

Uisce Éireann



Greater Dublin Drainage Project Addendum

Sensitivity Assessment – Odour Contours



Sensitivity Assessment – Odour Contours

Appendix 10A of the 2018 EIAR carried out a sensitivity analysis in accordance with recommendations in the EPA guidance on air dispersion modelling (AG4). The sensitivity assessment consisted of individually changing specific parameters to test the sensitivity of the predictions to changing inputs. The 2018 EIAR considered the following:

- Meteorological Data – Consideration of a second nearby meteorological station;
- Terrain - Consideration of the model run with and without terrain;
- Building Downwash - Consideration of the model run with and without building downwash; and
- Surface parameters – Use an alternative value, suggested value of 1m

The results of the sensitivity assessment were presented in Table 10A-1 and the results demonstrated that there was no significant change in the modelling predictions. The removal of buildings reduces the predicted odour impact in the near field and it was concluded that the modelled scenarios were conservative and robust in considering higher predicted impacts which conform to the recommended guidance. All of the sensitivity studies showed that the adopted odour annoyance criterion of $3.0\text{ou}_E\cdot\text{m}^{-3}$ as the 98th percentile of hourly averages was not predicted to be exceeded at any receptor location. In accordance with the EPA AG4 guidance, as the results of the sensitivity assessment were well below the relevant assessment level, no further consideration of input parameters was considered necessary. These findings remain valid and no further considerations are deemed necessary.

A number of further sensitivity checks to evaluate the robustness of the modelling assumptions were considered in this Addendum EIAR as follows:

- Increasing the odour emission rate;
- Changing the building height;
- Changing the stack height; and
- Maximum activity with 75% volume flow

As noted in Section 10.5.3, the model was run using an incorrect stack height (17.5m versus 18m) and an incorrect building height (13.5m versus 15.135m) in the 2018 EIAR and was re-run in this Addendum using stack height 18m and building height 15.135m. The results as reported in Section 10.4 predict lower odour impacts associated with those changes relative to the reduced building height and stack height reported in the 2018 EIAR, and the predictions are lower than the adopted odour assessment criterion of $3.0\text{ou}_E\cdot\text{m}^{-3}$ as the 98th percentile of hourly averages at all receptor locations.

The potential impact of a higher odour emission rate was also modelled and as shown in Table 10.4, the higher odour emission rate results in predictions that are lower than the adopted odour assessment criterion of $3.0\text{ou}_E\cdot\text{m}^{-3}$ as the 98th percentile of hourly averages at all receptor locations.

The EPA AG4 Guidance also requires that the effect of reducing the volume flow to 75% of the maximum volume flow while maintaining activity at full scale is also evaluated and this assessment was carried out and the results are presented in Table 10A-1. This additional sensitivity check also shows that the odour concentration predictions are lower than the adopted odour assessment criterion of $3.0\text{ou}_E\cdot\text{m}^{-3}$ as the 98th percentile of hourly averages at all receptor locations.

Table10A-1 Predicted Odour Concentrations - ‘Post Development’ Scenario using 2023 input data and 75% volume flow

Receptor	Odour Concentration					Assessment Criterion
	2018	2019	2020	2021	2022	
2023 EIAR input data, 100% volume flow						

Maximum at modelled receptor location	0.39	0.40	0.29	0.41	0.39	3 ouE.m ⁻³ as the 98 th percentile of hourly averages
Maximum at Site Boundary	0.89	0.96	0.96	0.91	0.74	N/A
2023 EIA input data, 75% volume flow						
Maximum at modelled receptor location	0.46	0.49	0.32	0.44	0.44	3 ouE.m ⁻³ as the 98 th percentile of hourly averages
Maximum at Site Boundary	0.94	1.02	1.02	0.96	0.81	N/A

A number of sensitivity checks were undertaken in both the 2018 EIA and for this Addendum EIA. In all cases, predicted odour concentrations are lower than the adopted odour assessment criterion of 3.0ouE.m⁻³ as the 98th percentile of hourly averages at all receptor locations. This demonstrates the robustness of the design and the assessment undertaken for this study. There is no materially significant difference between the 2018 EIA findings and this Addendum EIA.