

Clients



**MORGAN
SINDALL**

Main Contractor

PRICHARD'S

Environmental Consultants



TETRA TECH

Our experience and systems demonstrate our commitment to waste management to our supply chain with an effective site setup geared in every respect to deal with waste in the most efficient way."

We will look to minimise waste removal from site and to reduce material consumption in the building works throughout. This, in turn will reduce waste disposal volumes and costs, and reduce embodied carbon. This strategy will be the key deliverable when preparing the overarching Project Execution Plan and Site Waste Management Plan (SWMP)."

Identified Contamination

Tetra Tech identified contamination below a tarmacked car park. Contamination was initially identified in WS105 - further exploratory wells were installed around WS105 to delineate the source (i.e. WS201, WS202, WS203 and WS204 respectively). Soil samples taken from WS105 and WS204 were assessed to be hazardous for offsite disposal purposes (following a Haz-Waste-Online assessment).

The prime contaminants of concern were metals (i.e. lead ↑4,390 mg/kg) and zinc ↑7,720 mg/kg) and TPH (↑9,320 mg/kg). The identified contaminated area is shown in Figure 1 below.

Figure 1 – Contaminated Area



Site Background & History

The site is the former Cefn Saeson School. The new school development has been completed and the remediation works formed part of the demolition of the old school buildings and infrastructure works to accommodate sports pitches, a bus drop-off and staff car parking.

These works constituted Phase 1a of the overall NPT Council / Morgan Sindall development.

Tetra Tech prepared a comprehensive materials management plan [MMP] prior to commencement of the works (on behalf of NPT Council / Morgan Sindall). The prime objective was to maximise reuse of materials onsite in accordance with the key project objectives which were summarised as follows:

"Our robust waste management and environmental plans set out our strategy with clear measurable targets.

Sole Providers of E-CLAY® Technology

Remediation Works

Prichard's approached Envirotreat to find a sustainable and commercially viable alternative to offsite disposal. The agreed approach was to treat the contaminated area using E-Clay Stabilisation to enable reuse on-site (E-Clay Stabilisation is licensed as a waste recovery process).

The works were undertaken under an NRW exemption [RD 073 – Land Contamination Small Scale Remediation] – the envisaged treatment volume was <math><1,000\text{m}^3</math>. The recovery of material for reuse onsite was controlled by the MMP.

Source Delineation

A series of small trial pits were excavated around the identified contaminated area to determine the vertical and lateral extent of the contamination. Two samples from the deepest recorded depth of contamination were used for base validation requirements (based on olfactory, VOC headspace analysis and rapid XRF testing). Side validation samples were taken from the outer external faces to confirm the lateral extent of the identified contamination (based on olfactory, VOC headspace analysis and rapid XRF testing). The trial pit delineation is shown in Figure 2 below and the rapid XRF testing is shown in Figure 3 below.

Figure 2 – Trial Pit Delineation



Figure 3 – Rapid On-Site Metals Testing by XRF



Laboratory analysis of the base and side validation samples confirmed that all samples were below the designated remediation target criteria, confirming that the vertical and lateral extent of the hydrocarbon contamination had been fully determined.

E-Clay Stabilisation

Identified contaminated soils were treated *in-situ* using an E-Clay formulation specifically designed to address the identified contaminants of concern.

The contaminated area was treated in discrete areas of known volume to ensure that the correct quantity of E-Clay was added (in slurry form).

A known volume of E-Clay was added to each area and soil mixed *in-situ* to the required depth using the excavator bucket.

The *in-situ* treatment process is shown in Figure 4 below.

Figure 4 – *In-Situ* E-Clay Stabilisation



Environmental Monitoring

Envirotrear carried out extensive environmental monitoring at key locations around the site during the remediation works – this reflected the close proximity of a number of sensitive receptors (i.e. the school and residential developments in particular).

The environmental monitoring comprised:

- Noise Monitoring
- VOC Monitoring (using a handheld MiniRea – a 1 ppm threshold was used)
- Dust Monitoring (using a Dustscan measuring total, respirable and PM 10, PM 2.5 and PM 1.0)
- Odour Monitoring
- Weather Monitoring

Background monitoring was undertaken prior to commencement to establish background levels.

None of the established thresholds were exceeded during the works.

Dust suppression was also used during the handling of powdered treatment reagents as shown in Figure 5 below.

Figure 5 – Dust Suppression Employed During E-Clay Production On-Site



Validation

Samples of treated material were assessed on-site and also submitted for laboratory analysis at i2 Analytical (an accredited laboratory).

The testing and analysis confirmed that the treated materials were fully compliant with the designated reuse criteria and therefore suitable for appropriate reuse on-site (as a replacement for imported clean materials).

The treated materials were fully reused on-site in accordance with the stated project aims.

A validation report was provided to document the works undertaken including the compliance testing. This enabled the development to proceed with full regulatory support.