

Air Quality Note**February 2019**

Date : **February 2019**

Project : **Tye Lane, Walburton**

Project Ref : **183240**

Report Ref : **183240-06**

DOCUMENT CONTROL

REV	ISSUE PURPOSE	AUTHOR	CHECKED	APPROVED	DATE
-	1 st Draft for Team Review	SG	KM	Draft Only	27/01/19
-	Final	SG	SG	KM	11/02/19

DISTRIBUTION

This report has been prepared for the exclusive use of **Linden Homes**. It should not be reproduced in whole or in part, or relied upon by third parties, without the express written authority of Ardent Consulting Engineers.

1.0 INTRODUCTION

- 1.1 Ardent Consulting Engineers has been appointed by Linden Homes to produce this technical note in support of discharging the air quality element of the following planning condition no.23, associated with planning ref:WA/44/17/OUT:

"No development shall begin until an Air Quality Assessment and a Noise Impact Assessment have been submitted and approved in writing by the Local Planning Authority. Thereafter, the development shall be carried out in accordance with the approved schemes and any subsequent amendments shall be approved in writing by the Local Planning Authority."

- 1.2 This condition relates to a scheme comprising 175 residential dwellings, new vehicular access, with associated car parking, on land east of Tye Lane, Walberton, which has Outline Consent under application reference WA/44/17/OUT.

- 1.3 This technical note sets out the following:

- A review of the consented scheme;
- A review of the local policy;
- The existing baseline air quality conditions around the site; and
- An indicative air quality impact assessment using ADMS-Roads

2.0 LOCAL PLANNING POLICY

Arun Local Plan

- 2.1 The Arun Local Plan was adopted in July 2018 and sets out the vision for Arun to 2031. A review of the document indicates one policy is specifically related to air quality. Policy QE DM3 'Air Pollution' states:

"All major development proposals will be required to assess the likely impacts of the development on air quality and mitigate any negative impacts by:

- a. Ensuring the development is located within easy reach of established public transport services*
- b. Maximising provision for cycling and pedestrian facilities;*
- c. Encouraging the use of cleaner transport fuels on site, through the inclusion of electric car charging points; and*
- d. Contributing towards the improvement of the highway network where the development is predicted to result in increased congestion on the highway network.*

Development proposed nearby any Air Quality Management Area (AQMA) declared within the District within the Plan period, will require an air quality assessment to identify likely impacts of development upon the designated area. Developers will be required to ensure delivery of the actions set out within any Air Quality Action Plan.

Industrial development which is regulated by environmental permits (that creates or results in dust, smell, fumes, smoke, heat, radiation, gases, steam or other forms of pollution) must be located in such a position which ensures that the health, safety and amenity of users of the site or surrounding land is not put at risk and the quality of the environment would not be damaged or put at risk."

3.0 ASSESSMENT METHODOLOGY

Assessment Model

- 3.1 The modelling of the release of vehicular emissions, (dispersion), into the air has been carried out using the latest version of the air dispersion model: ADMS-Roads and most recent emission factors toolkit which is built into the model.

Assessment Scenarios

- 3.2 Traffic data for Yapton Lane for the following scenarios has been assessed, the data is set out in Table 3.1:

- 2023 Baseline; and
- 2023 Baseline + Development.

Table 3.1: Traffic Data

Site	AADT	HGV %
2023 Baseline		
Yapton Lane (north of site)	5,438	2%
Yapton Lane (south of site)	5,438	2%
2023 Baseline + Development		
Yapton Lane (north of site)	5,992	1.9%
Yapton Lane (south of site)	5,699	1.9%

Receptor Locations

- 3.3 The receptor locations used within the modelling exercise are set out in Table 3.2. A single receptor location has been used north and south of the site access. To note, all receptors were modelled at a height of 1.5m.

Table 3.2: Receptor Location

Site	X	Y
Yapton Lane (north of site)	497708	106432
Yapton Lane (south of site)	497671	106225

Model Verification

- 3.4 Due to the lack of monitoring locations within the vicinity of the site it has not been possible to undertake a verification process.

Metrological Data

- 3.5 The meteorological data required for the ADMS model, must be sourced from a representative location to the study site and include a full year of sequential readings. A review of the nearest available metrological stations indicates Shoreham is the most suitable site with the most complete/representative information.
- 3.6 It is recognised that a minimum data capture of 90% is recommended for representing hourly dispersion conditions within the dispersion model missing lines of meteorological data can be interpolated or filled by data for these specific hours from a neighbouring site. The data capture for Shoreham in 2017 was within an acceptable margin error for use for everything apart from cloud cover. Therefore, a review of adjacent metrological stations was undertaken to find a representative site for the missing data. The nearest

metrological station, which had an acceptable level of cloud cover data was Southampton, and therefore this data was utilised within the modelling process.

Impact Criteria

- 3.7 Currently there is no formal guidance on the absolute magnitude and significance criteria for the assessment of air quality impacts. However, the IAQM and Environmental Protection UK have published recommendations for describing the impact at individual receptor locations as set out in Table 3.3 and utilised to determine the description of any impact.

