

Appendix 16.3

Air Quality Modelling Results

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1.1 Modelling Results

1.1.1 NO₂, NO_x, PM₁₀ and PM_{2.5} concentrations were predicted for the Base Year (2012) and Opening Year (2026) Do-Minimum and Do-Something scenarios.

1.1.2 **Table 16-3-1** presents the unadjusted and LTT Gap analysis adjusted results for NO₂ of the operational assessment of the Proposed Scheme for human receptors. There are no exceedances of AQS NO₂ objective at any receptor for the Proposed Scheme, and all changes are mainly imperceptible or associated with small increase, except for receptor R18 showing a medium increase.

Table 16-3-1: Annual mean NO₂ concentrations (µg m⁻³) at human health receptors for all assessed scenarios for the Proposed Scheme Stage 3 with DMRB impact magnitudes

Receptor ID	Annual Mean NO ₂			Impact Magnitude
	Base	DM	DS	
R1	10.2	4.4	4.8	SMALL INCREASE
R2	5.3	2.9	2.9	IMPERCEPTIBLE
R3	10.2	4.6	5.0	SMALL INCREASE
R4	3.1	2.2	2.1	IMPERCEPTIBLE
R5	3.4	2.3	2.2	IMPERCEPTIBLE
R6	3.5	2.3	2.4	IMPERCEPTIBLE
R7	6.0	3.1	3.6	SMALL INCREASE
R8	4.8	2.7	3.3	SMALL INCREASE
R9	3.2	2.2	2.3	IMPERCEPTIBLE
R10	4.2	2.8	2.7	IMPERCEPTIBLE
R11	3.4	2.4	2.3	IMPERCEPTIBLE
R12	5.1	2.9	2.6	SMALL DECREASE
R13	4.5	2.5	3.0	SMALL INCREASE
R14	4.3	2.6	2.7	IMPERCEPTIBLE
R15	5.9	3.1	3.1	IMPERCEPTIBLE
R16	6.3	3.3	3.7	SMALL INCREASE
R17	5.3	2.8	3.0	IMPERCEPTIBLE
R18	6.7	3.3	5.4	MEDIUM INCREASE
R19	4.4	2.5	2.7	IMPERCEPTIBLE
R20	8.4	3.9	4.4	SMALL INCREASE
R21	4.3	2.5	3.0	SMALL INCREASE
R22	6.3	3.3	4.1	SMALL INCREASE
R23	9.0	4.2	4.7	SMALL INCREASE

Annual mean AQS objective for NO₂ = 40 µg m⁻³

1.1.3 **Table 16-3-2** presents the results for PM₁₀ and PM_{2.5} of the operational assessment of the Proposed Scheme. There are no exceedances of the AQS objective for PM₁₀ or PM_{2.5} at any receptor. All changes are imperceptible.

Table 16-3-2: Annual mean PM_{10} and $PM_{2.5}$ concentrations ($\mu g m^{-3}$) at human health receptors for all assessed scenarios for the Proposed Scheme Stage 3 with DMRB impact magnitude.

