

## Appendix 10A

### Sensitivity Assessment

The odour assessment presents predicted results which were considered appropriate and most representative of the study area and proposed development. In accordance with the recommendations in the Environment Protection Agency AG4 guidance, several sensitivity studies were undertaken to demonstrate the potential impact of using alternative input data. The sensitivity assessment consisted of individually changing specific parameters of one of the dispersion modelling scenarios used in the assessment.

From the suggested possible sensitivity studies detailed within the AG4 guidance document the following were considered appropriate for this assessment.

- 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
- Surface parameters – Use an alternative value, suggested value of 1m

**Table 10A.1** details the parameters considered and identifies the variances in predicted odour concentrations when applied to the 2011 ‘with development’ scenario.

**Table 10A-1: Calculated Odour Emission Rates – Do-Nothing Scenario – Point Sources**

Parameter	Odour Concentration at Worst Case Receptor (ouE/m <sup>3</sup> )*	Change from Scenario Considered in Assessment (ouE/m <sup>3</sup> )*
Model used in Assessment	0.97	-
Removal of Terrain	1.03	+0.06
Removal of all Buildings	0.72	-0.24
Surface Roughness at 1m for whole study area	0.83	-0.13
Use of 2011 Casement Meteorological Data	0.68	-0.29

\* as the 98<sup>th</sup> percentile of hourly averages.

The sensitivity assessment has shown that consideration of alternative assessment criteria could result in different odour concentrations at receptor locations. The largest variations were observed when removing buildings from the model or use of the alternative metrological data. Variations between different meteorological sites are expected. The removal of buildings is likely to reduce predicted odour concentrations in the near field as the impact of building downwash or early grounding of the plume would be removed. As these assumptions result in a reduction in predicted concentrations, it is considered that the modelled assessment is conservative.

Removal of terrain from the dispersion model resulted in a small increase in the predicted odour concentration at the worst affected receptor. The magnitude of change, calculated to be 0.06 ouE.m<sup>-3</sup>, as the 98<sup>th</sup> percentile of hourly averages, was small and unlikely to have a significant impact on the assessment conclusions.

It was considered that inclusion of, buildings, terrain, meteorological data from Dublin Airport and use of surface roughness representing the study area within the model would provide results which were more representative of site specific conditions.

All of the sensitivity studies showed that the adopted odour annoyance criterion of  $3.00 \text{ou}_E \cdot \text{m}^{-3}$  as the 98<sup>th</sup> 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 are well below the relevant assessment level, no further consideration of input parameters was considered necessary.





