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CASE STUDY

E-Clay Stabilisation / Discharge of Contaminated Land Planning Conditions

Langstone Technology Park, Havant

Client

AG Langstone BV

and

TRINITY

Environmental Consultants

clancy consulting

And

deltasimons Environment - Health & Safety - Sustainability

LucionGroup

now part of

Principal Contractor

adi Group — Total Engineered Solutions

Project Background

Envirotreat was commissioned by ADI to assist with their tender application for the redevelopment of part of the Langstone Technology Park, in Havant.

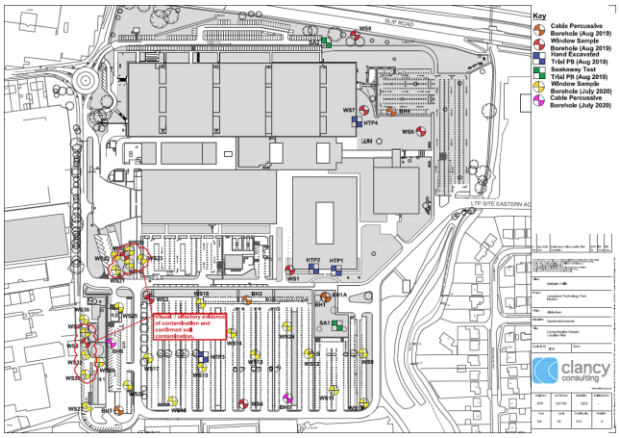
The vision of the project was to undertake redevelopment of parts of the park to promote the overall park as one of the premier locations for economic development on the south coast. This project comprised the development of commercial floor space through the creation of several new storage units across the southeastern area of the site.

Site Investigation

The site investigation had initially identified hydrocarbon contamination on the site (visually and olfactory).

Hydrocarbon contamination was subsequently recorded within the Made Ground and within shallow River Terrace Deposits in boreholes WS02 and WS05. The contamination at WS05 was related to a former hydrocarbon tank farm situated in the development area of the site. The development area and the identified contamination 'hot-spots' are shown in Figure 1 below.

Figure 1 – Development Area / Westerly 'Hot-Spot' (WS05) and Northerly 'Hot-Spot' (WS02).



The northern 'hot-spot' (WS02) was located outside the development area and not considered further. Supplementary site investigation works were undertaken to delineate the contamination in / around WS05.

Envirotreat proposed chemically stabilising the source and local groundwater contamination with E-Clay (modified clay). This approach was welcomed by the local authority.

This was included in ADI's tender response to address the identified contamination onsite. Envirotreat provided support to ADI in the tender process including the provision of a Remediation Strategy and Remediation Method Statement, Materials Management Plan [MMP], the proposed watching brief / discovery strategy to be implemented during the enabling works, validation of imported materials and validation of the required gas membrane.

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ADI were successful in their tender submission and contracted Envirotreat to carry out the required works. ADI placed responsibility for materials management and any offsite disposal with the ground engineers.

Remediation Works

Envirotreat attended site and fully delineated the source contamination around WS05. Envirotreat then carried out *in-situ* E-Clay stabilisation of the source and groundwater contamination as shown in Figure 2 below.

Figure 2 – In-Situ Remediation

In total 600m^3 of contaminated soils were treated.

Validation of Treated Materials

Given that there are no published EQS or DWS for total TPH or PHC fractions, a proxy approach was utilised which assessed aromatic fractions based on aromatics compounds for which there are published standards. However, given the environmental health concerns Envirotreat proposed a more stringent approach which utilised a laboratory limit of detection for each hydrocarbon fraction to confirm the success of the remediation works. This was achieved on all six composite samples of treated soils tested.

Watching Brief / Discovery Strategy.

A 'cut and fill' assessment was undertaken by the ADI approved subcontractor (to assist with the design of the enabling works).

Arisings from the cut and fill enabling works and subsequent drainage / services works were segregated and stockpiled to maximise reuse onsite. Envirotreat caried out soil sampling to demonstrate suitability for reuse onsite.

Albeit outside the development area, excavations around WS02 were undertaken to facilitate drainage works. Envirotreat attended site during these drainage works and provided the required testing and supervision. All excavated soils and the sides / base of all excavations were assessed by visual, olfactory and by headspace analysis (using PID). No contamination was observed and the excavated soils were reused to reinstate the excavations. The stockpiled drainage arisings are shown in Figure 3 below.

Figure 3 – Stockpiled Drainage Arisings

Gas Membrane

The ground conditions across the entire site were investigated in two phases. The first phase included the monitoring of four gas wells on four occasions. No additional gas monitoring was carried out during the second phase of intrusive works.

The gas screening value [GSV] suggested that the site should be classified as Characteristic Situation 1 [CS1]. However, the site was reclassified as CS2 due to an identified single elevated carbon dioxide concentration (7.4%). A basic gas protection membrane was therefore proposed for each development plot.

Envirotreat reattended site and installed four boreholes beneath each development plot. Further gas monitoring was carried out which supported a CS1 classification.

Envirotreat were able to convince the regulators that the CS2 characterisation was not necessary, gaining agreement to revert back to CS1 and resulting in a significant cost saving to ADI.

Validation of Capping Materials

Envirotreat attended site and carried out soil testing and placement validation to comply with the requirements of the regulators.

Further Testing of Soils

Envirotreat was commissioned to undertake further works onsite in relation to the testing and assessment of a number of soil stockpiles (circa 2,000m^3 in total) – these soils had been previously assessed by others to be hazardous based on lead content.

Envirotreat attended site and undertook a comprehensive sampling / testing programme and WM3 assessment, which clearly demonstrated that the soils were non-hazardous. The highest lead concentration encountered was 80mg/kg across the six stockpiles assessed.

The stockpiled materials are shown in Figure 4 below.

Figure 4 – Stockpiled Materials

Conclusions

Envirotreat provided a comprehensive support package to ADI throughout the site enabling works and development, ensuring regulatory compliance and resulting in significant cost savings.

Envirotreat also provided the necessary support to enable the discharge of the relevant planning conditions.

The completed development is shown in Figure 5 below.

Figure 5 – Completed Development