Cronton Road, Huyton

Phase 1 Geo-Environmental Investigation

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1.0 INTRODUCTION

This Phase 1 Geo-Environmental Investigation Report has been prepared at the request of Maro Developments Ltd.

Instructions to proceed were received in August 2017. Desk study work was undertaken between 17th and 24th August 2017.

This Phase 1 Geo-Environmental investigation report is to be used for submission to the Local Authority as part of a planning application as it is the client's intention to develop the site following an extensive earthwork exercise into an industrial unit with associated service areas, car parking and areas of soft landscaping.

A proposed development plan is included in Appendix 10.

2.0 BRIEF

The brief was to carry out a Phase 1 Geo-Environmental Investigation for the site off Cronton Road, Huyton, based upon the proposed development outlined in Section 1.0. The site area is shown on the site location plan contained in Appendix 1.

The investigation was to include the following studies:

a) Assess the probable ground conditions and contaminated land conditions on and below the site on the basis of existing and historic site and relevant off-site activities.

b) Identify probable contaminants / sources of contamination that may be present at the site using current contaminated land guidance and develop a conceptual site model for potential human health, ground gas and controlled waters receptors.

c) Undertake a Preliminary Risk Assessment – which will determine the requirement for further environmental (contaminated land) investigation and assessment.

d) Design on the basis of the anticipated ground conditions appropriate geotechnical site investigation works and discuss potential development issues (i.e. sub-surface features – obstructions, compressible ground, faulting, mineral extraction, mining and land instability).

A summary of the information / data sources is detailed in Section 5.2.

A report was to be provided to summarise findings and to provide recommendations.

3.0 LIMITATIONS OF INVESTIGATION WORK AND REPORT

Desk Study References

For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information it has been assumed that it is correct. No attempt has been made to verify this information. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.

The desk study has been produced using historical Ordnance Survey maps and environmental maps available at the time the report has been produced. The environmental information used was the current information available at the time of writing but there is no absolute guarantee of accuracy.

Historical Ordnance Survey maps do not provide a comprehensive description of a site history. They provide details of the site from a date prior to the publication of the map (i.e. a snapshot in time). The period between map editions can be substantial (i.e. several decades). Not all map series are available for every date range in many areas of the UK and therefore there will be gaps in this mapped record for some sites. Potentially contaminative land uses could have been present and removed during such periods and may therefore not form a part of this particular record. In addition, there will be potentially contaminative land uses which are not identified on the map records such as small scale storage / use of hazardous materials, illegal / unlicensed waste disposal activities etc.

Different map series identify different features utilising different symbols which can result in features that remain on-site being removed from maps. Some features are also not mapped for security reasons (e.g. airfields and other military installations). These areas are mostly shown as blank areas on historical maps.

Site Walkover

During the site walkover reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not be made known or accessible.

Extent of Contamination Studies

This report is strictly limited to the nature of contamination contained within the ground and groundwater at the site. The report does not cover environmental aspects such as air or noise pollution and ground vibrations and the like. In addition, ecological matters relating to wildlife, flora and fauna have not been investigated as part of this report. In particular, the site has not been inspected for the presence or otherwise of invasive species (e.g. Japanese Knotweed). It is recommended that the Client appoints a specialist in this subject to carry out a detailed inspection / survey of the site if its presence is suspected. Where mention has been made to the identification asbestos or asbestos-containing materials this is for indicative purposes only and does not constitute or replace full and proper surveys.

When investigating, or developing, potentially contaminated land it is important to recognise that sub-surface conditions may vary spatially and also with time. The absence of certain ground, ground gas, and contamination or groundwater conditions at the positions tested is not a guarantee that such conditions do not exist anywhere across the site. Additional contamination may be identified following the removal of the buildings or hardstanding.

Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.

The conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the reporting in full. The conclusions resulting from this study are not necessarily indicative of future conditions or operating practices at or adjacent to the site.

Flooding

Flooding in this report is defined as flooding caused by the sea, ditches, rivers, streams, ponds, lakes, reservoirs and the like. It does not extend to flooding caused by surcharged piped drainage systems and investigations into flooding of this nature are excluded from this report.

4.0 THIRD PARTIES

This report has been prepared for the sole use of Maro Developments Ltd. It must not be copied or passed onto any third party or used for any purpose other than which it was prepared without the permission of the author. This report is copyright.

5.0 SCOPE OF INVESTIGATION WORK

5.1 Walkover Survey

The site was visited on 25th August 2017 during overcast and dry weather conditions and the objectives of the site walkover were, where applicable:

- to identify and assess visual and olfactory evidence of contamination (e.g. staining of concrete / soils, odours, presence of gas protection measures etc.);
- to identify locations of potential sources of contamination and assess their conditions (i.e. tank location, presence / condition of secondary containment / bunds, location of fill points, process areas);
- to identify surrounding land uses and any potentially contaminating activities;
- to identify / verify the presence of potential receptors (on- and off-site) which may be affected by identified sources;
- to obtain information on activities / procedures and standards of housekeeping etc.;
- to assess site access and potential investigation locations and constraints; and
- to assess any visual subsurface geotechnical features / anomalies (e.g. foundations, made ground, subsidence etc.).

Photographs were taken of the site during the walkover survey and these photographs, together with a plan indicating their location and direction, are contained in Appendix 2.

5.2 Documentation

The following documents were obtained and examined during the desk study:

a) An aerial photograph of the site dated circa June 2009. The photograph is contained within the Groundsure Enviro Insight and Geo Insight reports in Appendices 4 and 5 respectively.

b) Historical Ordnance Survey maps as follows:

Date of Publication	Scale
1891	1:10,560
1892	1:2,500
1907	1:2,500
1925	1:10,560
1927	1:2,500
1937	1:2,500
1938	1:10,560
1947	1:10,560
1958	1:2,500
1980	1:2,500
1989	1:2,500
1993	1:2,500
1993	1:2,500
2002	1:10,000
2010	1:10,000
2014	1:10,000
1849 – 1850	1:10,560
1892 – 1893	1:2,500
1904 – 1905	1:10,560
1955 – 1956	1:10,560
1966 – 1967	1:10,560
1975 – 1978	1:2,500
1977 – 1978	1:10,000
1980 – 1984	1:2,500
1988 – 1989	1:2,500
1989 – 1990	1:10,000
1992 – 1993	1:2,500

These maps are contained in Appendix 3.

c) Groundsure maps, all dated 2017 as follows:

- Historical Land Use map;
- Environmental Permits, Incidents and Registers map;
- Landfill and other Waste Sites map;
- Current Land Use map;

- Hydrogeology and Hydrology maps;
- Environment Agency / Natural Resources Wales flood maps;
- Designated Environmentally Sensitive Sites map;
- Geological maps;
- Ground Workings map;
- Mining, Extraction & Natural Cavities map;
- Natural Ground Subsidence maps;
- Borehole Records map;
- Railways and Tunnels map;

These maps are contained within the reports in Appendices 4 and 5.

d) An Enviro Insight report and a Geo Insight report obtained from Groundsure, an environmental database company, which provides a list of recorded past and present activities at or adjacent to the site which could have an impact on the levels of contamination in the soils and groundwater at the site. These reports are contained in Appendices 4 and 5 respectively.

e) The British Geological Survey (BGS) 1:50,000 solid and drift map (sheet number: 97, dated 18077 and 1980) and the Lancashire six-inch county map (ref: OLA107SE). Extracts of the six-inch county map have been copied under license from the British Geological Society - CO7/044 LSCSL. 10 No. BGS borehole logs were also obtained (reference: SJ48NE39-42, SJ48NE496, SJ49NE320, SJ48NE58, SJ48NE516, SJ48NE53, SJ48NE497). Copies of the BGS borehole logs are contained in Appendix 6.

f) The Indicative Atlas of Radon in England and Wales published by the British Geological and the Health Protection Agency and BRE 211 Radon Report (2015) were examined to assess the probable presence or otherwise of radon gas in the ground. Extracts of the relevant maps are contained in Appendix 7.

6.0 FINDINGS

6.1 Description of the Site

This report pertains to land off Cronton Road, Huyton, at approximate postcode L35 1QZ and National Ordnance Survey grid reference 346775E, 389275N, approximately 2.8km south east of Huyton Town Centre.

The site is an approximately 9.3 Ha rhomboidal shaped site situated to the north of Cronton Road. The site is a densely vegetated open field except for a woodland area and a watercourse, Church Brook, in the western corner of the site. The site is bound by Cronton road along the south western boundary, Tarbock Roundabout and an M62 slip road along the north western boundary and open land along the north eastern and south eastern boundaries, formerly Cronton Colliery. Access to the site is off Cronton Road.

6.2 Walkover Survey

The walkover survey was carried out on the 25th August 2017 in overcast and dry weather conditions. During the walkover survey the following features were noted relating to geology and contaminated land matters:

Geology

The site comprises an open densely vegetated field, sloping up from Cronton Road along the southern boundary towards the north by c. 5m – 6m. The slope steepens towards the northern boundary particularly in the north western corner and in the north eastern site section in the vicinity of the former Cronton Colliery. A steep slope was noted adjacent to the northern western boundary, anticipated to be the cutting for the historic mineral railway. Chapel Brook and a land drain are present in the western site section. Brook Covert / Fox's Brook and ponds exist along the eastern boundary of the site. Mature trees exist along all four boundaries of the site and a dense cover of saplings / shrubs and other vegetation is present across the majority of the site.

The ground underfoot comprises uneven, densely vegetated ground with a woodland area in the western site section. The ground was softer towards the foot of the slope in the southern site section and was noted to be wet in places, particularly in the south western site section. Gravel hardcore is present near the access to the site off Cronton Road and gravel was noted along the northern boundary in the vicinity of the historic track.

The site was noted to be bound by a wooden fence and trees along the south western boundary and north western boundary and a treeline along the north eastern and south eastern boundaries. Two large concrete blocks were noted across the access road onto the site.

A stockpile of crushed wood chippings was noted in the central site section near the access point, anticipated to be from when the site was cleared in March 2016. An electricity pylon is located in the western section of the site, with overhead electricity cables crossing the site towards the north east. A suspected concrete base was noted along the northern boundary, possibly the base to a tank recorded in the vicinity on the historic maps.

Contaminated Land

No on-site potentially contaminative sources were identified on-site during the site walkover. Although a suspected historic tank base was identified, no staining or evidence of contamination was present.

The locations of the features mentioned above are shown on the Site Features Plan contained within Appendix 8.

6.3 Site History

The site development history has been researched by reference to historical maps, street plans and aerial photographs. The historical maps are included in Appendix 3

to this report and the principal observations which are divided into on-site history and off-site history are summarised below:

On-Site History

Date	Site Feature
1845 – 1925	The site was open fields until the 1920s. Ravenhurst Pits, anticipated to be clay pits, were present in the central site section. Chapel Brook is recorded along the north western boundary of the site, surrounded by "The Dacres", later recorded as Dacres Bridge Bog, in the western site section. Brook Covert / Fox's Brook is present along the south eastern boundary.
1925 - 1959	By 1925 a mineral railway associated with Cronton Colliery is present along the north eastern boundary with a tank present adjacent to the mineral railway in the northern site section. The tank is no longer recorded by 1947.
1959 - 1974	By 1959 the Ravenhurst Pits are no longer recorded. A track is present running approximately north to south through the eastern site section and along the north eastern site boundary. Land drains are recorded in the north western corner and along the south eastern boundary. 2 No. ponds are present along the south eastern boundary. Dacres Bridge Bog in the western site section is now recorded as Strettles Bog.
1974 - 2017	Sometime between 1974 and 1977, the mineral railway along the north eastern boundary is demolished. By 1977, Cronton Road has been moved towards the north and now runs along the south western boundary of the site. The Tannock Roundabout and the M62 slip road are present along the north western boundary and an electricity pylon is present in the eastern site section with overhead cables crossing the site towards the north east. The site has remained largely unchanged since.

Off Site History

Date	Site Feature	Distance (m)	Direction
1913 - 1984	**Cronton Colliery** is recorded on historic maps to the north east of the site since 1925, however according to the Northern Mine Research Society was opened in 1913. A mineral railway connecting Cronton Colliery to Huyton was also constructed by 1925 along the north eastern boundary of the site. The colliery closed in 1984, the colliery is still recorded on historic maps by 1990 however most buildings have been demolished.	200	E
1928 - 1977	**Brick works** are recorded to the east of Cronton Colliery by 1928. The brick works were recorded as unspecified works by 1959 and demolished sometime between 1967 and 1977.	150	E
1849 - 2017	**Huyton Quarry** (Sandstone, flags and slate quarry) was present prior to 1849 with a railway joining the quarry to the collieries to the south east. By 1889, the area is still recorded as Huyton Quarry however the pits are no longer recorded and industrial developments (gas works, iron works and works) are present. By 1906 chairmaking works, brickworks and electric lamp works are also present. By the 1960s, works and other industrial development have extended towards the south east. Further development towards the south east has occurred from the 1970s extending south towards Tannock Roundabout, the area appears to be an industrial estate.	310	NW
1991* - 2017	**Cronton clay pit** for brick manufacture is present from circa 1991 and is still is operation at present.	130	SE

* information from the planning portal

6.4 Geology

6.4.1 BGS Geological Map

The BGS 1:50,000 solid and drift geological maps (sheet number: 97) dated 1980 and 1977 respectively, indicate that the site is underlain by superficial deposits comprising glacial till with an area of alluvium in the western site section in the vicinity of Chapel Brook. Alluvium typically comprises soft to firm consolidated, compressible, silty clay, with layers of silt, sand, peat and basal gravel. The superficial deposits are underlain by solid geology comprising the Pennine Middle Coal Measures with the exception of the south-western boundary which is underlain by the Etruria Formation.

The Pennine Middle Coal measures comprise interbedded grey mudstone, siltstone, pale grey sandstone and commonly coal seams, with a bed of mudstone containing marine fossils at the base, and several such marine fossil-bearing mudstones in the upper half of the unit.

