

APPENDIX 6.2.9.17: AIR QUALITY OPERATIONAL PHASE CUMULATIVE ASSESSMENT RESULTS

Human Receptors

To enable consideration of cumulative effects arising from the operation of the HNRFI with the back-up CHP, a cumulative impact assessment was undertaken to consider the total change in nitrogen dioxide concentrations at human receptors as a result of emissions associated with operational road traffic and the back-up CHP. The significance criteria detailed in IAQM and EPUK guidance was utilised to determine the significance of any impacts at each individual receptor location.

Table 17.1 presents the annual mean NO₂ concentrations for the 2026 Opening Year Without HNRFI and With HNRFI and back-up CHP scenarios in addition to the cumulative change in concentration and impact associated with concurrent road traffic and back-up CHP operation. Table 17.2 presents the annual mean NO₂ concentrations for the 2036 Future Year Without HNRFI and With HNRFI and back-up CHP scenarios in addition to the cumulative change in concentration and cumulative impact.

Table 17.1: Predicted annual mean NO₂ concentrations and cumulative HNRFI impact at existing receptors considered in the combined road traffic and back-up CHP assessment - 2026 Opening Year.

Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2026 Without HNRFI (µg.m ⁻³)	2026 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R1	9.1	9.2	+0.1	0	Negligible
R2	9.5	9.7	+0.2	0	Negligible
R3	10.0	10.2	+0.2	0	Negligible
R4	11.9	12.0	+0.1	0	Negligible
R5	11.0	11.0	0.0	0	Negligible

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Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2026 Without HNRFI (µg.m ⁻³)	2026 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R6	11.4	11.4	0.0	0	Negligible
R7	11.5	11.4	0.0	0	Negligible
R8	11.0	11.1	+0.1	0	Negligible
R9	10.8	10.9	+0.2	0	Negligible
R10	9.7	9.8	+0.2	0	Negligible
R11	9.1	9.2	0.0	0	Negligible
R12	9.3	9.9	+0.6	+2	Negligible
R13	8.9	9.3	+0.4	+1	Negligible
R14	9.1	9.5	+0.4	+1	Negligible
R15	9.4	9.8	+0.4	+1	Negligible
R16	9.0	9.1	+0.1	0	Negligible
R17	9.2	9.4	+0.2	0	Negligible
R18	8.6	8.8	+0.2	+1	Negligible
R19	9.1	9.1	0.0	0	Negligible

Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2026 Without HNRFI (µg.m ⁻³)	2026 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R20	9.0	8.7	-0.3	-1	Negligible
R21	8.9	8.7	-0.2	-1	Negligible
R22	8.8	8.6	-0.2	-1	Negligible
R23	8.7	8.5	-0.2	0	Negligible
R24	9.0	8.7	-0.3	-1	Negligible
R25	8.9	8.7	-0.2	-1	Negligible
R26	8.8	8.7	-0.2	0	Negligible
R27	9.7	9.7	0.0	0	Negligible
R28	9.3	9.4	+0.1	0	Negligible
R29	10.2	10.4	+0.2	0	Negligible
R30	9.9	10.0	+0.1	0	Negligible
R31	10.8	10.9	+0.1	0	Negligible
R32	9.8	9.9	+0.1	0	Negligible

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Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2026 Without HNRFI (µg.m ⁻³)	2026 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R33	11.7	11.6	0.0	0	Negligible
R34	11.4	11.4	0.0	0	Negligible
R35	11.3	11.3	0.0	0	Negligible
R36	16.5	16.5	0.0	0	Negligible
R37	13.9	14.0	0.0	0	Negligible
R38	14.9	14.5	-0.4	-1	Negligible
R42	15.6	16.1	+0.6	+1	Negligible
R43	10.9	11.5	+0.6	+1	Negligible
R44	10.9	11.8	+0.9	+2	Negligible
R45	10.7	11.2	+0.5	+1	Negligible
R46	9.5	9.9	+0.4	+1	Negligible
R47	9.1	9.2	+0.1	0	Negligible
R48	9.2	9.4	+0.2	0	Negligible
R49	9.4	10.0	+0.7	+2	Negligible

Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2026 Without HNRFI (µg.m ⁻³)	2026 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R50	13.1	13.1	0.0	0	Negligible
R51	12.6	12.6	0.0	0	Negligible
R53	8.7	8.8	+0.1	0	Negligible
R65	14.5	15.0	+0.5	+1	Negligible
R66	10.0	10.2	+0.2	+1	Negligible
R69	9.4	9.6	+0.2	0	Negligible
R70	9.7	9.8	+0.1	0	Negligible
R71	9.8	10.1	+0.3	+1	Negligible
R72	10.6	10.7	+0.1	0	Negligible
R73	10.5	10.6	+0.1	0	Negligible
R75	9.6	9.5	0.0	0	Negligible
R76	9.7	9.6	0.0	0	Negligible
R78	9.8	9.9	+0.1	0	Negligible

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Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2026 Without HNRFI (µg.m ⁻³)	2026 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R79	11.4	11.7	+0.3	+1	Negligible
R80	9.3	9.5	+0.2	+1	Negligible
R81	10.7	11.1	+0.4	+1	Negligible
R82	10.3	10.7	+0.4	+1	Negligible
R83	10.6	11.0	+0.4	+1	Negligible
R84	10.3	10.9	+0.6	+1	Negligible
R85	9.8	10.1	+0.3	+1	Negligible
R86	10.3	10.8	+0.5	1	Negligible
R87	10.1	10.5	+0.4	+1	Negligible
R88	9.5	9.6	+0.1	0	Negligible
R89	8.6	8.7	+0.1	0	Negligible
R90	10.2	10.3	+0.1	0	Negligible
R91	13.0	13.2	+0.2	0	Negligible
R92	12.4	12.7	+0.3	+1	Negligible

Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2026 Without HNRFI (µg.m ⁻³)	2026 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R93	12.0	12.2	+0.2	+1	Negligible
R94	11.6	11.7	+0.2	0	Negligible
R95	12.2	12.2	0.0	0	Negligible
R96	14.3	14.3	-0.1	0	Negligible
R97	13.6	13.5	-0.1	0	Negligible
R98	14.9	14.8	-0.1	0	Negligible
R99	14.6	14.5	-0.1	0	Negligible
R100	14.7	14.6	-0.1	0	Negligible
R101	17.2	17.0	-0.2	0	Negligible
R102	16.5	16.3	-0.2	0	Negligible
R103	16.5	16.3	-0.1	0	Negligible
R104	13.8	13.8	0.0	0	Negligible
R105	14.4	14.3	-0.2	0	Negligible

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Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2026 Without HNRFI (µg.m ⁻³)	2026 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R106	15.5	15.2	-0.2	-1	Negligible
R107	13.3	13.4	+0.1	0	Negligible
R108	13.9	14.0	+0.2	0	Negligible
R109	14.8	15.0	+0.2	0	Negligible
R110	9.7	12.2	+2.5	+6	Slight Adverse
R111	12.5	11.9	-0.5	-1	Negligible
R112	13.5	12.9	-0.7	-2	Negligible
R113	13.1	12.5	-0.6	-2	Negligible
R114	15.4	14.3	-1.1	-3	Negligible
R115	12.4	12.0	-0.4	-1	Negligible
R116	13.1	12.9	-0.1	0	Negligible
R117	13.3	13.2	-0.1	0	Negligible
R118	13.9	13.5	-0.4	-1	Negligible

Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2026 Without HNRFI (µg.m ⁻³)	2026 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R119	17.4	16.3	-1.1	-3	Negligible
R120	14.8	14.3	-0.5	-1	Negligible
R121	14.4	14.0	-0.4	-1	Negligible
R122	15.0	14.5	-0.5	-1	Negligible
R123	14.6	14.3	-0.4	-1	Negligible
R124	13.0	12.6	-0.3	-1	Negligible
R125	13.2	12.6	-0.6	-2	Negligible
R126	12.0	11.7	-0.3	-1	Negligible
R127	12.3	11.9	-0.4	-1	Negligible
R128	12.6	12.3	-0.4	-1	Negligible
R129	14.1	13.3	-0.8	-2	Negligible
R130	13.8	13.5	-0.3	-1	Negligible
R131	12.7	12.5	-0.2	0	Negligible

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Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2026 Without HNRFI (µg.m ⁻³)	2026 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R132	12.9	12.7	-0.2	-1	Negligible
R133	12.9	12.8	-0.1	0	Negligible
R134	14.9	16.8	+1.9	+5	Negligible
R135	15.4	16.2	+0.7	+2	Negligible
R136	14.9	15.6	+0.7	+2	Negligible
R137	14.1	13.6	-0.5	-1	Negligible
R138	14.2	13.7	-0.5	-1	Negligible
R139	14.2	14.1	-0.1	0	Negligible
R140	13.9	13.8	0.0	0	Negligible
R141	14.9	14.6	-0.3	-1	Negligible
R142	14.8	14.8	0.0	0	Negligible
R143	15.0	15.0	0.0	0	Negligible
R144	14.8	14.8	0.0	0	Negligible
R145	11.9	11.9	-0.1	0	Negligible

Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2026 Without HNRFI (µg.m ⁻³)	2026 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R146	12.8	12.5	-0.3	-1	Negligible
R147	11.8	11.8	0.0	0	Negligible
R148	12.9	12.6	-0.3	-1	Negligible
R149	11.5	11.5	0.0	0	Negligible
R150	11.8	11.7	-0.1	0	Negligible
R151	11.5	11.5	0.0	0	Negligible
R152	11.6	11.5	-0.1	0	Negligible
R153	12.8	12.3	-0.4	-1	Negligible
R154	13.7	13.3	-0.4	-1	Negligible
R155	14.6	14.9	+0.4	+1	Negligible
R156	15.0	15.3	+0.2	+1	Negligible
R157	13.4	13.6	+0.2	+1	Negligible
R158	18.0	18.0	0.0	0	Negligible

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Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2026 Without HNRFI (µg.m ⁻³)	2026 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R159	12.8	12.8	0.0	0	Negligible
R160	15.3	15.2	0.0	0	Negligible
R161	11.7	11.6	-0.1	0	Negligible
R162	12.3	12.2	-0.1	0	Negligible
R163	12.6	12.5	-0.1	0	Negligible
R164	11.1	11.0	0.0	0	Negligible
R165	8.8	8.9	+0.1	0	Negligible
R166	8.6	8.7	+0.1	0	Negligible
R170	10.7	11.0	+0.3	+1	Negligible
R171	9.9	10.2	+0.3	+1	Negligible
R172	12.0	11.9	-0.1	0	Negligible
R173	10.3	10.4	0.1	0	Negligible
R174	13.9	14.0	0.0	0	Negligible
R175	11.6	11.7	+0.1	0	Negligible

Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2026 Without HNRFI (µg.m ⁻³)	2026 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R176	11.6	11.7	+0.1	0	Negligible
R177	10.5	10.6	+0.1	0	Negligible
R178	9.8	9.9	+0.2	0	Negligible
R179	12.4	13.2	+0.8	+2	Negligible
R191	14.7	14.8	+0.1	0	Negligible
R192	15.4	15.5	+0.1	0	Negligible
R207	13.9	14.5	+0.5	+1	Negligible
R208	14.2	14.8	+0.7	+2	Negligible
R209	12.7	13.1	+0.4	+1	Negligible
R210	13.5	13.6	0.0	0	Negligible
R219	9.2	11.1	+1.9	+5	Negligible

* Discrepancies in changes due to rounding effects.

Table 17.2: Predicted annual mean NO₂ concentrations and cumulative HNRFI impact at existing receptors considered in the combined road traffic and back-up CHP assessment - 2036 Future Year.

Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2036 Without HNRFI (µg.m ⁻³)	2036 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R1	8.3	8.4	+0.1	0	Negligible
R2	8.6	8.8	+0.2	0	Negligible
R3	9.0	9.2	+0.2	+1	Negligible
R4	10.4	10.5	+0.1	0	Negligible
R5	10.1	10.2	+0.1	0	Negligible
R6	10.4	10.5	0.0	0	Negligible
R7	10.5	10.5	0.0	0	Negligible
R8	10.1	10.2	+0.1	0	Negligible
R9	9.9	10.1	+0.1	0	Negligible
R10	8.8	8.9	+0.2	0	Negligible
R11	8.3	8.4	+0.1	0	Negligible
R12	8.4	8.8	+0.5	+1	Negligible
R13	8.1	8.4	+0.3	+1	Negligible

Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2036 Without HNRFI (µg.m ⁻³)	2036 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R14	8.2	8.5	+0.3	+1	Negligible
R15	8.4	8.8	+0.3	+1	Negligible
R16	8.2	8.3	+0.1	0	Negligible
R17	8.4	8.5	+0.2	0	Negligible
R18	7.9	8.0	+0.2	0	Negligible
R19	8.4	8.4	0.0	0	Negligible
R20	8.1	7.9	-0.1	0	Negligible
R21	8.0	7.9	-0.1	0	Negligible
R22	7.9	7.8	-0.1	0	Negligible
R23	7.9	7.8	-0.1	0	Negligible
R24	8.1	7.9	-0.1	0	Negligible
R25	8.0	7.9	-0.1	0	Negligible
R26	8.0	7.9	-0.1	0	Negligible

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Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2036 Without HNRFI (µg.m ⁻³)	2036 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R27	8.5	8.5	0.0	0	Negligible
R28	8.2	8.3	0.0	0	Negligible
R29	9.3	9.4	+0.2	0	Negligible
R30	9.0	9.1	+0.1	0	Negligible
R31	9.8	10.0	+0.1	0	Negligible
R32	9.0	9.1	+0.1	0	Negligible
R33	10.4	10.4	0.0	0	Negligible
R34	10.2	10.2	0.0	0	Negligible
R35	10.1	10.2	0.0	0	Negligible
R36	13.7	13.7	0.0	0	Negligible
R37	11.9	12.0	0.0	0	Negligible
R38	12.6	12.6	0.0	0	Negligible
R42	13.0	13.1	0.0	0	Negligible
R43	9.5	10.0	+0.5	+1	Negligible

Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2036 Without HNRFI (µg.m ⁻³)	2036 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R44	9.5	10.2	+0.7	+2	Negligible
R45	9.4	9.8	+0.4	+1	Negligible
R46	8.6	9.0	+0.3	+1	Negligible
R47	8.3	8.4	+0.1	0	Negligible
R48	8.4	8.5	+0.1	0	Negligible
R49	8.4	8.9	+0.5	+1	Negligible
R50	11.3	11.4	0.0	0	Negligible
R51	11.0	11.0	0.0	0	Negligible
R53	7.8	7.9	+0.1	0	Negligible
R65	12.0	12.2	+0.3	+1	Negligible
R66	8.7	8.8	+0.1	0	Negligible
R69	8.5	8.6	+0.2	0	Negligible
R70	8.6	8.7	+0.1	0	Negligible

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Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2036 Without HNRFI (µg.m ⁻³)	2036 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R71	8.9	9.2	+0.3	+1	Negligible
R72	9.3	9.4	+0.1	0	Negligible
R73	9.2	9.3	+0.1	0	Negligible
R75	8.4	8.4	0.0	0	Negligible
R76	8.5	8.5	0.0	0	Negligible
R78	8.9	9.0	0.0	0	Negligible
R79	9.9	10.1	+0.2	0	Negligible
R80	8.3	8.5	+0.2	0	Negligible
R81	9.4	9.7	+0.3	+1	Negligible
R82	9.1	9.4	+0.3	+1	Negligible
R83	9.7	9.9	+0.3	+1	Negligible
R84	9.6	10.0	+0.4	+1	Negligible
R85	9.0	9.2	+0.3	+1	Negligible
R86	9.4	9.8	+0.3	+1	Negligible

Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2036 Without HNRFI (µg.m ⁻³)	2036 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R87	9.3	9.5	+0.3	+1	Negligible
R88	8.6	8.7	+0.1	0	Negligible
R89	7.8	7.9	+0.1	0	Negligible
R90	9.1	9.2	+0.1	0	Negligible
R91	11.1	11.2	+0.1	0	Negligible
R92	10.7	10.9	+0.2	0	Negligible
R93	10.4	10.6	+0.1	0	Negligible
R94	10.2	10.3	+0.1	0	Negligible
R95	11.1	11.1	0.0	0	Negligible
R96	12.5	12.4	-0.1	0	Negligible
R97	12.1	12.0	-0.1	0	Negligible
R98	13.0	12.9	-0.1	0	Negligible
R99	12.7	12.7	-0.1	0	Negligible

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Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2036 Without HNRFI (µg.m ⁻³)	2036 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R100	12.7	12.6	-0.1	0	Negligible
R101	15.1	15.0	-0.1	0	Negligible
R102	14.7	14.6	-0.1	0	Negligible
R103	14.7	14.6	-0.1	0	Negligible
R104	11.6	11.7	0.1	0	Negligible
R105	12.5	12.4	-0.1	0	Negligible
R106	13.2	13.0	-0.2	-1	Negligible
R107	11.7	11.8	+0.1	0	Negligible
R108	11.7	11.8	+0.2	0	Negligible
R109	12.3	12.5	+0.2	0	Negligible
R110	8.7	10.3	+1.7	+4	Negligible
R111	10.8	10.3	-0.4	-1	Negligible
R112	11.7	11.1	-0.5	-1	Negligible
R113	11.5	11.1	-0.3	-1	Negligible

Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2036 Without HNRFI (µg.m ⁻³)	2036 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R114	13.1	12.5	-0.6	-1	Negligible
R115	11.0	10.7	-0.2	-1	Negligible
R116	11.6	11.6	-0.1	0	Negligible
R117	11.8	11.7	-0.1	0	Negligible
R118	12.2	12.0	-0.2	-1	Negligible
R119	14.7	14.0	-0.6	-2	Negligible
R120	12.8	12.5	-0.3	-1	Negligible
R121	12.5	12.3	-0.2	0	Negligible
R122	12.9	12.6	-0.2	-1	Negligible
R123	12.7	12.5	-0.2	0	Negligible
R124	11.1	10.9	-0.2	0	Negligible
R125	11.4	11.0	-0.5	-1	Negligible
R126	10.5	10.3	-0.2	0	Negligible

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Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2036 Without HNRFI (µg.m ⁻³)	2036 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R127	10.6	10.4	-0.2	-1	Negligible
R128	10.9	10.6	-0.2	-1	Negligible
R129	12.0	11.5	-0.5	-1	Negligible
R130	11.9	11.6	-0.3	-1	Negligible
R131	11.1	10.9	-0.2	0	Negligible
R132	11.5	11.1	-0.3	-1	Negligible
R133	11.6	11.3	-0.3	-1	Negligible
R134	12.4	14.1	+1.7	+4	Negligible
R135	13.1	14.3	+1.3	+3	Negligible
R136	12.4	13.8	+1.4	+3	Negligible
R137	11.9	11.5	-0.3	-1	Negligible
R138	12.0	11.6	-0.4	-1	Negligible
R139	11.9	11.9	0.0	0	Negligible
R140	11.7	11.7	+0.1	0	Negligible

Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2036 Without HNRFI (µg.m ⁻³)	2036 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R141	12.4	12.2	-0.1	0	Negligible
R142	13.5	13.5	0.0	0	Negligible
R143	13.7	13.6	0.0	0	Negligible
R144	13.5	13.5	0.0	0	Negligible
R145	10.8	10.8	0.0	0	Negligible
R146	11.4	11.2	-0.2	-1	Negligible
R147	10.7	10.7	0.0	0	Negligible
R148	11.2	11.0	-0.2	0	Negligible
R149	10.3	10.3	0.0	0	Negligible
R150	10.4	10.4	0.0	0	Negligible
R151	10.3	10.3	0.0	0	Negligible
R152	10.3	10.3	0.0	0	Negligible
R153	11.1	10.9	-0.3	-1	Negligible

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Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2036 Without HNRFI (µg.m ⁻³)	2036 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R154	11.6	11.3	-0.3	-1	Negligible
R155	12.2	12.5	+0.3	+1	Negligible
R156	12.5	12.7	+0.2	+1	Negligible
R157	11.4	11.6	+0.2	+1	Negligible
R158	14.9	14.9	0.0	0	Negligible
R159	11.4	11.4	0.0	0	Negligible
R160	13.1	13.1	0.0	0	Negligible
R161	10.3	10.3	-0.1	0	Negligible
R162	10.8	10.7	-0.1	0	Negligible
R163	10.9	10.9	-0.1	0	Negligible
R164	9.8	9.8	0.0	0	Negligible
R165	8.0	8.0	+0.1	0	Negligible
R166	7.8	7.8	+0.1	0	Negligible
R170	9.4	9.7	+0.3	+1	Negligible

Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2036 Without HNRFI (µg.m ⁻³)	2036 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R171	8.7	9.0	+0.2	+1	Negligible
R172	10.2	10.1	-0.1	0	Negligible
R173	9.4	9.4	0.0	0	Negligible
R174	12.9	13.0	0.0	0	Negligible
R175	10.6	10.6	+0.1	0	Negligible
R176	10.6	10.6	+0.1	0	Negligible
R177	9.4	9.5	+0.1	0	Negligible
R178	8.7	8.8	+0.2	0	Negligible
R179	11.5	11.8	+0.3	+1	Negligible
R191	12.9	13.0	+0.1	0	Negligible
R192	13.4	13.4	+0.1	0	Negligible
R207	11.7	12.1	+0.4	+1	Negligible
R208	12.2	12.8	+0.6	+2	Negligible

Receptor	Predicted NO ₂ Concentration (µg.m ⁻³)				
	2036 Without HNRFI (µg.m ⁻³)	2036 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)	Change in Concentration Relative to Air Quality Assessment Level (%)	Impact
R209	11.2	11.5	+0.4	+1	Negligible
R210	11.9	12.0	+0.1	0	Negligible
R219	8.4	9.8	+1.4	+3	Negligible

**Discrepancies in changes due to rounding effects.*

The predicted concentrations of NO₂ in cumulative 2026 Opening Year and 2036 Future Year scenarios are below the current relevant annual mean air quality objectives at all receptors considered in the assessment. The cumulative operation of road traffic generated by the HNRFI, and the back-up CHP, are not predicted to lead to any exceedances of the current relevant air quality objectives.

Predicted changes in concentrations at the majority of receptors in both the 2026 Opening Year and 2036 Future Year With and Without HNRFI scenarios are less than 5% of the relevant air quality objective and the total pollutant concentrations are less than 75% of the relevant air quality objective.

The exception to this is at receptor R110 in the HBBC administrative area. Receptor R110 is predicted to experience an increase in annual mean NO₂ concentrations of 6% of the annual mean NO₂ objective as a result of cumulative emissions associated with HNRFI road traffic and back-up CHP emissions, however the total predicted NO₂ concentration at receptor R110 is 30% of the annual mean NO₂ objective. This receptor is located on the B4668 Leicester Road, north of the new A47 Link Road, adjacent to the roundabout junction with the A47. This road is predicted to experience some of the largest increases in traffic as a result of the operation of the HNRFI. Receptor R110 is also located close to a junction where the influence of multiple roads converging and queuing is also considered to give rise to increased pollutant concentrations.

The cumulative impact of the HNRFI on annual mean NO₂ concentrations at receptors R110 is 'slight adverse' in accordance with IAQM and EPUK guidance in the 2026 Opening Year scenario.

In the 2036 Future Year scenario, receptor R110 is predicted to experience a 4% change in annual mean NO₂ concentrations as a result of cumulative emissions associated with road traffic and the back-up CHP within the HNRFI. The cumulative impact of the HNRFI on annual mean NO₂ concentrations at receptor R110 in the 2036 Future Year is therefore determined as negligible in accordance with IAQM and EPUK guidance.

The overall cumulative impact of the HNRFI on annual mean NO₂ concentrations is considered to be 'negligible' overall in accordance with IAQM and EPUK guidance and professional judgement, which is 'not significant'.

With regard to short term air quality objectives, the predicted annual mean NO₂ concentrations are less than 60µg.m⁻³ and therefore in accordance with DEFRA guidance it may be assumed that exceedances of the 1-hour mean objective are unlikely.

Ecological Receptors

Critical Level Assessment

To enable consideration of cumulative effects arising from the operation of the HNRFI with the back-up CHP, a cumulative impact assessment was also undertaken to consider the total change in NO_x concentrations at identified ecological designations as a result of emissions associated with operational road traffic and the back-up CHP.

Table 17.3 presents the predicted NO_x critical levels at ecological designations within 10km of the back-up CHP for the 2026 Opening Year Without HNRFI and With HNRFI and back-up CHP scenarios in addition to the cumulative change in concentration. Table 17.4 presents the predicted NO_x critical levels at ecological designations within 10km of the back-up CHP for the 2036 Future Year Without HNRFI and With HNRFI and back-up CHP scenarios in addition to the cumulative change in concentration.

Table 17.3: Predicted NO_x concentrations at ecological receptors in 2026 Opening Year Without HNRFI and 2026 Opening Year With Cumulative HNRFI

Ecological Receptor	2026 Without HNRFI (µg.m ⁻³)	2026 With HNRFI and Back-up CHP (µg.m ⁻³)	Cumulative Concentration Change* (µg.m ⁻³)
Burbage LNR_T1_15m	11.7	12.8	+1.1

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Ecological Receptor	2026 Without HNRFI ($\mu\text{g}\cdot\text{m}^{-3}$)	2026 With HNRFI and Back-up CHP ($\mu\text{g}\cdot\text{m}^{-3}$)	Cumulative Concentration Change* ($\mu\text{g}\cdot\text{m}^{-3}$)
Burbage LNR_T1_25m	11.7	12.6	+0.9
Burbage LNR_T1_35m	11.7	12.5+	0.8
Burbage LNR_T1_45m	11.7	12.4	+0.7
Burbage LNR_T1_55m	11.7	12.3	+0.6
Burbage LNR_T1_65m	11.7	12.3	+0.5
Burbage LNR_T1_75m	11.7	12.2	+0.5
Burbage LNR_T1_85m	11.7	12.2	+0.4
Burbage LNR_T1_95m	11.7	12.1	+0.4
Burbage LNR_T1_105m	11.7	12.1	+0.4
Burbage LNR_T1_115m	11.7	12.1	+0.4
Burbage LNR_T1_125m	11.7	12.1	+0.3

Ecological Receptor	2026 Without HNRFI ($\mu\text{g}\cdot\text{m}^{-3}$)	2026 With HNRFI and Back-up CHP ($\mu\text{g}\cdot\text{m}^{-3}$)	Cumulative Concentration Change* ($\mu\text{g}\cdot\text{m}^{-3}$)
Burbage LNR_T1_135m	11.7	12.1	+0.3
Burbage LNR_T1_145m	11.7	12.0	+0.3
Burbage LNR_T1_155m	11.7	12.0	+0.3
Burbage LNR_T1_165m	11.7	12.0	+0.3
Burbage LNR_T1_175m	11.7	12.0	+0.3
Burbage LNR_T1_185m	11.9	12.1	+0.3
Burbage LNR_T1_195m	11.7	12.0	+0.3
Burbage LNR_T2_42m	11.4	12.0	+0.6
Burbage LNR_T2_52m	11.4	11.9	+0.5
Burbage LNR_T2_62m	11.4	11.8	+0.4
Burbage LNR_T2_72m	11.4	11.8	+0.4

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Ecological Receptor	2026 Without HNRFI ($\mu\text{g}\cdot\text{m}^{-3}$)	2026 With HNRFI and Back-up CHP ($\mu\text{g}\cdot\text{m}^{-3}$)	Cumulative Concentration Change* ($\mu\text{g}\cdot\text{m}^{-3}$)
Burbage LNR_T2_82m	11.4	11.8	+0.3
Burbage LNR_T2_92m	11.4	11.7	+0.3
Burbage LNR_T2_102m	11.4	11.7	+0.3
Burbage LNR_T2_112m	11.4	11.7	+0.3
Burbage LNR_T2_122m	11.4	11.7	+0.3
Burbage LNR_T2_132m	11.4	11.7	+0.3
Burbage LNR_T2_142m	11.4	11.7	+0.2
Burbage LNR_T2_152m	11.4	11.6	+0.2
Burbage LNR_T2_162m	11.4	11.6	+0.2
Burbage LNR_T2_172m	11.4	11.6	+0.2
Burbage LNR_T2_182m	11.4	11.6	+0.2

