

High Wycombe - Dual Phase Vacuum Extraction

Former Use: Security Printworks
Client: De La Rue
Value: £300,000
Location: Hampshire

After completing an extensive intrusive site investigation at the active security printworks, Provectus confirmed that soil and groundwater beneath part of the site had become contaminated with solvents associated with the printing processes. Provectus were therefore engaged to devise and implement a remedial strategy which would reduce the risks to site workers, groundwater and nearby surface watercourses without interfering with the continued operation of the site.

A site workshop and an area containing underground storage tanks were identified as the source of the volatile organic compounds (VOCs) in the groundwater. The VOCs, principally toluene, ethyl benzene, xylene and methanol lent themselves to effective treatment by Dual Phase Vacuum Extraction.

A matrix of extraction boreholes was drilled at locations designed to intercept the migrating contaminant plume. The boreholes were cased and the casing connected by flexible plastic pipework via ducts to the vacuum extraction unit. A high vacuum is applied to the boreholes producing the highest concentration of VOCs until equilibrium at a lower concentration is achieved. The vacuum is then applied to other boreholes. The process is repeated to achieve a progressive reduction in VOCs beneath the whole site. During high vacuum treatment, up to 12,000m³ of contaminated groundwater was abstracted, removing a significant proportion of the contaminant loading as well as locally reducing the water table to facilitate residual treatment by low vacuum soil vapour extraction (SVE) from the unsaturated (vadose) zone. Contaminated water was passed through the site's interceptor prior to foul sewer discharge under a specially negotiated consent.



The vacuum extraction system exhausts through an activated carbon filter to minimise emissions to the atmosphere. In total over 2,500 kg of VOCs were removed by the treatment process.

The in-situ remediation system was operated for 18 months without affecting the continued operation of De La Rue's workshop or chemical storage area.

Two years after completing remedial works at the site, Provectus undertook an audit of the remediation area in support of a vendor's pack report for resale of the site. This audit involved a soil vapour survey and groundwater monitoring, followed by a quantitative risk assessment (QRA) under post completion conditions. The post-completion risk assessment confirmed that the residual risks to the major aquifer and associated groundwater abstraction located 1.5km south of the site are minimal, and no further remedial action necessary.