The Etruria Formation comprises red, purple, brown, ochreous, green, grey and commonly mottled mudstone, with lenticular sandstones and conglomerates referred to as 'espleys'. Subordinate features include lenticular sandstones and conglomerates commonly consisting mostly of volcanic and lithic clasts. Pedogenic horizons are common within the deposit however coal seams are rare.

2 No. faults north east to south west trending faults are present on-site. The first of which is the Church fault that is present in the western site section and downthrows the solid geology towards the west. A second fault, anticipated to be a splay off the Church fault, is present to the east of the Church fault and downthrows the solid geology towards the east. Consequently, the solid geology between the two faults is anticipated to be higher up in the stratigraphical sequence than the solid geology either side of these faults.

The 6-Inch County Map also indicates that numerous underground faults are also present beneath the site and have been recorded within coal seams that are present beneath the site. 2 of these underground faults are present in the eastern site section

and are noted to trend in an approximate north to south direction. Both faults are recorded in the Higher Florida Mine / St Helens Mine Delf and have a downthrow of approximately 9m to the east. A further 2 No. underground faults also recorded within the Higher Florida Mine / St Helens Mine Delf are present in the north-western site section. The westernmost of these faults trends towards the south east and downthrows to the east by approximately 7.30m. The second of these faults, located to the east of the first, trends in an approximate north to south direction and has a downthrow of 16.50m to the west.

Due to the faults present on-site, the bedrock in the eastern site section has a dip of 12 degrees towards the south west whereas the bedrock in the western site section has a dip of 12 degrees towards the south.

6.4.2 BGS Borehole Logs

There are 10 No. available BGS boreholes located on-site.

BGS borehole reference: SJ48NE42

This borehole is located along the south-eastern boundary and was drilled to a depth of 4.57m bgl (14.90m AOD) in 1967. The borehole log recorded the following pertinent information:

- TOPSOIL to a depth of 0.48m bgl (18.99m AOD), underlain by:
- Stiff, brown, mottled grey, sandy CLAY to a depth of 1.80m bgl (17.67m AOD), underlain by:
- Stiff to very stiff, brown, sandy, stony CLAY to a depth of 4.57m bgl (14.90m AOD) where the borehole was terminated.

No groundwater was recorded on the log.

BGS borehole reference: SJ48NE41

This borehole is located along the south western boundary and was drilled to a depth of 4.57m bgl (16.24m AOD) in 1967. The borehole log recorded the following pertinent information:

- TOPSOIL to a depth of 0.48m bgl (20.33m AOD), underlain by:
- Stiff, brown, mottled grey, sandy, stony CLAY to a depth of 2.92m bgl (17.89m AOD), underlain by:
- Very stiff, brown, sandy, stony CLAY to a depth of 4.57m bgl (16.24m AOD) where the borehole was terminated.

Groundwater was recorded at 4.14m bgl (16.67m AOD).

BGS borehole reference: SJ48NE40

This borehole is located along the south western boundary and was drilled to a depth of 7.62m bgl (13.59m AOD) in 1967. The borehole log recorded the following pertinent information:

- TOPSOIL to a depth of 0.30m bgl (20.91m AOD), underlain by:
- Stiff, brown, mottled grey, sandy, stony CLAY with pockets of sand to a depth of 3.23m bgl (17.98m AOD), underlain by:
- Very stiff, brown, sandy, stony CLAY to a depth of 5.05m bgl (16.16m AOD), underlain by:
- Red, clayey, shaley MARL to a depth of 7.62m bgl (13.59m AOD) where the borehole was terminated.

No groundwater was recorded on the log.

BGS borehole reference: SJ48NE39

This borehole is located along the south western boundary and was drilled to a depth of 3.96m bgl (16.86m AOD) in 1968. The borehole log recorded the following pertinent information:

- TOPSOIL to a depth of 0.30m bgl (20.53m AOD), underlain by:

- Firm, grey mottled brown, sandy CLAY to a depth of 2.13m bgl (18.69m AOD), underlain by:
- Soft, greyish brown sandy CLAY to a depth of 2.74m bgl (18.08m AOD), underlain by:
- Weathered to hard, purple / red SANDSTONE to a depth of 3.96m bgl (16.86m AOD) where the borehole was terminated.

Groundwater was recorded at 2.13m bgl (18.69m AOD)

BGS borehole reference: SJ48NE496

This borehole is located in the north eastern site section and was drilled to a depth of 1.80m bgl (21.74m AOD) in 2006. The borehole log recorded the following pertinent information:

- MADE GROUND comprising brown, gravelly, fine to medium SAND with some rootlets to a depth of 0.45m bgl (23.09m AOD), underlain by:
- Moderately weathered, moderately strong, grey SANDSTONE to a depth of 0.50m bgl (23.04m AOD), underlain by:
- Very weak, moderately weathered, grey SILTSTONE to a depth of 1.75m bgl (21.79m AOD), underlain by:
- Moderately strong, moderately weathered, buff SANDSTONE to a depth of 1.80m bgl (21.74m AOD) where the borehole was terminated.

No groundwater was recorded on the log.

BGS borehole reference: SJ48NE320

This borehole is located in the north western site section and was drilled to a depth of 11.36m bgl (12.49m AOD) in 1993. The borehole log recorded the following pertinent information:

- TOPSOIL comprising dark brown, sandy SILT with some rootlets and fine to medium gravel to a depth of 0.20m bgl (23.65m AOD), underlain by:
- MADE GROUND comprising soft to firm, reddish brown, very sandy, very silty CLAY with much gravel to a depth of 1.70m bgl (22.15m AOD), underlain by:

- Medium dense, reddish brown and light brown SAND with some angular, fine to coarse gravel of sandstone to a depth of 3.20m bgl (20.65m AOD), underlain by:
- Firm, reddish brown, very silty CLAY with some light brown sand lenses to a depth of 4.00m bgl (19.85m AOD), underlain by:
- Very dense, dark purple, clayey SAND becoming moderately weak to weak, dark purple, silty SANDSTONE with depth, to a depth of 5.00m bgl (18.85m AOD), underlain by:
- Moderately weak, purple, mottled red and dark purple, very thinly bedded, fine to medium grained SANDSTONE, highly to completely weathered, to a depth of 7.45m bgl (16.40m AOD), underlain by:
- Moderately strong, purple, reddish brown, mottled grey and white, fine grained, micaceous SANDSTONE, slightly weathered, to a depth of 11.36m bgl (12.49m AOD).

No groundwater was recorded on the log.

BGS borehole reference: SJ48NE58

This borehole is located in the northern western corner of the site and was drilled to a depth of 7.92m bgl (14.47m AOD) in 1968. The borehole log recorded the following pertinent information:

- TOPSOIL to a depth of 0.30m bgl (22.09m AOD), underlain by:
- Fine, wet, brown SAND to a depth of 0.60m bgl (21.79m AOD), underlain by:
- Firm, reddish brown, mottled grey, sandy, stony, slightly silty CLAY to a depth of 2.13m bgl (20.26m AOD), underlain by:
- Weathered, light grey, soft, micaceous, muddy SHALE, becoming light grey, hard, muddy SILTSTONE to a depth of 5.15m bgl (17.34m AOD), underlain by:
- Light grey, shattered, hard and soft bands of laminated SILTSTONE to a depth of 7.92m bgl (14.47m AOD) where the borehole was terminated.

No groundwater recorded on the log.

BGS borehole reference: SJ48NE516

This borehole is located along the north western boundary and was drilled to a depth of 5.00m bgl (18.18m AOD) in 2006. The borehole log recorded the following pertinent information:

- MADE GROUND comprising grass over sandy TOPSOIL to a depth of 0.20m bgl (22.98m AOD), underlain by:
- MADE GROUND comprising firm brownish black, sandy, gravelly CLAY with occasional rootlets to a depth of 0.75m bgl (22.43m AOD), underlain by:
- MADE GROUND comprising light brown, slightly silty, slightly gravelly, fine to medium SAND to a depth of 1.20m bgl (21.98m AOD), underlain by:
- MADE GROUND comprising firm, greyish brown, sandy, slightly gravelly CLAY to a depth of 1.70m bgl (21.48m AOD), underlain by:
- MADE GROUND comprising reddish brown, slightly clayey, gravelly, fine to medium SAND to a depth of 2.50m bgl (20.68m AOD) underlain by;
- Stiff, reddish brown and grey, sandy, slightly gravelly CLAY to a depth of 3.85m bgl (19.33m AOD), underlain by:
- Grey, slightly clayey, slightly gravelly, fine to medium SAND to a depth of 4.70m bgl (18.48m AOD), underlain by:
- Dark brown, slightly sandy, slightly gravelly CLAY to a depth of 5.00m bgl (18.18m AOD) where the borehole was terminated.

No groundwater was recorded on the log.

BGS borehole reference: SJ48NE53

This borehole is located along the north western boundary and was drilled to a depth of 4.26m bgl (13.49m AOD) in 1968. The borehole log recorded the following pertinent information:

- TOPSOIL to a depth of 0.60m bgl (17.15m AOD), underlain by:
- Firm to stiff, brown, sandy CLAY to a depth of 1.82m bgl (15.93m AOD), underlain by:
- Soft, grey, silty, sandy CLAY with layers of fine, wet, silt to a depth of 2.92m bgl (14.83m AOD), underlain by:

- Hard, grey, marly SANDSTONE to a depth of 4.26m bgl (13.49m AOD) where the borehole was terminated.

No groundwater was recorded on the log.

BGS borehole reference: SJ48NE497

This borehole is located in the western corner of the site and was drilled to a depth of 3.00m bgl (22.03m AOD) in 2006. The borehole log recorded the following pertinent information:

- MADE GROUND comprising dark greyish brown, very sandy, gravelly, organic CLAY with many fine rootlets to a depth of 0.60m bgl (24.43m AOD), underlain by:
- MADE GROUND comprising greyish brown, slightly sandy, gravelly CLAY with occasional pockets of reddish brown sand to a depth of 3.00m bgl (22.03m AOD) where the borehole was terminated.

No groundwater was recorded on the log.

The above BGS borehole logs are included in Appendix 6.

6.4.3 Geohazards

Data Type	Details
Ground Stability Data	➢ The maximum potential for landslide ground stability hazards at the site is regarded as very low. ➢ The maximum potential for running sand ground stability hazard at the site is regarded as low. ➢ The maximum potential for shrink or swelling clay ground stability hazards at the site is regarded as very low. ➢ The maximum potential for collapsible ground stability hazard at the site is regarded as very low. ➢ The maximum potential for compressible ground stability hazard at the site is regarded as moderate, anticipated to be associated with the alluvium deposits in the western site section. The maximum potential for dissolution ground stability hazards at the site is regarded as negligible.

For further details please see the Groundsure Geo Insight Report contained in Appendix 5.

6.4.4 BGS Estimated Soil Chemistry

The BGS have estimated that the superficial deposits across the site naturally comprise of the following determinands:

- Arsenic <15mg/kg
- Cadmium <1.8mg/kg
- Chromium 60 – 120mg/kg
- Lead 100 – 300mg/kg
- Nickel 15 – 30mg/kg

6.5 Coal Mining

6.5.1 Historical Maps

Following a review of the available historical maps evidence for potential coal mine workings (Ravenhurst Pits) have been recorded on-site since prior to the mid-19th Century. However, at this stage it is unclear if these workings pertain to coal or clay workings as during this time suspected clay pit workings (e.g. Sour Hey Pit and Potters Pits) were located within a 100m radius of the site along with several collieries within 1000m of the site; the most pertinent of these likely being Halsnead Colliery which was located approximately 500m to the north west of the site.

By the early 20th Century most of the collieries recorded on the historical maps are listed as '*old colliery'* or '*disused'* with the exception of Cronton Colliery which is first recorded on the historical maps during this time at approximately 200m to the east of the site.

By the late 20th Century very few features remain of the historical mining that has occurred in the area due to the rapid urbanisation and industrialisation that has occurred in the area during this time. However, despite its demolition during the late 20th Century the land around Cronton Colliery has remained undeveloped and features pertaining (shafts, spoil heaps etc.) to the colliery remain.

6.5.2 BGS Geological Map

A review of the 1:50,000 solid geological map (sheet 97 published 1980) and 6-inch County Map (sheet 107SE dated 1953) indicate that a south east to north west trending coal seam (3ft Coal) is conjectured to subcrop approximately 300m to the north of the site. Due to the faulting that this present within the central western section of the site the distance to this coal seam has been increased to approximately 400m to the north west for the western section of the site.

The General Vertical Section (GVS) for the more recent 1:50,000 solid geological map indicates that for the section of stratigraphy between the Felcroft Mine (located between 850m and 950m to the north of the site) and the Etruria Formation (located within the southernmost section of the site) at least 3 No. unnamed coal seams are likely to be present. However, only one of these coal seams (3ft Coal) is conjectured to outcrop on the geological maps. Consequently, there is a possibility that further unmapped coal seams may be present beneath the site.