Ecological Receptor	2026 Without HNRFI ($\mu\text{g}\cdot\text{m}^{-3}$)	2026 With HNRFI and Back-up CHP ($\mu\text{g}\cdot\text{m}^{-3}$)	Cumulative Concentration Change* ($\mu\text{g}\cdot\text{m}^{-3}$)
Burbage LNR_T2_192m	11.4	11.6	+0.2
Burbage LNR_T2_202m	11.4	11.6	+0.2
Burbage LNR_T3_76m	11.5	11.9	+0.4
Burbage LNR_T3_86m	11.5	11.8	+0.3
Burbage LNR_T3_96m	11.5	11.8	+0.3
Burbage LNR_T3_106m	11.5	11.8	+0.3
Burbage LNR_T3_116m	11.5	11.8	+0.3
Burbage LNR_T3_126m	11.5	11.7	+0.3
Burbage LNR_T3_136m	11.5	11.7	+0.2
Burbage LNR_T3_146m	11.4	11.7	+0.3
Burbage LNR_T3_156m	11.4	11.7	+0.3

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Ecological Receptor	2026 Without HNRFI ($\mu\text{g}\cdot\text{m}^{-3}$)	2026 With HNRFI and Back-up CHP ($\mu\text{g}\cdot\text{m}^{-3}$)	Cumulative Concentration Change* ($\mu\text{g}\cdot\text{m}^{-3}$)
Burbage LNR_T3_166m	11.4	11.7	+0.2
Burbage LNR_T3_176m	11.4	11.7	+0.2
Burbage LNR_T3_186m	11.4	11.7	+0.2
Burbage LNR_T3_196m	11.4	11.6	+0.2
Freeholt Wood AW_T1_55m	14.3	15.6	+1.3
Freeholt Wood AW_T1_65m	14.3	15.5	+1.2
Freeholt Wood AW_T1_75m	14.3	15.4	+1.1
Freeholt Wood AW_T1_85m	14.3	15.3	+1.0
Freeholt Wood AW_T1_95m	14.3	15.2	+0.9
Freeholt Wood AW_T1_105m	14.3	15.2	+0.9
Freeholt Wood AW_T1_115m	14.3	15.1	+0.8

Ecological Receptor	2026 Without HNRFI ($\mu\text{g}\cdot\text{m}^{-3}$)	2026 With HNRFI and Back-up CHP ($\mu\text{g}\cdot\text{m}^{-3}$)	Cumulative Concentration Change* ($\mu\text{g}\cdot\text{m}^{-3}$)
Freeholt Wood AW_T1_125m	14.3	15.1	+0.8
Freeholt Wood AW_T1_135m	14.3	15.0	+0.7
Freeholt Wood AW_T1_145m	14.3	15.0	+0.7
Freeholt Wood AW_T1_155m	14.3	15.0	+0.7
Freeholt Wood AW_T1_165m	14.3	14.9	+0.6
Freeholt Wood AW_T1_175m	14.3	14.9	+0.6
Freeholt Wood AW_T1_185m	14.3	14.9	+0.6
Freeholt Wood AW_T1_195m	14.3	14.9	+0.6
Aston Firs SSSI_T1_7m	14.3	14.1	-0.3
Aston Firs SSSI_T1_17m	13.6	13.5	-0.1
Aston Firs SSSI_T1_27m	13.2	13.2	0.0

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Ecological Receptor	2026 Without HNRFI ($\mu\text{g}\cdot\text{m}^{-3}$)	2026 With HNRFI and Back-up CHP ($\mu\text{g}\cdot\text{m}^{-3}$)	Cumulative Concentration Change* ($\mu\text{g}\cdot\text{m}^{-3}$)
Aston Firs SSSI_T1_37m	13.0	13.0	0.0
Aston Firs SSSI_T1_47m	12.8	12.9	0.0
Aston Firs SSSI_T1_57m	12.7	12.8	+0.1
Aston Firs SSSI_T1_67m	12.7	12.7	+0.1
Aston Firs SSSI_T1_77m	12.6	12.7	+0.1
Aston Firs SSSI_T1_87m	12.6	12.7	+0.1
Aston Firs SSSI_T1_97m	12.5	12.6	+0.1
Aston Firs SSSI_T1_107m	12.5	12.6	+0.1
Aston Firs SSSI_T1_117m	12.5	12.6	+0.1
Aston Firs SSSI_T1_127m	12.4	12.6	+0.1
Aston Firs SSSI_T1_137m	12.4	12.5	+0.1

Ecological Receptor	2026 Without HNRFI ($\mu\text{g}\cdot\text{m}^{-3}$)	2026 With HNRFI and Back-up CHP ($\mu\text{g}\cdot\text{m}^{-3}$)	Cumulative Concentration Change* ($\mu\text{g}\cdot\text{m}^{-3}$)
Aston Firs SSSI_T1_147m	12.4	12.5	+0.1
Aston Firs SSSI_T1_157m	12.4	12.5	+0.1
Aston Firs SSSI_T1_167m	12.4	12.5	+0.1
Aston Firs SSSI_T1_177m	12.4	12.5	+0.1
Aston Firs SSSI_T1_187m	12.4	12.5	+0.1
Aston Firs SSSI_T1_197m	12.3	12.5	+0.1
Aston Firs SSSI_T2_0m	14.9	14.6	-0.3
Aston Firs SSSI_T2_10m	13.8	13.7	0.0
Aston Firs SSSI_T2_20m	13.3	13.4	+0.1
Aston Firs SSSI_T2_30m	13.0	13.2	+0.1
Aston Firs SSSI_T2_40m	12.9	13.0	+0.1

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Ecological Receptor	2026 Without HNRFI ($\mu\text{g}\cdot\text{m}^{-3}$)	2026 With HNRFI and Back-up CHP ($\mu\text{g}\cdot\text{m}^{-3}$)	Cumulative Concentration Change* ($\mu\text{g}\cdot\text{m}^{-3}$)
Aston Firs SSSI_T2_50m	12.8	12.9	+0.2
Aston Firs SSSI_T2_60m	12.7	12.9	+0.2
Aston Firs SSSI_T2_70m	12.6	12.8	+0.2
Aston Firs SSSI_T2_80m	12.6	12.8	+0.2
Aston Firs SSSI_T2_90m	12.5	12.7	+0.2
Aston Firs SSSI_T2_100m	12.5	12.7	+0.2
Aston Firs SSSI_T2_110m	12.5	12.7	+0.2
Aston Firs SSSI_T2_120m	12.5	12.6	+0.2
Aston Firs SSSI_T2_130m	12.4	12.6	+0.2
Aston Firs SSSI_T2_140m	12.4	12.6	+0.2
Aston Firs SSSI_T2_150m	12.4	12.6	+0.2

Ecological Receptor	2026 Without HNRFI ($\mu\text{g}\cdot\text{m}^{-3}$)	2026 With HNRFI and Back-up CHP ($\mu\text{g}\cdot\text{m}^{-3}$)	Cumulative Concentration Change* ($\mu\text{g}\cdot\text{m}^{-3}$)
Aston Firs SSSI_T2_160m	12.4	12.6	+0.2
Aston Firs SSSI_T2_170m	12.4	12.6	+0.2
Aston Firs SSSI_T2_180m	12.4	12.6	+0.2
Aston Firs SSSI_T2_190m	12.4	12.5	+0.2
Aston Firs SSSI_T2_200m	12.3	12.5	+0.2
Narborough Bogs SSSI_127m	19.0	19.0	0.0
Narborough Bogs SSSI_137m	18.8	18.8	0.0
Narborough Bogs SSSI_147m	18.7	18.7	0.0
Narborough Bogs SSSI_157m	18.6	18.6	0.0
Narborough Bogs SSSI_167m	18.5	18.5	0.0
Narborough Bogs SSSI_187m	18.3	18.3	0.0

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Ecological Receptor	2026 Without HNRFI ($\mu\text{g}\cdot\text{m}^{-3}$)	2026 With HNRFI and Back-up CHP ($\mu\text{g}\cdot\text{m}^{-3}$)	Cumulative Concentration Change* ($\mu\text{g}\cdot\text{m}^{-3}$)
Narborough Bogs SSSI_177m	18.4	18.4	0.0
Narborough Bogs SSSI_197m	18.2	18.2	0.0

*Discrepancies in changes due to rounding effects.

