



GEORGE STREET, READING

AIR QUALITY ASSESSMENT

MARCH 2018



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Reading Borough Council

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WSP
Kings Orchard,
1 Queen St
Bristol, BS2 0HQ

Tel: +44 (0) 1179 306200
www.wsp.com



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1 INTRODUCTION

WSP has been commissioned by Reading Borough Council (RBC) to prepare an air quality assessment to support a planning application for a proposed development at George Street, Reading (hereafter referred to as the 'Proposed Development' or 'Application Site'). The development proposals are for the construction of four residential units (2.5 storeys each).

The Application Site lies within the administrative boundary of RBC and is located in an urban area. The main source of pollution in the area is road traffic and the relevant air pollutants for consideration are therefore nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}). To the north of the Site, approximately 30m away, are railway lines.

This report presents the findings of an assessment of the potential air quality impacts of the Proposed Development during both the construction and operational phases.

2 SCOPE AND METHODOLOGY

After consultation with the Environmental Health Officer (EHO) at RBC, the scope of the assessment was defined and it includes the following tasks:

Task 1: Undertake a simple two stage air quality assessment using the criteria provided in Tables 6.1 and 6.2 of the Institute of Air Quality Management/Environmental Protection UK (IAQM/EPUK) guidance¹ to establish whether the proposals warrant the need for a detailed air quality assessment. The two stages are as follows:

1. Stage 1: review of the development proposals, including number of residential units, floor space, car park spaces and the presence of an energy centre or other combustion processes on site, against the screening criteria provided in Table 6.1 of the guidance. In the event that the Stage 1 criteria are exceeded proceed to Stage 2; and
2. Stage 2: review of the changes in Light Duty Vehicles (LDVs) and Heavy Duty Vehicles (HDVs), road alignment, and the introduction of new junctions and bus stops (if applicable) due to the Proposed Development.

Task 2: Undertake a qualitative assessment of the potential impacts from dust generated during the construction phase, with reference to the IAQM construction guidance², including any applicable mitigation measures;

Task 3: Establish air quality baseline conditions at the Application Site considering local sources of air pollution including emissions from the local road network and from the presence of any industrial facilities. A review of the latest air quality review and assessment report produced by

¹ Environmental Protection UK and Institute of Air Quality Management (Version 1.2 Updated January 2017). Land Use Planning & Development Control: Planning for Air Quality

² Institute of Air Quality Management (Version 1.1 Updated June 2016). Guidance on the Assessment of Dust from Demolition and Construction

RBC and information available on Defra's website regarding local background pollution concentrations; and,

Task 4: A qualitative assessment of the potential exposure of future residents to air pollution using the information obtained from the tasks above and a review of the development plans.

3 ASSESSMENT

3.1 TASK 1: SIMPLE AIR QUALITY ASSESSMENT

A simple air quality assessment was undertaken following the EPUK/IAQM screening criteria and the results of this are detailed in **Table 1** below. The results indicate that a detailed air quality assessment is not required for the Proposed Development. However an assessment of the potential exposure of future residents to poor air quality is recommended and so this is addressed in Tasks 3 and 4, which are described in Sections 3.3 and 3.4 of this report.

Table 1: EPUK/IAQM Stage 1 Screening Assessment

SCREENING CRITERIA	DEVELOPMENT PROPOSAL
A: if any of the following apply	
>10 residential units or a site area of > 10ha or	4 residential units
> 1,000 m ² of floor space for all other uses or a site area > 1 ha	Not applicable
B. Coupled with any of the following	
Development > 10 parking spaces	No parking proposed
Central energy facility or centralised combustion process	No energy facility or centralised combustion process

3.2 TASK 2: CONSTRUCTION DUST ASSESSMENT

The Proposed Development covers a relatively small area and it is therefore reasonable to assume that the construction period will be short and the amount of equipment used limited. Based on the IAQM guidance, the potential magnitude of dust emissions from the anticipated construction, earthworks and trackout (vehicles moving over unpaved roads) activities that will be undertaken is small. The Application Site is within an urban area with a number of residential and commercial receptors in its vicinity and consequently is considered to have a high sensitivity to increases in dust deposition. Based on the sensitivity of the area and the potential magnitude of construction dust emissions, the risk of dust impacts is considered low. This in turn means that following the application of good construction practices and mitigation measures on-site during the construction phase, the residual effects on local air quality will be negligible.

