

DESIGN CODE REPORT

on behalf of

CAMPBELL REITH HILL LLP

for

FRIAR PARK - AIR QUALITY DESIGN CODE

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Miller Goodall Ltd
Ground Floor
Ashworth House
Deakins Business Park
Blackburn Road
Egerton
Bolton
Lancashire
BL7 9RP

Tel: 01204 596166

www.millergoodall.co.uk

Company registration number 5201673

1 Introduction

- 1.1 The purpose of this report is to provide a design code in relation to air quality for proposed residential development at Friar Park, Bescot. This report focuses on the baseline environment and the potential for air quality to adversely affect future occupants.
- 1.2 For any eventual planning application for development for the site, a full air quality assessment, that examines the air quality change at existing nearby sensitive receptors from development generated vehicles will, be required. An air quality modelling assessment is required due to the scale of the proposals.

2 Site Description

- 2.1 The development site is bound to the north by The Bescot Railway Depot and Ashton to Wolverhampton railway line. The M6 is located approximately 260 m to the north and north east of the site. The A4031 (Walsall Road) is located approximately 140 m to the east of the site. The A461 (Wood Green Road) is located approximately 1.2 km to the west of the site. The site is situated in a residential area.
- 2.2 Road traffic vehicle emissions are the main source of pollution that would give rise to concerns in relation to air quality for this study. Inspection of the area indicates that the development site is set back from the main sources of pollution by several hundred meters. Pollution reduces with distance from the source as the pollution disperses into the airflow.
- 2.3 Early designs of the project layout indicated that a standoff between future residential properties and the Bescot Railway Depot would be established within the design. We assume the future design would also incorporate some standoff, due to potential adverse effects arising from other environmental disciplines, for example noise.

3 Baseline Environment

Prevailing baseline

- 3.1 Baseline air quality at the development site has been established by examining monitoring data produced by Sandwell Metropolitan Borough Council (SMBC), in whose area the development is located, and Walsall Metropolitan Borough Council (WMBC), the boundary of which lies to the north of the development, beyond the Bescot Railway Depot.
- 3.2 SMBC has declared a Borough-wide Air Quality Management Area (AQMA) for exceedance of the 40 $\mu\text{g}/\text{m}^3$ nitrogen dioxide (NO_2) annual mean air quality objective. WMBC has also declared a Borough-wide AQMA for exceedances of the NO_2 annual mean and one-hour mean air quality objectives.

Nitrogen Dioxide (NO_2)

- 3.3 There are five NO_2 air quality monitors operated by SMBC and WMBC in the vicinity of the site. These include two urban background diffusion tubes referenced WW2 and WW3 operated by SMBC, two roadside diffusion tubes referenced 'AE' and 'AF' operated by SMBC, and an automatic monitor operated by WMBC referenced Motorway Junction 9'.

- 3.4 The SMBC urban background diffusion tubes, references WW2 and WW3, are located approximately 400 m to the north west of the site. The SMBC diffusion tubes 'AE' and 'AF' are located approximately 1.3 km to the west of the Applicant Site at A461 (Wood Green Road). This road is the southern arm of the M6 Junction 9 roundabout. These monitors are located approximately 350 m and 450 m, respectively, from Junction 9.
- 3.5 The WMBC reference 'Motorway Junction 9' automatic monitor is located approximately 1.4 km to the north west of the development at Bescot Road, which is the northern arm of the M6 Junction 9 roundabout. This monitor is located approximately 70 m from Junction 9.
- 3.6 The results from these air quality monitors are shown in Table 1 and the locations of the monitors are shown in Appendix A.

Table 1: Annual Mean NO₂ Concentrations Monitored by SMBC and WMBC in the local area

Site ID	Location		Annual Mean NO ₂ Concentrations (µg/m ³)				
			2016	2017	2018	2019	2020
M6 Motorway Junction 9 (roadside)	399932	296644	<u>47.5</u>	<u>49.1</u>	<u>42.0</u>	<u>44.7</u>	*
AE (roadside)	399702	296115	37.6	35.7	36.7	33.1	28.6
AF (roadside)	399647	296015	38.3	27.2	32.9	29.0	24.4
WW2 (urban background)	400542	296052	-	-	28.2	23.3	17.9
WW3 (urban background)	400596	296039	-	-	28.5	22.6	17.6
*WMBC has not released their 2020 dataset <u>Indicates an exceedance of the annual mean air quality objective</u>							

- 3.7 The public health strategy to control the spread of Covid-19 required the introduction of prolonged national and local lockdowns. These lockdowns had a significant effect on the traffic generation on the local road networks and significant and noticeable falls in the total traffic numbers on the roads were observed. As one of the primary sources of air pollution is from emissions of combustion engine vehicles, concentrations of pollutants such as nitrogen dioxide (NO₂) experienced significant and observable reductions across the country during 2020. The results for 2020 are, therefore, considered to be anomalies. The air quality changes arising from a post-Covid uptake in hybrid working (part office and part home working) cannot yet be spoken of due to insufficient data.
- 3.8 In SMBC, there were no air quality exceedances of NO₂ objectives near the proposed development site. However, the northern arm leading to Junction 9 of the M6 has experienced continued exceedances of the NO₂ annual mean air quality objective in WMBC's area.
- 3.9 Motorway Junction 9', AE' and 'AF' are positioned on A-roads and major routes leading to the M6. Pollutant concentrations near the development site are expected to be significantly less than the concentrations recorded at these monitors.
- 3.10 The background concentrations at WW2 and WW3 are considered representative of the proposed development site due to their positioning near the site, the railway and away from the main A-road network. The concentrations recorded at these two monitors are likely to be similar to the concentrations that would be found across the full development site. The concentrations are well below the annual mean air quality objective.

