

Water Eaton

PR6a : Land East of Oxford Road

Air Quality Operation Phase
Assessment Results

Bellway


**STRATEGIC
LAND**



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WE/ AQ4/P02

6.4 Operational Phase Impacts Results

Predicted Concentrations at Sensitive Receptors

Nitrogen Dioxide (NO₂)

6.4.1 Annual mean NO₂ concentrations were predicted for 2031 DM and DS scenarios and are summarised in Table 6.4.1.

Table 6.4.1 Predicted Annual Mean NO₂ Concentrations

Potential Impact		Predicted Annual Mean NO ₂ Concentration (µg/m ³)		
		DM	DS	Change
R1	82-83 Hawksmoor Road	18.68	18.82	0.14
R2	Residential - Cuttleslowe Roundabout	22.61	22.82	0.21
R3	Residential - Cuttleslowe Roundabout	14.84	14.90	0.06
R4	Residential - Cuttleslowe Roundabout	18.02	18.13	0.11
R5	431 Banbury Road	13.33	13.40	0.07
R6	Residential - Banbury Road	13.61	13.69	0.08
R7	532 Banbury Road	14.46	14.57	0.11
R8	560 Banbury Road	17.05	17.27	0.22
R9	20 Jordon Hill	12.85	12.90	0.05
R10	403 Banbury Road	15.72	15.91	0.19
R11	460 Banbury Road	12.84	12.89	0.05
R12	2 Sunderland Avenue	14.52	14.56	0.04
R13	5 Elsfield Way	16.30	16.37	0.07
R14	50 Kendall Crescent	14.09	14.12	0.03
R15	Cuttleslowe Primary School	10.15	10.17	0.02
R16	32 Sunderland Avenue	14.34	14.37	0.03
R17	Cuttleslowe Roundabout - Residential	19.76	19.80	0.04
R18	Wolvercote Roundabout - Residential	21.25	21.28	0.03
R19	39 Sunderland Avenue	15.96	15.98	0.02
R20	79 Sunderland Avenue	17.09	17.10	0.01
R21	Woodstock Road - Residential	13.14	13.15	0.01
R22	Godstow Road - Residential	14.83	14.84	0.01
R23	Woodstock Road - Residential	15.46	15.46	0.00
R24	328 Oxford Road	16.21	16.22	0.01
R25	300 Oxford Road	14.57	14.57	0.00
R26	171 Oxford Road	11.91	11.94	0.03
R27	166 Oxford Road	10.62	10.64	0.02
R28	Wheely Court	13.06	13.10	0.04
R29	85 Oxford Road	12.32	12.36	0.04
R30	28 Beagles Close	10.88	10.88	0.00
R31	46 Hampden Drive	10.23	10.24	0.01

6.4.2 As indicated in Table 6.4.1 annual mean NO₂ concentrations were below the relevant AQO at all receptor locations considered.

6.4.3 Predicted impacts on annual mean NO₂ concentrations are summarised in Table 6.4.2

Table 6.4.2 Predicted NO₂ Impacts

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R1	82-83 Hawksmoor Road	0.35	75% or Less of AQO	Negligible
R2	Residential - Cuttleslowe Roundabout	0.53	75% or Less of AQO	Negligible
R3	Residential - Cuttleslowe Roundabout	0.15	75% or Less of AQO	Negligible
R4	Residential - Cuttleslowe Roundabout	0.27	75% or Less of AQO	Negligible
R5	431 Banbury Road	0.18	75% or Less of AQO	Negligible
R6	Residential - Banbury Road	0.20	75% or Less of AQO	Negligible
R7	532 Banbury Road	0.27	75% or Less of AQO	Negligible
R8	560 Banbury Road	0.55	75% or Less of AQO	Negligible
R9	20 Jordon Hill	0.13	75% or Less of AQO	Negligible
R10	403 Banbury Road	0.47	75% or Less of AQO	Negligible
R11	460 Banbury Road	0.13	75% or Less of AQO	Negligible
R12	2 Sunderland Avenue	0.10	75% or Less of AQO	Negligible
R13	5 Elsfield Way	0.18	75% or Less of AQO	Negligible
R14	50 Kendall Crescent	0.07	75% or Less of AQO	Negligible
R15	Cuttleslowe Primary School	0.05	75% or Less of AQO	Negligible
R16	32 Sunderland Avenue	0.07	75% or Less of AQO	Negligible
R17	Cuttleslow Roundabout - Residential	0.10	75% or Less of AQO	Negligible
R18	Wolvercote Roundabout - Residential	0.08	75% or Less of AQO	Negligible
R19	39 Sunderland Avenue	0.05	75% or Less of AQO	Negligible
R20	79 Sunderland Avenue	0.03	75% or Less of AQO	Negligible
R21	Woodstock Road - Residential	0.02	75% or Less of AQO	Negligible
R22	Godstow Road - Residential	0.02	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	0.07	75% or Less of AQO	Negligible
R27	166 Oxford Road	0.05	75% or Less of AQO	Negligible
R28	Wheely Court	0.10	75% or Less of AQO	Negligible
R29	85 Oxford Road	0.10	75% or Less of AQO	Negligible

