

Water Eaton

PR6a : Land East of Oxford Road

Air Quality Sensitivity Analysis Results

Bellway


**STRATEGIC
LAND**



CHRIST CHURCH
UNIVERSITY OF OXFORD

WE/ AQ5 / P02

6.5 Sensitivity Analysis Results -2019 Emissions

Predicted Concentrations at Sensitive Receptors

6.5.1 Sensitivity analysis was undertaken to assess associated road vehicle exhaust emissions impacts based on the use of 2031 traffic data using 2019 emission factors. The use of 2019 emission factors assumes that vehicle emission factors will not improve in line with current predictions and future emission factors will remain consistent with those predicted for the baseline year. This ensures a worst-case scenario.

6.5.2 The results are detailed in the following Sections.

Nitrogen Dioxide (NO₂)

6.5.3 Annual mean NO₂ concentrations were predicted for 2031 DM and DS scenarios and are summarised in Table 6.5.1.

Table 6.5.1 Predicted Annual Mean NO₂ Concentrations

Potential Impact		Predicted Annual Mean NO ₂ Concentration (µg/m ³)		
		DM	DS	Change
R1	82-83 Hawksmoor Road	38.08	38.46	0.38
R2	Residential - Cuttleslowe Roundabout	48.71	49.23	0.52
R3	Residential - Cuttleslowe Roundabout	26.38	26.57	0.19
R4	Residential - Cuttleslowe Roundabout	35.98	36.30	0.32
R5	431 Banbury Road	21.66	21.87	0.21
R6	Residential - Banbury Road	22.57	22.82	0.25
R7	532 Banbury Road	25.35	25.70	0.35
R8	560 Banbury Road	33.37	33.96	0.59
R9	20 Jordon Hill	20.22	20.36	0.14
R10	403 Banbury Road	29.23	29.76	0.53
R11	460 Banbury Road	19.95	20.11	0.16
R12	2 Sunderland Avenue	25.16	25.27	0.11
R13	5 Elsfield Way	30.72	30.92	0.20
R14	50 Kendall Crescent	23.98	24.06	0.08
R15	Cuttleslowe Primary School	17.68	17.73	0.05
R16	32 Sunderland Avenue	24.67	24.75	0.08
R17	Cuttleslowe Roundabout - Residential	38.53	38.62	0.09
R18	Wolvercote Roundabout - Residential	42.95	43.05	0.10
R19	39 Sunderland Avenue	27.28	27.35	0.07
R20	79 Sunderland Avenue	31.11	31.14	0.03
R21	Woodstock Road - Residential	21.24	21.26	0.02
R22	Godstow Road - Residential	23.62	23.66	0.04
R23	Woodstock Road - Residential	26.10	26.12	0.02
R24	328 Oxford Road	28.30	28.33	0.03
R25	300 Oxford Road	22.85	22.88	0.03
R26	171 Oxford Road	21.90	21.99	0.09
R27	166 Oxford Road	17.73	17.78	0.05
R28	Wheely Court	25.48	25.61	0.13
R29	85 Oxford Road	23.15	23.25	0.10

Potential Impact		Predicted Annual Mean NO ₂ Concentration (µg/m ³)		
		DM	DS	Change
R30	28 Beagles Close	19.63	19.64	0.01
R31	46 Hampden Drive	16.90	16.93	0.03

6.5.4 As indicated in Table 6.5.1 annual mean NO₂ concentrations were below the relevant AQO at **29 of the 31** receptor locations considered.

6.5.5 Predicted impacts on annual mean NO₂ concentrations are summarised in Table 6.5.2

Table 6.5.2 Predicted NO₂ Impacts

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R1	82-83 Hawksmoor Road	0.95	95-102% of AQO	Slight
R2	Residential - Cuttleslowe Roundabout	1.30	110+ of AQO	Moderate
R3	Residential - Cuttleslowe Roundabout	0.48	75% or Less of AQO	Negligible
R4	Residential - Cuttleslowe Roundabout	0.80	76-94% of AQO	Negligible
R5	431 Banbury Road	0.53	75% or Less of AQO	Negligible
R6	Residential - Banbury Road	0.63	75% or Less of AQO	Negligible
R7	532 Banbury Road	0.87	75% or Less of AQO	Negligible
R8	560 Banbury Road	1.48	76-94% of AQO	Negligible
R9	20 Jordon Hill	0.35	75% or Less of AQO	Negligible
R10	403 Banbury Road	1.33	75% or Less of AQO	Negligible
R11	460 Banbury Road	0.40	75% or Less of AQO	Negligible
R12	2 Sunderland Avenue	0.27	75% or Less of AQO	Negligible
R13	5 Elsfield Way	0.50	76-94% of AQO	Negligible
R14	50 Kendall Crescent	0.20	75% or Less of AQO	Negligible
R15	Cuttleslowe Primary School	0.13	75% or Less of AQO	Negligible
R16	32 Sunderland Avenue	0.20	75% or Less of AQO	Negligible
R17	Cuttleslowe Roundabout - Residential	0.22	95-102% of AQO	Negligible
R18	Wolvercote Roundabout - Residential	0.25	103-109% of AQO	Negligible
R19	39 Sunderland Avenue	0.18	75% or Less of AQO	Negligible
R20	79 Sunderland Avenue	0.08	76-94% of AQO	Negligible

