

0.0 EXECUTIVE SUMMARY

Site Details	The site is situated off Pontefract Road, Wombwell Barnsley. The site is roughly rectangular in shape, orientated east west. The general layout of the site and original site levels are illustrated on Drawing No. E3943/001. In terms of former use the site has been divided into the western side and the eastern side.
Site History	<p><u>Western Side</u> The western side of the site was greenfield until Wombwell Diesels Co. Limited purchased the site circa 1980. Planning permission was granted to Wombwell Diesels Co. Limited to develop the site as a bus dismantling yard. VHE purchased the site in 1988 and used the site for storage of plant and equipment. The site was subsequently operated by VHE partly as a landfill from 1990 until 1993, the licence was cancelled in 1993 by the South Yorkshire Joint Hazardous Waste Unit.</p> <p><u>Eastern Side</u> The eastern side of the site was occupied by a large fertiliser works from circa 1930 (possibly 1905) to the late 1950's. The eastern side was latterly used as a depot by VHE. A mineral railway has been evident, until 1989, to the north of the site, adjoining the mainline to the north east of the site. A canal, infilled between 1980 and 1989, was located to the south of Knoll Beck. A sewage works was located immediately to the south of the site, adjacent to the canal.</p>
Geology	<p>The Geological Map of Barnsley (Sheet 87, 1:50,000) indicates that the Solid geology is Oaks Rock of the Sandstone and Grits Group of the Middle Coal Measures (Upper Carboniferous period). Millstone Grits are shown to underlie the Coal Measures at a depth of approximately 1000m.</p> <p>The Coal Authority report indicates that the depth of the coal seams occurs at 240m to 610m below the site, and that the site is not within a zone of likely influence from any past or present underground workings.</p> <p>There is a fault located approximately 400m to the north west of the site with a downward throw to the south-east, and a fault to the south-east of the site, again showing a downward throw to the south-east.</p>
Hydrogeology	The Middle Coal Measures are classified as a minor aquifer.
Hydrology	The closest surface water feature is Knoll Beck, which borders the site to the south, whilst the River Dearne is located 1km to the north. The EA have classified the Beck and the River Dearne as having River Quality C (fairly good). There is 1 No. surface water abstraction within 1km, located 895m to the north east of the site. There is 1 No. discharge consent located on site and 2 No. located approximately 90m to the southeast and southwest.
Investigation Summary	<p>A site investigation was undertaken by WYGE in March 1999 on the western area of the site. The investigation comprised 5 No. cable percussion boreholes and 24 No. trial pits. Minor hotspots of cadmium, hydrocarbon and asbestos cement were identified in addition to oil and diesel surface staining. Minor remediation works were undertaken on the identified contaminated areas and "clean" materials were understood to be imported on the study site.</p> <p>A second WYGE site investigation was undertaken in November 2000. The site investigation comprised the installation of 3 No. cable percussion boreholes, and 11 No. trial pits with associated chemical and geotechnical analyses.</p> <p>In addition, preliminary remedial works were undertaken in the western area of the site. The remedial works comprised the removal of asbestos sheeting observed at the surface in the northwestern area of the site and removal of soils from two areas where elevated concentrations of metals and TPH were reported within the site investigation report.</p> <p>Following the site investigation works undertaken in November 2000 an asbestos walkover was undertaken in December 2000 and identified 3 No spoil heaps containing chrysotile asbestos.</p>
Supervision of Works	Ground preparation and remediation works were undertaken by VHE Construction Ltd and supervised full time by White Young Green Environmental Ltd.
Guidelines Used for Remedial Design and Validation	The ground preparation and remediation works were undertaken in consideration to the proposed residential development of the site. At the time of the remedial works a development masterplan had not been produced. Site Target Values (STVs) were based upon a qualitative risk assessment and 'approval in principal' by Barnsley Metropolitan Borough Council and the Environment Agency. Both parties were consulted prior to the commencement of the Works.
Remediation Works Summary	Remediation works generally comprised of the excavation, processing and recompaction of hardstanding and Made Ground soils to depths of up to 2.0m below original ground level. All below ground structures encountered within the Made Ground within 2.0m of the original