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R30	28 Beagles Close	0.00	75% or Less of AQO	Negligible
R31	46 Hampden Drive	0.02	75% or Less of AQO	Negligible

6.4.4 As indicated in Table 6.4.2 impacts on annual mean NO₂ 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 (PM₁₀)

6.4.5 Annual mean PM₁₀ concentrations were predicted for 2031 DM and DS scenarios and are summarised in Table 6.4.3.

Table 6.4.3 Predicted Annual Mean PM₁₀ Concentrations

Potential Impact		Predicted Annual Mean PM ₁₀ Concentration (µg/m ³)		
		DM	DS	Change
R1	82-83 Hawksmoor Road	17.69	17.75	0.06
R2	Residential - Cuttleslowe Roundabout	19.19	19.28	0.09
R3	Residential - Cuttleslowe Roundabout	16.12	16.15	0.03
R4	Residential - Cuttleslowe Roundabout	17.37	17.42	0.05
R5	431 Banbury Road	15.63	15.67	0.04
R6	Residential - Banbury Road	15.79	15.83	0.04
R7	532 Banbury Road	16.28	16.34	0.06
R8	560 Banbury Road	17.63	17.74	0.11
R9	20 Jordon Hill	15.52	15.55	0.03
R10	403 Banbury Road	16.77	16.86	0.09
R11	460 Banbury Road	14.79	14.81	0.02
R12	2 Sunderland Avenue	16.06	16.08	0.02
R13	5 Elsfield Way	16.96	17.00	0.04
R14	50 Kendall Crescent	16.19	16.20	0.01
R15	Cuttleslowe Primary School	15.24	15.25	0.01
R16	32 Sunderland Avenue	16.05	16.06	0.01
R17	Cuttleslowe Roundabout - Residential	19.04	19.05	0.01
R18	Wolvercote Roundabout - Residential	19.58	19.59	0.01
R19	39 Sunderland Avenue	17.52	17.53	0.01
R20	79 Sunderland Avenue	17.92	17.92	0.00
R21	Woodstock Road - Residential	14.68	14.69	0.01
R22	Godstow Road - Residential	16.99	17.00	0.01
R23	Woodstock Road - Residential	17.73	17.73	0.00
R24	328 Oxford Road	17.64	17.64	0.00
R25	300 Oxford Road	16.95	16.95	0.00
R26	171 Oxford Road	15.49	15.51	0.02
R27	166 Oxford Road	14.85	14.85	0.00

Potential Impact		Predicted Annual Mean PM ₁₀ Concentration (µg/m ³)		
		DM	DS	Change
R28	Wheely Court	16.06	16.08	0.02
R29	85 Oxford Road	15.68	15.70	0.02
R30	28 Beagles Close	16.61	16.61	0.00
R31	46 Hampden Drive	14.89	14.90	0.01

6.4.6 As indicated in Table 6.4.3 annual mean PM₁₀ concentrations were below the relevant AQO at all receptor locations considered.