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R21	Woodstock Road - Residential	0.05	75% or Less of AQO	Negligible
R22	Godstow Road - Residential	0.10	75% or Less of AQO	Negligible
R23	Woodstock Road - Residential	0.05	75% or Less of AQO	Negligible
R24	328 Oxford Road	0.07	75% or Less of AQO	Negligible
R25	300 Oxford Road	0.07	75% or Less of AQO	Negligible
R26	171 Oxford Road	0.23	75% or Less of AQO	Negligible
R27	166 Oxford Road	0.13	75% or Less of AQO	Negligible
R28	Wheely Court	0.32	75% or Less of AQO	Negligible
R29	85 Oxford Road	0.25	75% or Less of AQO	Negligible
R30	28 Beagles Close	0.03	75% or Less of AQO	Negligible
R31	46 Hampden Drive	0.08	75% or Less of AQO	Negligible

6.5.6 As indicated in Table 6.5.2 impacts on annual mean NO₂ concentrations as a result of road vehicle exhaust emissions associated with the development were predicted to be **moderate** at one receptor location, **slight** at **one** receptor location. All the remaining receptor locations were predicted to be **negligible**. It is therefore considered that the overall impacts as a result of the proposed development are **not significant**. Further justifications are discussed in Section 5.2.3 of the main report.

Particulate Matter (PM₁₀)

6.5.7 Annual mean PM₁₀ concentrations were predicted for 2031 DM and DS scenarios and are summarised in Table 6.5.3.

Table 6.5.3 Predicted Annual Mean PM₁₀ Concentrations

Potential Impact		Predicted Annual Mean PM ₁₀ Concentration (µg/m ³)		
		DM	DS	Change
R1	82-83 Hawksmoor Road	19.16	19.22	0.06
R2	Residential - Cuttleslowe Roundabout	20.76	20.87	0.11
R3	Residential - Cuttleslowe Roundabout	17.43	17.46	0.03
R4	Residential - Cuttleslowe Roundabout	18.82	18.87	0.05
R5	431 Banbury Road	16.87	16.91	0.04
R6	Residential - Banbury Road	17.04	17.08	0.04
R7	532 Banbury Road	17.56	17.62	0.06
R8	560 Banbury Road	19.00	19.12	0.12
R9	20 Jordon Hill	16.74	16.77	0.03
R10	403 Banbury Road	18.10	18.20	0.10
R11	460 Banbury Road	16.02	16.04	0.02
R12	2 Sunderland Avenue	17.34	17.36	0.02
R13	5 Elsfield Way	18.31	18.34	0.03
R14	50 Kendall Crescent	17.45	17.47	0.02
R15	Cuttleslowe Primary School	16.50	16.50	0.00

Potential Impact		Predicted Annual Mean PM ₁₀ Concentration (µg/m ³)		
		DM	DS	Change
R16	32 Sunderland Avenue	17.32	17.34	0.02
R17	Cuttleslowe Roundabout - Residential	20.43	20.45	0.02
R18	Wolvercote Roundabout - Residential	21.05	21.07	0.02
R19	39 Sunderland Avenue	18.80	18.81	0.01
R20	79 Sunderland Avenue	19.26	19.27	0.01
R21	Woodstock Road - Residential	15.90	15.90	0.00
R22	Godstow Road - Residential	18.21	18.21	0.00
R23	Woodstock Road - Residential	18.99	18.99	0.00
R24	328 Oxford Road	18.92	18.93	0.01
R25	300 Oxford Road	18.15	18.15	0.00
R26	171 Oxford Road	16.81	16.82	0.01
R27	166 Oxford Road	16.11	16.12	0.01
R28	Wheely Court	17.41	17.44	0.03
R29	85 Oxford Road	17.01	17.03	0.02
R30	28 Beagles Close	17.87	17.88	0.01
R31	46 Hampden Drive	16.13	16.14	0.01

6.5.8 As indicated in Table 6.5.3 annual mean PM₁₀ concentrations were below the relevant AQO at all receptor locations considered.