3.3 TASK 3: REVIEW OF BASELINE CONDITIONS

The main source of pollution in the area in which the Application Site is located is road traffic, followed by emissions from rail movements on the nearby railway lines. The Environment Agency's online pollution register indicates that there are no large scale/ Part A1 authorised industrial processes located within the vicinity of the Site that are likely to have a significant influence on local air quality. Furthermore, a review of information held on the public register available on RBC's website confirms that there are no smaller scale Part A2 or B processes located within the immediate vicinity of the Site either.

The Proposed Development is bordered to the north by the railway line. According to Defra's Technical Guidance for the review and assessment of air quality (TG16)³ moving diesel locomotives are associated with elevated short term NO₂ concentrations close to the track. The guidance also states that emissions from railway lines need to be considered if there is relevant exposure within 30 meters of the track and the local background annual mean NO₂ concentration is above 25µg/m³. The railway lines are within 30m from the northern boundary of the site. Although background annual mean concentrations of NO₂ are above 25µg/m³ (see **Table 3** below), the railway line is not a line with a heavy volume of diesel passenger trains. Therefore it is very unlikely that future residents will experience elevated short term NO₂ concentrations due to the presence of the railway line.

RBC has declared an Air Quality Management Area encompassing all the main arterial routes in and out of Reading, due to exceedances of the UK Air Quality Strategy (AQS) objective for annual mean concentrations of NO₂ and 24 hour mean concentrations of PM₁₀. RBC published their latest air quality report earlier this year⁴ summarising the air quality monitoring data collected in 2016.

From this report, it has been identified that there are three NO₂ diffusion tube monitoring sites in the vicinity of the Application Site operated by RBC. The annual mean NO₂ concentrations measured at these monitoring sites over the last five years are shown in the table below.

Table 2: RBC Diffusion Tube NO₂ concentrations (µg/m³)

SITE	GRID REFERENCE (X,Y)	HEIGHT	2012	2013	2014	2015	2016
10 Trinity Place	470738, 173433	2.5	33	37	32	31	31
165 Oxford Street	470717, 173373	2.5	52	48	51	47	44
Cow Lane Bridge	470230, 173818	2.5	34	35	37	31	32

The data in **Table 2** shows that annual mean NO₂ concentrations along Oxford Street, a major road in and out of Reading, have been consistently above the annual mean objective of 40µg/m³ for the last five years. The Proposed Development is located 300m from Oxford Street. Therefore, annual mean NO₂ concentrations recorded at the Oxford Street monitoring site will not be representative of those at the Application Site. The most relevant diffusion tube is in Cow Lane Bridge located 350m from Oxford Street and 350m west of the Application Site. Annual mean NO₂ concentrations at the Cow Lane Bridge site are below the annual mean NO₂ objective.

As part of the review of available air quality data in the area, background pollutant concentrations were taken from the national maps provided on the Defra website⁵, where background concentrations of those pollutants included within the AQS have been mapped at a grid resolution of 1x1km for the whole of the UK. Estimated concentrations are available for all years between 2015 and 2030. **Table 3** summarises the background pollutant concentrations of NO₂, PM₁₀ and PM_{2.5} for 2017 for the grid square in which the Application Site is located.

³ Defra (2016) Part IV The Environment Act 1995 and Environment (Northern Ireland) Order 2002 Part III, Local Air Quality Management Technical Guidance LAQM.TG16

⁴ RBC (2017). 2017 Air Quality Annual Status Report

⁵ <https://uk-air.defra.gov.uk/data/laqm-background-home>

Table 3: Background Concentrations for 2017 ($\mu\text{g}/\text{m}^3$)

GRID SQUARE (CENTRE ON O.S. GRID REFERENCE)	NO₂	PM₁₀	PM_{2.5}
470500, 173500	26.0	15.0	9.3

Background concentrations of PM₁₀ and PM_{2.5} in the vicinity of the Application Site are well below the relevant objectives. Background concentrations of NO₂ are also well below the objective, however concentrations at roadside locations, as indicated by the diffusion tube results, are elevated. It is therefore reasonable to assume that concentrations of all pollutants in the vicinity of the Proposed Development will be below the objectives.

3.4

TASK 4: REVIEW OF ASSESSMENT PROPOSALS

From Task 3 it can be concluded that annual mean NO₂ concentrations will be below the AQS objective on the Application Site. Therefore, it is considered that no mitigation is required to protect future residents from exposure to air pollution.

4 CONCLUSIONS

The construction phase of the development will be limited in duration given the size and nature of the development proposals. Following the application of good construction practices and mitigation measures on site during the construction phase, any potential dust impacts will be mitigated so that the residual effects will be negligible.

Based on a review of local air quality data for the area in which the Application Site is located, and the proposed development proposals, it can be concluded that future residents will not be exposed to poor air quality, and that no mitigation measures specifically for air quality in the operational phase are required.