6.4.7 Predicted impacts on annual mean PM₁₀ concentrations are summarised in Table 6.4.4.

Table 6.4.4 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	0.23	75% or Less of AQO	Negligible
R3	Residential - Cuttleslowe Roundabout	0.07	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	0.27	75% or Less of AQO	Negligible
R9	20 Jordon Hill	0.08	75% or Less of AQO	Negligible
R10	403 Banbury Road	0.23	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 Elsfield Way	0.10	75% or Less of AQO	Negligible
R14	50 Kendall Crescent	0.02	75% or Less of AQO	Negligible
R15	Cuttleslowe Primary School	0.02	75% or Less of AQO	Negligible
R16	32 Sunderland Avenue	0.02	75% or Less of AQO	Negligible
R17	Cuttleslowe Roundabout - Residential	0.03	75% or Less of AQO	Negligible
R18	Wolvercote Roundabout - Residential	0.03	75% or Less of AQO	Negligible
R19	39 Sunderland Avenue	0.03	75% or Less of AQO	Negligible
R20	79 Sunderland Avenue	0.00	75% or Less of AQO	Negligible
R21	Woodstock Road - Residential	0.02	75% or Less of AQO	Negligible
R22	Godstow Road - Residential	0.03	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

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R26	171 Oxford Road	0.05	75% or Less of AQO	Negligible
R27	166 Oxford Road	0.00	75% or Less of AQO	Negligible
R28	Wheely Court	0.05	75% or Less of AQO	Negligible
R29	85 Oxford Road	0.05	75% or Less of AQO	Negligible
R30	28 Beagles Close	0.00	75% or Less of AQO	Negligible
R31	46 Hampden Drive	0.02	75% or Less of AQO	Negligible

6.4.8 As indicated in Table 6.4.4 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})

6.4.9 Annual mean PM_{2.5} concentrations were predicted for 2031 DM and DS scenarios and are summarised in Table 6.4.3.

Table 6.4.5 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	11.37	11.41	0.04
R2	Residential - Cuttleslowe Roundabout	12.22	12.27	0.05
R3	Residential - Cuttleslowe Roundabout	10.49	10.51	0.02
R4	Residential - Cuttleslowe Roundabout	11.20	11.23	0.03
R5	431 Banbury Road	10.22	10.24	0.02
R6	Residential - Banbury Road	10.30	10.32	0.02
R7	532 Banbury Road	10.57	10.60	0.03
R8	560 Banbury Road	11.31	11.38	0.07
R9	20 Jordon Hill	10.15	10.17	0.02
R10	403 Banbury Road	10.85	10.90	0.05
R11	460 Banbury Road	9.93	9.94	0.01
R12	2 Sunderland Avenue	10.46	10.47	0.01
R13	5 Elsfield Way	10.96	10.98	0.02
R14	50 Kendall Crescent	10.52	10.53	0.01
R15	Cuttleslowe Primary School	9.49	9.49	0.00
R16	32 Sunderland Avenue	10.45	10.46	0.01
R17	Cuttleslowe Roundabout - Residential	11.71	11.72	0.01
R18	Wolvercote Roundabout - Residential	12.02	12.03	0.01
R19	39 Sunderland Avenue	10.86	10.86	0.00
R20	79 Sunderland Avenue	11.08	11.09	0.01
R21	Woodstock Road - Residential	9.65	9.65	0.00
R22	Godstow Road - Residential	10.57	10.57	0.00
R23	Woodstock Road - Residential	10.96	10.96	0.00

Potential Impact		Predicted Annual Mean PM _{2.5} Concentration (µg/m ³)		
		DM	DS	Change
R24	328 Oxford Road	10.92	10.92	0.00
R25	300 Oxford Road	10.54	10.54	0.00
R26	171 Oxford Road	10.34	10.35	0.01
R27	166 Oxford Road	9.98	9.99	0.01
R28	Wheely Court	10.65	10.67	0.02
R29	85 Oxford Road	10.45	10.46	0.01
R30	28 Beagles Close	10.51	10.52	0.01
R31	46 Hampden Drive	9.72	9.72	0.00

6.4.10 As indicated in Table 6.4.5 annual mean PM_{2.5} concentrations were below the relevant AQO at all receptor locations considered.

