Case Study

Remediation of Infilled Gas Works Waste

Client

Major UK Housing Provider

Remediation Value

>£300, 000

Site

Former farmland on which 300+ housing units were under construction. During development a historic pond was discovered to have been infilled with gas works waste to a depth of 4m, containing very high levels of contamination. The infilled pond was located beneath proposed houses and gardens.

Contaminants

- Cyanide - >10,000mg/kg
- Hydrocarbons
- Poly Aromatic Hydrocarbons
- Lead
- Ammonia

Challenges

- Occupied homes within 20m on three sides and a primary school within 250m of the work area.
- Absolute control of airborne emissions critical, with a detailed 24/7 air quality monitoring scheme imposed in advance by regulators.
- Perched water made the materials very unstable.
- Location above a chalk aquifer required absolute control of groundwater during the works.
- Hydrogen cyanide and entrapped vapour risks.
- Backfill had to be raised out of the groundwater, while ensuring no cross contamination occurred with the incomplete excavation areas.

Successes

- Excavation of >850 tonnes of heavily impacted material, successfully stabilised for handling and consigned to a licensed facility.
- All works completed inside a large inflatable tent under negative air pressure to contain fugitive emissions, with clean air feed PPE system and HVAC with air scrubbing exhaust system.
- Access to the works area was strictly controlled via a decontamination unit with sign-in/sign-out system
- UKRL operated a 24/7 air quality monitoring system using digital datalogging instruments.
- Dewatering and disposal to a licensed treatment facility of 24,000 litres of impacted groundwater.
- Careful segregation and waste classification during the works minimised the overall disposal costs.
- Lime stabilisation of site-won backfill placed under active dewatering with method compaction to achieve site geotechnical specification.
- All environmental records maintained throughout the project for successful Environment Agency sign off.

Figure 1 – “Blue Billy” ferricyanide visible at the surface following the topsoil strip.

Figure 2 – Inflatable tent used to contain emissions.

Figure 3 – controlled dewatering of the excavation.