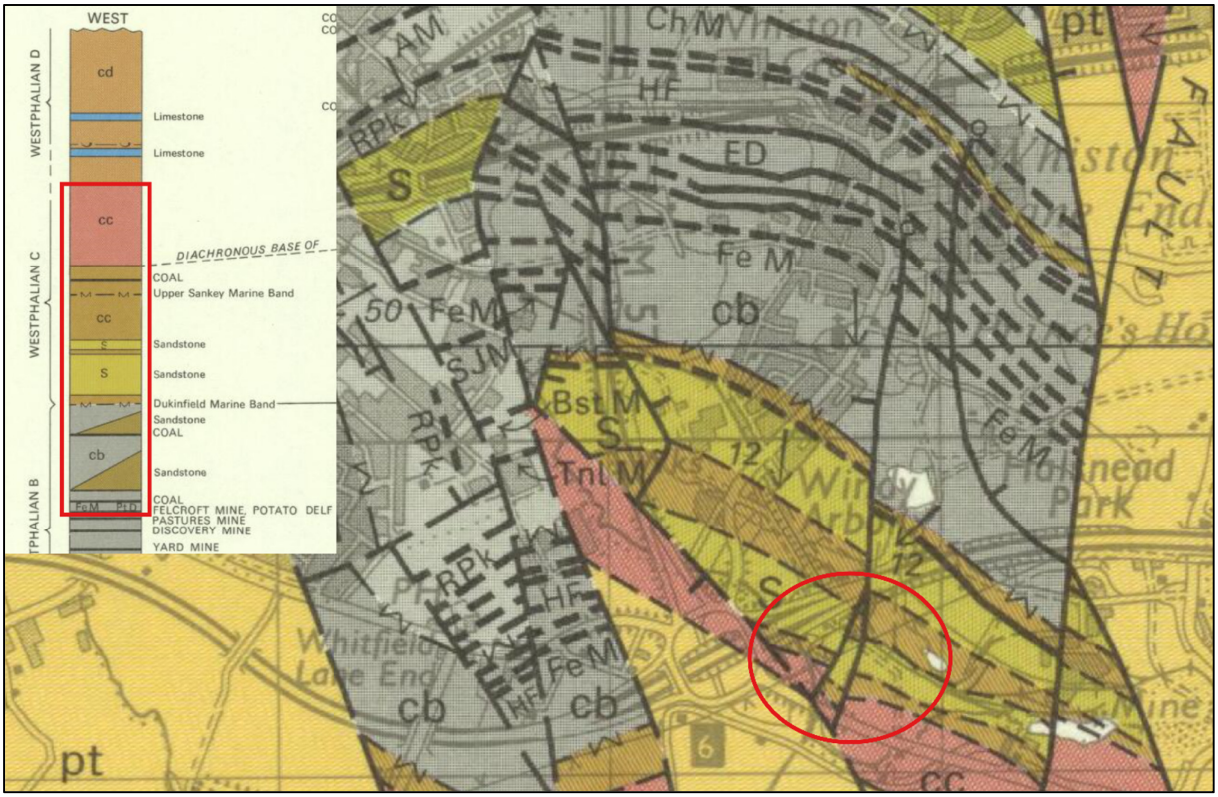


Figure 6.5.2: Extract of BGS 1: 50,000 Geological Map (Sheet 97) showing the sites approximate location and its position within the GVS.

6.5.3 Coal Authority Mining Report

As part of the Baker Barnett Coal Mining Risk Assessment Report (ref: 15/NSB/SB/2572) a Coal Authority Mining Report was obtained for the wider Cronton Colliery site.

The report states that the site is in the likely zone of influence from 12 No. coal seams at depths between 100m and 670m bgl that were last worked in 1976 from Cronton Colliery. The Coal Authority state that any ground movement associated with the coal workings should have stopped.

Although the Coal Authority state that the property is in an area where they believe there is coal at or close to the surface that may have been worked in the past it is envisaged that this pertains to unrecorded workings within the 3ft Coal that is recorded to subcrop within the boundaries of the wider Cronton Colliery site.

6.5.4 Coal Authority Interactive Map Viewer

A review of the Coal Authority Interactive Map Viewer shows that the site lies within a designated Surface Coal Resource Area and that a Development High Risk Area associated with the 3ft Coal is located between approximately 130m and 250m to the north of the site (see Figure 6.5.4).

The site is not recorded to be within an area of recorded past shallow coal mine workings or within an area where recorded surface mining (past and current) have occurred. Furthermore, there are no recorded mine entries within the confines of the site.

Underground workings are recorded beneath the site but these are discussed in more detail in the following sections.

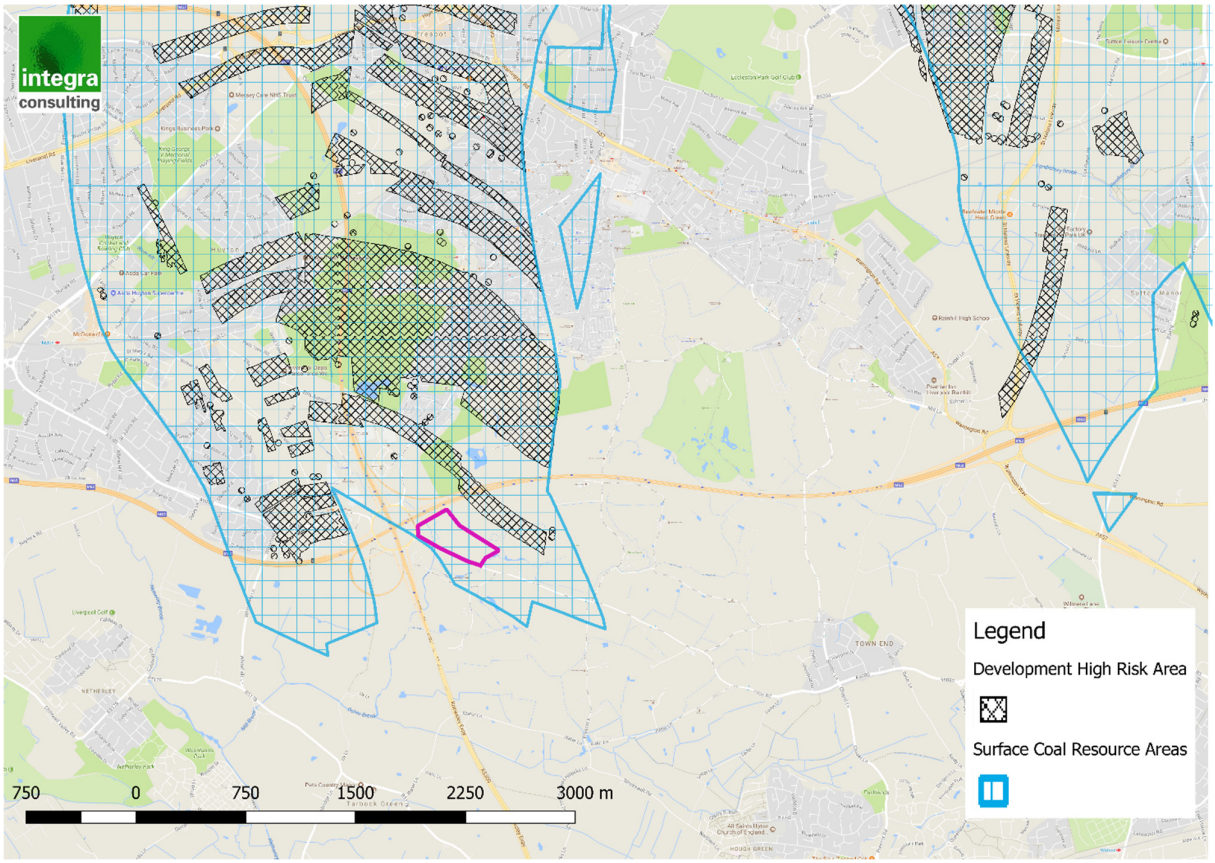


Figure 6.5.4: Overlay of selected Coal Authority Interactive Map Viewer layers showing their relationship to the site.

6.5.5 Groundsure GeoInsight Reports

The Groundsure GeoInsight Report states that the site lies within the specified search distance of an identified coal mining area. Further details are outlined within the table below:

Dataset	Details
Historical Underground Workings	➢ There are 2 No. historical underground working features present on-site that pertain to a Colliery and an unspecified mine. These are dated between 1925 and 1967. ➢ There are 51 No. historical underground working features present within 1000m of the site that pertain to collieries, disused delfs and unspecified disused / old shafts. These are dated 1891 to 1989.
Historical Mining	➢ There are 2 No. historical mining features present on-site that pertain to a Colliery and an unspecified mine. These are dated between 1925 and 1967. ➢ There are 51 No. historical mining features present within 1000m of the site that pertain to collieries, disused delfs and unspecified disused / old shafts. These are dated 1891 to 1989.

No other features pertaining to coal mining are recorded either on or near the site.

6.5.6 Light Detecting and Ranging (LIDAR) Data

LIDAR data was obtained for the site and a hillshade analysis was undertaken to highlight any features within the site and its vicinity that may be indicative of ground instability that may possibly have been caused by coal mining activity.

As outlined in Figure 6.5.5 possible areas of subsidence were highlighted within the fault block that lies within the sites western site section and the area where the historical Ravenhurst Pits were located. Possible outcrop workings were also located in an area approximately 290m to the north east of the sites north easternmost section.

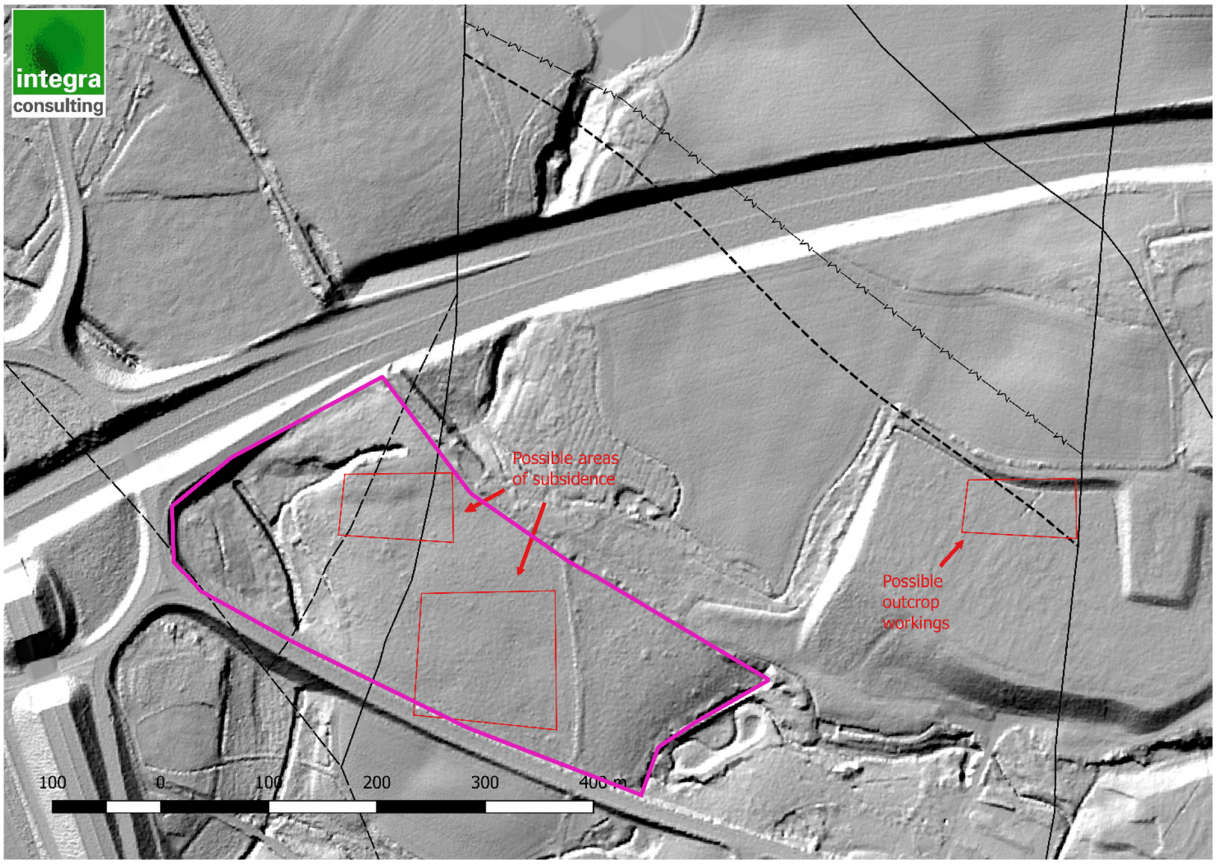


Figure 6.5.6: Hillshade analysis of LIDAR data showing possible areas of subsidence on-site and possible outcrop workings to the north east.

6.5.7 Evidence for Shallow Coal Mine Workings

Evidence for shallow coal mine workings and coal were recorded during previous site investigation works for the wider Cronton Colliery site. These site investigation works

were undertaken by Parkman and Soil Mechanics and the pertinent details have been outlined below.

Parkman, Former Cronton Colliery Site, Site Investigation Interpretative Report – Volume 1, dated August 1999 (report No: 19399/OR/02 B)

As part of these site investigation works several boreholes were sunk across the wider Cronton site to obtain geotechnical and geo-environmental information. During these site investigation works coal and evidence of possible shallow coal mine workings were encountered at the following locations:

Location	Exploratory Hole Type	Depth m bgl (m AOD)	Thickness (m)	Details
P1/2	Rotary cored	9.10 – 9.50 (24.70 – 24.30)	0.40	COAL (recovered as fine to coarse gravel size fragments of coal)
P1/3	Rotary cored	12.95 – 13.60 (20.85 – 20.20)	0.65	Black COAL with yellow brown staining
P1/4	Rotary open hole	14.10 – 14.70 (19.90 – 19.30)	0.60	COAL
P1/5	Rotary open hole	13.70 – 14.40 (20.10 – 19.40)	0.70	Possible OLD WORKINGS (flush returns reduced to 10% and dirty brown in colour)
		14.40 – 15.90 (19.40 – 17.90)	1.50	Very loose material
P1/6	Rotary open hole	11.70 – 12.80 (22.20 – 21.10)	1.10	Possible WORKINGS (flush returns become dirty brown)
P1/7	Rotary open hole	16.50 – 16.90 (17.40 – 17.00)	0.40	COAL
P2/2	Rotary cored	3.74 – 5.00 (30.16 – 28.90)	1.26	Gravel sized fragments of COAL and mudstone with yellow staining. From 3.74m to 5.00m run dived in. At 5.00m caving's recorded.
P2/4	Rotary open hole	5.40 – 6.70 (28.60 – 27.30)	1.30	VOID
P2/5	Rotary open hole	8.24 – 9.60 (25.86 – 24.50)	1.36	COAL
P2/6	Rotary open hole	8.19 – 11.80 (25.71 – 22.10)	3.61	OLD WORKINGS (at 9.00m loss of flush returns. Below 9.80m flush returns orange. From 8.19m old workings. At 10.80m loss of flush returns)
P2/7	Rotary open hole	6.90 – 7.60 (27.00 – 26.30)	0.70	COAL

It should be noted that minor evidence of coal in the form of sandstone with thin laminations of coal was also encountered within a few exploratory holes but these have been excluded from the table above based on their very limited thickness (less than 20mm thick).