Table 17.4: Predicted NO_x concentrations at ecological receptors in 2036 Opening Year Without HNRFI and 2036 Future Year With Cumulative HNRFI

Ecological Receptor	2036 Without HNRFI ($\mu\text{g}\cdot\text{m}^{-3}$)	2036 With HNRFI and Back-up CHP ($\mu\text{g}\cdot\text{m}^{-3}$)	Cumulative Concentration Change* ($\mu\text{g}\cdot\text{m}^{-3}$)
Burbage LNR_T1_15m	10.8	11.5	+0.8
Burbage LNR_T1_25m	10.8	11.4	+0.6
Burbage LNR_T1_35m	10.8	11.3	+0.5
Burbage LNR_T1_45m	10.8	11.2	+0.5
Burbage LNR_T1_55m	10.8	11.2	+0.4

Ecological Receptor	2036 Without HNRFI ($\mu\text{g}\cdot\text{m}^{-3}$)	2036 With HNRFI and Back-up CHP ($\mu\text{g}\cdot\text{m}^{-3}$)	Cumulative Concentration Change* ($\mu\text{g}\cdot\text{m}^{-3}$)
Burbage LNR_T1_65m	10.8	11.1	+0.4
Burbage LNR_T1_75m	10.8	11.1	+0.3
Burbage LNR_T1_85m	10.8	11.1	+0.3
Burbage LNR_T1_95m	10.8	11.1	+0.3
Burbage LNR_T1_105m	10.8	11.0	+0.3
Burbage LNR_T1_115m	10.8	11.0	+0.3
Burbage LNR_T1_125m	10.8	11.0	+0.3
Burbage LNR_T1_135m	10.8	11.0	+0.2
Burbage LNR_T1_145m	10.8	11.0	+0.2
Burbage LNR_T1_155m	10.8	11.0	+0.2
Burbage LNR_T1_165m	10.8	11.0	+0.2

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Ecological Receptor	2036 Without HNRFI ($\mu\text{g}\cdot\text{m}^{-3}$)	2036 With HNRFI and Back-up CHP ($\mu\text{g}\cdot\text{m}^{-3}$)	Cumulative Concentration Change* ($\mu\text{g}\cdot\text{m}^{-3}$)
Burbage LNR_T1_175m	10.8	11.0	+0.2
Burbage LNR_T1_185m	10.8	11.0	+0.2
Burbage LNR_T1_195m	10.8	11.0	+0.2
Burbage LNR_T2_42m	10.5	10.9	+0.4
Burbage LNR_T2_52m	10.5	10.8	+0.4
Burbage LNR_T2_62m	10.5	10.8	+0.3
Burbage LNR_T2_72m	10.5	10.7	+0.3
Burbage LNR_T2_82m	10.5	10.7	+0.2
Burbage LNR_T2_92m	10.5	10.7	+0.2
Burbage LNR_T2_102m	10.5	10.7	+0.2
Burbage LNR_T2_112m	10.5	10.7	+0.2

Ecological Receptor	2036 Without HNRFI ($\mu\text{g}\cdot\text{m}^{-3}$)	2036 With HNRFI and Back-up CHP ($\mu\text{g}\cdot\text{m}^{-3}$)	Cumulative Concentration Change* ($\mu\text{g}\cdot\text{m}^{-3}$)
Burbage LNR_T2_122m	10.5	10.7	+0.2
Burbage LNR_T2_132m	10.5	10.6	+0.2
Burbage LNR_T2_142m	10.5	10.6	+0.2
Burbage LNR_T2_152m	10.5	10.6	+0.2
Burbage LNR_T2_162m	10.5	10.6	+0.2
Burbage LNR_T2_172m	10.5	10.6	+0.2
Burbage LNR_T2_182m	10.5	10.6	+0.1
Burbage LNR_T2_192m	10.5	10.6	+0.1
Burbage LNR_T2_202m	10.5	10.6	+0.1
Burbage LNR_T3_76m	10.5	10.8	+0.3
Burbage LNR_T3_86m	10.5	10.8	+0.3

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Ecological Receptor	2036 Without HNRFI ($\mu\text{g}\cdot\text{m}^{-3}$)	2036 With HNRFI and Back-up CHP ($\mu\text{g}\cdot\text{m}^{-3}$)	Cumulative Concentration Change* ($\mu\text{g}\cdot\text{m}^{-3}$)
Burbage LNR_T3_96m	10.5	10.8	+0.3
Burbage LNR_T3_106m	10.5	10.7	+0.2
Burbage LNR_T3_116m	10.5	10.7	+0.2
Burbage LNR_T3_126m	10.5	10.7	+0.2
Burbage LNR_T3_136m	10.5	10.7	+0.2
Burbage LNR_T3_146m	10.5	10.7	+0.2
Burbage LNR_T3_156m	10.5	10.7	+0.2
Burbage LNR_T3_166m	10.5	10.7	+0.2
Burbage LNR_T3_176m	10.5	10.7	+0.2
Burbage LNR_T3_186m	10.5	10.7	+0.2
Burbage LNR_T3_196m	10.5	10.6	+0.2

Ecological Receptor	2036 Without HNRFI ($\mu\text{g}\cdot\text{m}^{-3}$)	2036 With HNRFI and Back-up CHP ($\mu\text{g}\cdot\text{m}^{-3}$)	Cumulative Concentration Change* ($\mu\text{g}\cdot\text{m}^{-3}$)
Freeholt Wood AW_T1_55m	12.5	13.4	+1.0
Freeholt Wood AW_T1_65m	12.5	13.3	+0.9
Freeholt Wood AW_T1_75m	12.5	13.2	+0.8
Freeholt Wood AW_T1_85m	12.5	13.2	+0.7
Freeholt Wood AW_T1_95m	12.5	13.1	+0.7
Freeholt Wood AW_T1_105m	12.5	13.1	+0.6
Freeholt Wood AW_T1_115m	12.5	13.1	+0.6
Freeholt Wood AW_T1_125m	12.5	13.0	+0.5
Freeholt Wood AW_T1_135m	12.5	13.0	+0.5
Freeholt Wood AW_T1_145m	12.5	13.0	+0.5
Freeholt Wood AW_T1_155m	12.5	13.0	+0.5

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Ecological Receptor	2036 Without HNRFI ($\mu\text{g}\cdot\text{m}^{-3}$)	2036 With HNRFI and Back-up CHP ($\mu\text{g}\cdot\text{m}^{-3}$)	Cumulative Concentration Change* ($\mu\text{g}\cdot\text{m}^{-3}$)
Freeholt Wood AW_T1_165m	12.5	12.9	+0.5
Freeholt Wood AW_T1_175m	12.5	12.9	+0.4
Freeholt Wood AW_T1_185m	12.5	12.9	+0.4
Freeholt Wood AW_T1_195m	12.5	12.9	+0.4
Aston Firs SSSI_T1_7m	12.4	12.3	-0.2
Aston Firs SSSI_T1_17m	11.9	11.9	-0.1
Aston Firs SSSI_T1_27m	11.7	11.7	0.0
Aston Firs SSSI_T1_37m	11.5	11.6	0.0
Aston Firs SSSI_T1_47m	11.4	11.5	0.0
Aston Firs SSSI_T1_57m	11.4	11.4	+0.1
Aston Firs SSSI_T1_67m	11.3	11.4	+0.1

Ecological Receptor	2036 Without HNRFI ($\mu\text{g}\cdot\text{m}^{-3}$)	2036 With HNRFI and Back-up CHP ($\mu\text{g}\cdot\text{m}^{-3}$)	Cumulative Concentration Change* ($\mu\text{g}\cdot\text{m}^{-3}$)
Aston Firs SSSI_T1_77m	11.3	11.4	+0.1
Aston Firs SSSI_T1_87m	11.3	11.3	+0.1
Aston Firs SSSI_T1_97m	11.2	11.3	+0.1
Aston Firs SSSI_T1_107m	11.2	11.3	+0.1
Aston Firs SSSI_T1_117m	11.2	11.3	+0.1
Aston Firs SSSI_T1_127m	11.2	11.3	+0.1
Aston Firs SSSI_T1_137m	11.2	11.3	+0.1
Aston Firs SSSI_T1_147m	11.1	11.3	+0.1
Aston Firs SSSI_T1_157m	11.1	11.2	+0.1
Aston Firs SSSI_T1_167m	11.1	11.2	+0.1
Aston Firs SSSI_T1_177m	11.1	11.2	+0.1

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Ecological Receptor	2036 Without HNRFI ($\mu\text{g}\cdot\text{m}^{-3}$)	2036 With HNRFI and Back-up CHP ($\mu\text{g}\cdot\text{m}^{-3}$)	Cumulative Concentration Change* ($\mu\text{g}\cdot\text{m}^{-3}$)
Aston Firs SSSI_T1_187m	11.1	11.2	+0.1
Aston Firs SSSI_T1_197m	11.1	11.2	+0.1
Aston Firs SSSI_T2_0m	12.8	12.6	-0.1
Aston Firs SSSI_T2_10m	12.0	12.1	0.0
Aston Firs SSSI_T2_20m	11.7	11.8	+0.1
Aston Firs SSSI_T2_30m	11.6	11.7	+0.1
Aston Firs SSSI_T2_40m	11.5	11.6	+0.1
Aston Firs SSSI_T2_50m	11.4	11.5	+0.1
Aston Firs SSSI_T2_60m	11.3	11.5	+0.1
Aston Firs SSSI_T2_70m	11.3	11.4	+0.1
Aston Firs SSSI_T2_80m	11.3	11.4	+0.1

