
**LAND AT KIDNAPPERS LANE, LECKHAMPTON AND
FARM LANE, SHURDINGTON, CHELTENHAM:
OUTLINE PLANNING APPLICATION FOR
RESIDENTIAL AND ASSOCIATED DEVELOPMENT**

ENVIRONMENTAL STATEMENT

ADDENDUM RELATING TO AIR QUALITY

APPLICATION REF: P13/01605

FEBRUARY 2014

11 AIR QUALITY

11.1 Introduction

- 11.1.1 Chapter 11 of the Environmental Statement presents the results of the likely significant effects of the Proposed Development in terms of air quality. New information has been made available from the project's transport consultant, which assesses the effects of the 650 dwellings of the Leckhampton Proposed Development. The 350 houses that are part of the cumulative development to the west of Farm Lane are now included as part of the wider Masterplan. Further traffic modelling has been undertaken to reflect the changes and demonstrate the impact of the Leckhampton Development as proposed in the current outline planning application (Ref: P13/01605).
- 11.1.2 The air quality assessment work has been updated using the revised traffic flows associated with the development proposals.
- 11.1.3 Full details of the traffic forecasting methodology and assumptions are provided in Chapter 9 (Movement).

11.2 Assessment Methodology

- 11.2.1 For the construction phase, the outcome of the assessment of dust effects will be unaffected. As such, the assessment of construction effects and the proposed mitigation measures for the construction phase remain unchanged from the original assessment.
- 11.2.2 For the operational phase, the key impacts in relation to air quality relate to traffic flow changes due to additions to the wider Masterplan. Excluding traffic flow changes, all other model input data remain unchanged. In particular, to allow a comparison with the earlier assessment, the assessment of baseline conditions has not been updated and the same meteorological data, model correction factor and receptor locations have been used within this assessment.
- 11.2.3 Modelling has been undertaken for the two following scenarios in the first year that the development is expected to be fully operational year, 2023:
- 'Without Development' – the future baseline, committed developments and the development to the West of Farm Lane, without the Proposed Leckhampton Development; and
 - 'With Development' – the future baseline, committed developments and the development to the West of Farm Lane development with the current Proposed Leckhampton Development.
- 11.2.4 It should be clear that the 'With Development' scenario is unchanged from the previous assessment and the results from the original assessment have been included in this addendum.

Revised Traffic Data

- 11.2.5 The revised 'Without Development' scenario traffic flow data provided for the assessment of the operational effects in 2023 are summarised in Table 11.1.

Table 11.1: Traffic Data Used Within the Assessment

Road Link ID	Road Link Name	Daily Two Way Vehicle Flow (veh.day ⁻¹)					
		With Development (2023)			Without Development (2023)		
		AADT	HDV	Speed (km.hr ⁻¹)	AADT	HDV	Speed (km.hr ⁻¹)
1	Shurdington Road	14,078	241	49.4	15,670	241	57.1
2	Leckhampton Lane	6,573	87	46.0	6,403	87	46.0
3	Church Road West	7,416	128	48.0	7,157	128	48.0
4	Church Road East	8,247	66	48.4	7,858	74	48.7
5	Up Hatherley Way	11,887	155	39.8	11,303	150	39.6
6	Kidnappers Lane North	3,803	25	15.5	2,952	14	23.1
7	Kidnappers Lane South	874	2	30.7	757	14	30.7
8	Farm Lane	2,366	0	30.2	2,395	0	30.2
9	Woodlands Road	4,591	65	44.2	4,150	41	44.2

Notes: (km.hr⁻¹) = kilometres per hour

HDV = Heavy Duty Vehicle - vehicles greater than 3.5 t gross vehicle weight including buses

AADT = Average Annual Daily Traffic

- 11.2.6 The average speed on each road has been reduced by 10 km.hr⁻¹ to take into account the possibility of slow moving traffic near junctions and at roundabouts in accordance with LAQM.TG(09).

