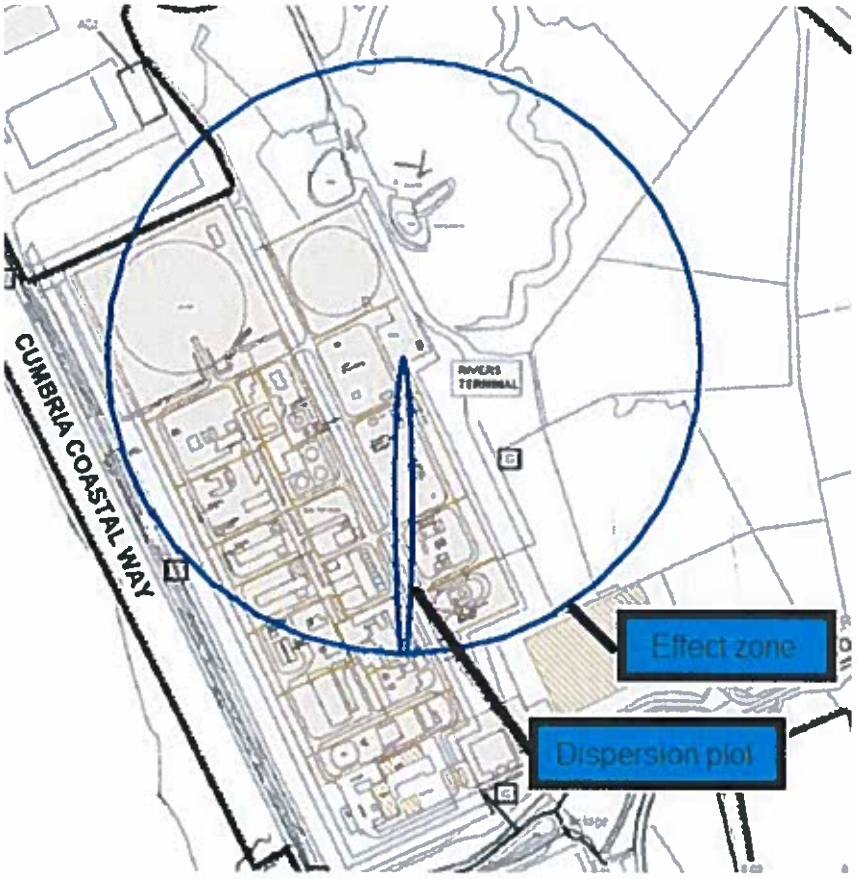
Figure A.2 LFL Dispersion Plot and Effect Zone for an Above Ground Rupture Release



A.3.3 *Vapour Cloud Explosion*

If a flammable gas cloud reached a congested region and subsequently ignited a vapour cloud explosion could occur. Explosions have been modelled using the TNO multi energy method with either curve 5 or curve 7 depending on the amount of congestion and confinement. Assuming curve 7 the maximum explosion overpressure is predicted to be 1 bar.

A northerly wind direction could cause a flammable cloud to drift towards the temporary construction facility (TCF) where there are assumed to be 50 workers during the day. An explosion could occur if the flammable cloud was ignited within one of the congested regions between the above ground section of the pipeline and the TCF. The largest congested region is 1700 m^3 and is assumed to give a multi energy curve 7 explosion. Figure A.3 provides the overpressure decay curve for such an explosion.

Among workers on site, a release of acid gas from the pipework upstream of the acid gas KO drum (60% H_2S) is predicted to result in 1 to 2 fatalities. Although the dispersion distances can be significant, the maximum half widths of the clouds are small, meaning that there are not likely to be many personnel within the fatal cloud. Releases of acid gas downstream of the acid gas KO drum are predicted to result in fewer fatalities given the lower concentrations of H_2S in the streams.

Figure E.2 shows the 1316 ppm and 508 ppm H_2S dispersion plots and effect zones for a Rupture of Piping downstream of YSV-39-0090 to HTAS sulphuric acid plant.

Figure E.2 1316 ppm and 508 ppm H_2S Dispersion Plots and Effect Zones for a Rupture of Piping downstream of YSV-39-0090 to HTAS sulphuric acid plant