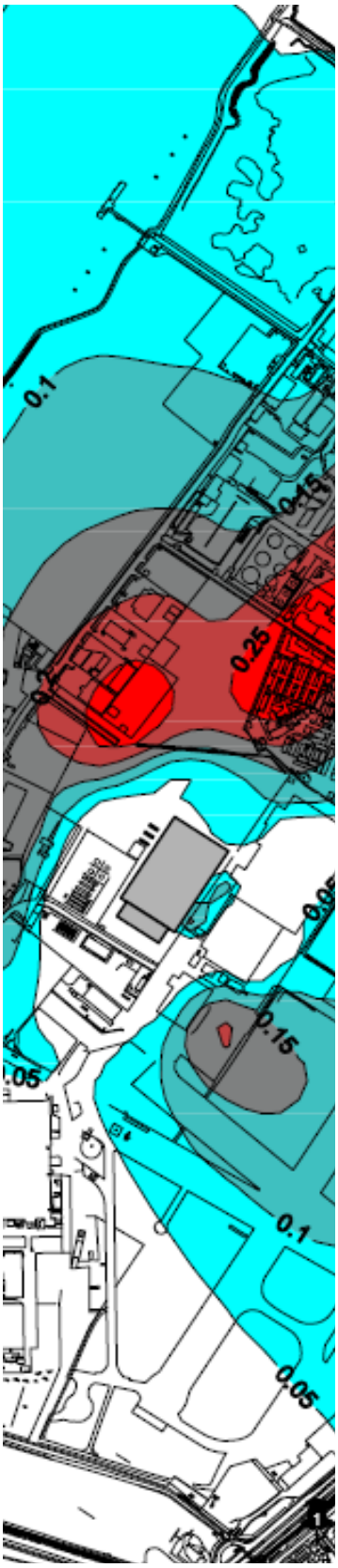
Air Quality EfW

This application proposed constructing a new energy from waste (EfW) process using 240,000 tonnes per annum of processed residual municipal and commercial solid waste material as fuel. The main process building was 27m high and housed the combustion plant, heat exchange boilers and steam turbines. The plant was to use gasification technology with combustion gases held at above 850°C > 2 seconds to ensure complete combustion of the fuel. Process gases were to be treated by flue gas treatment plant to comply with WID emission limits, before being discharged through two 42m high stacks with exhaust temperature at or above 166°C and with an efflux velocity of 15m/s. The installation was intended to generate about 23MW of electricity for use on site and exported to the grid and surplus heat exported to local commercial and industrial users.



The Airshed conducted an AQIA to consider the potential adverse air quality impacts from the proposed new process and determine the likely concentration of residual pollutants at sensitive receptors. The air quality impacts from the process were assessed against Environmental Assessment Levels (EAL) derived from European Directives, UK Air Quality Standards (AQS) and EA Guidance for Environmental Assessment. Baseline air quality conditions were obtained from UK Government and local authority estimates. Emission rates from the process were based on permitted emission rates and estimated combustion gases. The assessment had regard to best practice Guidelines for dispersion modelling and included a detailed model sensitivity analysis for meteorological data, surface roughness, terrain, buildings, receptor height, exhaust temperature, stack exhaust velocity, particle density and deposition characteristics. The predictions were obtained using ADMS 5, a model usually accepted by EA, subject to its proper use. The predicted air pollution and particle deposition were plotted in contours, excluding background. The predictions assumed the worst case meteorological conditions, pessimistic dispersion conditions (e.g. surface roughness and deposition rates) and maximum emission rate (100% of WID) at all times. Additional predictions at receptors were based on the worst case factors for dispersion. The emissions of combustion pollutants were predicted to comply with all relevant air quality standards. The most significant air pollutant compared to the EAL was the predicted annual mean concentration of hexavalent Chromium, which was ~38% of the EAL at the nearest residential receptor. The next most significant pollutant was Arsenic, which was predicted to be ~13% of the annual mean EAL. Cadmium was predicted to be 7% of the relevant EAL. These pollutants were considered unlikely to exceed the relevant EAL.

Nitrogen Dioxide was the most significant short-term air pollutant, being 10% of the EAL. The short-term averages for all other air pollutants were predicted to be $\leq$10% of the EAL and to be either of minor adverse significance or insignificant. The most significant impacts from deposition were from Mercury (4% of EAL) and Cadmium (2% of EAL). The operational impacts from the deposition of all metals were predicted to be less than 10% of the relevant EAL. Critical levels and critical loads at designated sites within 20km were predicted to be $\leq$1% of baseline conditions and therefore insignificant. The assessment considered impacts from nitrogen and sulphur deposition effects on designated habitats within 20km in terms of critical levels and critical loads.

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