Model Output Data

Assessment of Operational Impacts

Nitrogen Dioxide (NO₂)

- 11.2.7 Predicted annual-mean NO₂ concentrations at selected existing properties resulting from the changes in traffic flow characteristics on the local road network are presented in Table 11.2.

Table 11.2: Predicted Annual-Mean NO₂ Concentrations (µg.m⁻³) at Existing Receptors

Receptor ID	Concentration (µg.m ⁻³)		With – Without Dev as % of the AQS Objective	Magnitude of Change Descriptor	Impact Descriptor
	Without Development	With Development			
Woodland Road 1	25.1	25.1	0.1	Imperceptible	Negligible
Woodland Road 2	24.5	24.6	0.1	Imperceptible	Negligible
Up Hatherley Way	24.7	24.7	0.1	Imperceptible	Negligible
Leckhampton Lane 1	24.8	24.8	<0.05	Imperceptible	Negligible

Receptor ID	Concentration ($\mu\text{g}\cdot\text{m}^{-3}$)		With – Without Dev as % of the AQS Objective	Magnitude of Change Descriptor	Impact Descriptor
	Without Development	With Development			
Leckhampton Lane 2	24.1	24.1	<0.05	Imperceptible	Negligible
Kidnappers Lane South 1	24.1	24.2	<0.05	Imperceptible	Negligible
Kidnappers Lane South 2	24.0	24.0	<0.05	Imperceptible	Negligible
Church Road West 1	24.1	24.1	<0.05	Imperceptible	Negligible
Church Road West 2	24.8	24.8	0.1	Imperceptible	Negligible
Church Road East 1	24.2	24.2	0.1	Imperceptible	Negligible
Church Road East 2	24.7	24.7	0.1	Imperceptible	Negligible
Farm Lane 1	23.9	23.9	<0.05	Imperceptible	Negligible
Farm Lane 2	23.8	23.8	<0.05	Imperceptible	Negligible
Kidnappers Lane North	25.4	25.5	0.4	Imperceptible	Negligible
Shurdington Road 1	24.7	24.6	<0.05	Imperceptible	Negligible
Shurdington Road 2	24.9	24.8	-0.1	Imperceptible	Negligible
Maximum	25.1	25.1	0.4	Imperceptible	Negligible
Minimum	24.0	24.0	-0.1	Imperceptible	Negligible

11.2.8 The magnitude of change at all receptors is 'imperceptible'. When this change is considered in the context of the absolute concentrations, the impact descriptor at all receptors is 'negligible'.

11.2.9 As all predicted annual-mean NO_2 concentrations are below $60 \mu\text{g}\cdot\text{m}^{-3}$, the hourly-mean NO_2 objective is unlikely to be exceeded and is not considered further within this assessment.

Particulate Matter (PM_{10})

11.2.10 Predicted annual-mean PM_{10} concentrations at selected existing properties resulting from the changes in traffic flow characteristics on the local road network are presented in Table 11.3.

Table 11.3: Predicted Annual-Mean PM₁₀ Concentrations (µg.m⁻³) at Existing Receptors

Receptor ID	Concentration (µg.m ⁻³)		With – Without Dev as % of the AQS Objective	Magnitude of Change Descriptor	Impact Descriptor
	Without Development	With Development			
Woodland Road 1	15.7	15.7	<0.05	Imperceptible	Negligible
Woodland Road 2	15.6	15.6	<0.05	Imperceptible	Negligible
Up Hatherley Way	15.6	15.6	<0.05	Imperceptible	Negligible
Leckhampton Lane 1	15.6	15.6	<0.05	Imperceptible	Negligible
Leckhampton Lane 2	15.5	15.5	<0.05	Imperceptible	Negligible
Kidnappers Lane South 1	15.5	15.5	<0.05	Imperceptible	Negligible
Kidnappers Lane South 2	15.4	15.4	<0.05	Imperceptible	Negligible
Church Road West 1	15.5	15.5	<0.05	Imperceptible	Negligible
Church Road West 2	15.7	15.7	<0.05	Imperceptible	Negligible
Church Road East 1	15.5	15.5	<0.05	Imperceptible	Negligible
Church Road East 2	15.6	15.6	<0.05	Imperceptible	Negligible
Farm Lane 1	15.4	15.4	<0.05	Imperceptible	Negligible
Farm Lane 2	15.4	15.4	<0.05	Imperceptible	Negligible
Kidnappers Lane North	15.8	15.8	<0.05	Imperceptible	Negligible
Shurdington Road 1	15.6	15.6	-0.1	Imperceptible	Negligible
Shurdington Road 2	15.7	15.7	-0.1	Imperceptible	Negligible
Maximum	15.8	15.8	<0.05	Imperceptible	Negligible
Minimum	15.4	15.4	-0.1	Imperceptible	Negligible