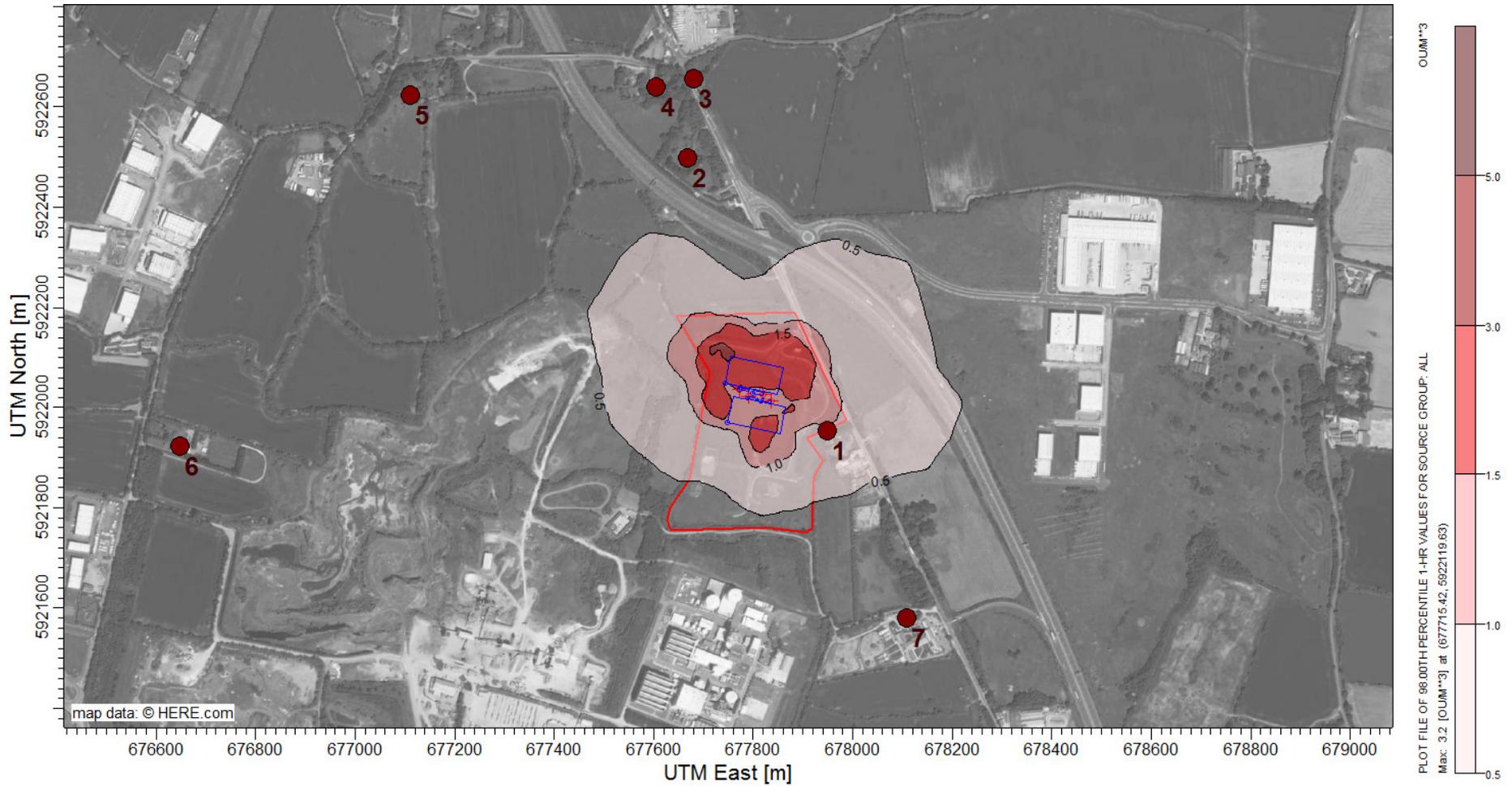


Figure 3: Predicted Odour Concentration – ‘RBSF’ Scenario, 17.5m stack - 2013 Meteorological Data ( $ou_e/m^3$  as the 98<sup>th</sup> Percentile of Hourly Averages)