Table 3.3: Impact Descriptors

Long term average Concentration at receptor in assessment year.	% Change in concentration relative to Air Quality Action Level			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

- 3.8 The EPUK & IAQM (2017) advice provides guidance on the severity of an impact as a descriptor. However, although the impacts might be considered 'Slight', 'Moderate' or 'Substantial' at one or more receptor location, the overall effects of a proposed development may not always be judged as being significant.

4.0 BASELINE CONDITIONS

Air Quality Review and Assessment

- 4.1 Under the Air Quality Strategy there is a duty on all Local Authorities to consider the air quality within their boundaries and to report annually to Defra.
- 4.2 Local Air Quality Management in the Walberton area has been assessed by Arun District Council through the national Review and Assessment process, in fulfilment of Part IV of the Environmental Act 1995.
- 4.3 A review of the area indicates no air quality monitoring is undertaken in Walberton, which indicates that air quality is not of a concern to the local authority.

Mapped Background Pollution

- 4.4 The Defra website includes estimated background air pollution data for NO_x, NO₂, PM₁₀ and PM_{2.5} for each 1km by 1km OS grid square. Background pollutant concentrations are modelled from the base year of 2015 and based on ambient monitoring, meteorological data from 2013 and then projected for future years. Projected pollutant concentrations for the year 2019 and covering the OS grid square in which the proposed development site lies, (origin E: 497500, N: 106500) are shown in **Table 4.1**. Annual mean concentrations are within the relevant objective limits for NO₂ and PM₁₀. There are no ambient air quality limits for PM_{2.5}.

Pollutant	2023 Annual Mean (µg/m ³)
NO₂	7.82
PM₁₀	12.57
PM_{2.5}	8.09

Table 4.1: Annual Mean Background Concentrations of NO₂, PM₁₀ and PM_{2.5}

5.0 ROAD TRAFFIC IMPACT ASSESSMENT

5.1 The predicted 'future baseline' NO₂, PM₁₀ and PM_{2.5} concentrations at the previously specified receptor locations, have been compared to the predicted 'future baseline + development' concentrations and the results are set out in Tables 5.1 to 5.3. The tables also set out the impact descriptor at each receptor location in line with the assessment matrix in Table 3.2.

Table 5.1: 2023 Baseline + Proposed Development NO₂

Receptor	Annual Mean NO ₂ (µg/m ³)			
	2023 Baseline	2023 Baseline + Development	% Change of Objective	Impact Descriptor
1	8.73	8.82	0.2	Negligible
2	8.20	8.22	0.1	Negligible

Table 5.2: 2023 Baseline + Proposed Development PM₁₀

Receptor	Annual Mean PM ₁₀ (µg/m ³)			
	2023 Baseline	2023 Baseline + Development	% Change of Objective	Impact Descriptor
1	12.73	12.75	0.0	Negligible
2	12.63	12.64	0.0	Negligible

Table 5.3: 2023 Baseline + Proposed Development PM_{2.5}

Receptor	Annual Mean PM _{2.5} (µg/m ³)			
	2023 Baseline	2023 Baseline + Development	% Change of Objective	Impact Descriptor
1	8.18	8.19	0.0	Negligible
2	8.13	8.13	0.0	Negligible

- 5.2 The modelled nitrogen dioxide concentrations in Table 5.1, show that with the nitrogen dioxide levels at the specified receptor locations are all below the annual mean objective (40 µg/m³).
- 5.3 All of the annual mean nitrogen dioxide concentrations are also all below 60 µg/m³. It is, therefore, unlikely that the 1-hour mean nitrogen dioxide objective will be exceeded. Using the matrix in Table 3.3, it can be seen, the nitrogen dioxide impacts are anticipated to be 'negligible.'
- 5.4 The modelled PM₁₀ concentrations in Table 5.2, do not predict any exceedances of the annual mean objective, (40 µg/m³), at any of the specified receptor locations. Using the matrix in Table 3.3, it can be seen that the impacts are anticipated to be 'negligible.'
- 5.5 For PM₁₀, the following equation can be used to derive the number of days that the daily mean limit (of 50µg/m³) is likely to be exceeded:

$$\text{No. 24 hour exceedances} = -18.5 + 0.00145 \times \text{annual mean}^3 + \left(\frac{206}{\text{annual mean}} \right)$$

- 5.6 The highest annual mean PM₁₀ concentration in the assessment tables is 12.75µg/m³. Based on the above formula, this predicts 0.7 exceedance days, which is below the 35-days annual limit. It is therefore thought that none of the receptors would be exposed to any material impact from the short-term concentrations of PM₁₀.

- 5.7 Along with the modelled PM₁₀ concentrations, no exceedances are anticipated of the PM_{2.5} annual mean objective. Using the matrix in Table 3.3, it can be derived that the impacts are anticipated to be 'negligible.'

6.0 SUMMARY & CONCLUSION

Baseline

- 6.1 The proposed development is not situated within an AQMA, and the lack of monitoring locations in the area indicates air quality is not of concern for the local authority at this location.

Operational Phase

- 6.2 The air quality modelling exercise indicates that the proposed development will have a negligible adverse impact upon future baseline air quality concentrations at some specified residential receptors.
- 6.3 To note, all of the modelled residential receptor locations are below their respective air quality objectives / targets for NO₂, PM₁₀ & PM_{2.5}.
- 6.4 The proposed development is expected to comply with all relevant air quality policy and therefore the air quality element of the planning condition can be discharged.