Receptor ID	PM_{10}					$PM_{2.5}$				
	Base	DM	DS	Change (DS-DM)	Impact Magnitude	Base	DM	DS	Change (DS-DM)	Impact Magnitude
R1	8.0	7.6	7.6	0.0	IMPERCEPTIBLE	5.1	4.7	4.7	0.0	IMPERCEPTIBLE
R2	7.5	7.3	7.2	0.0	IMPERCEPTIBLE	4.8	4.5	4.5	0.0	IMPERCEPTIBLE
R3	8.2	7.9	7.9	0.0	IMPERCEPTIBLE	5.2	4.9	4.9	0.0	IMPERCEPTIBLE
R4	7.3	7.0	7.0	0.0	IMPERCEPTIBLE	4.6	4.4	4.4	0.0	IMPERCEPTIBLE
R5	7.3	7.0	7.0	0.0	IMPERCEPTIBLE	4.6	4.4	4.4	0.0	IMPERCEPTIBLE
R6	7.4	7.2	7.2	0.0	IMPERCEPTIBLE	4.7	4.4	4.4	0.0	IMPERCEPTIBLE
R7	7.7	7.5	7.5	0.1	IMPERCEPTIBLE	4.9	4.6	4.6	0.0	IMPERCEPTIBLE
R8	7.6	7.3	7.4	0.1	IMPERCEPTIBLE	4.7	4.5	4.6	0.1	IMPERCEPTIBLE
R9	7.4	7.1	7.1	0.0	IMPERCEPTIBLE	4.6	4.4	4.4	0.0	IMPERCEPTIBLE
R10	8.1	7.9	7.8	0.0	IMPERCEPTIBLE	4.8	4.6	4.6	0.0	IMPERCEPTIBLE
R11	7.6	7.4	7.4	0.0	IMPERCEPTIBLE	4.9	4.7	4.7	0.0	IMPERCEPTIBLE
R12	7.8	7.6	7.5	-0.1	IMPERCEPTIBLE	5.0	4.8	4.7	-0.1	IMPERCEPTIBLE
R13	7.3	7.1	7.2	0.1	IMPERCEPTIBLE	4.6	4.4	4.5	0.0	IMPERCEPTIBLE
R14	7.7	7.4	7.4	0.0	IMPERCEPTIBLE	4.7	4.5	4.5	0.0	IMPERCEPTIBLE
R15	7.8	7.6	7.6	0.0	IMPERCEPTIBLE	4.8	4.6	4.6	0.0	IMPERCEPTIBLE
R16	7.9	7.6	7.7	0.0	IMPERCEPTIBLE	4.9	4.6	4.7	0.0	IMPERCEPTIBLE
R17	7.5	7.2	7.2	0.0	IMPERCEPTIBLE	4.7	4.5	4.5	0.0	IMPERCEPTIBLE
R18	8.0	7.7	8.2	0.4	IMPERCEPTIBLE	5.0	4.7	5.0	0.3	IMPERCEPTIBLE
R19	7.7	7.5	7.5	0.0	IMPERCEPTIBLE	4.8	4.6	4.6	0.0	IMPERCEPTIBLE
R20	8.2	7.9	8.0	0.1	IMPERCEPTIBLE	5.1	4.8	4.9	0.0	IMPERCEPTIBLE
R21	7.4	7.2	7.3	0.1	IMPERCEPTIBLE	4.7	4.5	4.6	0.1	IMPERCEPTIBLE
R22	7.5	7.2	7.3	0.1	IMPERCEPTIBLE	4.8	4.6	4.6	0.1	IMPERCEPTIBLE
R23	7.8	7.5	7.5	0.0	IMPERCEPTIBLE	5.0	4.7	4.7	0.0	IMPERCEPTIBLE

Annual mean AQS objective for $PM_{10} = 18 \mu g m^{-3}$, $PM_{2.5} = 10 \mu g m^{-3}$

1.1.4 **Table 16-3-3** presents the results for NO_x at ecological receptors for the operational assessment of the Proposed Scheme. NO_x concentrations are below the objective of $30 \mu g m^{-3}$ in all scenarios for all ecological receptors. There were two large (E6 and E7), two medium (E8 and E11) and seven small impact magnitude changes for the Insh Marshes SAC, and the River Spey-Insh Marshes SPA and SSSI ecological designated sites. However, since there are no exceedances of the AQS objective for at any receptor, the concentrations are not significant.

Table 16-3-3: Annual mean NO_x concentrations (µg m⁻³) at ecological all assessed scenarios for the Proposed Scheme Stage 3 with DMRB impact magnitudes

Receptor ID	Background NO _x		Annual Mean NO _x			
	Base Year (2015)	Opening Year (2026)	DM	DS	Change (DS-DM)	Impact Magnitude
E1	3.5	2.6	9.85	11.04	1.19	SMALL INCREASE
E2			5.52	6.15	0.63	SMALL INCREASE
E3			3.83	4.14	0.31	SMALL INCREASE
E4			3.11	3.30	0.19	IMPERCEPTIBLE
E5			2.80	2.65	-0.15	IMPERCEPTIBLE
E6	4.0	3.1	15.59	21.51	5.92	LARGE INCREASE
E7			7.80	17.19	9.39	LARGE INCREASE
E8			4.65	6.83	2.17	MEDIUM INCREASE
E9			3.49	4.30	0.80	SMALL INCREASE
E10			3.08	3.42	0.34	SMALL INCREASE
E11	3.6	2.7	10.52	12.33	1.81	MEDIUM INCREASE
E12			5.47	6.17	0.69	SMALL INCREASE
E13			3.76	4.07	0.31	SMALL INCREASE
E14			3.13	3.33	0.20	IMPERCEPTIBLE
E15			2.42	2.45	0.02	IMPERCEPTIBLE
<i>Annual mean AQS objective for NO_x = 30 µg m⁻³</i>						