6.5.9 Predicted impacts on annual mean PM₁₀ concentrations are summarised in Table 6.5.4.

Table 6.5.4 Predicted PM₁₀ Impacts

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R1	82-83 Hawksmoor Road	0.15	75% or Less of AQO	Negligible
R2	Residential - Cuttleslowe Roundabout	0.27	75% or Less of AQO	Negligible
R3	Residential - Cuttleslowe Roundabout	0.08	75% or Less of AQO	Negligible
R4	Residential - Cuttleslowe Roundabout	0.13	75% or Less of AQO	Negligible
R5	431 Banbury Road	0.10	75% or Less of AQO	Negligible
R6	Residential - Banbury Road	0.10	75% or Less of AQO	Negligible
R7	532 Banbury Road	0.15	75% or Less of AQO	Negligible
R8	560 Banbury Road	0.30	75% or Less of AQO	Negligible
R9	20 Jordon Hill	0.08	75% or Less of AQO	Negligible
R10	403 Banbury Road	0.25	75% or Less of AQO	Negligible
R11	460 Banbury Road	0.05	75% or Less of AQO	Negligible
R12	2 Sunderland Avenue	0.05	75% or Less of AQO	Negligible
R13	5 Elsfeld Way	0.08	75% or Less of AQO	Negligible

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R14	50 Kendall Crescent	0.05	75% or Less of AQO	Negligible
R15	Cuttleslowe Primary School	0.00	75% or Less of AQO	Negligible
R16	32 Sunderland Avenue	0.05	75% or Less of AQO	Negligible
R17	Cuttleslowe Roundabout - Residential	0.05	75% or Less of AQO	Negligible
R18	Wolvercote Roundabout - Residential	0.05	75% or Less of AQO	Negligible
R19	39 Sunderland Avenue	0.02	75% or Less of AQO	Negligible
R20	79 Sunderland Avenue	0.02	75% or Less of AQO	Negligible
R21	Woodstock Road - Residential	0.00	75% or Less of AQO	Negligible
R22	Godstow Road - Residential	0.00	75% or Less of AQO	Negligible
R23	Woodstock Road - Residential	0.00	75% or Less of AQO	Negligible
R24	328 Oxford Road	0.02	75% or Less of AQO	Negligible
R25	300 Oxford Road	0.00	75% or Less of AQO	Negligible
R26	171 Oxford Road	0.03	75% or Less of AQO	Negligible
R27	166 Oxford Road	0.03	75% or Less of AQO	Negligible
R28	Wheely Court	0.08	75% or Less of AQO	Negligible
R29	85 Oxford Road	0.05	75% or Less of AQO	Negligible
R30	28 Beagles Close	0.02	75% or Less of AQO	Negligible
R31	46 Hampden Drive	0.03	75% or Less of AQO	Negligible

6.5.10 As indicated in Table 6.5.4 impacts on annual mean PM₁₀ concentrations as a result of road vehicle exhaust emissions associated with the development were predicted to be **negligible** at all receptor locations. It is therefore considered that the overall impacts as a result of the proposed development are **not significant**. Further justifications are discussed in Section 5.2.3 of the main report.

Particulate Matter (PM_{2.5})

6.5.11 Annual mean PM_{2.5} concentrations were predicted for 2031 DM and DS scenarios and are summarised in Table 6.5.3.

Table 6.5.5 Predicted Annual Mean PM_{2.5} Concentrations

Potential Impact		Predicted Annual Mean PM _{2.5} Concentration (µg/m ³)		
		DM	DS	Change
R1	82-83 Hawksmoor Road	12.61	12.66	0.05
R2	Residential - Cuttleslowe Roundabout	13.60	13.66	0.06
R3	Residential - Cuttleslowe Roundabout	11.57	11.59	0.02
R4	Residential - Cuttleslowe Roundabout	12.41	12.45	0.04