Ecological Receptor	2036 Without HNRFI ($\mu\text{g}\cdot\text{m}^{-3}$)	2036 With HNRFI and Back-up CHP ($\mu\text{g}\cdot\text{m}^{-3}$)	Cumulative Concentration Change* ($\mu\text{g}\cdot\text{m}^{-3}$)
Aston Firs SSSI_T2_90m	11.2	11.4	+0.1
Aston Firs SSSI_T2_100m	11.2	11.4	+0.1
Aston Firs SSSI_T2_110m	11.2	11.3	+0.1
Aston Firs SSSI_T2_120m	11.2	11.3	+0.1
Aston Firs SSSI_T2_130m	11.2	11.3	+0.1
Aston Firs SSSI_T2_140m	11.2	11.3	+0.1
Aston Firs SSSI_T2_150m	11.1	11.3	+0.1
Aston Firs SSSI_T2_160m	11.1	11.3	+0.1
Aston Firs SSSI_T2_170m	11.1	11.3	+0.1
Aston Firs SSSI_T2_180m	11.1	11.3	+0.1
Aston Firs SSSI_T2_190m	11.1	11.3	+0.1

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Ecological Receptor	2036 Without HNRFI ($\mu\text{g}\cdot\text{m}^{-3}$)	2036 With HNRFI and Back-up CHP ($\mu\text{g}\cdot\text{m}^{-3}$)	Cumulative Concentration Change* ($\mu\text{g}\cdot\text{m}^{-3}$)
Aston Firs SSSI_T2_200m	11.1	11.3	+0.1
Narborough Bogs SSSI_127m	16.1	16.1	0.0
Narborough Bogs SSSI_137m	16.0	16.0	0.0
Narborough Bogs SSSI_147m	15.9	15.9	0.0
Narborough Bogs SSSI_157m	15.8	15.9	0.0
Narborough Bogs SSSI_167m	15.8	15.8	0.0
Narborough Bogs SSSI_187m	15.6	15.7	0.0
Narborough Bogs SSSI_177m	15.7	15.7	0.0
Narborough Bogs SSSI_197m	15.6	15.6	0.0

**Discrepancies in changes due to rounding effects*

Concentrations of NO_x at the ecological transect points were predicted to be below the critical level of 30 $\mu\text{g}\cdot\text{m}^{-3}$ both without and with HNRFI and back-up CHP operating in both the 2026 Opening Year and 2036 Future Year scenarios.

Critical Load Assessment

To enable consideration of cumulative effects arising from the operation of the HNRFI with the back-up CHP, a cumulative impact assessment was also undertaken to predict the change in nitrogen deposition (N) at identified ecological receptors as a result of emissions associated with operational road traffic and the back-up CHP.

Table 17.5 presents the predicted nitrogen deposition (N) at ecological designations within 10km of the back-up CHP for the 2026 Opening Year Without HNRFI and With HNRFI and back-up CHP scenarios in addition to the cumulative change in nitrogen deposition and cumulative percentage change in nitrogen deposition relative to the lower critical load for each designation. Table 17.6 presents the results of the cumulative nitrogen deposition assessment at ecological designations within 10km of the back-up CHP for the 2036 Future Year Without HNRFI and With HNRFI and back-up CHP scenarios.

Increases in nitrogen deposition greater than 1% of the relevant lower critical load for each designation are highlighted in **bold**.

Table 17.5: Predicted nitrogen deposition and change relative to lower critical load at ecological receptors in 2026 Opening Year Without HNRFI and 2026 Future Year With Cumulative HNRFI

Ecological Receptor	2026 Without HNRFI Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	2026 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	Change in Nitrogen Deposition* (kg ha ⁻¹ year ⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Burbage LNR_T1_15m	26.0	26.1	+0.1	+1.1
Burbage LNR_T1_25m	26.0	26.1	+0.1	+0.9
Burbage LNR_T1_35m	26.0	26.0	+0.1	+0.8
Burbage LNR_T1_45m	26.0	26.0	+0.1	+0.6

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Ecological Receptor	2026 Without HNRFI Nitrogen Deposition (kg ha⁻¹ year⁻¹)	2026 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha⁻¹ year⁻¹)	Change in Nitrogen Deposition* (kg ha⁻¹ year⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Burbage LNR_T1_55m	26.0	26.0	+0.1	+0.5
Burbage LNR_T1_65m	26.0	26.0	0.0	+0.5
Burbage LNR_T1_75m	26.0	26.0	0.0	+0.4
Burbage LNR_T1_85m	26.0	26.0	0.0	+0.4
Burbage LNR_T1_95m	26.0	26.0	0.0	+0.4
Burbage LNR_T1_105m	26.0	26.0	0.0	+0.3
Burbage LNR_T1_115m	26.0	26.0	0.0	+0.3
Burbage LNR_T1_125m	26.0	26.0	0.0	+0.3
Burbage LNR_T1_135m	26.0	26.0	0.0	+0.3
Burbage LNR_T1_145m	26.0	26.0	0.0	+0.2

Ecological Receptor	2026 Without HNRFI Nitrogen Deposition (kg ha⁻¹ year⁻¹)	2026 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha⁻¹ year⁻¹)	Change in Nitrogen Deposition* (kg ha⁻¹ year⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Burbage LNR_T1_155m	26.0	26.0	0.0	+0.2
Burbage LNR_T1_165m	26.0	26.0	0.0	+0.2
Burbage LNR_T1_175m	26.0	26.0	0.0	+0.2
Burbage LNR_T1_185m	26.0	26.0	0.0	+0.2
Burbage LNR_T1_195m	26.0	26.0	0.0	+0.2
Burbage LNR_T2_42m	25.9	26.0	+0.1	+0.5
Burbage LNR_T2_52m	25.9	25.9	0.0	+0.4
Burbage LNR_T2_62m	25.9	25.9	0.0	+0.3
Burbage LNR_T2_72m	25.9	25.9	0.0	+0.3
Burbage LNR_T2_82m	25.9	25.9	0.0	+0.2

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Ecological Receptor	2026 Without HNRFI Nitrogen Deposition (kg ha⁻¹ year⁻¹)	2026 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha⁻¹ year⁻¹)	Change in Nitrogen Deposition* (kg ha⁻¹ year⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Burbage LNR_T2_92m	25.9	25.9	0.0	+0.2
Burbage LNR_T2_102m	25.9	25.9	0.0	+0.2
Burbage LNR_T2_112m	25.9	25.9	0.0	+0.1
Burbage LNR_T2_122m	25.9	25.9	0.0	+0.1
Burbage LNR_T2_132m	25.9	25.9	0.0	+0.1
Burbage LNR_T2_142m	25.9	25.9	0.0	+0.1
Burbage LNR_T2_152m	25.9	25.9	0.0	+0.1
Burbage LNR_T2_162m	25.9	25.9	0.0	+0.1
Burbage LNR_T2_172m	25.9	25.9	0.0	+0.1
Burbage LNR_T2_182m	25.9	25.9	0.0	+0.1

Ecological Receptor	2026 Without HNRFI Nitrogen Deposition (kg ha⁻¹ year⁻¹)	2026 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha⁻¹ year⁻¹)	Change in Nitrogen Deposition* (kg ha⁻¹ year⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Burbage LNR_T2_192m	25.9	25.9	0.0	0.0
Burbage LNR_T2_202m	25.9	25.9	0.0	0.0
Burbage LNR_T3_76m	25.9	26.0	0.0	+0.4
Burbage LNR_T3_86m	25.9	25.9	0.0	+0.3
Burbage LNR_T3_96m	25.9	25.9	0.0	+0.3
Burbage LNR_T3_106m	25.9	25.9	0.0	+0.3
Burbage LNR_T3_116m	25.9	25.9	0.0	+0.3
Burbage LNR_T3_126m	25.9	25.9	0.0	+0.2
Burbage LNR_T3_136m	25.9	25.9	0.0	+0.2
Burbage LNR_T3_146m	25.9	25.9	0.0	+0.2

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Ecological Receptor	2026 Without HNRFI Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	2026 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	Change in Nitrogen Deposition* (kg ha ⁻¹ year ⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Burbage LNR_T3_156m	25.9	25.9	0.0	+0.2
Burbage LNR_T3_166m	25.9	25.9	0.0	+0.2
Burbage LNR_T3_176m	25.9	25.9	0.0	+0.2
Burbage LNR_T3_186m	25.9	25.9	0.0	+0.2
Burbage LNR_T3_196m	25.9	25.9	0.0	+0.1
Freeholt Wood AW_T1_55m	49.5	49.6	+0.1	+1.3
Freeholt Wood AW_T1_65m	49.5	49.6	+0.1	+1.1
Freeholt Wood AW_T1_75m	49.5	49.5	+0.1	+0.9
Freeholt Wood AW_T1_85m	49.5	49.5	+0.1	+0.8
Freeholt Wood AW_T1_95m	49.5	49.5	+0.1	+0.8

Ecological Receptor	2026 Without HNRFI Nitrogen Deposition (kg ha⁻¹ year⁻¹)	2026 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha⁻¹ year⁻¹)	Change in Nitrogen Deposition* (kg ha⁻¹ year⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Freeholt Wood AW_T1_105m	49.5	49.5	+0.1	+0.7
Freeholt Wood AW_T1_115m	49.5	49.5	+0.1	+0.6
Freeholt Wood AW_T1_125m	49.5	49.5	+0.1	+0.6
Freeholt Wood AW_T1_135m	49.5	49.5	0.0	+0.5
Freeholt Wood AW_T1_145m	49.5	49.5	0.0	+0.5
Freeholt Wood AW_T1_155m	49.5	49.5	0.0	+0.4
Freeholt Wood AW_T1_165m	49.5	49.5	0.0	+0.4
Freeholt Wood AW_T1_175m	49.5	49.5	0.0	+0.4
Freeholt Wood AW_T1_185m	49.5	49.5	0.0	+0.4
Freeholt Wood AW_T1_195m	49.5	49.5	0.0	+0.3

