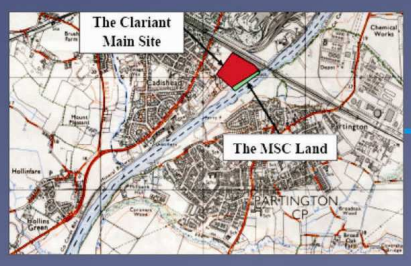
Mixed Technology Remediation Of A Former Tar Works: Cadishead, Gt. Manchester

History

Location Approximately 6Ha



Site began use in 1916. Originally for refining crude tar and chemical intermediates such as solvents for the paint industry, benzol as a motor fuel, naphthalene for dyestuff making, phenol and creosols for resins, pitch for electrodes, pyridines for drug manufacture and Tar for road surfacing

The Site c. 1985

Following the demolition of the storage works in 2000, the site was solely used for chemical manufacture

Former Major Uses

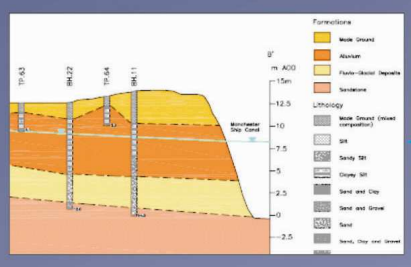
Processes included the hydrogenation of phenols, selective hydrogenation of alkenes, hydrogenation of nitrile and oxime groups, reductive alkylation and reductive amination

Contamination Associated with Former Use

The site was decommissioned during 2003 with most of the above ground structures and process buildings demolished

Characterisation

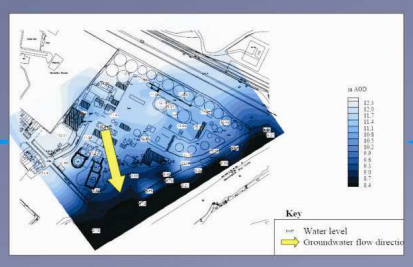
Geology



- **Made Ground**
  - Various rubble fills. Leftover material from construction of the Canal
- **Alluvial Deposits**
  - Varying proportions of interbedded clay, silt, sand and gravel
- **Fluvio-glacial Deposits**
  - Sand and gravel with occasional cobbles
- **Solid Geology**
  - Permo-Triassic Sandstone. Major Aquifer used for public water supply

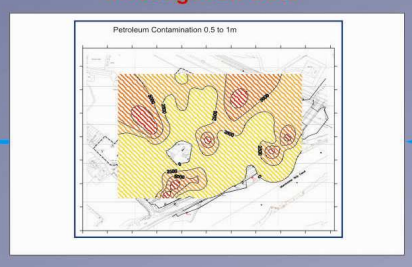
WA initially carried out a review of Site Investigation and preliminary Risk Assessment in 2005. The reports identified the following areas of concern:• TPH, SVOC (phenols and PAHs) and VOC (BTEX compounds and styrene) contamination in the soils across the whole of the site in excess of 100000mg/kg for some contaminants;

Hydrogeology



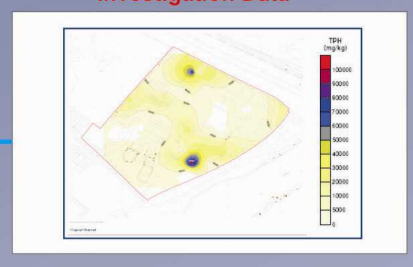
TPH, SVOC and VOC contamination in the near surface groundwater/possible perched groundwater in excess of 100mg/l for some contaminants

Evolution of Site Investigation Data



SVOC and VOC contamination in the deeper groundwater beneath the site

Evolution of Site Investigation Data



Potential TPH, SVOC and VOC contamination in the Manchester Ship Canal

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Quantitative Risk Assessment: Remedial Targets

After lengthy discussions with the UK Environment Agency the following targets were agreed,

Contaminant of Concern	Risk Based Groundwater Criteria		Risk Based Human Health Criteria	
	Proposed Soil Remedial Target (mg/kg)	Top Soil Criteria (mg/kg)	SSAC/SGV for soils 0.25m to 0.7m below ground level (mg/kg)	SSAC for soils 0.7m below ground level and greater (mg/kg)
Benzene	2.3	0	0.2	9.7
Toluene	10	0	45	1,500
Ethylbenzene	6.5	0	55	460
Xylene	6.5	0	6.1	220
Styrene	35	0	350	2.2×10^5
Naphthalene	10	0	45	2,600
Benzo(a)pyrene	450	0	0.5d	6.0×10^4
Total PAH	1,000			
Phenol	10	300	1,300	2.9×10^7
Coal Tar (as an absolute entry)				
Total TPH (EC6-EC40)	5,000			
TPH (EC6-EC16)	500			
TPH (EC5-EC10)				
Aromatic TPH (EC21-EC35)				

Remediation

Working at Groundwater Level

Pumping and treating of groundwater encountered in excavations

Buried Structures

In-situ bio-treatment of groundwater

In-Situ Treatment

In-Situ Treatment

Ex-situ On-Site Treatment

Selection and screening of materials for treatment and disposal

Ex-situ Bio Treatment

Ex Situ bio-treatment of suitable soils

Vertase F.L.I.
ENVIRONMENTAL CONTRACTING SPECIALISTS

Ex-Situ Treatment

Disposal of materials to hazardous waste landfill

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Validation

Validation Sampling

Geotechnical Testing

Importation of clean inert fill materials

Compaction

Compaction of materials to a final landform for development

Final Landform