

Technical Note

Date: 27 October 2020
Project Reference JAR 02198

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Document Status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
0	Technical Note	F Prismall	K Barker	F Prismall	27/10/2020

Approval for issue

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2020-10-27

Proposed Lidl Store in Havant - Air Quality Technical Note

1 INTRODUCTION

- 1.1 This Air Quality Technical Note has been prepared to support the planning application for a proposed new Lidl store and 132 parking spaces on Purbrook Way in Havant.
- 1.2 In relation to Air Quality, Policy E23 in the Pre-Submission Havant Borough Local Plan 2036 states that:

“Offsetting emissions

Major development proposals will be expected to provide mitigation measures which offset emissions and are proportionate to the scale and nature of the development.

Threshold based assessment

In addition to a., development proposals of 150 or more (gross) residential units, 1,000 sqm or more of commercial floorspace, or which are likely to materially alter the traffic flow on the local highway network will be permitted where:

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b. Projected levels of air pollution or emissions associated with the development would not result in a significant deterioration of current air quality at a location where national air quality objectives or limit values apply; or

c. Measures are provided which demonstrably mitigate the impact on air quality to an acceptable level.”

- 1.3 The key policy in the Havant Borough Core Strategy adopted on 1 March 2011 is DM10 which states that:

“Pollution Development that may cause pollution of water, air or soil or pollution through noise, smell, smoke, fumes, gases, steam, dust, vibration, light, heat, electromagnetic radiation and other pollutants will only be permitted where all of the following relevant criteria can be met:

- 1. The health and safety of existing and future users of the site, or nearby occupiers and residents is not put at risk.*
- 2. National air quality standards or objectives would not be breached.*
- 3. The water environment would not be detrimentally affected.*
- 4. It would not lead to an unacceptable deterioration in the quality or potential yield of coastal, surface and ground water resources.*
- 5. External lighting is of the minimum level of illumination and duration required for security and operational purposes.*
- 6. External lighting would not interfere with safe navigation in either Chichester or Langstone Harbours and other coastal locations.”*

- 1.4 This Technical Note considers whether emissions from the development would result in a significant deterioration in air quality.

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2 LEGISLATIVE CONTEXT

Ambient Air Quality Legislation and National Policy

The Ambient Air Quality Directive and Air Quality Standards Regulations

2.1 The 2008 Ambient Air Quality Directive (2008/50/EC) [i] aims to protect human health and the environment by avoiding, reducing or preventing harmful concentrations of air pollutants; it sets legally binding concentration-based limit values, as well as target values. There are also information and alert thresholds for reporting purposes. These are to be achieved for the main air pollutants: particulate matter (PM₁₀ and PM_{2.5}), nitrogen dioxide (NO₂), sulphur dioxide (SO₂), ozone (O₃), carbon monoxide (CO), lead (Pb) and benzene. This Directive replaced most of the previous EU air quality legislation and in England was transposed into domestic law by the Air Quality Standards Regulations 2010 [ii], which in addition incorporates the 4th Air Quality Daughter Directive (2004/107/EC) that sets targets for ambient air concentrations of certain toxic heavy metals (arsenic, cadmium and nickel) and polycyclic aromatic hydrocarbons (PAHs). Member states must comply with the limit values (which are legally binding on the Secretary of State) and the Government and devolved administrations operate various national ambient air quality monitoring networks to measure compliance and develop plans to meet the limit values.

UK Air Quality Strategy

2.2 The Environment Act 1995 established the requirement for the Government and the devolved administrations to produce a National Air Quality Strategy (AQS) for improving ambient air quality, the first being published in 1997 and having been revised several times since, with the latest published in 2007 [iii]. The Strategy sets UK air quality standards* and objectives# for the

* Standards are concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. Standards, as the benchmarks for setting objectives, are set purely with regard to scientific evidence and medical evidence on the effects of the particular pollutant on health, or on the wider environment, as minimum or zero risk levels.

Objectives are policy targets expressed as a concentration that should be achieved, all the time or for a percentage of time, by a certain date.

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pollutants in the Air Quality Standards Regulations plus 1,3-butadiene and recognises that action at national, regional and local level may be needed, depending on the scale and nature of the air quality problem. There is no legal requirement to meet objectives set within the UK AQS except where equivalent limit values are set within the EU Directives.

