Air Quality Management Technical Guidance (TG16), DEFRA, 2021.

6.0 SUMMARY

This report has been prepared to support a planning application for a residential development at 17 Swaythling Road, Southampton.

The proposals comprise the demolition of existing buildings and subsequent construction of a detached four-bedroom dwelling with associated parking facilities.

EBC have indicated concerns over the potential exposure of future residents to elevated pollution levels as result of road traffic emissions associated with the A27. An Air Quality Assessment was therefore undertaken in order to determine baseline conditions at the development and consider location suitability for the proposed end-use.

The potential for exposure of future residents to exceedences of the AQOs was assessed based on the AQMA designation, proximity of the A27 to the proposed dwelling, local monitoring results and predicted background pollutant levels. This indicated that concentrations of NO₂ and PM₁₀ are likely to be below the relevant AQOs at the development location.

Based on the assessment results, the site is considered suitable for the proposed end-use from an air quality perspective without the requirement for mitigation.

7.0 ABBREVIATIONS

AADT	Annual Average Daily Traffic
AQAP	Air Quality Action Plan
AQLV	Air Quality Limit Value
AQMA	Air Quality Management Area
AQO	Air Quality Objective
AQS	Air Quality Strategy
DEFRA	Department for Environment, Food and Rural Affairs
EBC	Eastleigh Borough Council
HDV	Heavy Duty Vehicle
LA	Local Authority
LAQM	Local Air Quality Management
NGR	National Grid Reference
NO ₂	Nitrogen dioxide
NPPF	National Planning Policy Framework
NPPG	National Planning Policy Guidance
PM ₁₀	Particulate matter with an aerodynamic diameter of less than 10µm

APPENDIX I

Drawings