11.2.11 The magnitude of change at all the receptors is 'imperceptible'. When this change is considered in the context of the absolute concentrations, the impact descriptor at all receptors is 'negligible'.

11.2.12 As all predicted annual-mean PM₁₀ concentrations are below 31.5 µg.m⁻³, the daily-mean PM₁₀ objective is expected to be met and is not considered further within this assessment.

Fine Particulate Matter (PM_{2.5})

11.2.13 Predicted annual-mean PM_{2.5} concentrations at selected existing properties resulting from the changes in traffic flow characteristics on the local road network are presented in Table 11.4.

Table 11.4: Predicted Annual-Mean PM_{2.5} Concentrations (µg.m⁻³) at Existing Receptors

Receptor ID	Concentration (µg.m ⁻³)		With – Without Dev as % of the AQS Objective	Magnitude of Change Descriptor	Impact Descriptor
	Without Development	With Development			
Woodland Road 1	10.7	10.7	<0.05	Imperceptible	Negligible
Woodland Road 2	10.7	10.7	<0.05	Imperceptible	Negligible
Up Hatherley Way	10.7	10.7	<0.05	Imperceptible	Negligible
Leckhampton Lane 1	10.7	10.7	<0.05	Imperceptible	Negligible
Leckhampton Lane 2	10.6	10.6	<0.05	Imperceptible	Negligible
Kidnappers Lane South 1	10.6	10.6	<0.05	Imperceptible	Negligible
Kidnappers Lane South 2	10.6	10.6	<0.05	Imperceptible	Negligible
Church Road West 1	10.6	10.6	<0.05	Imperceptible	Negligible
Church Road West 2	10.7	10.7	<0.05	Imperceptible	Negligible
Church Road East 1	10.6	10.6	<0.05	Imperceptible	Negligible
Church Road East 2	10.7	10.7	<0.05	Imperceptible	Negligible
Farm Lane 1	10.6	10.6	<0.05	Imperceptible	Negligible
Farm Lane 2	10.5	10.5	<0.05	Imperceptible	Negligible
Kidnappers Lane North	10.8	10.8	<0.05	Imperceptible	Negligible
Shurdington Road 1	10.7	10.7	-0.1	Imperceptible	Negligible
Shurdington Road 2	10.7	10.7	-0.1	Imperceptible	Negligible
Maximum	10.8	10.8	<0.05	Imperceptible	Negligible
Minimum	10.5	10.5	-0.1	Imperceptible	Negligible

AQS objective = 25 µg.m⁻³

11.2.14 The magnitude of change is 'imperceptible' at all receptors and the impacts are described as 'negligible'.

11.2.15 As the maximum predicted annual-mean PM_{2.5} concentration is below 25 µg.m⁻³ in the opening year, and concentrations are expected to decrease in future years, the AQS objective for PM_{2.5} is expected to be met by a wide margin.

11.3 **Summary and Conclusions**

11.3.1 Concentrations of NO₂, PM₁₀ and PM_{2.5} have been predicted at existing receptors for the opening year of the Proposed Development (2023). The air quality effects associated with the operation of the Proposed Development are deemed to be of negligible significance according to the criteria adopted for this assessment.

11.3.2 The operation of the Proposed Development does not conflict with any regional or local air quality policies. It may be concluded that air quality does not constitute a material constraint for the Proposed Development.