- 2.3 The 1995 Environment Act also established the UK system of Local Air Quality Management (LAQM), that requires local authorities to go through a process of review and assessment of air quality in their areas, identifying places where objectives are not likely to be met, then declaring Air Quality Management Areas (AQMAs) and putting in place Air Quality Action Plans to improve air quality. These plans also contribute, at local level, to the achievement of EU limit values.
- 2.4 For the purposes of this assessment, the limit values set out in the Air Quality Standards Regulations 2010 and the objective levels specified under the current UK AQS have been used.
- 2.5 The limit values and objectives relevant to this assessment are summarised in Table 2.1. Although the EU limit values and the UK AQS objectives are numerically equal, there are some differences in where they apply and who is responsible for their achievement.

Table 2.1: Summary of Relevant Air Quality Limit Values and Objectives

Pollutant	Averaging Period	Objectives/ Limit Values	Not to be Exceeded More Than
Nitrogen Dioxide (NO ₂)	1 hour	200 µg.m ⁻³	18 times per calendar year
	Annual	40 µg.m ⁻³	-
Particulate Matter (PM ₁₀)	24 Hour	50 µg.m ⁻³	35 times per calendar year
	Annual	40 µg.m ⁻³	-
Particulate Matter (PM _{2.5})	Annual	25 µg.m ⁻³	-

3 PREDICTED AIR QUALITY IMPACTS

Construction Phase

- 3.1 For the construction phase of the Proposed Development, the key pollutant is dust. This comprises both the PM₁₀ fraction, that is suspended in the air that can be breathed, and the

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deposited dust that has fallen out of the air onto surfaces and which can potentially cause temporary annoyance effects.

- 3.2 The Institute of Air Quality Management (IAQM) *Guidance on the assessment of dust from demolition and construction* [iv] provides a methodology for assessing the risk of impacts from deposited dust and increases in suspended particulate matter. The IAQM Guidance concludes that with the effective implementation of appropriate mitigation, the residual effects can normally be “not significant”.

Operational Phase

- 3.3 Havant Borough Council (HBC) has not designated any Air Quality Management Areas (AQMAs); the nearest AQMA is in Portsmouth, 12.5 km to the south west of the Application Site. As such, the development is unlikely to affect air quality within a designated AQMA.
- 3.4 The Environmental Protection UK (EPUK) & Institute of Air Quality Management (IAQM) *Land-Use Planning & Development Control: Planning For Air Quality* [v], document sets out threshold criteria for determining when an assessment is required. Outside an AQMA, an assessment is required where annual average daily (AADT) light-duty vehicle movements increase by 500 or annual average daily heavy-duty vehicle movements increase by 100.
- 3.5 Figure 5.1 sets out the transport consultant’s prediction of the distribution of traffic generated by the development once operational. The highest net change in AADT for heavy-goods vehicles is 6. This is well below the threshold criteria for heavy-duty vehicles of 100. The increase in heavy-goods vehicles would therefore not trigger the need for an assessment.
- 3.6 The predicted net change in AADT for all vehicles (light and heavy-goods vehicles) is above 500 on links 1, 3, 4 and 6. Figure 5.1 indicates that there are no properties sensitive to air pollution within 200 m of the links 1, 3 or 4. The following analysis considers the likely air quality impact of the net change in AADT of 556 vehicles on link 6.
- 3.7 The Air Quality Expert Group (AQEG) study of Particulate Matter in the UK [vi] provided a comparison of NO₂ and PM₁₀ monitoring undertaken in the UK at roadside, urban background (i.e. locations that are not near to sources of pollution) and rural locations. A much larger variation in monitored NO₂ concentrations is reported compared to PM₁₀ concentrations. The lower variation in monitored PM₁₀ concentrations reflects the more even distribution of particulate matter across the UK due to the wide range of sources and the contribution of

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secondary particulate matter. Based on that, the analysis that follows focusses on changes in NO₂ concentrations.

3.8 Table 3.1 sets out the results of annual-mean NO₂ monitoring undertaken by HBC at roadside locations nearest to the site.

