

## Chettles Development, Radford, Nottingham.

**Period** — 2007/8. **Value**— £2.0m

**Client** — Ocon Construction Ltd

**Designer** — BWB Consultants

Remediation and Infrastructure works to a 3.6ha previous industrial site for development of student accommodation and commercial premises. The site has had a range of uses including; rail sidings, scrap yards, fuel depot, transport yard, garage and warehousing which has left a significant amount of hydrocarbon contamination (TPH) in the over-site fills.



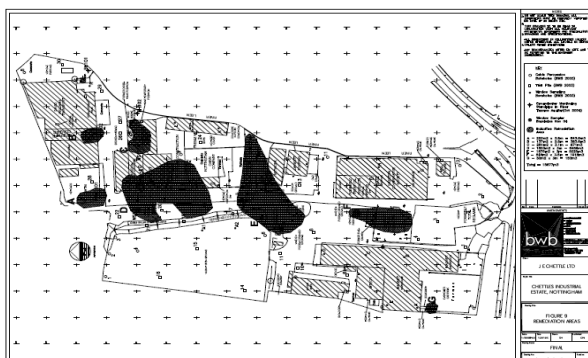
Site investigations had identified a number of contamination 'hot-spots' that would require remediation both from a risk to human health and to ground water. The remediation strategy was developed based on treatment and re-use of contaminated soils on site.

Our review of the proposed remediation strategy at tender stage resulted in our assessment that it was overly conservative and we were able to offer a cost saving alternative tender to the client by revisiting the strategy and agreeing revised site specific clean up criteria with the regulators.

The hydrocarbon contamination was treated by Bio-remediation techniques by QDS Environmental under a Mobile Treatment License.

Remediation works include;

- Excavate and sort areas of fly tipped materials, retaining re-usable materials.
- Carefully excavate identified hydrocarbon hot spot areas, sorting and separating identifiable clean materials, unsuitable materials (plastic, tyres, wood etc) and contaminated material for treatment.
- Place hydrocarbon contaminated materials in an engineered 'bio-pile' with nutrient application and positive aeration via longitudinal pipework and fans. The bio-pile was constructed on a levelled area of the site provided with an MDPE impermeable membrane and a perimeter water collection bund.
- 15,000m<sup>3</sup> of hydrocarbon impacted soils required treatment. The bio-pile was limited to 2m in height for optimum operating conditions requiring an minimum area of 150m x 50m.
- Dig out existing foundations and crush all concrete for re-use as 6F2 recycled aggregate
- The bio-pile operation required 26 weeks to achieve the commercial clean-up target values.



Excavation of TPH hot spots

## Chettles Development, Radford, Nottingham (contd)

- Extensive validation testing of hot-spot excavations, excavated/sorted 'clean' materials and bio-remediated materials.
- Collection of any water produced from the bio-pile operation and contaminated perched water pumped from excavations, passing the contaminated water through a storage, filtration and activated carbon water treatment plant prior to consented discharge to foul sewer.
- Filling of the hot-spots was been undertaken using clean materials excavated from a borrow pit in an uncontaminated area of the site. The majority of the bio treated materials were reinstated in the borrow pit area which was located in the commercial development section of the site.
- Gas monitoring on completion of remediation works for a 6 month period
- Disposal off site of physically unsuitable materials and any residual untreatable hydrocarbons



Bio-Pile and Water Treatment Plant

Forkers were also engaged to carry out **drainage, infrastructure and highway works** for the project which included;

- New 500m access road to the development site with individual plot accesses and 3000m<sup>2</sup> of flexible surfacing
- In situ reinforced concrete bridge deck and retaining walls over the River Leen culvert
- Construction of 850m of foul and surface water sewers up to 1500mm diameter
- 3200m of ducting and Utilities installation for new development
- Section 278 highway improvement works in Woollaton Road and St Peters Street involving new 4 way traffic light controlled junction with splitter islands, 150m of road widening and footpath realignment, re-surfacing, including anti-skid surfacing, signing & lighting
- Extensive utilities diversions to facilitate new road layout
- Close liaison with Nottingham City Council Highways Department and all Utilities