Soil Mechanics, Cronton Colliery, Factual Report on Ground Investigation, dated October 2003 (report No: F3605)

As part of these site investigation works several boreholes were sunk to locate the position of the 3ft Coal seam. During these site investigation works coal and evidence of possible shallow coal mine workings were encountered at the following locations:

Location	Exploratory Hole Type	Depth m bgl (m AOD)	Thickness (m)	Details
P1/10	Rotary cored	11.98 – 12.08 (22.04 – 21.94)	0.10	Weak, black, dull COAL
		17.80 – 18.40 (16.22 – 15.62)	0.60	Possible MINE WORKINGS (driller notes flush returns of 25%)
P2/10	Rotary cored	15.47 – 17.22 (18.51 – 16.76)	1.75	Possible MINE WORKINGS (zone of core loss)
P2/11	Rotary open hole	17.10 – 17.49 (15.86 – 15.47)	0.39	COAL
P2/13	Rotary open hole	8.17 – 9.46 (25.73 – 24.44)	1.29	Zone of core loss (driller notes flush returns of 60%)
P2/13	Rotary cored	18.46 – 20.10 (15.44 – 13.80)	1.64*	Possible MINE WORKINGS (zone of core loss)
P2/14	Rotary open hole	15.00 – 19.80 (10.82 – 6.02)	4.80	Possible MINE WORKINGS (cobbles, sand and gravel, coal pieces and bricks)
P4/09	Rotary cored	11.82 – 11.96 (22.90 – 22.76)	0.14	Very weak, black, dull COAL
P4/10	Rotary open hole	12.80 – 13.40 (20.03 – 19.43)	0.60	COAL
TP43	Trial Pit	1.30 – 1.70 (34.18 – 33.78)	0.40	Black COAL (recovered as silt and sand)
BH121R	Rotary cored	11.33 – 11.49 (13.81 – 13.85)	0.16	Weak, black, vitreous COAL

*Hole terminated before full thickness could be determined.

Spatial Distribution

Figure 6.5.5.1 shows the locations of the above exploratory holes in which coal and evidence for shallow mine workings was encountered. From this information evidence for shallow coal mine workings was predominantly encountered within an area

approximately 250m to the north east of the site and this coincides with the area of potential outcrop workings identified from the LIDAR analysis (see Figure 6.5.6.2).

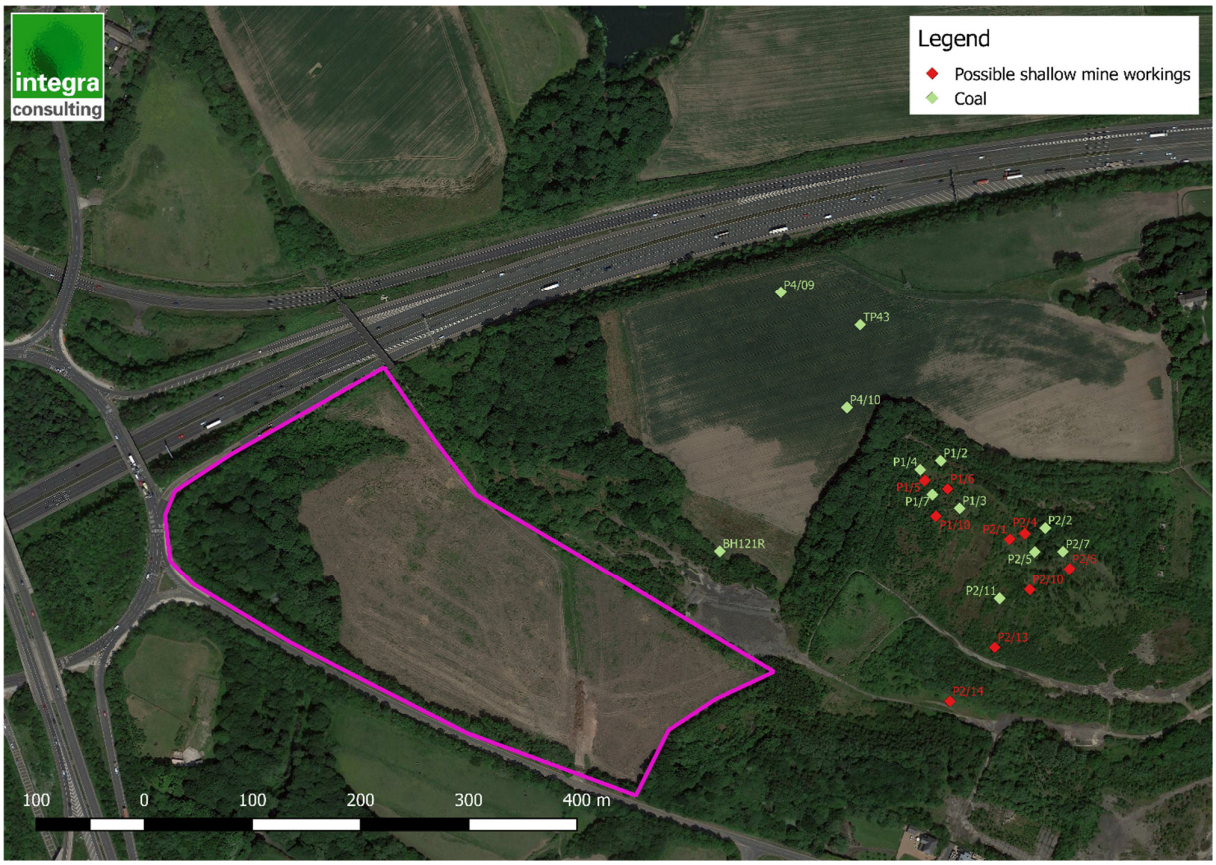


Figure 6.5.7.1: Locations of exploratory holes in which evidence for shallow coal mine workings or coal was encountered during previous site investigation works.

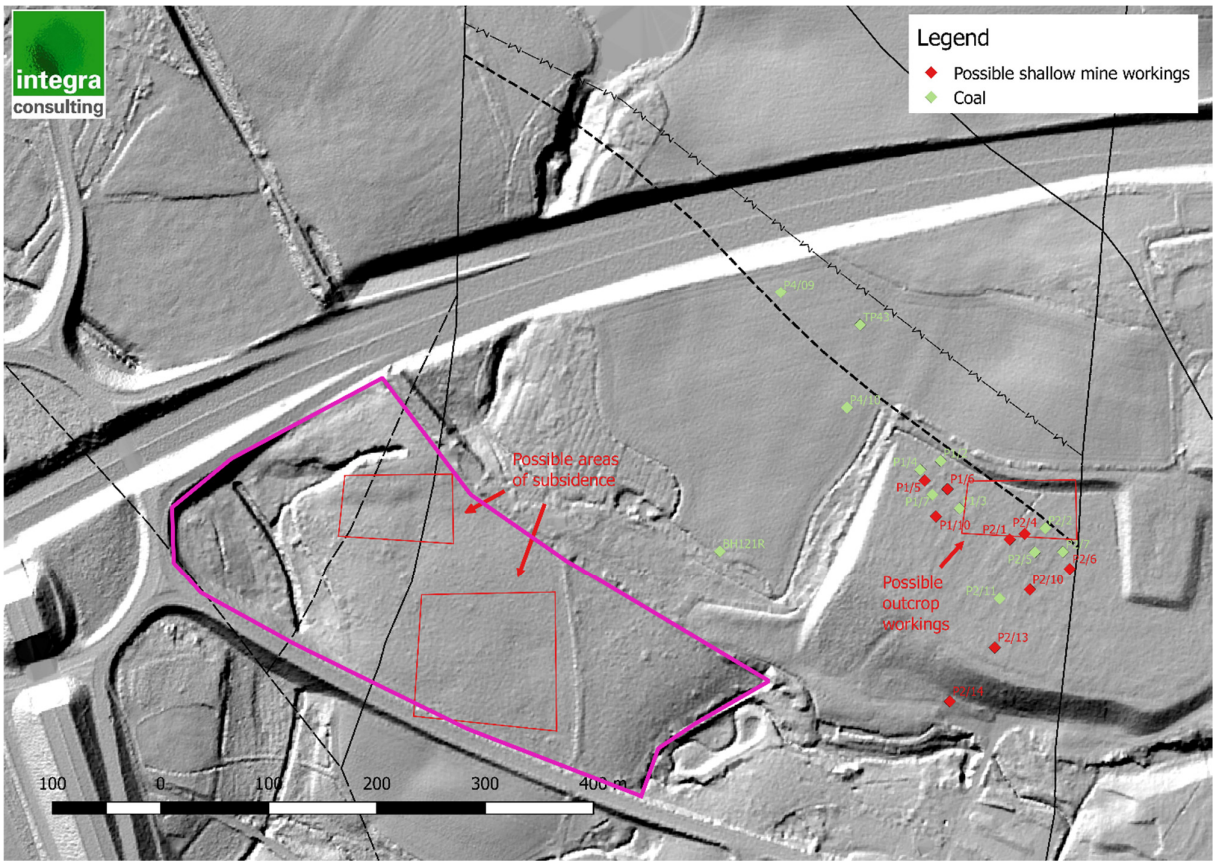


Figure 6.5.7.2: Locations of exploratory holes in which evidence for shallow coal mine workings or coal was encountered overlaid onto the hillshade analysis of the LIDAR data.

6.5.8 Calculated Coal Seam Contours

As possible shallow coal mine workings were encountered within the 3ft Coal during previous site investigation works, contours for this coal seam have been constructed to estimate at what depth the 3ft Coal will be present beneath selected parts of the site.

These coal seam contours have been constructed using the conjectured subcrop position of the 3ft Coal and the 12˚ dip to the south west recorded on the BGS Geological Maps. Naturally, caution should be given in utilising a consistent dip degree as variations occur.

Moving east to west across the site the contours indicate that for most of the site the 3ft Coal will be encountered at a depth of between approximately 40m and 60m along

the sites northern boundary and at a depth of between approximately 70m and 110m along the sites southern boundary. The depth to the coal increases from east to west due to the south easterly to north westerly trend of the conjectured outcrop of the 3ft Coal.



Figure 6.5.8.1: Calculated coal seam contours (m AOD) beneath the eastern and central section of the site for the conjectured 3ft Coal Seam

Due to the lack of a conjectured coal seam subcrop and dip direction within the small fault block that is present within the central western section of the site, coal seam contours have not been constructed for this area. However, as the solid geology is downthrown either side of this tract of land it is anticipated that the coal will be located at a shallower depth to that for the calculated contours.

Coal seam contours have also not been calculated for the westernmost section of the site as here the 3ft Coal is anticipated to be located at an increased depth to those

calculated based on the increased distance of the conjectured 3ft Coal from this section of the site.

Comparison with Previous Site Investigation Works

Most of the exploratory holes in which coal or evidence for possible shallow coal mine workings were encountered closely matched the anticipated depths of the 3ft Coal from the calculated coal seam contours. However, there were 3 No. notable exceptions where coal and / or evidence for shallow coal mine workings were encountered at much shallower depths than those envisaged by the coal seam contours (see Figure

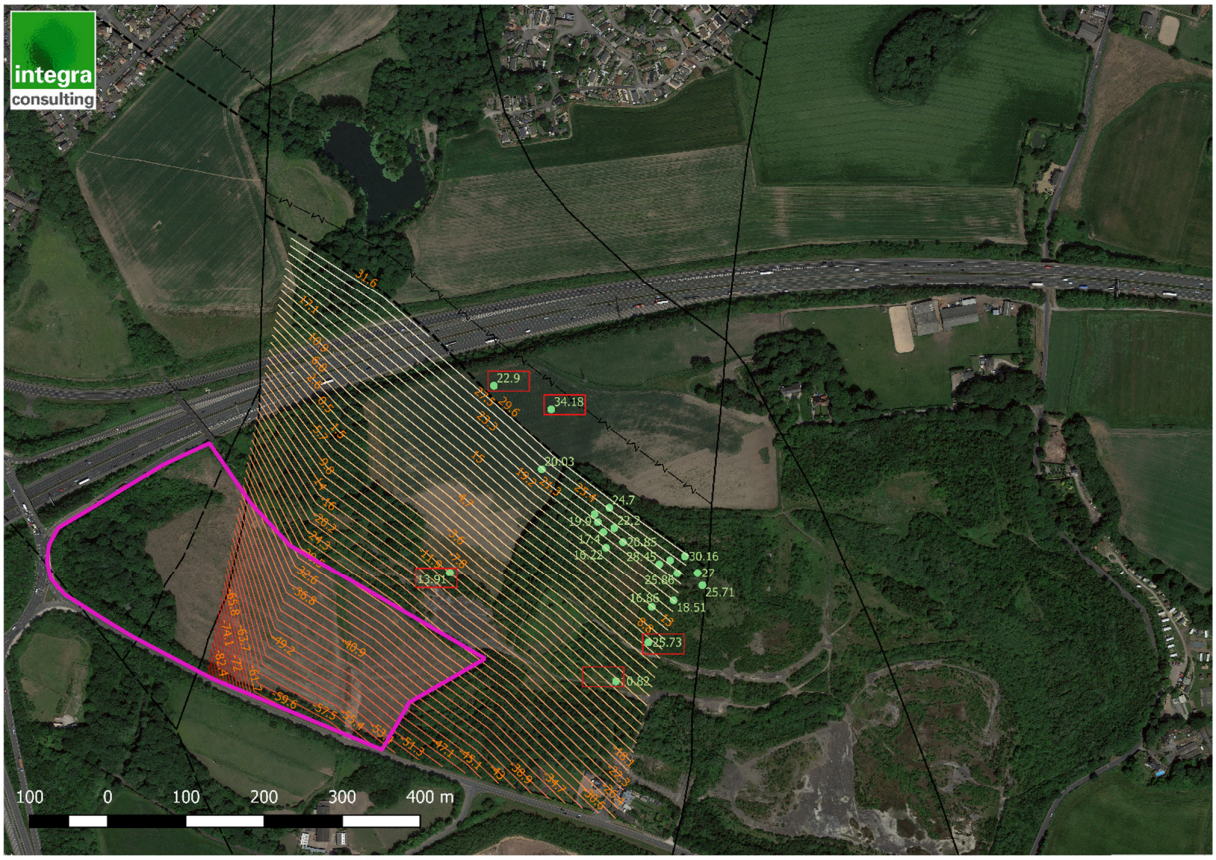


Figure 6.5.8.2: Comparison of calculated coal seam contours and locations in which coal and evidence for shallow coal mine workings were encountered during previous SI works.