6.4.11 Predicted impacts on annual mean PM_{2.5} concentrations are summarised in Table 6.4.6.

Table 6.4.6 Predicted PM_{2.5} Impacts

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R1	82-83 Hawksmoor Road	0.16	75% or Less of AQO	Negligible
R2	Residential - Cuttleslowe Roundabout	0.20	75% or Less of AQO	Negligible
R3	Residential - Cuttleslowe Roundabout	0.08	75% or Less of AQO	Negligible
R4	Residential - Cuttleslowe Roundabout	0.12	75% or Less of AQO	Negligible
R5	431 Banbury Road	0.08	75% or Less of AQO	Negligible
R6	Residential - Banbury Road	0.08	75% or Less of AQO	Negligible
R7	532 Banbury Road	0.12	75% or Less of AQO	Negligible
R8	560 Banbury Road	0.28	75% or Less of AQO	Negligible
R9	20 Jordon Hill	0.08	75% or Less of AQO	Negligible
R10	403 Banbury Road	0.20	75% or Less of AQO	Negligible
R11	460 Banbury Road	0.04	75% or Less of AQO	Negligible
R12	2 Sunderland Avenue	0.04	75% or Less of AQO	Negligible
R13	5 Elsfield Way	0.08	75% or Less of AQO	Negligible
R14	50 Kendall Crescent	0.04	75% or Less of AQO	Negligible
R15	Cuttleslowe Primary School	0.00	75% or Less of AQO	Negligible
R16	32 Sunderland Avenue	0.04	75% or Less of AQO	Negligible
R17	Cuttleslowe Roundabout - Residential	0.04	75% or Less of AQO	Negligible
R18	Wolvercote	0.04	75% or Less of AQO	Negligible

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
	Roundabout - Residential			
R19	39 Sunderland Avenue	0.00	75% or Less of AQO	Negligible
R20	79 Sunderland Avenue	0.04	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	0.08	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

6.4.12 As indicated in Table 6.4.6 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.

Predicted Concentrations at Sensitive Ecological Receptors

6.4.13 Predicted concentrations of NO_x and NH₃ concentrations and acid deposition rates were assessed for the development traffic. Predicted concentrations and deposition rates of each pollutant at the ecological receptor locations are summarised in the following section.

6.4.14 predicted annual mean NO_x concentrations for the development only are summarised in Table 6.4.7.

Table 6.4.7 Predicted Annual Mean NO_x Concentrations

Receptor		Predicted Annual Mean NO _x Concentration (µg/m ³)		Proportion of Critical Level (%)	
		PC	PEC	PC	PEC
ER1	Oxford Meadows, Pixey Yarnton Meads	0.00	16.69	0.0	56
ER2	Oxford Meadows, Pixey Yarnton Meads	0.01	16.70	0.0	56
ER3	Oxford Meadows, Pixey Yarnton Meads	0.01	16.46	0.0	55
ER4	Stratfield Brake	0.13	16.14	0.4	54
ER5	Stratfield Brake, Woodland Trust Reserve, Conservation Target Area	0.13	16.14	0.4	54
ER6	Meadows West of the Oxford Canal,	0.07	16.08	0.2	54

Receptor		Predicted Annual Mean NOx Concentration (µg/m3)		Proportion of Critical Level (%)	
		PC	PEC	PC	PEC
ER7	Conservation Target Area				
	Linkside Lake	0.01	17.14	0.0	57
ER8	Peartree Hill Verges	0.09	16.11	0.3	54
ER9	Peartree Hill Verges	0.10	16.12	0.3	54
ER10	Canalside Meadow Oxford Canal Marsh	0.14	16.83	0.5	56
ER11	Duke Meadow	0.12	16.81	0.4	56
ER12	Bypass Meadows	0.05	12.08	0.2	40

6.4.15 As indicated in Table 6.4.7 predicted annual mean NOx concentrations were below the relevant critical level at all sensitive receptor locations.

6.4.16 In addition, the PC proportion of the critical level is less than 1% at all receptor locations. As such, impacts on annual mean NOx concentrations are considered to be insignificant in accordance with the IAQM guidance and EA screening criteria.