Table 3.1: Annual-mean NO₂ Concentrations – Roadside Locations

Site ID	Site Name	2014	2015	2016	2017	2018
25(B)	Stakes Road	26.0	22.4	24.4	24.1	26.8
26	Ladybridge Road	24.9	21.6	24.9	25.1	-
8	London Road (Purbrook)	26.5	23.5	26.8	26.3	23.5

3.9 There is relatively little variation in measured roadside concentrations between the monitoring locations. The average of the measured roadside concentrations is 24.8 µg.m⁻³.

3.10 Table 3.2 sets out the results of annual-mean NO₂ monitoring undertaken by HBC at background locations.

Table 3.2: Annual-mean NO₂ Concentrations – Background Locations

Site ID	Site Name	2014	2015	2016	2017	2018
S9	St. Peter's Primary Sch. (Prayer Garden)	-	-	-	-	19.3
S8	Barncroft (Woodland)	-	-	-	-	19.6

3.11 There is very little variation between the two available measurements. The average of the available measured background concentrations is 19.4 µg.m⁻³.

3.12 Based on the above, the contribution to annual-mean NO₂ concentrations that can be attributed to road traffic in the area can be approximated as 24.8 µg.m⁻³ – 19.4 µg.m⁻³ = 5.4 µg.m⁻³.

3.13 The Department for Transport (DfT) provides AADT flows for London Road (Purbrook); no AADT flows are provided by the DfT for Stakes Road or Ladybridge Road. The average AADT for London Road (Purbrook) between 2014 and 2018 is 18,386.

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- 3.14 A rough estimate of the contribution to annual-mean NO₂ concentrations that can be attributed to the net change in AADT of 556 on link 6 is therefore $5.4 \times 556 / 18,386 = 0.16 \mu\text{g.m}^{-3}$. If this $0.16 \mu\text{g.m}^{-3}$ is added to the average of the measured concentrations at roadside locations, the total annual-mean NO₂ concentration with the development would be $24.8 \mu\text{g.m}^{-3} + 0.16 \mu\text{g.m}^{-3} = 24.96 \mu\text{g.m}^{-3}$, still well below the AQS objective of $40 \mu\text{g.m}^{-3}$.
- 3.15 A change of $0.16 \mu\text{g.m}^{-3}$ is approximately 0.4% of the AQS objective of $40 \mu\text{g.m}^{-3}$. The Environmental Protection UK (EPUK) & Institute of Air Quality Management (IAQM) *Land-Use Planning & Development Control: Planning For Air Quality* document considers a change of less than 0.5% of the AQS objective to have a 'negligible' impact. A 'negligible' impact is not considered to have a significant air quality effect.
- 3.16 Based on this analysis, the development is considered to be compliant with policy E23 and *"Projected levels of air pollution or emissions associated with the development would not result in a significant deterioration of current air quality at a location where national air quality objectives or limit values apply"*.

4 MITIGATION

- 4.1 As the effects of the air quality impacts are not considered to be significant, no mitigation is proposed.

5 CONCLUSIONS

- 5.1 This Air Quality Technical Note has been prepared to support the planning application for a proposed new Lidl store and 132 parking spaces on Purbrook Way in Havant.
- 5.2 For the construction phase of the Proposed Development, the key pollutant is dust. The IAQM Guidance states that with the effective implementation of appropriate controls and mitigation, the residual effects can normally be "not significant".
- 5.3 Once operational, based on the predicted net change in traffic flows, the development is expected to have a 'negligible' impact on existing pollutant concentrations and the air quality effect is not considered to be significant.
- 5.4 The proposed development does not conflict with the Pre-Submission Havant Borough Local Plan 2036.

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Figure 5.1: Distribution of Traffic Generated by the Development

