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CASE STUDY

Remediation Design / Management

WMC UTC – Former Springfield Brewery Site, Wolverhampton

Client

West Midlands Construction – University Technical College [WMCUTC]

Main Contractor

BOUYGUES UK

THOMAS VALE construction

Site Background & History

The Springfield Brewery Site commenced operations in the 1870's (the site was acquired in 1873) and was operational as a brewery until circa 1990 – the buildings were subsequently used for distribution purposes until closure a few years later. The brewery was located close to a canal and the Great Western Railway – sidings were installed to serve the brewery and to enable distribution of the brewery products. A new brewing tower was installed in the early 1880's – in circa 1885 the site comprised of various buildings with two tanks located in the centre of the site.

The brewery entrance, lodge and stable blocks are shown in Figures 1 and 2 below (circa 1899 and 1920 respectively). The brewery in circa 1924 is shown in Figure 3 below.

The brewery buildings were mainly destroyed by fires in 2004 and 2005.

Several of the buildings were subsequently demolished – the site entrance, lodge and stables were still present in 2015 as shown in Figure 4 below – it was understood that the canopy over the site entrance and the buildings were listed and it was therefore agreed to incorporate these features into the development.

Figure 1 – Entrance, Lodge and Stable Block (circa 1899)

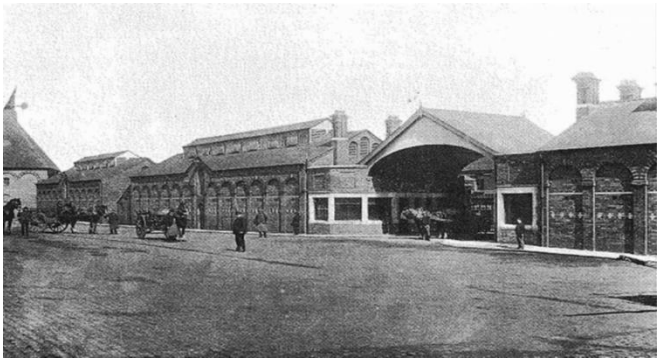


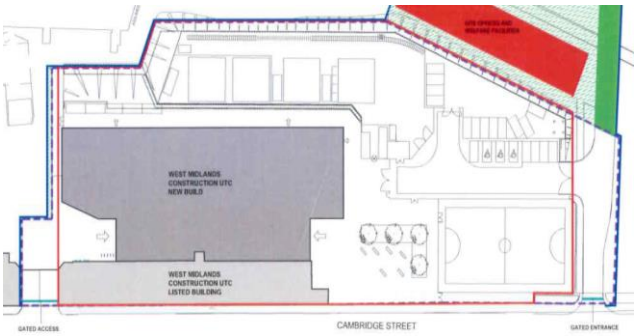
Figure 2 – Entrance, Lodge and Stable Block (1920)

Figure 3 – Springfield Brewery (circa 1924)

Figure 4 – Entrance, Lodge and Stable Block – Prior to Redevelopment (2015)

The site is being developed by the West Midlands Construction – University Technical College Trust [WMC UTC] – the development comprises of a technical college with external hard surfaced sports, play and teaching spaces and parking. The college building is to be constructed by converting the entrance and lodge / stables (as shown in Figure 4 above) with a three-storey extension. The proposed development layout is shown in Figure 5 below.

Figure 5 – WMC UTC - Proposed Development Layout



Planning permission was granted by Wolverhampton City Council subject to the satisfactory discharge of planning conditions – these included conditions relating to contaminated land which essentially comprised:

- a requirement to develop an acceptable ground remediation strategy for approval by the regulators prior to commencement
- a requirement to provide a validation report confirming satisfactory completion of all ground remediation works prior to commencement of groundworks
- a requirement to provide a validation report on completion of the construction works confirming the installation and completion of all required contamination protection measures
- a requirement to notify the regulatory bodies if 'contamination not previously identified' is discovered on-site during the remediation works

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

Recent site investigations had identified the presence of localised soil contamination within the made ground (predominantly total petroleum hydrocarbons [TPH] and asbestos containing materials [ACM] / asbestos fibres).