The most likely reasons for these notable exceptions to the calculated contours are outlined below:

- There is another coal seam present in the stratigraphical sequence that is not recorded on the BGS Geological Maps. As outlined in Section 6.5.2 additional unnamed coal seams are recorded on the GVS. Consequently, a second coal seam may be present at shallow depth beneath the site.
- The possible coal mine workings encountered do not directly relate to a coal seam but rather an infrastructure element associated with Cronton Colliery. This is indicated by the cobbles, sand and gravel, coal pieces and bricks encountered within P2/14. However, this does not account for the coal encountered within BH121R.
- The possible coal mine workings encountered do not directly relate to a coal seam but rather are associated with ground disturbance centred around the Eccleston Fault as a direct result of faulting and / or due to subsequent historic fault reactivation. However, again this does not account for the coal encountered within BH121R.
- The position of the Eccleston fault on the BGS Geological maps is incorrect and P2/13 and P2/14 are located to the east of his fault and within a different fault block to that in which the site is present. However, this does not account for the coal encountered within BH121R and raises further questions regarding a second coal seam beneath the site as the BGS 6-Inch Map indicates that the 3ft Coal is located at a depth of 40m bgl within this fault block and the possible shallow mine workings encountered within these exploratory holes would be too shallow to be the 3ft Coal.
- The geology beneath the site is more complex than that indicated on the BGS Geological Maps (e.g. variable dip directions resulting in incorrect calculated coal seam contours).
- Errors are present within the previous site investigation works due to the intrusive investigative methods employed (e.g. unreliability of open rotary holes).

At this stage it is difficult to determine which of the above scenarios is correct and due to this uncertainty, a conservative approach should be adopted (i.e. a second unrecorded coal seam may be present at shallow depth beneath the site) until the above scenarios can be further investigated.

6.5.9 Coal Mine Abandonment Plans

Coal mine abandonment plans were obtained and reviewed to assess the impact of any deep coal mine workings that may be present beneath the site.

It should be noted that where overlays of the abandonment plans have been utilised they are approximately only as there were limited surface features present with each to overlay the plans accurately.

Also, please note that prior to 1872 there was no compulsory requirement for coal mine plans to be submitted. Abandonment plans are therefore unlikely to show any workings prior to this date and therefore caution is advised as unrecorded workings may exist. Abandonment plans, especially the older plans, are also frequently inaccurate due to the cover up of illegal mining activities that are documented to have occurred in the 18th Century. Adits, faults and workings were commonly mislocated on the plans to cover up the '*robbing'* of coal on privately owned land and to avoid paying royalties.

In order of increasing depth, the information from these abandonment plans and comments made by Parkman are outlined below.

London Delf (or Felcroft) Seam

Suspected pillar and stall workings are recorded beneath the eastern section of the site at depths more than 140m. There are also indications from the plan that workings may also have extended beneath the remainder of the site. Parkman state that these workings appear to have been carried out until the early to late 1920's.

Parkman also state that this coal seam is recorded to be 2.20m in thickness and is noted as having underground water so it is likely that the workings are now flooded.



Figure 6.5.9.1: Approximate overlay of the Coal Authority Abandonment Plan for the London Delf (or Felcroft) Seam

Crombourke (or Pasture) Seam

Recorded workings appear to be centred around Cronton Colliery and were undertaken using both the pillar and stall and longwall mining techniques between 1917 and the late 1930's.

Old workings are noted immediately to the north east of the site and may extend beneath the central and western sections of the site.

While no thickness is indicated on the plans, within the St Helens Coalfield this coal seam is known to attain a thickness of between 0.90m and 1.80m.

The depth of this coal seam beneath the site is unknown but it must lie at a depth greater than the London Delf (or Felcroft) Seam due to its position in the stratigraphical sequence.



Figure 6.5.9.2: Approximate overlay of the Coal Authority Abandonment Plan for the Crombourke (or Pasture) Seam

Yard Seam

Longwall workings are recorded beneath the eastern section of the site and are recorded to have been undertaken between 1930 and 1931. However, there are also indications from the plan that workings may extend across the remainder of the site.

Assumed water levels are noted on the plan indicating that these workings may now be flooded.

While no thickness is indicated on the plans a thickness of 0.90m has been assumed based on the name of the seam.

The depth of this coal seam beneath the site is unknown but it must lie at a depth greater than the Crombourke (or Pasture) Seam due to its position in the stratigraphical sequence.

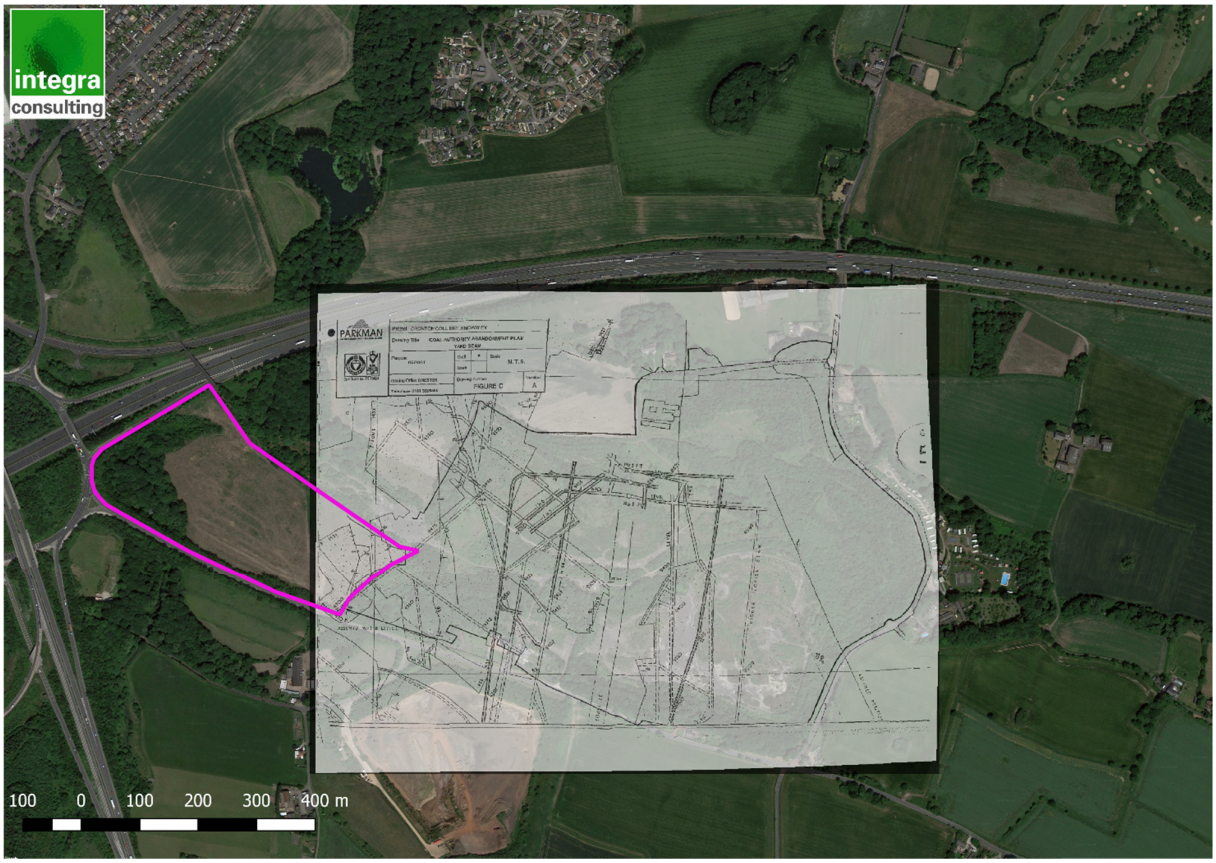


Figure 6.5.9.3: Approximate overlay of the Coal Authority Abandonment Plan for the Yard Seam.

Ince Six Feet (or Earthy Delf) Seam

Working within this coal seam do not appear to be recorded beneath the site but longwall workings are noted approximately 500m to the north east of the site.

While no thickness is indicated on the plans a thickness of 1.80m has been assumed based on the name of the seam.

The depth of this coal seam beneath the site is unknown but it must lie at a depth greater than the Yard Seam due to its position in the stratigraphical sequence.

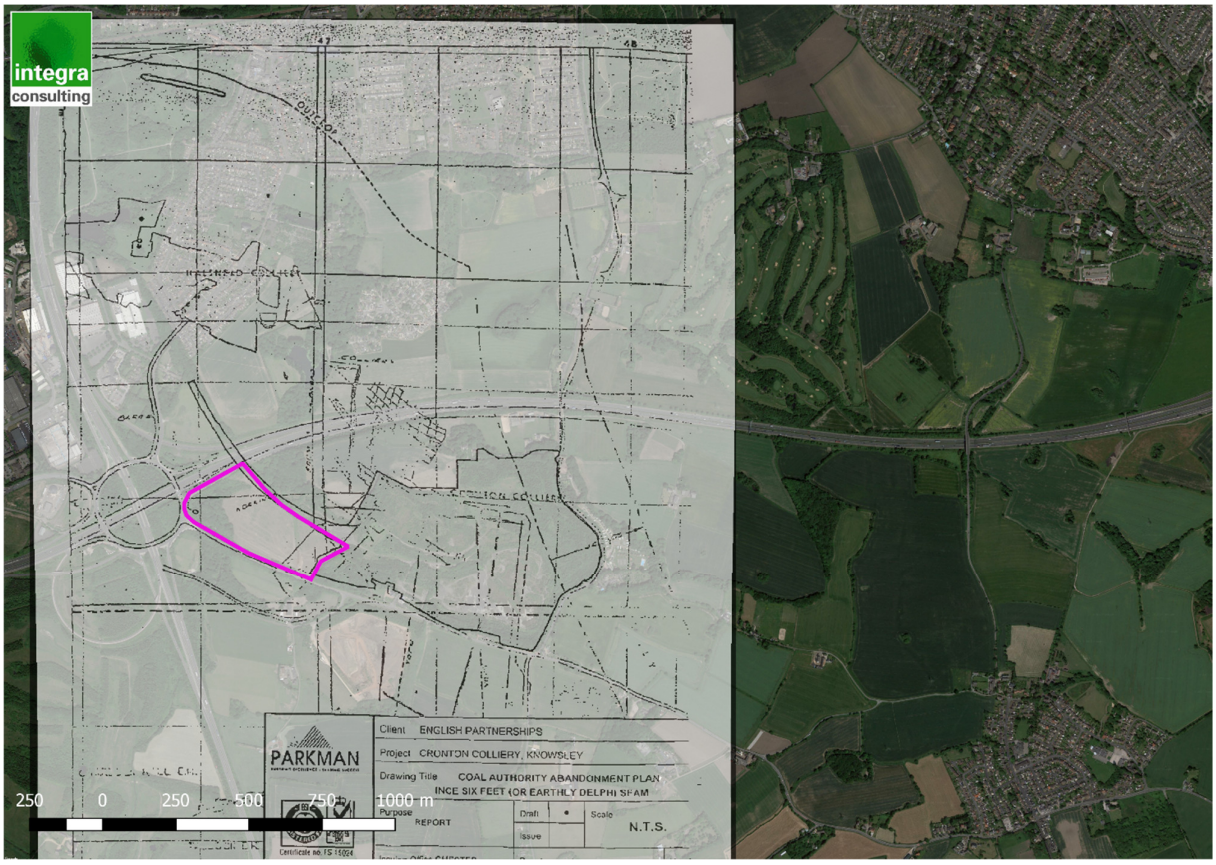


Figure 6.5.9.4: Approximate overlay of the Coal Authority Abandonment Plan for the Ince Six Feet (or Earthy Delf) Seam

Higher Florida (or Higher Bug) Seam

Suspected pillar and stall workings are recorded beneath the eastern section of the site and are recorded to have been undertaken in June 1928. However, there are also indications from the plan that workings may extend across the remainder of the site.

A barrier against possible old workings from Halsnead Colliery may be also be present across the western section of the site so it is possible that workings from this colliery may also be present beneath the remainder of the site.

Parkman state that the major coal seam was recorded as 2.11m thick and that pumps were noted to dewater the workings so it is likely that these workings are now flooded.

The depth of this coal seam beneath the site is unknown but it must lie at a depth greater than the Ince Six Feet (or Earthy Delf) Seam due to its position in the stratigraphical sequence.



Figure 6.5.9.5: Approximate overlay of the Coal Authority Abandonment Plan for the Higher Florida (or Higher Bug) Seam

Cheshire (or Pigeon House) Seam

Working within this coal seam do not appear to be recorded beneath the site but pillar and stall workings undertaken between December 1935 and February 1936 are noted approximately 250m to the north east of the site.

The depth to this seam from the No.1 shaft at Cronton Colliery was 215.8m. However, the depth to this coal seam beneath the site is unknown but it must lie at a depth greater than the Higher Florida (or Higher Bug) Seam due to its position in the stratigraphical sequence.



