

Client



Environmental Consultant



The stockpiled soils at Galton Way are shown in Figure 1 below.

Figure 1 – Galton Way Stockpile



Site Background & History

The remediation project was based in Swindon and involved two sites, the 'Donor Site' at Galton Way and the 'Receiver Site' at Shaw Forest Park approximately 2 miles away. Both sites are owned by Swindon Borough Council [SBC] and therefore deemed to be cluster sites for regulatory / remediation purposes.

A 900m³ soil stockpile (circa 65m long, 8m wide and 1.75m high) had been created at Galton Way resulting from a recent road improvement scheme within the Bruce Street Bridge area of Swindon. This area was associated with the former town gas works and it was concluded that the stockpiled soils had the potential to be contaminated.

SBC had identified a requirement for soils at Shaw Forest Park – these soils were required to create earthwork bunds along the access road to prevent fly tipping (prevalent in the area).

SBC commissioned CH2M to carry out an investigation into the nature of the stockpiled soils and to undertake a risk assessment and develop a remediation strategy to support the reuse of the soils at the Shaw Forest Site.

CH2M confirmed that the stockpiled soils were contaminated to varying degrees reflecting the origin of the soils – the prime contaminants of concern being total petroleum hydrocarbons [TPH] and polycyclic aromatic hydrocarbons [PAHs].

Based on the soil analyses results CH2M concluded that the majority of analysis results were below risk derived threshold levels (reuse criteria) for public open space usage and therefore presented no risk to human health.

CH2M also compared Waste Acceptance Criteria [WAC] analysis results with Surface Water Environmental Quality Standards [EQS] and noted there were exceedances of EQS values. CH2M concluded that soil treatment (i.e. soil stabilisation) would be required to facilitate transfer of the material to the Shaw Forest Site and to reduce the potential risk to surface waters.

SBC invited tender submissions for a designated works package which included soil stabilisation, validation, transfer of the soils to Shaw Forest Park and the creation of earthwork bunds in accordance with the agreed plans.

Envirotrear was the successful bidder, scoring highly, not just on cost, but also on quality and anticipated timescales - Envirotrear proposed undertaking the complete works package within four weeks, which was considerably shorter than other tender submissions. Envirotrear proposed the use of E-Clay Stabilisation for the treatment process.

Methodology

Envirotrear attended site at Galton Way in December 2017 and undertook a trial pit investigation of the soil stockpile to obtain a comprehensive understanding of the soil contamination profile. The resultant analysis suggested that approximately two thirds of the stockpiled soils were compliant with the proposed reuse criteria as determined by CH2M.

A remediation strategy was developed by Envirotrear based on the findings from the trial pit investigations – the strategy involved the transfer of excavated soils from the Galton Way stockpile to an adjoining treatment compound (the 'Hub Site') and segregation into separate sub-stockpiles within the compound depending on contamination status (to be determined initially by use of visual and olfactory methods supported by the use of a Photo Ionisation Detector [PID] to assess any potential volatile organic carbon [VOC] pollutants).

This strategy was agreed with SBC and implemented.

In accordance with SBC requirements, Envirotrear undertook a comprehensive topographic survey of the Galton Way stockpile (the 'Donor Site').

Envirotrear prepared a series of documents to support the proposed remediation works. These documents comprised of the following:

- ❖ Environmental Risk Assessment
- ❖ Remediation Method Statement
- ❖ Health & Safety Plan (covering all aspects of the envisaged remediation works including necessary risk assessments)
- ❖ Site-Specific Quality Plan

The main remediation works commenced on the 10th January 2018.

Following site mobilisation, the Galton Way stockpiled soils were relocated / imported to the treatment compound (the 'Hub Site') and segregated / stockpiled based on the initial visual / olfactory / PID testing.

Soils considered as being suitable for reuse without further treatment were sampled and tested to confirm suitability.

Soils considered to be contaminated and not compliant with the reuse criteria were stockpiled separately awaiting treatment.

On completion of the removal of the Galton Way stockpile the soils directly beneath the stockpile were sampled and tested to confirm the removal of the contaminated soils from the 'Donor Site'.

The identified contaminated soils were treated in 15m³ batches utilising E-Clay Stabilisation – this involved the use of a site-specific E-Clay formulation added in slurry form (formulated to specifically reduce the mobility / leaching capability of the identified contaminants of concern). Cementitious materials were also added in a controlled manner to assist with the drying / curing of the treated soils to support reuse. The treatment [stabilisation] process is shown in Figure 2 below.

Figure 2 – E-Clay Stabilisation Process



The treated soils were stockpiled within the treatment compound pending validation and subsequent transfer to Shaw Forest Park.

The treatment element of the works was completed by 25th January 2018. In total approximately 300m³ of contaminated soils were treated. The ultimate total volume of soils within the compound was circa 1,000m³ (a further 100m³ originating from a reduced dig beneath the Galton Way stockpile to remove residual contamination).

On receipt of compliant leachate results for the treated material, the treated soils were relocated to Shaw Forest Park (the 'Receiver Site'), where they were used exclusively to form the base of the respective earthwork bunds.

Stockpiled soils deemed to be compliant without the need for treatment (confirmed by sampling and laboratory analysis) were transferred to Shaw Forest Park to form a capping layer over the treated soils. This element of the works was completed by 2nd February 2018.

The earthwork bunds created at Shaw Forest Park are shown in Figure 3 below.

Figure 3 – Earthwork Bunds - Shaw Forest Park



A comprehensive topographic survey of the bunds was undertaken at Shaw Forest Park (the 'Receiver Site').

Validation

Six representative samples were taken from beneath the Galton Way stockpile to confirm that all the residual contamination had been successfully removed – these samples were submitted to i2 Analytical for appropriate testing.

Five of the samples were compliant however one of the results obtained indicated the presence of further potential contamination – it was therefore decided to excavate / remove a further 100m³ of soils from the potentially impacted area. The residual soils were tested and confirmed to be compliant.

Six representative samples were taken from the stockpile of soils deemed to be compliant to confirm compliance with the reuse criteria – these samples were submitted to i2 Analytical for appropriate testing. All six samples were demonstrated as being compliant and therefore suitable for reuse at Shaw Forest Park without treatment. Large obstructions and other superfluous waste items were removed prior to transfer.

Composite samples of treated soils were prepared for analysis equivalent to one sample per 100m³ of treated soils (a sample was taken from each batch of treated soils to produce the composite samples) - these samples were submitted to i2 Analytical for appropriate testing (four in total). All the results demonstrated that the treated soils were compliant with the reuse criteria and suitable for reuse at the 'Receiver Site'.

Enviro-treat produced a comprehensive Validation Report which documented the works undertaken and confirmed that the prime drivers for the remediation works had been achieved.

Conclusions

The project demonstrates the successful implementation of a Cluster Site Remediation Project. The cluster approach is designed to facilitate the remediation and / or development of sites owned by the same land owner – the sites are typically located in relative close proximity to each other and share a decontamination / treatment facility located on a single site (the treatment enclosure located near the Galton Way stockpile referred to as the 'Hub Site'). Cluster projects are regarded as a practical and sustainable way of developing land.