

Case Study

Stabilisation-Solidification of TPH Contaminated Organic Sludge

Client

Linden Homes

Remediation Value

£850,000

Site

14,000m² site, with river frontage, undergoing redevelopment for 140 houses. A paper mill, foundry and workshops had operated on the site, resulting in widespread contamination, associated particularly with a network of underground voids and tunnels.

Contamination

Organic paper/rag residue in the tunnel system was impacted with heavy hydrocarbons.

Challenges

- Deep buried obstructions, including a heavily contaminated tunnel system, not previously surveyed.
- High volume of mixed free phase oil, highly organic residue and contaminated water in the tunnels.
- The tunnel system was known to have been in continuity with the river that bounded the site.
- Site reuse of all materials was the preferred strategy.
- Demanding specification for reinstatement.
- Construction and enabling works were underway in parallel with the remediation, demanding a tight programme for treatment and reinstatement.

Remediation Methods

- Selective removal of LNAPL oil free product.
- Construction of a holding lagoon and deployment of water treatment plant.
- Chemical-physical separation of solids and liquids.
- Dewatering of the resulting semi-solid phase
- Two stage stabilisation/solidification of oily sludge.
- Reinstatement to environmental and geotechnical specifications using the treated solids.

On-site trials optimised the coagulant/flocculant mix (right). Treated water was pumped to a holding lagoon for testing prior to discharge or reuse (left).



Dewatered sludge (left) was treated in batches using two-stage S-S (right) to enable reuse on site.



Left to Right:

Excavated tunnel crown running to the river (beyond the trees), showing oil/water/sludge mix within.

Partially dewatered oily sludge after removal of free oils and coagulant/flocculant addition.

Fully dewatered tunnel with dewatered sludge awaiting removal to the site treatment area.

Having removed all below-ground obstructions, voids were backfilled using the stabilised and solidified material.