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Ecological Receptor	2026 Without HNRFI Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	2026 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	Change in Nitrogen Deposition* (kg ha ⁻¹ year ⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Aston Firs SSSI_T1_7m	48.7	48.6	-0.2	-1.1
Aston Firs SSSI_T1_17m	48.6	48.5	-0.1	-0.7
Aston Firs SSSI_T1_27m	48.5	48.5	-0.1	-0.5
Aston Firs SSSI_T1_37m	48.5	48.4	-0.1	-0.4
Aston Firs SSSI_T1_47m	48.5	48.4	-0.1	-0.3
Aston Firs SSSI_T1_57m	48.5	48.4	0.0	-0.3
Aston Firs SSSI_T1_67m	48.5	48.4	0.0	-0.2
Aston Firs SSSI_T1_77m	48.4	48.4	0.0	-0.2
Aston Firs SSSI_T1_87m	48.4	48.4	0.0	-0.2
Aston Firs SSSI_T1_97m	48.4	48.4	0.0	-0.2

Ecological Receptor	2026 Without HNRFI Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	2026 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	Change in Nitrogen Deposition* (kg ha ⁻¹ year ⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Aston Firs SSSI_T1_107m	48.4	48.4	0.0	-0.2
Aston Firs SSSI_T1_117m	48.4	48.4	0.0	-0.1
Aston Firs SSSI_T1_127m	48.4	48.4	0.0	-0.2
Aston Firs SSSI_T1_137m	48.4	48.4	0.0	-0.1
Aston Firs SSSI_T1_147m	48.4	48.4	0.0	-0.1
Aston Firs SSSI_T1_157m	48.4	48.4	0.0	-0.1
Aston Firs SSSI_T1_167m	48.4	48.4	0.0	-0.1
Aston Firs SSSI_T1_177m	48.4	48.4	0.0	-0.1
Aston Firs SSSI_T1_187m	48.4	48.4	0.0	-0.1
Aston Firs SSSI_T1_197m	48.4	48.4	0.0	-0.1

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Ecological Receptor	2026 Without HNRFI Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	2026 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	Change in Nitrogen Deposition* (kg ha ⁻¹ year ⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Aston Firs SSSI_T2_0m	48.8	48.6	-0.2	-1.3
Aston Firs SSSI_T2_10m	48.6	48.5	-0.1	-0.7
Aston Firs SSSI_T2_20m	48.6	48.5	-0.1	-0.5
Aston Firs SSSI_T2_30m	48.5	48.5	-0.1	-0.3
Aston Firs SSSI_T2_40m	48.5	48.5	0.0	-0.3
Aston Firs SSSI_T2_50m	48.5	48.4	0.0	-0.2
Aston Firs SSSI_T2_60m	48.5	48.4	0.0	-0.2
Aston Firs SSSI_T2_70m	48.5	48.4	0.0	-0.2
Aston Firs SSSI_T2_80m	48.4	48.4	0.0	-0.2
Aston Firs SSSI_T2_90m	48.4	48.4	0.0	-0.2

Ecological Receptor	2026 Without HNRFI Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	2026 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	Change in Nitrogen Deposition* (kg ha ⁻¹ year ⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Aston Firs SSSI_T2_100m	48.4	48.4	0.0	-0.1
Aston Firs SSSI_T2_110m	48.4	48.4	0.0	-0.1
Aston Firs SSSI_T2_120m	48.4	48.4	0.0	-0.1
Aston Firs SSSI_T2_130m	48.4	48.4	0.0	-0.1
Aston Firs SSSI_T2_140m	48.4	48.4	0.0	-0.1
Aston Firs SSSI_T2_150m	48.4	48.4	0.0	-0.1
Aston Firs SSSI_T2_160m	48.4	48.4	0.0	-0.1
Aston Firs SSSI_T2_170m	48.4	48.4	0.0	-0.1
Aston Firs SSSI_T2_180m	48.4	48.4	0.0	-0.1
Aston Firs SSSI_T2_190m	48.4	48.4	0.0	-0.1

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Ecological Receptor	2026 Without HNRFI Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	2026 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	Change in Nitrogen Deposition* (kg ha ⁻¹ year ⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Aston Firs SSSI_T2_200m	48.4	48.4	0.0	-0.1
Narborough Bogs SSSI_127m	52.4	52.3	-0.1	-1.4
Narborough Bogs SSSI_137m	52.4	52.3	-0.1	-1.3
Narborough Bogs SSSI_147m	52.4	52.3	-0.1	-1.3
Narborough Bogs SSSI_157m	52.4	52.3	-0.1	-1.2
Narborough Bogs SSSI_167m	52.4	52.2	-0.1	-1.2
Narborough Bogs SSSI_187m	52.3	52.2	-0.1	-1.1
Narborough Bogs SSSI_177m	52.3	52.2	-0.1	-1.1
Narborough Bogs SSSI_197m	52.3	52.2	-0.1	-1.0

**Discrepancies in changes due to rounding effects.*

Table 17.6: Predicted nitrogen deposition and change relative to lower critical load at ecological receptors in 2036 Opening Year Without HNRFI and 2036 Future Year With Cumulative HNRFI

Ecological Receptor	2036 Without HNRFI Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	2036 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	Change in Nitrogen Deposition* (kg ha ⁻¹ year ⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Burbage LNR_T1_15m	25.8	25.9	+0.1	+1.3
Burbage LNR_T1_25m	25.8	25.9	+0.1	+1.1
Burbage LNR_T1_35m	25.8	25.9	+0.1	+1.0
Burbage LNR_T1_45m	25.8	25.9	+0.1	+0.8
Burbage LNR_T1_55m	25.8	25.8	+0.1	+0.8
Burbage LNR_T1_65m	25.8	25.8	+0.1	+0.7
Burbage LNR_T1_75m	25.8	25.8	+0.1	+0.6
Burbage LNR_T1_85m	25.8	25.8	+0.1	+0.6
Burbage LNR_T1_95m	25.8	25.8	+0.1	+0.6

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Ecological Receptor	2036 Without HNRFI Nitrogen Deposition (kg ha⁻¹ year⁻¹)	2036 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha⁻¹ year⁻¹)	Change in Nitrogen Deposition* (kg ha⁻¹ year⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Burbage LNR_T1_105m	25.8	25.8	+0.1	+0.5
Burbage LNR_T1_115m	25.8	25.8	0.0	+0.5
Burbage LNR_T1_125m	25.8	25.8	0.0	+0.5
Burbage LNR_T1_135m	25.8	25.8	0.0	+0.5
Burbage LNR_T1_145m	25.8	25.8	0.0	+0.4
Burbage LNR_T1_155m	25.8	25.8	0.0	+0.4
Burbage LNR_T1_165m	25.8	25.8	0.0	+0.4
Burbage LNR_T1_175m	25.8	25.8	0.0	+0.4
Burbage LNR_T1_185m	25.8	25.8	0.0	+0.4
Burbage LNR_T1_195m	25.8	25.8	0.0	+0.4

Ecological Receptor	2036 Without HNRFI Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	2036 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	Change in Nitrogen Deposition* (kg ha ⁻¹ year ⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Burbage LNR_T2_42m	25.7	25.8	+0.1	+0.7
Burbage LNR_T2_52m	25.7	25.8	+0.1	+0.6
Burbage LNR_T2_62m	25.7	25.8	+0.1	+0.5
Burbage LNR_T2_72m	25.7	25.8	0.0	+0.4
Burbage LNR_T2_82m	25.7	25.8	0.0	+0.4
Burbage LNR_T2_92m	25.7	25.7	0.0	+0.4
Burbage LNR_T2_102m	25.7	25.7	0.0	+0.4
Burbage LNR_T2_112m	25.7	25.7	0.0	+0.3
Burbage LNR_T2_122m	25.7	25.7	0.0	+0.3
Burbage LNR_T2_132m	25.7	25.7	0.0	+0.3

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Ecological Receptor	2036 Without HNRFI Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	2036 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	Change in Nitrogen Deposition* (kg ha ⁻¹ year ⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Burbage LNR_T2_142m	25.7	25.7	0.0	+0.3
Burbage LNR_T2_152m	25.7	25.7	0.0	+0.3
Burbage LNR_T2_162m	25.7	25.7	0.0	+0.3
Burbage LNR_T2_172m	25.7	25.7	0.0	+0.3
Burbage LNR_T2_182m	25.7	25.7	0.0	+0.3
Burbage LNR_T2_192m	25.7	25.7	0.0	+0.3
Burbage LNR_T2_202m	25.7	25.7	0.0	+0.3
Burbage LNR_T3_76m	25.7	25.8	+0.1	+0.6
Burbage LNR_T3_86m	25.7	25.8	+0.1	+0.6
Burbage LNR_T3_96m	25.7	25.8	+0.1	+0.5

Ecological Receptor	2036 Without HNRFI Nitrogen Deposition (kg ha⁻¹ year⁻¹)	2036 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha⁻¹ year⁻¹)	Change in Nitrogen Deposition* (kg ha⁻¹ year⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Burbage LNR_T3_106m	25.7	25.8	+0.1	+0.5
Burbage LNR_T3_116m	25.7	25.8	0.0	+0.5
Burbage LNR_T3_126m	25.7	25.8	0.0	+0.5
Burbage LNR_T3_136m	25.7	25.8	0.0	+0.4
Burbage LNR_T3_146m	25.7	25.8	0.0	+0.5
Burbage LNR_T3_156m	25.7	25.8	0.0	+0.4
Burbage LNR_T3_166m	25.7	25.8	0.0	+0.4
Burbage LNR_T3_176m	25.7	25.8	0.0	+0.4
Burbage LNR_T3_186m	25.7	25.8	0.0	+0.4
Burbage LNR_T3_196m	25.7	25.7	0.0	+0.3

