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CASE STUDY

Remediation Design / Management

Former IMI Kynoch Works
Birmingham

Client

Tauheedul Education

Main Contractor

THOMAS VALE construction

Site Background & History

The site forms part of the former IMI Kynoch Works – the Tauheedal School Development is located on an area of the site bordering Wellhead Lane as shown in Figure 1 below (which shows many of the former factory buildings prior to demolition).

The Kynoch Works were used to produce munitions and were also used to carry out for metal manufacturing operations – the works were in operation for 150 years. The majority of the site was demolished in 2004.

Figure 1 – School Development Area

This area of the site was acquired by the Tauheedul Education Trust with the aim of developing the site as a boy's school. Planning permission was granted by Birmingham City Council subject to the satisfactory discharge of planning conditions – these included conditions relating to contaminated land which essentially comprised:

- a requirement to carry out a satisfactory site investigation and to develop an acceptable remediation strategy for approval by the regulators
- a requirement to carry out remediation works in accordance with the approved remediation strategy
- a requirement to notify the council if 'contamination not previously identified' is discovered on-site
- a requirement to provide a validation / verification report on completion of the remediation works (to document the works undertaken and to confirm compliance with the approved remediation strategy)

Envirotreat were commissioned by Thomas Vale to address the stated requirements and to enable the discharge of the relevant planning conditions.

The site had previously been remediated – this involved the removal of underground storage tanks and gross contamination. However recent site investigations had identified the presence of pervasive soil contamination (predominantly total petroleum hydrocarbons [TPH] and asbestos containing materials [ACM] / asbestos fibres within the made ground across the site).

Envirotreat prepared a remediation strategy to address identified historical contamination and to satisfy the requirements of the regulatory bodies and the planning department.

The remediation strategy incorporated the following:

- A site investigation and risk assessment in accordance with the requirements of CLR 11

- An acceptable 'remediation scheme' to address previously identified contamination considered to pose a potential risk to human health and / or controlled waters
- An acceptable 'Discovery Strategy' incorporating necessary protocols to address 'contamination not previously identified' (including quarantine provisions if required) the protocols. Envirotreat has an established protocol designed to ensure that the remediation works can continue in the event of discovering 'contamination not previously identified' without the need to delay the project – this was considered to be very important from a programming perspective
- A verification plan summarising the validation procedures and requirements to confirm compliance with the approved remediation strategy

A 'cut and fill' assessment was carried out which indicated that the enabling works would generate a net surplus of material. It was a requirement to retain as much of the geotechnically suitable materials on site for use as fill and sub-base etc – these materials were preferentially retained on site and geotechnically unsuitable materials / excavated natural soils were preferentially removed from site and disposed of at a local inert landfill site.

Envirotreat managed the soil selection process and the offsite disposal requirement – this included a targeted site investigation (focused trial pitting with supporting analysis) to confirm the suitability of respective materials for their intended use. Envirotreat implemented a Material Management Plan [MMP] for the soil management processes on site.

Envirotreat also managed the identified site contamination issues on the site through a supporting 'watching brief'. This included the implementation of the Discovery Strategy to address and manage any 'contamination not previously identified'.

The trial pit investigation managed by Envirotreat is shown in Figure 2 below.

Figure 2 – Focused Trial Pit Investigation

Enabling Works

A surface scrape was initially undertaken as shown in Figure 3 below.

Figure 3 – Initial Surface Scrape

The enabling works included a requirement to carry out an extensive reduced dig to accommodate the foundations and drainage channels etc. The excavation of the foundations for the Sports Hall is shown in Figure 4 below.

The excavation of the attenuation tank is shown in Figure 5 below – the excavations for the attenuation tank were predominantly in the underlying natural soils as shown.

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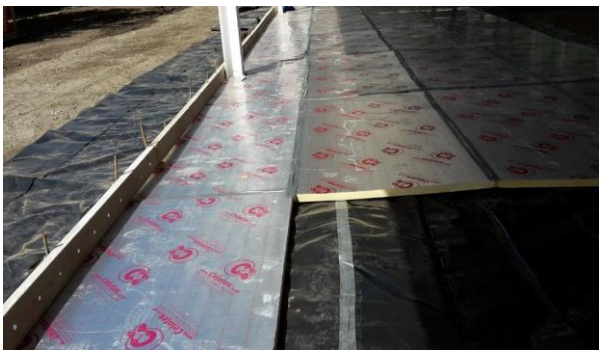
Figure 4 – Excavation of Foundations (Sports Hall)

Figure 5 – Excavation of the Attenuation Tank / Underlying Natural Soils

Gas Protection

Gas protection measures were required within the school buildings (as a preventative measure reflecting the historical use of the site and the associated contamination which had the potential to generate gases). Envirotreat validated the installation of the gas membranes where required. The installation of the gas membranes is shown in Figure 6 below.

Figure 6 – Installation of the Gas Membranes



Capping Layer

A suitable capping layer was installed in landscaping areas on completion – this was required for the protection of human health. Envirotreat validated the installation of the capping layer where required. The capping layer is shown in Figure 7 below.

Figure 7 – Capping Layer Installed in Soft Landscaped Areas

Validation and Verification

Following completion of the requisite enabling works, Envirotreat produced a Validation / Verification Report documenting the works undertaken and confirming compliance with the approved remediation strategy. The report was submitted to the regulatory bodies to obtain discharge of the relevant planning conditions.

Conclusions

In total 3,325 tonnes of surplus soils were removed from the site. There was no unexpected contamination identified during the remediation works.

Envirotreat provided significant added benefit to the project as summarised below:

- Significant cost savings were achieved by negating any requirement to dispose of soils as hazardous / non-hazardous (at a potential cost of circa £120/tonne) – this was achieved by delineating the soils and ensuring that only inert soils were removed from site (at a significantly reduced cost)
- Additional cost savings were generated by negating the need for offsite disposal of geotechnically suitable soils / materials and by negating the potentially corresponding requirement for importation of granular fill (for use as sub-base etc)
- The use of a local inert landfill site resulted in reduced haulage costs / impact on the environment
- Time and cost savings were achieved by effectively controlling the management of soils / materials on site and by effectively managing the identified / potential contamination

Figure 8 – Completed Development.