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:

- The proposed 'remediation scheme' to address previously identified contamination considered to pose a potential risk to human health and / or controlled waters
- The proposed 'Discovery Strategy' incorporating necessary protocols to address 'contamination not previously identified' (including quarantine provisions if required). 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 (on completion of the remediation works)

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. 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 'watching brief' was also provided during the installation of building foundations and drainage / services.

Enabling Works

Envirotreat worked in close conjunction with the appointed groundworker throughout the period of the enabling works. All excavation works were monitored by Envirotreat to identify and assess any contamination (including any 'contamination not previously identified' in accordance with the requirements of the 'Discovery Strategy') – this was primarily achieved by visual and olfactory means (particularly in relation to asbestos and total petroleum hydrocarbon contamination) with confirmatory sampling / analysis where required.

The enabling works included a requirement to carry out an extensive reduced dig to accommodate the foundations and drainage channels etc.

The site area as a whole was assessed utilising a 5m grid pattern – the objective was to confirm the suitability of excavated soils for either (a) potential offsite disposal as inert waste / soils or (b) potential re-use on site where appropriate. The excavated soils were delineated on this basis.

The initial excavations were centred on the removal of the historical culvert. The void created by the culvert excavations was subsequently backfilled with suitable site derived soils. Envirotreat monitored this operation and provided full sampling / analytical support to ensure that the soils used for backfilling were compliant with the appropriate specification and posed no risk to human health or groundwater.

The initial excavations and the removal of the historical culvert are shown in Figures 6 and 7 below. The infilled void containing compliant soils is shown in Figure 8 below.

Figure 6 - Initial Excavation Works (Showing Historical Culvert)

Figure 7 – Removal of the Historical Culvert

Figure 8 – Infilled Soils within the Void Created by the Culvert Excavations

A reduced level dig was required under the footprint of the new three-storey (main university) building to enable the building foundations to be installed. A reduced level dig was also required in the footprint of the proposed Multi-Use Games Area [MUGA].

Envirotreat monitored the reduced level dig excavation works to identify and assess any potential contamination within the surplus soils generated by the excavations. Soil samples were collected and analysed to confirm suitability for offsite disposal at an inert landfill facility.

The reduced level dig and completed reduced level dig in the MUGA is shown in Figures 9 and 10 below respectively.

Figure 9 – Reduced Level Dig [MUGA]

Figure 10 – Completed Reduced Level Dig [MUGA]

Following the completion of the reduced level digs in the main building area and the MUGA, drainage channels were excavated to enable the subsequent construction of chambers and the installation of pipework. Envirotreat supervised the excavation as part of the overall 'watching brief'. Soil samples were collected and analysed to confirm suitability for offsite disposal at an inert landfill facility. The drainage excavations are shown in Figure 11 below.

Figure 11 – Drainage Excavations / Chamber Installation

Validation and Verification

Following completion of the required remediation / 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.

Sample analyses confirmed that all soils removed from site were compliant with WM3 and inert Waste Acceptance Criteria (to enable offsite disposal as inert soils). Circa 10,000 tonnes of inert soils were disposed of offsite.

There was no unexpected contamination identified during the remediation works.

The new three-storey (main university) building is shown in Figure 12 below. The completed development is shown in Figure 13 below (as an artist's impression).

Figure 12 – The New Three Storey (Main University) Building

Figure 13 – Artist's Impression of the Completed Development

Conclusions

The works were carried out within the required timeframes and in full accordance with the agreed Remediation Strategy and Method Statement. The 'watching brief' as implemented provided a very cost effective remediation solution and ensured that the project remained on track throughout.

The provision of the Validation / Verification Report (in combination with the Remediation Strategy and Method Statement) enabled the full discharge of the relevant planning conditions.

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

- Significant cost savings were achieved by negating any requirement to dispose of contaminated (or potentially contaminated) soils offsite – only inert soils were disposed of at a suitable landfill repository
- 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