Particulate Matter (PM₁₀ & PM_{2.5})

- 3.11 There is no PM₁₀ monitoring undertaken in the vicinity of the site.
- 3.12 WMBC operates a PM_{2.5} monitor at the 'Motorway Junction 9' roadside automatic monitor. The results from this monitor are shown in Table 2.

Table 2: Annual Mean PM_{2.5} Concentrations Monitored by WMBC in the local area

Site ID	Location		Annual Mean NO ₂ Concentrations (µg/m ³)				
			2016	2017	2018	2019	2020
M6 Motorway Junction 9 (roadside)	399932	296644	11.9	11.9	10.5	10.6	*
**WMBC has not released their 2020 dataset							

Likely future baseline

- 3.13 Air quality is improving with time, and long term trends are evidence of this¹. The primary reasons for this are due to the ongoing actions taken to improve air quality (associated with Local Air Quality Management at Council-level (LAQM)) and the improvement of vehicular emission technology, combined with replacement of older more polluting vehicles from the road network with more modern vehicles over time. The purchase and uptake of electric vehicles is also increasing, up to the proposed ban on sales of combustion engine vehicles by 2030 and 2032. Improved vehicle emissions will provide air quality reductions at roadside and to the ambient environment.
- 3.14 The time period until future residents will occupy the site will be several years, due to the planning timeframes and the actual construction of the development. It is likely the future air quality environment will be significantly different to the current baseline, owing to improvements in air quality with time.

4 Rail Emissions

- 4.1 The Ashton to Wolverhampton railway line borders the development site to the north. The Bescot Railway Depot also operates on the land to the north of the site.
- 4.2 Defra Guidance LAQM.TG(16) ^[2] provides a methodology for the assessment of rail emissions (Paragraphs 7.18 to 7.19 and Table 7.2 of LAQM.TG(16)) for NO₂ and sulphur dioxide (SO₂).
- 4.3 The first stage of the methodology is to identify whether the rail line of interest is affected by heavy diesel locomotive traffic. If the rail is not affected by heavy-diesel locomotives, then the risk of air quality impacts from rail emissions can be concluded as not significant and does not require further detailed assessment.
- 4.4 This section of railway line is not listed in LAQM.TG(16). The impact of the nearby train line has been screened out from further assessment as this railway line is not affected by heavy-diesel locomotive traffic, as outlined within Table 7.2 of Defra (2021) TG16 ^[2].

¹ Department for Food, Rural Affairs and Environment, 2021. Air Pollution in the UK 2020

² Department for Food, Rural Affairs and Environment, 2021. Local Air Quality Management Technical Guidance 2016. LAQM.TG(16).

- 4.5 Stationary diesel locomotives may be associated with the activities at the railway depot. LAQM.TG(16) states that the following criteria in relation to these:
- Identify locations where diesel or steam locomotives are regularly (at least three times a day) stationary for periods of 15-minutes or more; and
 - Determine relevant exposure within 15 m of locomotives.
- 4.6 The activities at the railway depot are unknown. However, based on early site layouts, the proposed development is not expected to introduce sensitive receptors within 15 m of the railway depot. The potential for future residents to be adversely affected by railway emissions is considered to be not significant.

5 Site Suitability Analysis

- 5.1 A review of the local air quality environment has been undertaken. The long term (annual mean) and short term (one-hour and 24-hour mean) air quality objectives apply to future residential receptors located on the development site.
- 5.2 The proposed development is set back from the nearest main pollutant sources; these being the M6 and surrounding A-roads. Pollution from road traffic sources reduces with distance from the source and, thus, these sources will have minimal impact at the development site due to the distances between them and future receptors. The local residential roads near the site will not be significant pollution sources of any concern.
- 5.3 Given the expected improvements in air quality, subject to a minor standoff between the location of new dwellings and the Railway Depot to the north being incorporated into the site design, there is not expected to be a significant risk to future occupants from local air quality.

6 Potential Mitigation

- 6.1 Direct measures to protect future occupants (such as mechanical ventilation) are not considered to be required.
- 6.2 We recommend that the design of the site includes the following provisions:
- Electric vehicle charge points and/or infrastructure;
 - Cycle storage facilities; and
 - A minimum 15 m standoff between future properties and the railway lines.
- 6.3 SMBC has adopted the Black Country Air Quality Supplementary Planning Document (SPD)³ which stipulates the content of air quality assessments and mitigation to be submitted to planning. The proposals will meet a Major classification in accordance with this SPD and will require the inclusion of an emissions assessment. An emissions statement is otherwise known as a damage cost assessment and can result in a financial contribution dependent on the trip generation and emissions created by the development.

³ Sandwell Metropolitan Borough Council, 2016. Black Country Air Quality Supplementary Planning Document (SPD)

6.4 The monetary value which SMBC may require cannot be stated in this design code report, the level of information to calculate it is not available at this stage. The damage cost contribution will primarily focus on measures to reduce the air quality change to existing sensitive receptors, rather than proposed future receptors of the development. Typical measures will include mitigation that aims to reduce the private vehicle usage of the development.

7 Summary

7.1 A review of the development site has been completed by undertaking a baseline review and analysis of potential air quality risks. The conclusions of this report confirms that there is unlikely to be a significant effect to future occupants of the development.

7.2 There are no stringent requirements in relation to air quality for the design of the development site. We would recommend a minimum 15 m standoff between future residential dwellings and the rail depot is incorporated into the design.

7.3 Further air quality assessment work will be required for any eventual planning application. This would include an air quality modelling assessment of the air quality changes to existing sensitive receptors adjacent to the roads where increased vehicle generation from the development will arise. Modelling of the site suitability for future users would also be undertaken.

Appendix A: Site Location