6.4.17 Predicted 24-hour mean NOx concentrations for the development only are summarised in Table 6.4.8.

Table 6.4.8 Predicted 24-Hour Mean NOx Concentrations

Receptor		Predicted 24-Hour Mean NOx Concentration (µg/m3)		Proportion of Critical Level (%)	
		PC	PEC	PC	PEC
ER1	Oxford Meadows, Pixey Yarnton Meads	0.01	33.39	0.0	N/A
ER2	Oxford Meadows, Pixey Yarnton Meads	0.03	33.41	0.0	N/A
ER3	Oxford Meadows, Pixey Yarnton Meads	0.03	32.94	0.0	N/A
ER4	Stratfield Brake	0.31	32.34	0.4	N/A
ER5	Stratfield Brake, Woodland Trust Reserve, Conservation Target Area	0.18	32.21	0.2	N/A
ER6	Meadows West of the Oxford Canal, Conservation Target Area	0.21	32.23	0.3	N/A
ER7	Linkside Lake	0.01	34.27	0.0	N/A
ER8	Peartree Hill Verges	0.13	32.16	0.2	N/A
ER9	Peartree Hill Verges	0.23	32.26	0.3	N/A
ER10	Canalside Meadow Oxford Canal Marsh	0.25	33.62	0.3	N/A
ER11	Duke Meadow	0.22	33.59	0.3	N/A
ER12	Bypass Meadows	0.12	24.19	0.2	N/A

6.4.18 As indicated in Table 6.4.8 predicted 24-hour mean NOx concentrations were below the relevant critical level at all sensitive receptor locations.

6.4.19 In addition, the PC proportion of the critical level is less than 10% at all receptor locations. As such, impacts on 24-hour mean NOx concentrations are considered to be insignificant in accordance with the IAQM guidance and EA screening criteria.

6.4.20 Predicted annual mean NH₃ concentrations for the development only are summarised in Table 6.4.9.

Table 6.4.9 Predicted Annual Mean NH₃ Concentrations

Receptor		Predicted Annual Mean NH ₃ Concentration (µg/m ³)		Proportion of Critical Level (%)	
		PC	PEC	PC	PEC
ER1	Oxford Meadows, Pixey Yarnton Meads	0.00	2.30	0.0	77
ER2	Oxford Meadows, Pixey Yarnton Meads	0.00	2.30	0.0	77
ER3	Oxford Meadows, Pixey Yarnton Meads	0.00	2.30	0.0	77
ER4	Stratfield Brake	0.02	2.32	0.8	77
ER5	Stratfield Brake, Woodland Trust Reserve, Conservation Target Area	0.03	2.33	0.9	78
ER6	Meadows West of the Oxford Canal, Conservation Target Area	0.01	2.31	0.5	77
ER7	Linkside Lake	0.00	2.30	0.1	77
ER8	Peartree Hill Verges	0.01	2.31	0.5	77
ER9	Peartree Hill Verges	0.02	2.32	0.5	77
ER10	Canalside Meadow Oxford Canal Marsh	0.03	2.33	1.0	78
ER11	Duke Meadow	0.03	2.33	0.9	78
ER12	Bypass Meadows	0.01	2.31	0.3	77

6.4.21 As indicated in Table 6.4.9. predicted annual mean NH₃ concentrations were below the relevant critical level at all sensitive receptor locations.

6.4.22 In addition, the PC proportion of the critical level is less than 1% at all receptor locations. As such, impacts on annual mean NH₃ concentrations are considered to be insignificant in accordance with the IAQM guidance and EA screening criteria.

6.4.23 Predicted annual mean acid deposition rates for the development only are summarised in Table 6.4.10

Table 6.4.10 Predicted Annual Mean Acid Deposition Rates

Receptor	Predicted Annual Mean Acid Deposition Rate (keq/ha/yr)	Proportion of Critical Load (%)	Exceedance of CL Function (keq/ha/yr)
	N	PC	
ER1	0.000	0.1	None
ER2	0.001	0.1	None
ER3	0.001	0.1	None

6.4.24 The APIS site relevant critical load tool indicated that no receptors exceeded the CL function for acid deposition.