Figure 6.5.9.6: Approximate overlay of the Coal Authority Abandonment Plan for the Cheshire (or Pigeon House) Seam

Haigh Yard (or Burgy) Seam

Longwall workings are recorded beneath the eastern section of the site and are suspected to have been undertaken between 1945 and 1949. However, there are also indications from the plan that workings may extend across the remainder of the site.

The depth to this coal seam beneath the site is unknown but it must lie at a depth greater than the Cheshire (or Pigeon House) Seam due to its position in the stratigraphical sequence.



Figure 6.5.9.7: Approximate overlay of the Coal Authority Abandonment Plan for the Haigh Yard (or Burgy) Seam

Rushy Park Seam

Longwall workings are recorded beneath the eastern section of the site and are suspected to have been undertaken between the mid 1930's and early 1940's. However, there are also indications from the plan that workings may extend across the remainder of the site.

Parkman state that the major coal seam was recorded as 1.27m thick and that pumps were noted to dewater the workings so it is likely that these workings are now flooded.

The depth to this coal seam beneath the site is unknown but it must lie at a depth greater than the Haigh Yard (or Burgy) Seam due to its position in the stratigraphical sequence.



Figure 6.5.9.8: Approximate overlay of the Coal Authority Abandonment Plan for the Rushy Park Seam

6.6 Historical Surface Excavations

Evidence for historical surface excavations (Ravenhurst Pits) have been recorded on-site since prior to the mid-19th Century. However, as stated in Section 6.5.1 at this stage it is unclear if these pertain to historical coal mine or clay pit workings.

Furthermore, the Groundsure information obtained for the site and its surrounds indicates that several historical ground workings have occurred within or close to the

site and that current ground workings are active within 1000m of the site. Further details can be found in the table below.

Dataset	Details
Historical Surface Ground Workings	➢ There are 7 No. historical surface ground workings located within or close to the sites north eastern section and along the northern boundary that pertain to Cronton Colliery, ponds and refuse heaps. These are dated between 1925 and 1989. ➢ There are 33 No. historical ground workings within 250m of the site that pertain to Cronton Colliery, ponds, reservoirs, refuse heaps, brick works, unspecified pits and cuttings. These are dated between 1891 and 1989.
Current Ground Workings	➢ There are 17 No. current ground workings within 1000m of the site that pertain to clay and shale, sandstone and deep coal. The closest of these being Cronton Claypit that is located approximately 325m to the south east of the site. Except for Cronton Claypit these have now all ceased.

Due to the history of mineral extraction and the presence of numerous clay pits, sandstone quarries and collieries within the surrounding area, the presence of further unrecorded historical excavations on-site cannot be discounted.

A site features plan showing the location of the historic excavations is contained within Appendix 8.

6.7 Non-Coal Mining

The Groundsure information obtained for the site and its surrounds indicates that the southern section of the site lies within a designated non-coal mining area. Further details pertaining to non-coal mining from the Groundsure GeoInsight report have been summarised within the table below.

Dataset	Details
Non-Coal Mining	➢ The study site is located within the specified search distance of an identified non-coal mining area that pertains to an unknown vein mineral in which sporadic underground mining of restricted extent may have occurred. Based on the mapping this most likely pertains to the Etruria Formation.
Johnson Poole and Bloomer	➢ The site does not lie within 1000m of a JPB mining area.
Non-Coal Mining Cavities	➢ The site does not lie within 1000m of any designated non-coal mining cavity areas.
Natural Cavities	➢ The site does not lie within 1000m of any designated natural cavity areas.
Brine Affected Areas	➢ The site does not lie within 1000m of any designated brine extraction areas.
Gypsum Extraction	➢ The site does not lie within 1000m of any designated gypsum extraction areas.

Tin Mining	➢ The site does not lie within 1000m of any designated tin mining areas.
Kaolin and Ball Clay	➢ The site does not lie within 1000m of any kaolin or ball clay mining areas.

It is envisaged that the non-coal mining area identified for the site pertains to the Etruria Formation as the area indicated in the GeoInsight report coincides with the outcrop position of this rock strata on the BGS Geological Maps.

6.6 Previous Site Investigations

Integra Consulting Environmental (March 2016)

Integra Consulting Environmental undertook a site investigation in March 2016. The site investigation works comprised 24 No. trial pits excavated to depths of between 0.30m and 5.70m bgl across the site and targeted the larger Ravenhurst Pit to delineate the area and depth of the pit. A second, smaller, possible pit is located to the north west of the first pit, however, was not investigated due to the presence of overhead electricity cables.

The typical ground conditions encountered during the site investigation are as follows:

- TOPSOIL with rootlets and in places whole and half bricks to a depth of 0.30m bgl, underlain by:
- [In places] MADE GROUND comprising firm to stiff, dark brown, slightly sandy, gravelly CLAY with occasional whole and half bricks and angular cobbles of concrete OR loose to very loose, grey, clayey, angular GRAVEL, COBBLES and BOULDERS of mudstone and sandstone to a depth of between 0.85m and 2.75m bgl, underlain by:
- Firm to stiff, becoming stiff to very stiff with depth, friable in places, greyish brown, slightly sandy, slightly silty, gravelly CLAY with occasional rounded to subangular boulders of mixed lithologies and occasional gravel to cobbles sized pockets of sand, to a depth of between 2.30m and 5.50m bgl, underlain by:
- Weathered, greyish green / pink SANDSTONE to a depth of between 5.10m and 5.70m bgl, where the trial pits were terminated.

No groundwater was encountered in any of the trial pits.

The exploratory hole logs and plan are contained within Appendix 11.

Soil Mechanics Cronton Colliery Site investigation (2003)

Soil Mechanics undertook a ground investigation at the wider Cronton Colliery site in 2003. The exploratory holes located on-site included 6 No. shell and auger boreholes drilled to depths of between 6.45m and 9.30m bgl (13.14m – 14.88m AOD), a single rotary borehole (BH124R) continued from BH124 to a depth of 20.20m bgl (2.39m AOD) and 6 No. trial pits excavated to depths of between 3.00m and 4.00 m bgl (17.18m – 20.55m AOD).

The typical ground conditions encountered during the site investigation is as follows:

- Grassed TOPSOIL to depths of between 0.10m and 0.30m bgl, underlain by:
- [In places] MADE GROUND comprising firm, dark grey, slightly sandy, gravelly CLAY with bricks and concrete rubble to a depth of between 1.00m and 3.50m bgl (18.64m – 23.55m AOD), underlain by;
- Firm to stiff, very stiff in places, orangish grey, slightly sandy, slightly gravelly CLAY with rare, reddish brown sand lenses to a depth of between 5.50m and 9.15m bgl (13.50m – 16.28m AOD), underlain by;
- [In places] Very weak to moderately weak, reddish grey SANDSTONE to a depth of at least 9.30m bgl (13.83m AOD).
- [In places] Very weak to moderately weak, orangish grey or bluish grey MUDSTONE with subordinate medium beds of sandstone to a depth of 20.20m bgl (2.38m AOD).

No groundwater was encountered in any of the exploratory holes.

The factual ground investigation report is contained within Appendix 12.

6.7 Hydrology and Hydrogeology

Environmental data relevant to the site and its immediately surrounding area has been obtained from sources available in the public domain. In addition, an

environmental report was obtained from Groundsure. The Enviro Insight report and associated maps that have been inspected are presented in Appendices 4 and the principal observations in relation to waters and flooding can be summarised as follows:

Data Type	Details
Flooding	➢ The majority of the site lies within a Flood Zone 1 with the exception the area in the vicinity of Chapel Brook in the western site section which is designated as Flood Zones 2 and 3.
Surface Water Features	➢ Chapel Brook and a drain are present in the western site section. ➢ Brook Covert / Fox's Brook and pond exist along the south eastern boundary of the site.
Surface Water Abstractions	➢ No Surface Water Abstractions are located on-site. ➢ 5 No. Surface Water Abstractions exist within 2km of the site. All are historic with the exception of a single surface water abstraction license located 680m to the south west pertaining to the abstraction of water from Ochre and Dog Clog brook for spray irrigation by Belpool Development Ltd (License No.:2569028018).
Nitrate Vulnerable Zones	➢ The site lies within a surface water Nitrate Vulnerable Zone.
Superficial Aquifer	➢ The superficial deposits on-site are classed as a Secondary Undifferentiated Aquifer with the exception of the alluvium deposits in the vicinity of Chapel Brook which are classed as a Secondary A Aquifer.
Bedrock Aquifer	➢ The bedrock on-site is classified as a Secondary A Aquifer.
Groundwater Abstraction License	➢ There are no groundwater abstraction licenses located on-site. ➢ 15 No. groundwater abstraction licenses exist within 2km of the site. The nearest is located 1230m to the south and pertains to the abstraction of groundwater from boreholes as at La Pumping Station, Whiston for potable water. The remainder pertain to the abstraction of water for potable water, general use, water bottling, spray irrigation, cooking, sanitary, drinking and washing.
Licensed Discharge Consents	➢ There are no licensed discharge consents located on-site. ➢ There are 11 no. licensed discharge consents located within 500m of the site the nearest is located 10m to the south east and pertains to the discharge of process effluent, the license was revoked in 1991. The remainder pertain to the discharge of sewage / treated effluent and surface water.
Source Protection Zones	➢ The site is not located within a Source Protection Zone. ➢ A Total Catchment (Zone 3) Source Protection Zone is located 20m to the south west.
Pollution Incidents to Controlled Waters	➢ There are no recorded pollution incidents to controlled waters located on-site. ➢ There are 4 No, recorded pollution incidents to controlled waters located within 500m of the site the nearest pertains to a Category 3 (Minor) Incident on the 25th February 2002 relating to the discharge of oil or fuel 70m to the south of the site. The remainder pertain to Category 3 (Minor) or Category 4 (No impact) incidents between February and October 2002.

For further details please see the Groundsure Enviro Insight Report contained in Appendix 4.

6.8 Hazardous Installations, Landfill and Waste

The following information relating to hazardous installations, landfill and waste obtained from the Groundsure Enviro Insight report, published information and the walkover survey can be summarised as follows:

Data Type	Details
Environment Agency Recorded Landfill Sites	➢ There are no Environment Agency Recorded Landfill Sites located on-site. ➢ A single Environment Agency Recorded Landfill Site is located within 2km of the site, pertaining to Cronton Quarry for inert waste located 130m south east of the site.
Historic Landfill Sites	➢ There are no recorded Historic Landfill Sites located on-site. ➢ The nearest Historic Landfill Site is located approximately 750m to the north west and pertains to the Coalgate Lane landfill site.
BGS Recorded Landfill Sites	➢ There are no BGS recorded landfill sites located on-site. ➢ There is a single BGS recorded landfill site located within 1.5km of the site, pertaining to Whiston Tip in St Helens, 1214m to the north of the site.
Local Authority Recorded Landfill Sites	➢ There are no Local Authority Recorded Landfill Sites located on-site. ➢ 4 No. refuse tips have been recorded in the Local Authority Historic Mapping located between 959m and 2399m north and north west of the site.
Local Authority Pollution Prevention and Control	➢ There are no recorded local authority pollution prevention and control licenses / enforcements located on-site or within 500m of the site.
Registered Radioactive Substances	➢ There are no registered radioactive substances located on-site or within 500m of the site.
Registered Waste Treatment, Transfer or Disposal Sites	➢ There are no registered waste treatment, transfer or disposal sites located on-site or within 500m of the site.
Industrial Land Use	➢ There are no recorded industrial land uses located on-site, however, Ravenhurst pits existed on-site which are anticipated to be historic clay pits. ➢ The nearest recorded industrial land use pertains to Cronton Colliery located adjacent to the site to the north east. Numerous industrial land uses exist approximately 300m to the west of the site in the vicinity of the former Huyton Quarry which is now an industrial estate.

For further details please see the Groundsure Enviro Insight Report contained in Appendix 4.

6.9 Radon

The Indicative Atlas of Radon in England and Wales produced by the Health Protection Agency and British Geological Survey indicates that the site lies within a

lower probability area where between 1% and 3% of homes are above the action level. Consequently, BR211 (2015) indicates that no radon protection measures are necessary in the construction of new dwellings or extensions.

Map 13 of the Indicative Atlas of Radon in England and Wales and BR211 (2015) are contained within Appendix 7.

6.10 Services

An electricity pylon is present in the western site section with overhead cables extending across the central site section towards the north east. Further services may be present, it is recommended that full service plans are obtained prior to intrusive site investigation works.

6.11 UXO

Zetica UXO risk maps indicate that the site lies within an area of low risk of Unexploded Ordnance (UXO).

7.0 CONCLUSIONS

7.1 General

The site is largely a greenfield site with the exception of a mineral railway being present along the north-eastern boundary between 1925 and 1977 and Ravenhurst Pits in the central site section from 1845 until 1959. A track has been recorded running approximately north to south from Cronton Road through the central site section and along the north-eastern boundary since 1959, although the raised track is still recorded it is no longer evident due to the dense vegetation. By 1977, Cronton Road had been constructed along the south-western boundary of the site and the M62 and Tannock Roundabout adjacent to the north western boundary. An electricity pylon was constructed in the western site section sometime between 1974 and 1977. The site has remained largely unchanged since.

7.2 Geotechnical and Geology

On the basis of the desk study information obtained, the following typical underlying ground conditions are anticipated for the site:

- TOPSOIL to a depth of 0.30m bgl, underlain by:
- Firm to stiff, very stiff in places, brown, mottled grey, slightly gravelly, slightly sandy CLAY with rare reddish brown sand lenses to a depth of between 2.30m and 9.15m bgl, underlain by:
- [In places] Weathered, very weak to moderately weak, reddish grey SANDSTONE to a depth of at least 9.30m bgl.
- [In places] Very weak to moderately weak, orangish grey or bluish grey MUDSTONE with subordinate medium beds of sandstone to a depth of 20.20m bgl.