AADT Flow Calculations

PROJECT: B/LIDL Purbrook Way.1

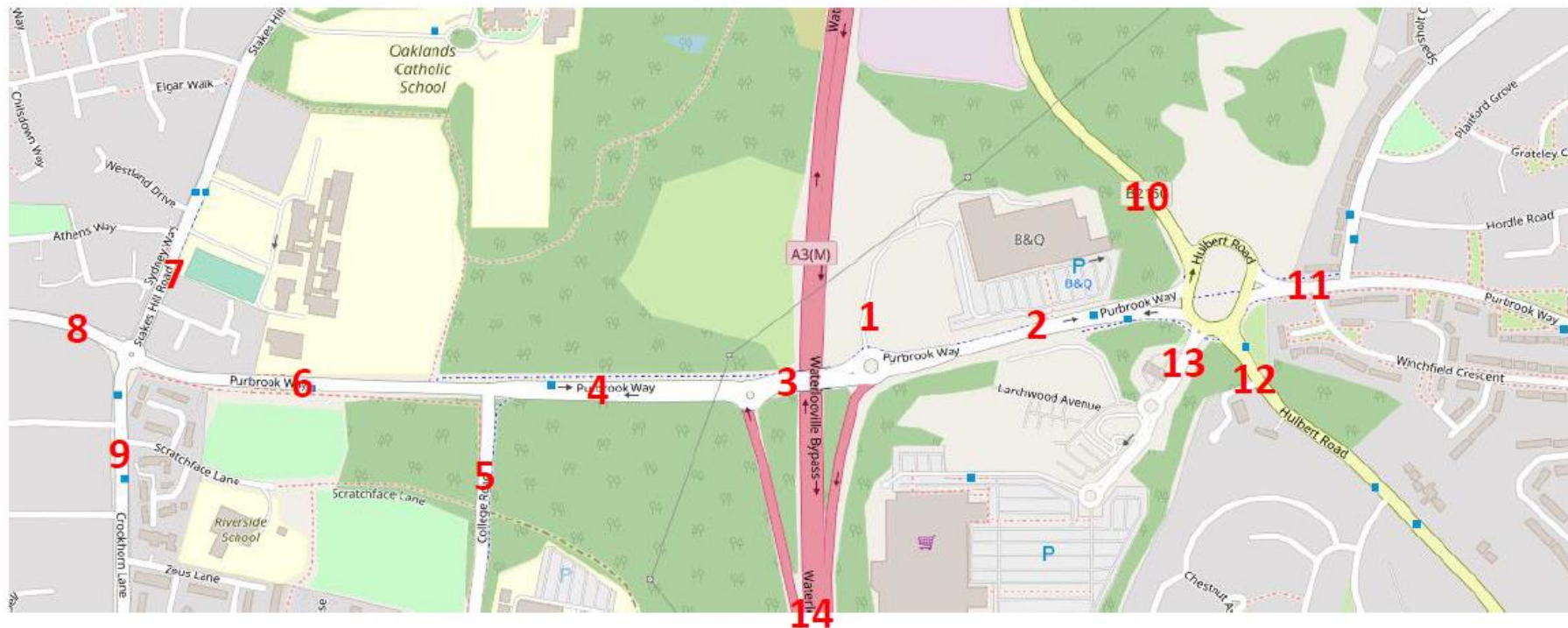
Road ID	Road Name	Direction
1	B&Q Private Access Road	Two-way
2	Purbrook Way (A3(M) - Asda)	Two-way
3	Purbrook Way (Between A3(M) Slips)	Two-way
4	Purbrook Way (A3(M) - College Rd)	Two-way
5	College Rd	Two-way
6	Purbrook Way (College Rd - Purbrook)	Two-way
7	Stakes Hill Rd	Two-way
8	Stakes Rd	Two-way
9	Crookhorn Ln	Two-way
10	Hulbert Rd	Two-way
11	Purbrook Way EAST	Two-way
12	B2150	Two-way
13	Asda Access	Two-way
14	A3(M) South	Two-way

AADT Calculations

Development Net Change in traffic		
24-hr AADT	HGVs	%HGVs
2001	6	0%
335	0	0%
663	3	0%
643	0	0%
87	0	0%
556	0	0%
250	0	0%
303	0	0%
4	0	0%
-61	0	0%
222	0	0%
193	0	0%
-691	0	0%
40	6	15%

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REFERENCES

- i Council Directive 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe.
- ii Defra, 2010, The Air Quality Standards Regulations.
- iii Defra, 2007, The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. Volume 2.
- iv IAQM (2014) Guidance on the assessment of dust from demolition and construction
- v EPUK & IAQM (January 2017) Land-Use Planning & Development Control: Planning For Air Quality
- vi AQEG(2005). Particulate Matter in the UK: Defra, London