Pyrolysis

Robert Hopkins Environmental Ltd. provides waste management services for drummed, hazardous and special waste. The company plans to install a new process plant at its existing site at Bullock Street, West Bromwich, to treat oily rags, contaminated plastic, contaminated paper and paint sludge waste which are currently exported, contrary to European legislation. The plant will process up to 24,000 tonnes per year of waste using a pyrolysis process. The Airshed was appointed to conduct the air quality impact assessment for the planning application.

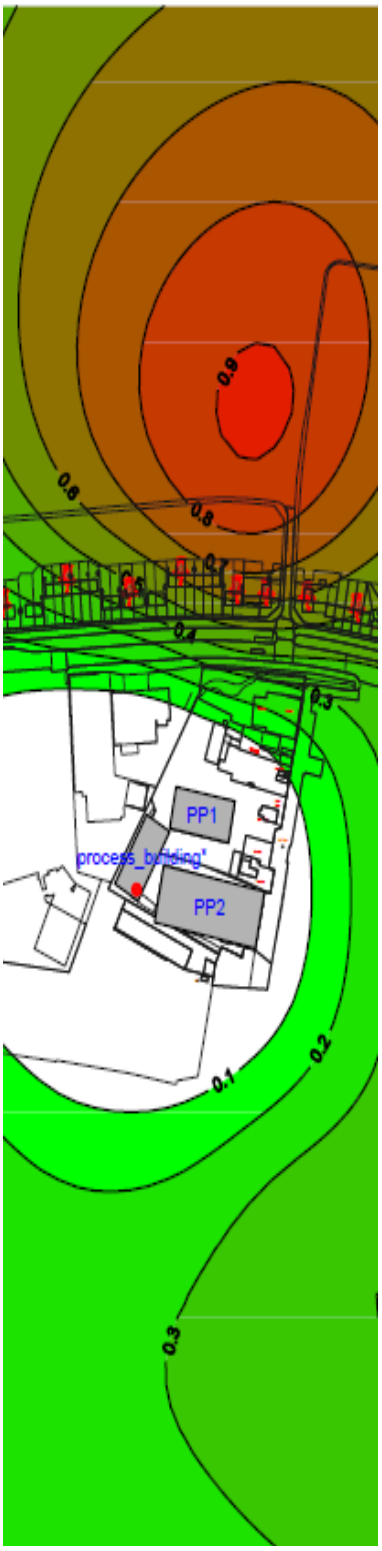
The pyrolysis process involves exhaust gases emitted: by the combustion of cleaned carbon char residues; and the combustion of cleaned syn-gas in a gas engine. These two separate flues from the process will be collected and released from a single stack after flue gas treatment to reduce emissions of particles and oxides of nitrogen. The process is located in a highly developed mixed industrial and residential area.

Air quality impacts were assessed against European Limit Values intended to protect human health. The baseline levels of oxides of nitrogen exceed the European air quality limit value in some parts of the study area, due to the contribution from the adjacent M5 and road traffic on surrounding streets. The main pollutant of concern is the annual mean NO_2, due to the high baseline pollution, particularly at receptors adjacent to busy roads near the site. The results from local authority monitoring near the site suggest that the annual mean may be ~44ug/m^3, which exceeds the European Limit Value of 40ug/m^3. The local environment therefore has very little additional capacity to receive additional air pollution.

A dispersion model (ADMS 4-2) was used to predict dispersion using five years of hourly sequential meteorological data from Coleshill, 20km from the proposed site. A model sensitivity analysis was conducted to consider the potential significance of stack height, surface roughness, building effects and efflux velocity.

The effect of stack height on predicted ground level concentration was considered for a range of heights from 15m to 48m at 3m intervals. Increasing stack height not only reduced the predicted maximum ground level concentration, but also moved the worst case footprint away from receptors on busy roads where the baseline is likely to be more critical due to road traffic emissions. The assessment therefore proposed that the process should be subject to stricter emission controls than would be imposed by the Waste Incineration Directive (WID), to take account of baseline conditions. The Environment Agency confirmed that they must take baseline conditions into account and that "*The Environment Agency can and indeed must set tighter restrictions if local conditions require it.*"

The proposed mitigation measures include the erection of a 39m stack and restricting NO_x emissions to 100mg/m^3 to ensure that as a worst case, the process contribution to the annual mean would be <1 ug/m^3 at any sensitive receptor. These measures should ensure that the process emissions would be unlikely to cause the European annual mean Limit Value for NO_2 to be exceeded.



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