



PROJECTS

CONTAMINATED LAND & GROUNDWATER

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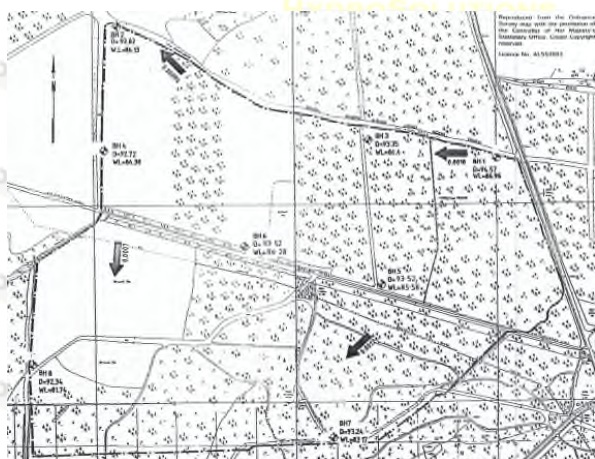
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Site suitability for landfill development via 'Disperse & Attenuate' or Containment, Bramshill Quarry, Hampshire, UK



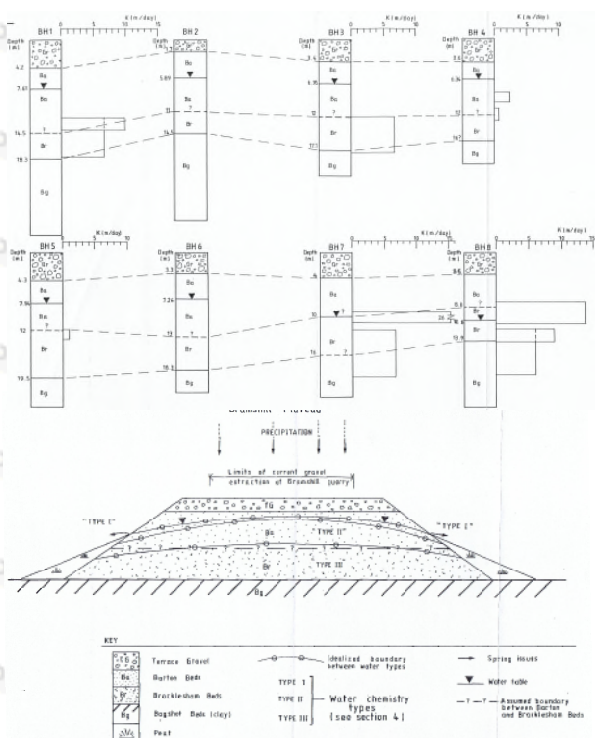
A desktop study was conducted to determine the suitability of a quarry for development as a landfill site, via 'disperse & attenuate' or containment, and the availability of on-site development materials. Data on the geology, hydrogeology, meteorology, geography & current site operations was collated and reviewed and a walk over survey was conducted.

Site operations involved stripping soil overburden and extracting 2-3m of gravel which is then washed to remove fine silt and clay before being sold as aggregate; washings were used to reinstate the site after quarrying. The land is due to become a landfill but upon completion of landfill operations a significant proportion of the area is to be restored to forestry.



Hydrogeological investigation included the establishment of a groundwater monitoring bore network and the establishment of hydraulic parameters from bore slug and falling head tests. Samples were collected from surface water and groundwater and sent to the laboratory for analysis to determine water chemistry. Soil tests were conducted to determine the geotechnical & natural attenuation potential, including:

- particle size distribution
- iron oxide content
- clay mineralogy
- carbon content
- cation exchange capacity
- compaction characteristics
- permeability
- silt tailings properties



The estimated potential of in-situ materials & process wastes to attenuate leachate generation did not provide an adequate margin of safety to permit development via 'disperse & attenuate'. To minimise leachate generation, surface water and groundwater needed to be excluded from the site with a low-permeability synthetic HDPE cap and liner, with the in-situ materials providing a secondary containment barrier after suitable compaction.

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