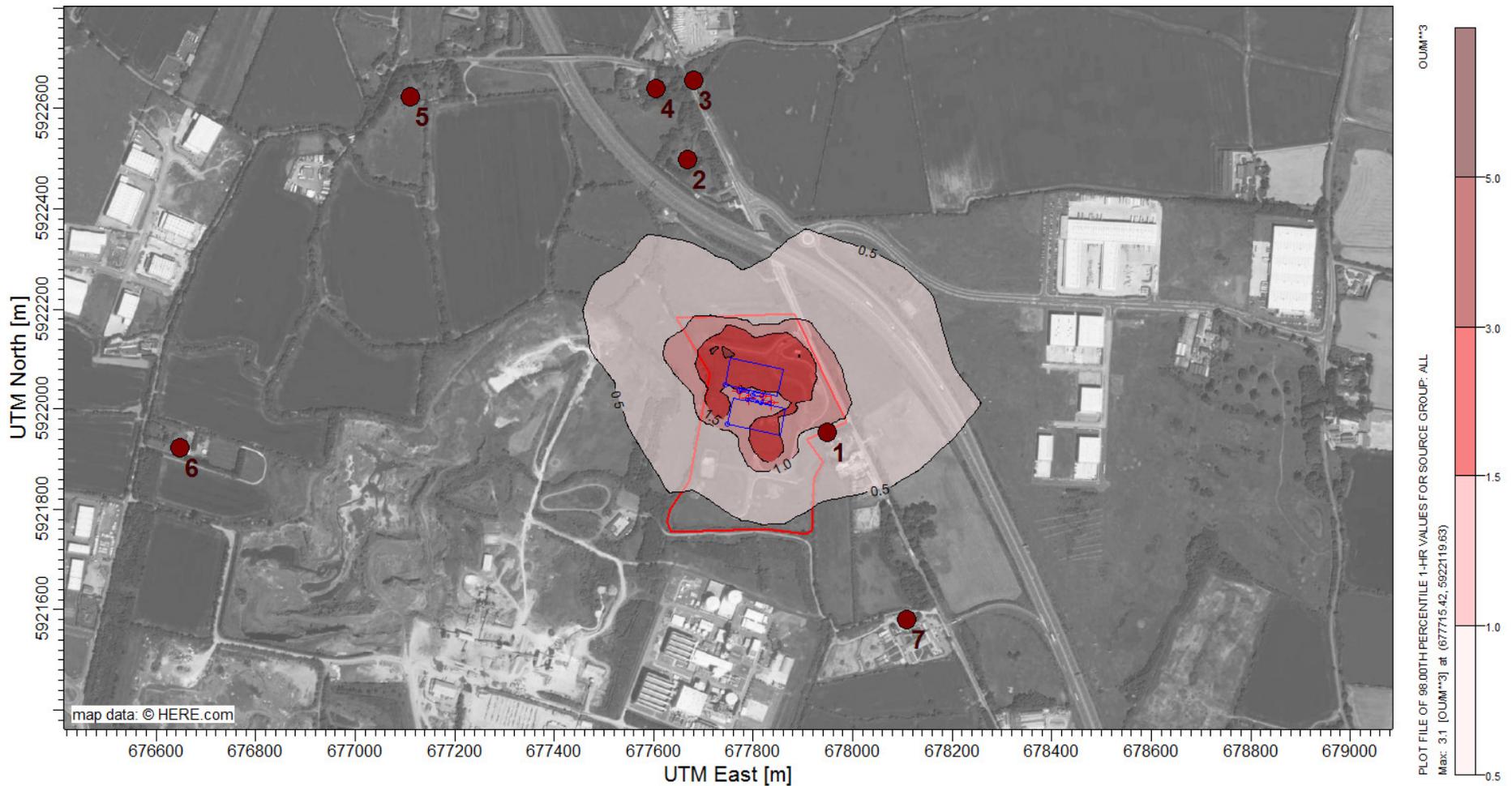


Figure 4: Predicted Odour Concentration – ‘RBSF’ Scenario, 17.5m stack - 2014 Meteorological Data ( $ou_e/m^3$  as the 98<sup>th</sup> Percentile of Hourly Averages)

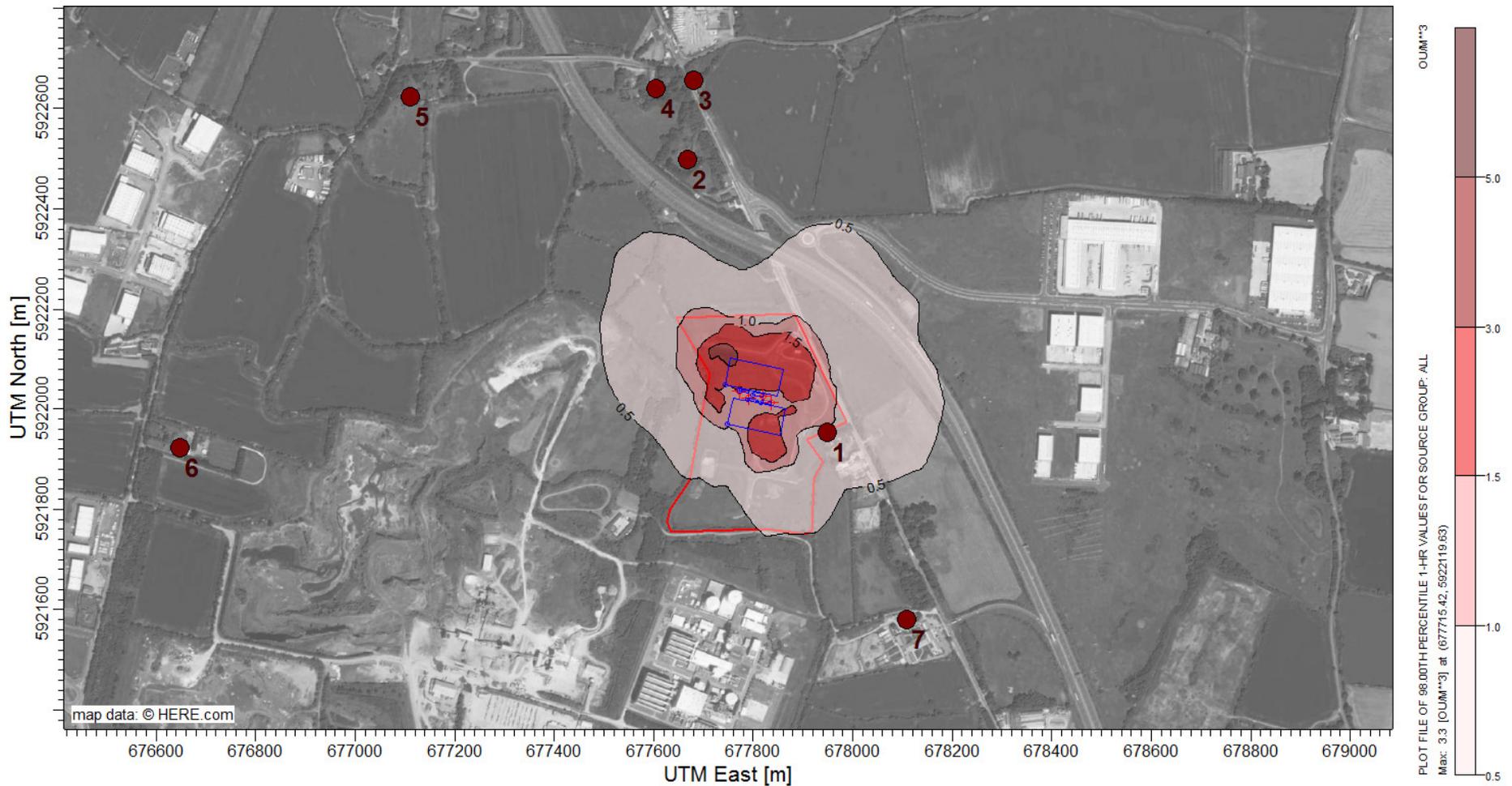


Figure 5: Predicted Odour Concentration – ‘RBSF’ Scenario, 17.5m stack - 2015 Meteorological Data ( $ou_e/m^3$  as the 98<sup>th</sup> Percentile of Hourly Averages)