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Ecological Receptor	2036 Without HNRFI Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	2036 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	Change in Nitrogen Deposition* (kg ha ⁻¹ year ⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Freeholt Wood AW_T1_55m	49.1	49.2	+0.2	+1.6
Freeholt Wood AW_T1_65m	49.1	49.2	+0.1	+1.5
Freeholt Wood AW_T1_75m	49.1	49.2	+0.1	+1.2
Freeholt Wood AW_T1_85m	49.1	49.2	+0.1	+1.2
Freeholt Wood AW_T1_95m	49.1	49.2	+0.1	+1.1
Freeholt Wood AW_T1_105m	49.1	49.2	+0.1	+1.0
Freeholt Wood AW_T1_115m	49.1	49.2	+0.1	+0.9
Freeholt Wood AW_T1_125m	49.1	49.2	+0.1	+0.9
Freeholt Wood AW_T1_135m	49.1	49.2	+0.1	+0.8
Freeholt Wood AW_T1_145m	49.1	49.2	+0.1	+0.8

Ecological Receptor	2036 Without HNRFI Nitrogen Deposition (kg ha⁻¹ year⁻¹)	2036 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha⁻¹ year⁻¹)	Change in Nitrogen Deposition* (kg ha⁻¹ year⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Freeholt Wood AW_T1_155m	49.1	49.2	+0.1	+0.8
Freeholt Wood AW_T1_165m	49.1	49.2	+0.1	+0.7
Freeholt Wood AW_T1_175m	49.1	49.2	+0.1	+0.7
Freeholt Wood AW_T1_185m	49.1	49.2	+0.1	+0.7
Freeholt Wood AW_T1_195m	49.1	49.2	+0.1	+0.7
Aston Firs SSSI_T1_7m	48.4	48.3	0.0	-0.1
Aston Firs SSSI_T1_17m	48.3	48.3	0.0	0.0
Aston Firs SSSI_T1_27m	48.2	48.2	0.0	0.0
Aston Firs SSSI_T1_37m	48.2	48.2	0.0	+0.1
Aston Firs SSSI_T1_47m	48.2	48.2	0.0	+0.1

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Ecological Receptor	2036 Without HNRFI Nitrogen Deposition (kg ha⁻¹ year⁻¹)	2036 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha⁻¹ year⁻¹)	Change in Nitrogen Deposition* (kg ha⁻¹ year⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Aston Firs SSSI_T1_57m	48.2	48.2	0.0	+0.1
Aston Firs SSSI_T1_67m	48.2	48.2	0.0	+0.1
Aston Firs SSSI_T1_77m	48.2	48.2	0.0	+0.1
Aston Firs SSSI_T1_87m	48.2	48.2	0.0	+0.1
Aston Firs SSSI_T1_97m	48.2	48.2	0.0	+0.1
Aston Firs SSSI_T1_107m	48.2	48.2	0.0	+0.1
Aston Firs SSSI_T1_117m	48.2	48.2	0.0	+0.1
Aston Firs SSSI_T1_127m	48.2	48.2	0.0	+0.1
Aston Firs SSSI_T1_137m	48.2	48.2	0.0	+0.1
Aston Firs SSSI_T1_147m	48.2	48.2	0.0	+0.1

Ecological Receptor	2036 Without HNRFI Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	2036 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	Change in Nitrogen Deposition* (kg ha ⁻¹ year ⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Aston Firs SSSI_T1_157m	48.2	48.2	0.0	+0.1
Aston Firs SSSI_T1_167m	48.2	48.2	0.0	+0.1
Aston Firs SSSI_T1_177m	48.2	48.2	0.0	+0.1
Aston Firs SSSI_T1_187m	48.2	48.2	0.0	+0.1
Aston Firs SSSI_T1_197m	48.2	48.2	0.0	+0.2
Aston Firs SSSI_T2_0m	48.4	48.4	0.0	-0.1
Aston Firs SSSI_T2_10m	48.3	48.3	0.0	0.0
Aston Firs SSSI_T2_20m	48.3	48.3	0.0	+0.1
Aston Firs SSSI_T2_30m	48.2	48.2	0.0	+0.1
Aston Firs SSSI_T2_40m	48.2	48.2	0.0	+0.2

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Ecological Receptor	2036 Without HNRFI Nitrogen Deposition (kg ha⁻¹ year⁻¹)	2036 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha⁻¹ year⁻¹)	Change in Nitrogen Deposition* (kg ha⁻¹ year⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Aston Firs SSSI_T2_50m	48.2	48.2	0.0	+0.2
Aston Firs SSSI_T2_60m	48.2	48.2	0.0	+0.2
Aston Firs SSSI_T2_70m	48.2	48.2	0.0	+0.2
Aston Firs SSSI_T2_80m	48.2	48.2	0.0	+0.2
Aston Firs SSSI_T2_90m	48.2	48.2	0.0	+0.2
Aston Firs SSSI_T2_100m	48.2	48.2	0.0	+0.2
Aston Firs SSSI_T2_110m	48.2	48.2	0.0	+0.2
Aston Firs SSSI_T2_120m	48.2	48.2	0.0	+0.2
Aston Firs SSSI_T2_130m	48.2	48.2	0.0	+0.2
Aston Firs SSSI_T2_140m	48.2	48.2	0.0	+0.2

Ecological Receptor	2036 Without HNRFI Nitrogen Deposition (kg ha⁻¹ year⁻¹)	2036 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha⁻¹ year⁻¹)	Change in Nitrogen Deposition* (kg ha⁻¹ year⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Aston Firs SSSI_T2_150m	48.2	48.2	0.0	+0.2
Aston Firs SSSI_T2_160m	48.2	48.2	0.0	+0.2
Aston Firs SSSI_T2_170m	48.2	48.2	0.0	+0.2
Aston Firs SSSI_T2_180m	48.2	48.2	0.0	+0.2
Aston Firs SSSI_T2_190m	48.2	48.2	0.0	+0.2
Aston Firs SSSI_T2_200m	48.2	48.2	0.0	+0.2
Narborough Bogs SSSI_127m	51.9	51.9	0.0	0.0
Narborough Bogs SSSI_137m	51.9	51.9	0.0	+0.1
Narborough Bogs SSSI_147m	51.9	51.9	0.0	0.0
Narborough Bogs SSSI_157m	51.9	51.9	0.0	+0.1

Ecological Receptor	2036 Without HNRFI Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	2036 With HNRFI and Back-up CHP Nitrogen Deposition (kg ha ⁻¹ year ⁻¹)	Change in Nitrogen Deposition* (kg ha ⁻¹ year ⁻¹)	Percentage Change in Nitrogen Deposition relative to Lower Critical Load (%)
Narborough Bogs SSSI_167m	51.8	51.8	0.0	0.0
Narborough Bogs SSSI_187m	51.8	51.8	0.0	0.0
Narborough Bogs SSSI_177m	51.8	51.8	0.0	0.0
Narborough Bogs SSSI_197m	51.8	51.8	0.0	0.0

**Discrepancies in changes due to rounding effects.*

Changes in nitrogen deposition as a result of the operation of the HNRFI and back-up CHP are predicted to be less than 1% of the relevant lower critical load at the majority of transect points considered in the assessment. The following designations were predicted to experience an increase in nitrogen deposition of greater than 1% of the relevant lower critical load in the 2026 Opening Year:

- Burbage Local Nature Reserve Transect 1 – a change of 1.1% of the lower critical load for nitrogen deposition was predicted at the closest transect point to the A47 Link Road (15m). A change of greater than 1% was predicted at this transect point in the operational phase road traffic emissions impact assessment also.
- Freeholt Wood Ancient Woodland – a change of greater than 1% of the lower critical load for nitrogen deposition was predicted at transect point 55m and 65m within the Freeholt Wood transect. The increase of greater than 1% at transect point 55m was predicted in the operational phase road traffic emissions assessment. The increase of greater than 1% at transect 65m is a new increase of greater than 1%.

The following designations were predicted to experience an increase in nitrogen deposition of greater than 1% of the relevant lower critical load in the 2036 Future Year:

- Burbage Local Nature Reserve Transect 1 – a change of 1.1% of the lower critical load for nitrogen deposition was predicted at the closest transect point to the A47 Link Road (15m). A change of greater than 1% was predicted at this transect point in the operational phase road traffic emissions impact assessment also. A further change of greater than 1% of the relevant lower critical load was predicted at transect point 25m which was a new increase greater than 1%.
- Freeholt Wood Ancient Woodland – a change of greater than 1% of the lower critical load for nitrogen deposition was predicted at transect point 55m through to 95m within the Freeholt Wood transect. The increases of greater than 1% at these transect points were predicted in the operational phase road traffic emissions assessment and are not a result of cumulative effects associated with the road traffic and back-up CHP at the HNRFI.

The results were therefore referred to the appointed ecological consultants, to determine any potential impact. Further details are available in Chapter 12: Ecology and Biodiversity (*document reference 6.1.2.12*).

It should be noted that the lower and upper critical loads were exceeded at all ecological designations considered in the assessment, both without and with the HNRFI.