	<p>ground level were removed as well as those evident at the natural materials formation. Where soil and groundwater had visual/olfactory evidence of contamination (with hydrocarbons and asbestos containing materials) and where soils showed elevated total contamination concentrations with elevated leachate concentrations above the STVs, the materials were removed off site to a licensed landfill.</p> <p>The Made Ground was re-compacted to a method specification to provide a minimum bearing capacity of 50kN/m² for the proposed residential development. Where contaminated soils were removed they were replaced with engineered fill.</p> <p>Other works included the construction of two flood storage/compensation ponds and a channel in the east of the site.</p> <p>A bund containing potential topsoil/subsoil was removed from the western area adjacent to the Knoll Beck and stockpiled for potential re-use.</p>
Accidents/ Incidents/ Emergencies	<p>Health and safety during the contract was of a high standard and no complaints were received from adjacent site users. Works were undertaken in accordance with the Construction Design Management (CDM) Regulations (as amended). WYGE acted as planning supervisor.</p>
Clear Statement	<p>The works have been undertaken in accordance with the agreed Reclamation Strategy and Specification for the works. The site is suitable for redevelopment in the form of a residential end use as long as the placement of a suitable cover layer is undertaken and the other development issues, as listed below, are taken into consideration.</p>
Development Issues	<p>Further to the ground preparation and remediation undertaken at the site the following issues should be taken account of as part of the proposed residential development;</p> <ul style="list-style-type: none"> • As a result of an invasive species survey undertaken by WYGE during December 2004 and a report provided to Harrow Estates Plc, a small area of Japanese Knotweed was identified adjacent to a section of open ditch in the centre of the site. An area of ground approximately 50m² to the east of the ditch has not been excavated. Liaison has been undertaken with the Environment Agency with regards to works adjacent to the ditch and a course of action requires agreement based on the recommended actions indicated in the WYGE report. • Following construction of the flood compensation areas in accordance with the Parkman Engineers information provided by Harrow Estates Plc, additional design and construction details need to be provided for the connection of the flood compensation areas to the Knoll Beck. Outfall headwall design details together with suitable landscaping will also be necessary for these areas. • The Made ground was recompacted to a Specification of Highway Works (SHW) method specification to provide a minimum bearing capacity of 50kN/m² for the proposed residential development. The use of shallow strip and/or trench fill foundations is recommended in the east of the site, and rigid or semi-rigid raft foundations in the west of the site, particularly in the areas of deeper Made Ground. • As a result of the turnover and recompaction of materials within the previous landfilled areas; materials may be present with a residual capacity for expansion in parts of the western area of the site. Foundation solutions should consider that while expansion tests show <1% expansion, measures may be required to accommodate residual expansion (e.g suspended floor slabs with void formers). • Elevated total concentrations of phytotoxic metals (predominantly zinc) occur within materials beneath future cover layers in areas of the west of the site. However, these elevated total concentrations are not shown to be leachable and therefore should not effect groundwater (as compared to the EQS for freshwater). • A qualitative risk assessment indicates that the risk to site end users from elevated total concentrations of phytotoxic metals (primarily zinc) is considered to be low-moderate. Further measures such as undertaking bio-availability tests to fully establish the risk to human health of total zinc concentrations, the provision of a capillary break layer prior to placement of cover materials, and possibly increasing the cover layer thickness, should be considered to confirm and maintain the risk to a low level. The residual contaminant concentrations within the Made Ground may require consideration for construction workers during foundation and drainage works, and also for tree and shrub planting. • During redevelopment works, prior to placement of cover materials, consideration regarding waste classification should be given to any excavated material to be taken off site from drainage/foundation excavations in the west of the site from depths greater than 750mm. • Testing of the stockpile of site won materials for potential use as topsoil has confirmed that the materials are acceptable based on the clean up criteria for the intended 750mm cover layer