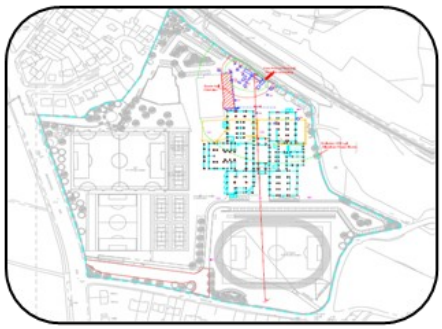
Dual Phase Extraction and Chemical Oxidation

Terra Vac (UK) Ltd, Educo, Bradford CC (Beckfoot Campus)

The replacement of a large secondary school near Bingley in West Yorkshire was threatened when contamination was detected on a previously undeveloped part of the site. Terra Vac (UK) Ltd was asked to implement a remediation system that would allow development work to continue during the clean up, ensuring that deadlines were met.

Beckfoot Campus was chosen as one of Bradford's first schools to be redeveloped under the governments 'Building Schools for the Future' (BSF) programme. Beckfoot was originally known as Bingley Senior School and Technical Institute. Construction started in March 1939 and the school was formally opened in April 1943. By the early 2000's, parts of the original property were in such poor structural condition that replacement rather than repair was the only realistic long-term solution.



Educo were appointed as the main contractor to deliver the new school at a contract value of approx. £30m. Quite apart from delivering the school infrastructure, there were a number of challenges about the site itself, including a number of clean and dirty water mains supplies and easements that crossed the site, and south east corner of the site was prone to periodic flooding. This meant that the developers had to look to using parts of the site that were previously undeveloped.

During investigations of these 'new' areas, a large plume of Hydrocarbon contamination was discovered, consisting of approx. 1,800m² free phase plume in the 'source' area, and a further 18,000m² down gradient dissolved phase plume.

The origin of this contamination was unclear, but it was suspected that previous use of the site as a timber treatment and storage yard could have been the source.

There were no options but to treat the contamination in-situ, without delays to an already tight development schedule, recognising an absolute deadline of the school premises being available for occupation at the start of the new school year in September 2010.

Terra Vac suggested a combination of a multi phase extraction system to remove the free phase product, supplemented with a program of in-situ chemical oxidation, using hydrogen peroxide, to address the larger dissolved phase plume. In the former 'source' area, once free product had been removed, dissolved phase concentrations remained persistently above target values. In order to address these elevated dissolved phase concentrations, the in-situ chemical oxidation process was enhanced by the addition of a catalyst.

As a direct result of Terra vac's adaptability and close working relationship with the main contractor, the remediation process was completed, meeting the Environment Agency standards, within 36 weeks, with no delays or disruption to the main construction works.

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