In the vicinity of the Ravenhurst Pits, the topsoil was underlain by MADE GROUND comprising frim to stiff, dark grey, slightly gravelly, slightly sandy CLAY or loose to

very loose, grey, clayey, GRAVEL, COBBLES and BOULDERS of mixed lithologies with occasional whole and half bricks to a depth of between 0.85m and 3.50m bgl. Exceptions to the above typical ground conditions may exist in the western site section in the vicinity of Church / Ochre Brook where alluvium deposits are recorded

Recommendations for the scope of intrusive site investigations are detailed in Section 7.12.

Shallow Bedrock

Boreholes undertaken in the northern site section indicate there may be shallow bedrock along the north eastern and north western boundary of the site. The depth to bedrock is anticipated to increase towards the south, nevertheless, the depth of bedrock should be determine during intrusive site investigations.

Shrink and Swell Clays

Due to the anticipated presence of clay across the site and the presence of numerous trees on-site, particularly along the boundaries, there is potential for the clays to shrink or swell if the moisture of the clays is changed through the removal / planting of trees. Changes in the volume of the clays through shrinking or swelling / heaving may cause structural damage to the development, therefore, the potential for volume change should be determined through geotechnical testing during intrusive site investigations to allow appropriate foundation and external design to be completed.

7.3 Coal Mining

7.3.1 Shallow Coal Mining

The desk study works have highlighted that there may be features present at shallow depth beneath the site that may relate to historic shallow coal mine workings. At this stage it is unclear if these features pertain to an unrecorded coal seam, an infrastructure element pertaining to Cronton Colliery, a natural geological disturbance (e.g. fault zone) or errors in the dataset reviewed.

Consequently, due to this uncertainty a conservative approach should be adopted and further intrusive investigations are recommended to either prove or disprove the potential scenarios outlined in Section 6.5.8 and to further ascertain the risk posed to the site from any potentially shallow coal mine workings.

Furthermore, emphasis should be placed on the small fault block within the central western section of the site as coal is anticipated to be located at shallower depth within this area and unrecorded workings may have occurred.

7.3.2 Deep Coal Mining

Numerous thick coal seams are anticipated to be present beneath the site with recorded workings within the London Delf (or Pasture) Seam, Crombourke (or Pasture) Seam, Yard Seam, Higher Florida (or Higher Bug), Haigh Yard (or Burgy) Seam and Rushy Park Seam. It should be noted that unrecorded workings may also be present at depth.

Despite some of these workings being undertaken using pillar and stall methods and an increased risk of pillar deterioration due to recorded flooding within these mine workings it is unlikely that the site will be affected by any of these deep coal mine workings as they are anticipated to be located at depths greater than 140m beneath the site.

Furthermore, these deep coal seams are anticipated to be overlain throughout the stratigraphic sequence by thick beds of relatively competent sandstone that are likely to bridge or arrest any migrating voids from these workings well before they reach rockhead or culminated with other overlying coal seams.

7.3.4 Coal Mine Entries

After reviewing the available desk study information no abandoned mine entries are recorded to have been located on-site. However, abandoned mine entries are recorded within 500m of the site with the nearest of these being located approximately 400m to north east of the site and associated with the former Cronton Colliery.

However, the site lies within an area surrounded by historical coal mine workings and infrastructure and within an area where potential shallow mine workings could have occurred. Consequently, unrecorded mine entries / ventilation / air shafts may be present within the sites boundaries.

Consequently, there is a risk that unrecorded mine entries may be encountered across the site and further site investigation works will likely be required to further ascertain the risk. As noted in Section 7.3.1 the small fault block that is present within the central western section of the site is anticipated to be at increased risk.

7.4 Historical Surface Excavations and Non-Coal Mining

Historical surface excavations (Ravenhurst Pits) have been recorded on-site and the southernmost section of the site lies within a recorded non-coal mining area that is anticipated to pertain to the Etruria Formation.

Numerous historical surface excavations are also recorded close to the site and due to the history of mineral extraction and the presence of numerous clay pits, sandstone quarries and collieries within the surrounding area further unrecorded historical surface excavations may be present on-site.

Consequently, there is a risk that further unrecorded historical surface excavations may be present across the site.

7.3 Contaminated Land Legislative Framework

Environmental risks are assessed in accordance with Contaminated Land (England) (Amendment) Regulations (2012), Part IIA of the Environmental Protection Act 1990, and Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance, DEFRA (2012). Part IIA provides a statutory definition of contaminated land. To fall within this definition it is necessary that, as a result of the condition of the land, substances may be present on or under the land such that:

(a) Significant harm is being caused or there is a significant possibility of such harm being caused; or
(b) Significant pollution of controlled waters is being caused, or there is a significant possibility of such pollution being caused.

Risk from contamination is assessed by consideration of possible linkages between contaminant sources and potential receptors which could be harmed or polluted and the potential pathways between them – known as the Contaminant Linkage. For a risk of pollution or environmental harm to occur as a result of ground contamination, all of the following elements must be present:

- A source – a substance that is capable of causing pollution or harm;
- A receptor – something which could be adversely affected by the contaminant;
- A pathway – a route by which the contaminant can reach the receptor.

If one of these elements is absent there can be no significant risk. If all are present then the magnitude of the risk is a function of the magnitude and mobility of the source, the sensitivity of the receptor and the nature of the migration pathway.
The Environment Agency Contaminated Land Report CLR 11 Model Procedures for the Management of Land Contamination provides the technical framework for structured decision making about land contaminations. CLR 11 advocates a phased approach to risk assessment comprising:

- Preliminary Risk Assessment (PRA) – desk study and qualitative assessment;
- Generic Quantitative Risk Assessment (GQRA) – assessment of contaminant concentrations against generic assessment criteria;
- Detailed Quantitative Risk Assessment (DQRA) – detailed site specific risk assessment and development of site-specific assessment criteria.

Each of these phases follows the same basic steps but adds site specific details and further certainty into the assessment as the stages progress. The basic steps are:

- Hazard Identification and hazard assessment- development or refinement of the source – pathway – receptor conceptual model, and identification of potential pollutant linkages;

- Risk Estimation – qualitative risk estimation predicting magnitude and probability of potential consequences that may arise as a result of a hazard.
- Risk Evaluation – deciding whether a risk is unacceptable.

The key to the classification is that the designation of risk is based upon the consideration of both:

(a) The magnitude of the potential consequence which takes into account both the potential severity of the hazard and the sensitivity of the receptor;
(b) The magnitude of probability which takes into account both the presence of the hazard and receptor and the integrity of the pathway.

Generic Quantitative Risk Assessment (GQRA) will utilise generic assessment criteria (GAC) for the purposes of screening allowable concentrations in comparison to the measured site concentrations. The GAC are defined based on the critical receptors identified at the site. Receptors are considered in relation to:

- Human health receptors (e.g. site users) via measured solid concentrations;
- The water environment (e.g. groundwater and surface water) via measured leachate / water concentrations.

Additional receptors may be relevant dependant on the site e.g. flora/fauna, water supply pipes, buried concrete.

The GAC adopted for assessment of soils in relation to Human Health are based on published Soil Guideline Values (SGV) in 2009 for those compounds for which published criteria are available for varying scenarios (residential, commercial, allotment). In the absence of SGVs the following GAC defining documents are adopted - LQM/CIEH S4ULs (2015), CL:AIRE Soil GAC for Human Health Assessment (2010) and Category 4 Screening Levels (C4SL's) (2014).

GACs for waters must be selected to assess potential risks to the identified environmental receptors. There are numerous UK and European guidelines for waters based on the site situation and different receptors. GACs utilised include - The River Basin Districts Typology, Standards and Groundwater threshold values (Water

Framework Directive) (England and Wales) Directions 2009 (Part 7:Groundwater Threshold Values), UK Drinking Water Standards (2000), Environmental Quality Standards, World Health Organisation concentrations, Environment Agency guidance concentrations and United States Environmental Protection Agency – Region 9 GACs.

7.4 Sources of Contamination and Probable Contaminants

On the basis of the desk study information the following potentially contaminative on-site sources have been identified:

Potentially Contaminative Source	Associated Determinands	Comments
Made Ground	Unknown – suspected to comprise those determinands associated with historic on-site developments and determinands Ground gas – Carbon dioxide, methane and hydrogen sulphide.	Made Ground anticipated in the location of the track, infilled Ravenhurst Pits and along the north-eastern boundaries in the location of the historic mineral railway. Colliery spoil may have been used to infill pits and may be present elsewhere on-site given the close proximity to Cronton Colliery.
Historic Mineral Railway	Metals, phenols, sulphates, PCBs, TPH and PAHs	Clinker, ash and slag were used extensively during the 19th and 20th Centuries as fill material to raise levels, form embankments and as ballast. Local contamination hotspots of oils, lubricants possible due to spillages / leakages.
Historic Tank	Unknown – suspected to comprise those determinands associated with historic on-site developments and determinands	A tank of unknown content was present in the north western corner of the site between 1925 and 1947.
Off-Ste Colliery Spoil Heaps	Metals, low pH, sulphates	A disused heap is recorded adjacent to the site to the north east, possible colliery spoil.
Underlying Coal Measures	Ground gas – carbon dioxide and methane	Worked coal seams (100m – 670m bgl) and coal at a depth of approximately 50m to 75m bgl exist beneath the site, the coal may be shallower within the popup fault. Fractures or fissures and faults within the bedrock and superficial deposits may create a preferential pathway for ground gas migration.
Organic / Alluvium Deposits		Potentially organic deposits located within the western site section and along the south eastern boundary in the location of waterways. Organic peaty clay was encountered during Integra Consulting's previous site investigation.

It should be noted that potentially contaminative unrecorded historic activities may have occurred (e.g. the use or deposition of made ground from off-site during historic

on-site developments) and in this event, further contaminative sources may be present.

7.4.1 Unknowns

Following the desk study, the areas of uncertainty are summarised as follows:

- Extent and depth of made ground
- Presence of colliery spoil on-site
- Depth of coal in middle fault block

7.4.2 Chemical Testing

In consideration of all the above and the guidance contained in the appropriate DEFRA industry profile and associated documents, it is therefore proposed to test for at least the following basic determinands:

Arsenic, barium, beryllium, boron, cadmium, chromium, chromium (hexavalent), copper, cyanide, lead, mercury, nickel, selenium, vanadium, zinc, sulphate, pH, Total Petroleum Hydrocarbon screen and Speciated Polyaromatic Hydrocarbons.

Phenols and PCBs should be tested in the vicinity of the historic mineral railway.

If elevated concentrations of TPH are recorded within the made ground Speciated Aliphatic and Aromatic Total Petroleum Hydrocarbon Fractions (TPHCWG) and VOC testing should be undertaken.

All shallow made ground solid samples selected for chemical testing will also be tested for asbestos. Positive asbestos identification will be quantified for further analysis.

7.5 Pathways for Contamination

7.5.1 Controlled Waters

The pathways along which contamination could potentially reach the controlled waters receptors during use and after completion of development works are as follows:

- Vertical migration along future foundations and pooling at base / beneath foundations.
- Vertical migration through granular made ground and granular natural deposits / lenses in natural cohesive deposits.
- Vertical migration along faults.
- Lateral migration along low permeability natural deposits and pooling at relative low points.
- Negligible infiltration through low-permeability natural cohesive deposits.
- Migration through porous bedrock.
- Migration along groundwater flow.
- Overland flow

7.5.2 Human Health

The pathways along which contamination could potentially reach the receptors on-site during use and after completion of development works are detailed in 'Updated Technical Background to the CLEA Model' (Environment Agency 2009) but can be summarised as follows:

- Ingestion of soil directly and indoor dust *
- Inhalation of soil dust (indoor and outdoor).
- Dermal contact with soil (indoor and outdoor).
- Inhalation of soil vapours (indoor and outdoor).
- Oral background.
- Inhalation background.

** Treated as one pathway*

7.5.3 Ground Gas Pathways

The pathways along which ground gas could potentially reach the receptors on-site during use and after completion of the development works are as follows;

- Migration through fractures and fissures in bedrock
- Preferential migration along foundations, service ducts / trenches
- Migration within groundwater
- Ingress through wall cavities and floors and accumulation
- Inhalation of ground gas and vapours

7.6 Receptors of Contamination

Human Health receptors for these pathways include the following:

a) Human Occupants – End Users (Commercial Land Use Scenario)
b) Construction workers.
c) The general public and adjacent site users.

Controlled waters receptors for these pathways include the following:

d) Groundwater contained within the Secondary Undifferentiated and Secondary A Aquifers within the superficial deposits and Secondary A Aquifer within the bedrock.
e) Surface water features – Church / Ochre Brook on site, ponds and Brook Covert / Fox's Brook adjacent to the site to the east

Other receptors for these pathways include the following:

f) Subsurface plastic (e.g. potable plastic water pipe).
g) Building fabric (e.g. concrete foundations, etc.).