Potential Impact		Predicted Annual Mean PM _{2.5} Concentration (µg/m ³)		
		DM	DS	Change
R5	431 Banbury Road	11.22	11.25	0.03
R6	Residential - Banbury Road	11.32	11.35	0.03
R7	532 Banbury Road	11.62	11.66	0.04
R8	560 Banbury Road	12.47	12.55	0.08
R9	20 Jordon Hill	11.14	11.16	0.02
R10	403 Banbury Road	11.95	12.01	0.06
R11	460 Banbury Road	10.91	10.93	0.02
R12	2 Sunderland Avenue	11.51	11.52	0.01
R13	5 Elsfield Way	12.08	12.10	0.02
R14	50 Kendall Crescent	11.56	11.56	0.00
R15	Cuttleslowe Primary School	10.50	10.51	0.01
R16	32 Sunderland Avenue	11.50	11.50	0.00
R17	Cuttleslowe Roundabout - Residential	12.91	12.92	0.01
R18	Wolvercote Roundabout - Residential	13.29	13.30	0.01
R19	39 Sunderland Avenue	11.92	11.93	0.01
R20	79 Sunderland Avenue	12.21	12.21	0.00
R21	Woodstock Road - Residential	10.65	10.65	0.00
R22	Godstow Road - Residential	11.57	11.57	0.00
R23	Woodstock Road - Residential	12.01	12.01	0.00
R24	328 Oxford Road	12.00	12.00	0.00
R25	300 Oxford Road	11.53	11.53	0.00
R26	171 Oxford Road	11.40	11.41	0.01
R27	166 Oxford Road	10.99	11.00	0.01
R28	Wheely Court	11.76	11.77	0.01
R29	85 Oxford Road	11.52	11.53	0.01
R30	28 Beagles Close	11.54	11.55	0.01
R31	46 Hampden Drive	10.71	10.71	0.00

6.5.12 As indicated in Table 6.5.5 annual mean PM_{2.5} concentrations were below the relevant AQO at all receptor locations considered.

6.5.13 Predicted impacts on annual mean PM_{2.5} concentrations are summarised in Table 6.5.6.

Table 6.5.6 Predicted PM_{2.5} Impacts

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R1	82-83 Hawksmoor Road	0.20	75% or Less of AQO	Negligible
R2	Residential - Cuttleslowe Roundabout	0.24	75% or Less of AQO	Negligible
R3	Residential - Cuttleslowe Roundabout	0.08	75% or Less of AQO	Negligible
R4	Residential -	0.16	75% or Less of AQO	Negligible

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
	Cuttleslowe Roundabout			
R5	431 Banbury Road	0.12	75% or Less of AQO	Negligible
R6	Residential - Banbury Road	0.12	75% or Less of AQO	Negligible
R7	532 Banbury Road	0.16	75% or Less of AQO	Negligible
R8	560 Banbury Road	0.32	75% or Less of AQO	Negligible
R9	20 Jordon Hill	0.08	75% or Less of AQO	Negligible
R10	403 Banbury Road	0.24	75% or Less of AQO	Negligible
R11	460 Banbury Road	0.08	75% or Less of AQO	Negligible
R12	2 Sunderland Avenue	0.04	75% or Less of AQO	Negligible
R13	5 Elsfeld Way	0.08	75% or Less of AQO	Negligible
R14	50 Kendall Crescent	0.00	75% or Less of AQO	Negligible
R15	Cuttleslowe Primary School	0.04	75% or Less of AQO	Negligible
R16	32 Sunderland Avenue	0.00	75% or Less of AQO	Negligible
R17	Cuttleslowe Roundabout - Residential	0.04	75% or Less of AQO	Negligible
R18	Wolvercote Roundabout - Residential	0.04	75% or Less of AQO	Negligible
R19	39 Sunderland Avenue	0.04	75% or Less of AQO	Negligible
R20	79 Sunderland Avenue	0.00	75% or Less of AQO	Negligible
R21	Woodstock Road - Residential	0.00	75% or Less of AQO	Negligible
R22	Godstow Road - Residential	0.00	75% or Less of AQO	Negligible
R23	Woodstock Road - Residential	0.00	75% or Less of AQO	Negligible
R24	328 Oxford Road	0.00	75% or Less of AQO	Negligible
R25	300 Oxford Road	0.00	75% or Less of AQO	Negligible
R26	171 Oxford Road	0.04	75% or Less of AQO	Negligible
R27	166 Oxford Road	0.04	75% or Less of AQO	Negligible
R28	Wheely Court	0.04	75% or Less of AQO	Negligible
R29	85 Oxford Road	0.04	75% or Less of AQO	Negligible
R30	28 Beagles Close	0.04	75% or Less of AQO	Negligible
R31	46 Hampden Drive	0.00	75% or Less of AQO	Negligible

6.5.14 As indicated in Table 6.5.6 impacts on annual mean PM_{2.5} concentrations as a result of road vehicle exhaust emissions associated with the development were predicted to be **negligible** at all receptor locations. It is therefore considered that the overall impacts as a result of the proposed development are **not significant**. Further justifications are discussed in Section 5.2.3 of the main report.