

Havant Thicket Reservoir Project

Environmental Statement Volume 4 - Appendices Appendix A7 Air Quality

Portsmouth Water Ltd.

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This document has 8 pages including the cover.

Document history

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Appendix A7.1 Receptors

Table 1-1 - Discrete Sensitive Receptors Included in the Air Quality Assessment

Receptor	X	Y	Z	Description
R1	470901	112470	1.5	Private Residence Havant Road
R2	470851	112580	1.5	Private Residence Havant Road
R3	470510	113333	1.5	Private Residence A3 South
R4	470435	113300	1.5	Private Residence A3 North
R5	470886	112309	1.5	Private Residence B2149
ECO1	470448	113492	0	Ancient Woodland west of A3
ECO2	470800	112440	0	Redcroft Row SINC/ Ancient Woodland
ECO3	470789	112442	0	Redcroft Row SINC/ Ancient Woodland
ECO4	471532	111458	0	Ancient Woodland adjacent to Idsworth Common SINC (south of B2149)
ECO5	471533	111442	0	Idsworth Common SINC/ Ancient Woodland (west of access road)
ECO6	471546	111423	0	Idsworth Common SINC/ Ancient Woodland (east of access road)
ECO7	471567	111451	0	The Holt SINC/ Ancient Woodland (north of B2149)
ECO8	470395	112307	0	Hazleton Common Local Nature Reserve/ Hazleton Common SINC
ECO9	470927	110915	0	Havant Thicket SINC/ Forest of Bere Ancient Woodland
ECO10	470889	110723	0	Havant Thicket SINC / Forest of Bere Ancient Woodland
ECO11	471436	111329	0	Idsworth Common SINC / Forest of Bere Ancient Woodland (east of access road)
ECO12	471401	111673	0	The Holt SINC /Pyle Farm Meadow South SINC / The Holt Ancient Woodland
ECO13	470504	112901	0	Havant Road Woodland Strip SINC
ECO14	471564	111423	0	Idsworth Common SINC/ Forest of Bere Ancient Woodland (south of B2149)
ECO15	471423	111340	0	Idsworth Common SINC/ Forest of Bere Ancient Woodland (west of access road)

Appendix A7.2 Verification

Air Quality Model Verification

- A.1. It is good practice to compare modelled estimates of pollutant concentrations with real-world monitoring to assess the model's performance for a base year and to inform the interpretation of model results for future years. Verification of the 2019 base year scenario has been undertaken by comparison of the modelled concentration against that measured at the closest monitoring site to the study area (monitoring location 10 – Ramblers Way) with data available for 2019.
- A.2. An air quality model can be considered to perform reasonably well where modelled concentrations are within 25% of monitored concentrations, in accordance with DEFRA's Technical Guidance LAQM.TG(16).
- A.3. The unadjusted modelled estimate of total annual mean NO₂ concentration has been compared against monitored annual mean concentration as shown in Table 1-2. Results show the model overestimates the monitored concentration by 19%.
- A.4. The modelled concentration is within 25% of the monitored concentration. In accordance with DEFRA's Technical Guidance LAQM.TG(16), adjustment to the model is not required for differences within 25%.
- A.5. The model statistics without adjustment are presented in Table 1-3. The overall RMSE calculated for each area is below the threshold value of 25% of the AQS objective (i.e. 10 µg/m³) and is, therefore, considered acceptable.

Table 1-2 - Comparison of Modelled and Measured NO₂ Concentrations (µg/m³), Unadjusted

Site Name	Background Annual Mean NO ₂ (µg/m ³)	Monitored Annual Mean Total NO ₂ (µg/m ³)	Modelled Annual Mean Total NO ₂ (µg/m ³)	Modelled NO ₂ Minus Monitored NO ₂ (µg/m ³)	% Difference (unadjusted modelled NO ₂ - monitored NO ₂) / monitored NO ₂ * 100
10	15.3	20.8	24.7	3.9	19%

Table 1-3 - Model Statistics Pre-Adjustment

RMSE[i]	FB[ii]	r[iii]
3.90	-0.17	N/A

[i] Root Mean Square Error: RMSE is used to define the average error or uncertainty of the model (units = µg/m³). In the case of modelled annual mean NO₂ a value of less than 10 is acceptable and less than 4 is the ideal

[ii] Fractional Bias: FB is used to identify if the model shows a systematic tendency to over or under estimate. Ideal value is 0

[iii] Correlation coefficient: r is used to measure the linear relationship between modelled and observed data. Ideal value is 1

N/A as there is only one monitor used for model verification, it is not possible to calculate correlation coefficient.



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