7.7 Conceptual Model for Human Health Risk Assessment

A site conceptual model in the form of a linkage table for the purposes of a preliminary risk assessment for the human health of site occupants has been produced as a result of the probable contaminants, pathways and receptors identified in Sections 7.4, 7.5 and 7.6 above:

Sources of Contamination	Pathway	Receptor	Hazard (severity)	Likelihood	Risk
Made Ground Historic Mineral Railway Historic Tank Off-Ste Colliery Spoil Heaps	Ingestion of contaminated soil and dust (indoor and outdoor) Dermal contact with contaminated soil (outdoor and indoor) Inhalation of contaminated dust (indoor and outdoor)	Human occupants and general public	Effect on human health **(Medium)**	**Unlikely:** Widespread made ground is not anticipated, however deep made ground is possible in the location of the infilled pits. Potential for made ground and associated contaminative hotspots along the north-eastern boundary near the historic mineral railway. Potential for colliery spoil to be present as a disused heap (c. 20m x 75m x 1m) has been recorded adjacent to the site to the north east. However, it is anticipated that as part of the proposed development hardstanding will be present across the majority of the development significantly reducing if not negating any ingestion, dermal and inhalation pathways. Areas of soft landscaping remain a higher risk.	LOW
		Construction workers		**Low Likelihood**: Construction workers at increased risk due to their acute interaction with soil. Although widespread made ground is not anticipated, there is potential for hydrocarbon / asbestos hotspots and contamination associated with potential made ground along the north eastern boundary and infilled pits as well as potential for colliery spoil. Dust is likely to be generated during any earthworks and construction, consequently this pathway will become prevalent.	LOW - MODERATE
	Inhalation of soil vapours (indoors and outdoors)	Human occupants and general public		**Unlikely:** No widespread potential source of VOCs identified on-site, possible localised VOC hotspots however low likelihood of VOCs remaining due to their inherent volatility and mobility. Pathways will be significantly reduced if not negated by the anticipated presence of hardstanding across the majority of the proposed development.	LOW
		Construction workers		**Low likelihood**: Construction workers at increased risk as disturbance of the ground and exposure of possible contaminants during construction works may increase prevalence of soil vapours. However, no widespread source of VOCs identified and low likelihood of VOCs remaining on-site.	LOW

A diagram of the conceptual site model is contained within Appendix 9.

7.8 Conceptual Model for Ground Gas Risk Assessment

A conceptual model in the form of a linkage table for the purposes of a preliminary risk assessment for ground gas has been produced as a result of the probable contaminants, pathways and targets identified above as follows:

Source	Pollutant	Pathway	Receptor	Hazard (severity)	Likelihood of Occurrence	Risk
Made Ground	Methane Carbon Dioxide Hydrogen Sluphide	Migration through fractures and fissures in bedrock Preferential migration along foundations, culverts, service ducts / trenches Migration within groundwater Ingress through wall cavities and floors and accumulation Inhalation of ground gas and vapours	Human occupants Site Workers	Effect on human health **(Mild to Severe*)**	**Unlikely:** Widespread made ground is not anticipated however deep made ground may be present in the vicinity of the infilled pits. Ground gas generation potential anticipated to be low. Potential for hydrocarbon contamination hotspots along the north-eastern boundary associated with the historic mineral railway which may increase ground gas generation in localised areas. Migration through proposed plots possible e.g. ground floor slabs and wall cracks. Disturbance of the ground and exposure of contaminants during construction works may increase ground gas generation temporarily.	LOW
			Building and Structures	Damage to building **(Mild)**		LOW
Organic Deposits / Alluvium	Methane Carbon dioxide Carbon Monoxide		Human occupants Site Workers	Effect on human health **(Mild to Severe*)**	**Unlikely**: Thin bands of organic / peaty clay has been recorded on-site in the vicinity of the infilled pits and alluvium is recorded in the vicinity of Church Brook, however ground gas generation is anticipated to be low. Hardstanding will reduce the migration of ground gas following development, however, migration through proposed plots possible e.g. ground floor slabs and wall cracks.	LOW
			Building and Structures	Damage to building **(Mild)**		LOW
Underlying Coal Measures and Workings			Human occupants Site Workers	Effect on human health **(Mild to Severe*)**	**Low Likelihood:** Although deep underground mine workings exist on-site, there is evidence that the mine workings are flooded, therefore the risk is deemed low. Potential shallow mine workings have been recorded to	LOW - MODERATE

(100m – 670m bgl)			Building and Structures	Damage to building **(Mild)**	the north east of the site, however, the shallow coal is anticipated to be between 50m and 75m bgl on-site and no mine workings have been recorded on-site. Nevertheless, due to the presence of faults on-site and consequently the anticipated presence of fractured rock, preferential pathways from underlying coal seams may exist on-site. However, the anticipated presence of relatively impermeable glacial till across the site will reduce pathways for ground gas migration. The anticipated presence of hardstanding across the site following development will also reduce the migration of ground gas, however, migration through proposed plots possible e.g. ground floor slabs and wall cracks.	

*Due to the risk of explosion.

Utilising the guidance stipulated in BS8485 (2015), BS8576 (2013) and CIRIA 665 (2007), the probability and consequence of the identified potential ground gas sources at the site are considered to result in a low level of risk. Consequently, given the sensitivity of the development, it is considered prudent to undertake ground gas monitoring for a period of 2 – 3 months with up to fortnightly visits to confirm this regime.

If any organic rich made ground deposits are identified or if previously unrecorded potential ground gas sources are recorded during the site investigation works then further ground gas monitoring may be required.

The length and frequency of the ground gas monitoring regime is subject to sampling method, initial results and alterations to the conceptual model as well as the proposed development.

A diagram of the conceptual site model is included within Appendix 9.

7.9 Conceptual Model for Waters Risk Assessment

A site conceptual model in the form of a linkage table for the purposes of a preliminary risk assessment for pollution of waters has been produced as a result of the probable contaminants, pathways and targets identified in sections 7.4, 7.5 and 7.6 above as follows:

Source	Pathway	Receptor	Hazard (severity)	Likelihood of Occurrence	Risk
Made Ground Historic Mineral Railway Historic Tank Off-Ste Colliery Spoil Heaps	Vertical migration along current and future foundations Vertical migration through granular made ground and / or natural deposits Vertical migration along faults Negligible infiltration through low permeability cohesive deposits Migration through porous bedrock	Groundwater within Aquifers Discharges from groundwater, (e.g. springs and rivers)	Effects to controlled waters (**Mild)**	**Pre-Development Site** **Low Likelihood**: No widespread contaminative sources anticipated on-site. Potential localised contamination associated with the infilled pits, historic mineral railway and historic tank. Colliery spoil may be present on-site which may lead to coal mine drainage containing low pH, metalliferous sulphide rich drainage, however the risk is deemed low. Vertical migration along faults possible, however, low permeability glacial till has been recorded across the site significantly reducing infiltration of contaminants and subsequent migration to the underlying aquifers.	LOW
				Post-Development Site **Low Likelihood:** Additional pathways may be created to the superficial aquifers along new foundations, however, the potential for infiltration and vertical migration is low due to the anticipated presence of hardstanding across the majority of the site. Furthermore, the anticipated presence of natural cohesive deposits will significantly reduce if not negate migration pathways to the underlying bedrock and Secondary A Aquifer.	LOW
	Lateral migration along low permeability cohesive deposits Lateral migration along historic drainage Migration along groundwater flow	Surface water courses & aquatic organisms	Effects to controlled waters: (**Mild**)	**Pre-Development Site:** **Low Likelihood:** Potential for lateral migration of contaminants along low permeability glacial till to Church Brook, Brook Covert / Fox's Brook and the ponds located along the eastern boundary, however widespread potentially contaminative sources not identified on-site. Migration along groundwater flow unlikely due to the presence of laterally extensive low permeability glacial till.	LOW
				Post-Development Site: **Low likelihood**: Lateral migration unlikely due to the lack of infiltration. Lateral migration of contaminants from off-site sources beneath hardstanding prevalent.	LOW
	Overland flow	Surface water courses & aquatic organisms	Effects to controlled waters: (**Mild)**	**Pre-Development Site:** **Unlikely:** Overland flow to surface water features unlikely due to the absence of hardstanding on-site.	LOW

				Post-Development Site: **Likely:** While overland flow is anticipated to increase for the post development site due to anticipated presence of hardstanding these materials will act as a low permeability barrier to any underlying contaminative sources. Consequently, while overland flow is likely to occur there it is unlikely that any significant contaminants will be present.	

A diagram of the conceptual site model is included within Appendix 9.

7.10 Preliminary Risk Assessment Summary

Human Health

On the basis of the human heath conceptual model the risk to human health is deemed low for end users and low – moderate for construction workers due to the possible presence of contamination in associated with the historic mineral railway, historic tank, infilled pits and colliery spoil. It is envisaged that with appropriate PPE and site management that risks to construction workers can be mitigated.

Ground Gas

No significant widespread ground gas source with a high ground gas generation potential has been identified on-site, however, localised made ground and organic deposits / alluvium have been recorded on-site and flooded mine workings that have been mined within the last 50 years exist beneath the site. Nevertheless, the gas risk is deemed low, therefore, it is considered prudent to undertake ground gas monitoring for a period of at least 2 to 3 months with up to fortnightly visits to confirm the ground gas regime.

Controlled Waters

Due to the anticipated presence of only localised contaminative sources on-site and the lack of shallow groundwater as well as the presence of low permeability glacial till cross the majority of the site, the risk to controlled waters is regarded to be low. The highest risk of contamination is thought to be associated with the made ground associated with the historic mineral railway and any colliery spoil that may be present on-site.

If unrecorded contaminative sources are noted, the above conceptual model may require re-assessment / re-appraisal.

7.11 Scope of Phase 2 Intrusive Geo-Environmental Ground Investigation

As a result of the preliminary risk assessment, a Phase 2 intrusive environmental ground investigation should be carried out to quantify the identified contaminative risks including made ground deposits e.g. infilled pits, the historic mineral railway, an historic tank and the effect of colliery spoil to the site. It is also recommended that spatial chemical testing of the onsite topsoil and subsoils are undertaken to determine their suitability for re-use and / or disposal from site.

Furthermore, to determine the geotechnical and geological properties of the underlying ground conditions, appropriate intrusive works and associated testing should be undertaken. Site investigation works will be required on a spatial and targeted basis based on design team requirements, to provide adequate assessment in terms of both environmental and geotechnical site parameters. The proposed site investigation works should comprise of the following:

- Shell and Auger Boreholes
- Trial Pits
- Rotary Holes

The rationale for the exploratory holes is discussed below:

- To allow the collection of samples from the made ground and natural deposits for chemical laboratory testing (solid and leachate samples) for the suite of determinands specified in Section 7.4
- To determine the extent and depth of the made ground.
- The location of the infilled Ravenhurst pits should be determined and their vertical and lateral extents should be defined. It is recommended that the material within these infilled pits is excavated and the underlying ground inspected for the presence of unrecorded mine entries.

- To determine the nature and extent of superficial deposits.
- Enable in-situ geotechnical testing including density testing (SPTs) and hand shear vein (HSVs) and laboratory testing including moisture content, undrained triaxial compressions without pore pressure, oedometer consolidation testing of the underlying made ground and natural deposits for the purposes of sub-structure design;
- Soluble sulphate (2:1 extract) and / or total sulphate and pH (to determine the suitable concrete classification in associated with relevant guidance e.g. BRE Special Digest 1).
- Shell and auger boreholes to allow the monitoring of the groundwater regime and ground gas.
- Rotary Holes – to determine the underlying solid bedrock sequence, the presence of any coal seams and / or evidence of mining or ground instability. A permit issued by the Coal Authority to access the underlying coal measures will be required for each rotary hole undertaken.

Given the anticipated significant (±1m – 2.5m) earthwork exercise, it is recommended that shallow soils are tested for an appropriate suite of determinands to ensure suitability and design of potential lime stabilisation scheme.

-

8.0 RECOMMENDATIONS

8.1 As a result of the information gathered and the risks identified in this report, it is regarded that there is a low to moderate risk to human health and a low risk controlled waters on the basis that no widespread potentially contaminative sources have been identified on-site, however, possible localised contaminative sources have been identified and possible pathways exist following development. Consequently, a Phase 2 intrusive environmental ground investigation should be undertaken and spatial and targeted chemical testing of the site materials and waters (if required) is considered prudent. In order to determine the suitability of existing site materials either for off-site disposal or re-engineering on-site, chemical laboratory testing should be undertaken for characterisation of site materials. The risk posed to construction workers can be mitigated using appropriate PPE.

8.2 On the basis that a low to moderate ground gas risk potential has been identified due to the underlying coal seams and on-site made ground and organic deposits, it is considered necessary to undertake ground gas monitoring for a period of 2 – 3 months. On the basis that the site lies within an area where less than 1% of homes are affected by radon at or above the Action Level; no radon protection measures are required.

8.3 From the results of the Phase 2 site investigation work – if this report identifies a potential risk and / or a requirement for further detailed site specific assessment, a Phase 3 environmental investigation report and / or a Remedial Strategy (informing on potential remediation solutions) may be required.

8.4 The nature and extent of the proposed targeted chemical and environmental testing should be confirmed, if time / commercial constraints allow, with the relevant Local Authority Environmental Health Officer and the Environment Agency prior to undertaking works on-site. Proceeding without agreement between regulatory authorities may result in further assessment being required.

8.5 It should be noted that, if any visual or olfactory evidence of contamination is encountered during remediation or construction work, then the Local Authority Environmental Health Officer and Environment Agency should be contacted immediately in order to agree any necessary remediation measures.

8.6 Due to geotechnical requirements, site investigation works should be undertaken across the entire site envelope including sufficient rotary holes, trial pits, shell and auger boreholes, and associated geotechnical in-situ / laboratory tests. These works will enable the designing of foundation, slabs and external areas / roads and underground drainage as well as assess any ground instability risk associated with previous mining activities by establishing the actual ground conditions at the site.

APPENDIX 1

SITE LOCATION PLAN



Notes.

1 All dimensions and levels are in metres unless noted otherwise.

2 This drawing is to be read in conjunction with all relevant Architects and Service Engineers drawings.

Key

Approximate Site Boundary

Rev	Drawn	Date	Description

Drawing Status
INFORMATION

Contract
CRONTON ROAD, HUYTON

Drawing Title
SITE LOCATION PLAN

Integra
consulting
environmental

Suite 4, 14-32 Hewitt Street, Manchester, M15 4GB
email: environmental@integraconsulting.co.uk
web: www.integraconsulting.co.uk
tel: 0161 237 9310

Scales	Date	
1:750@A1	AUGUST 2017	
Drawn: AJ	Checked: AE	
Contract No: 2956	Drawing No: SI–01	P1

APPENDIX 2

WALKOVER SURVEY PHOTOGRAPHS AND PHOTOGRAPHS LOCATION PLAN

Notes.

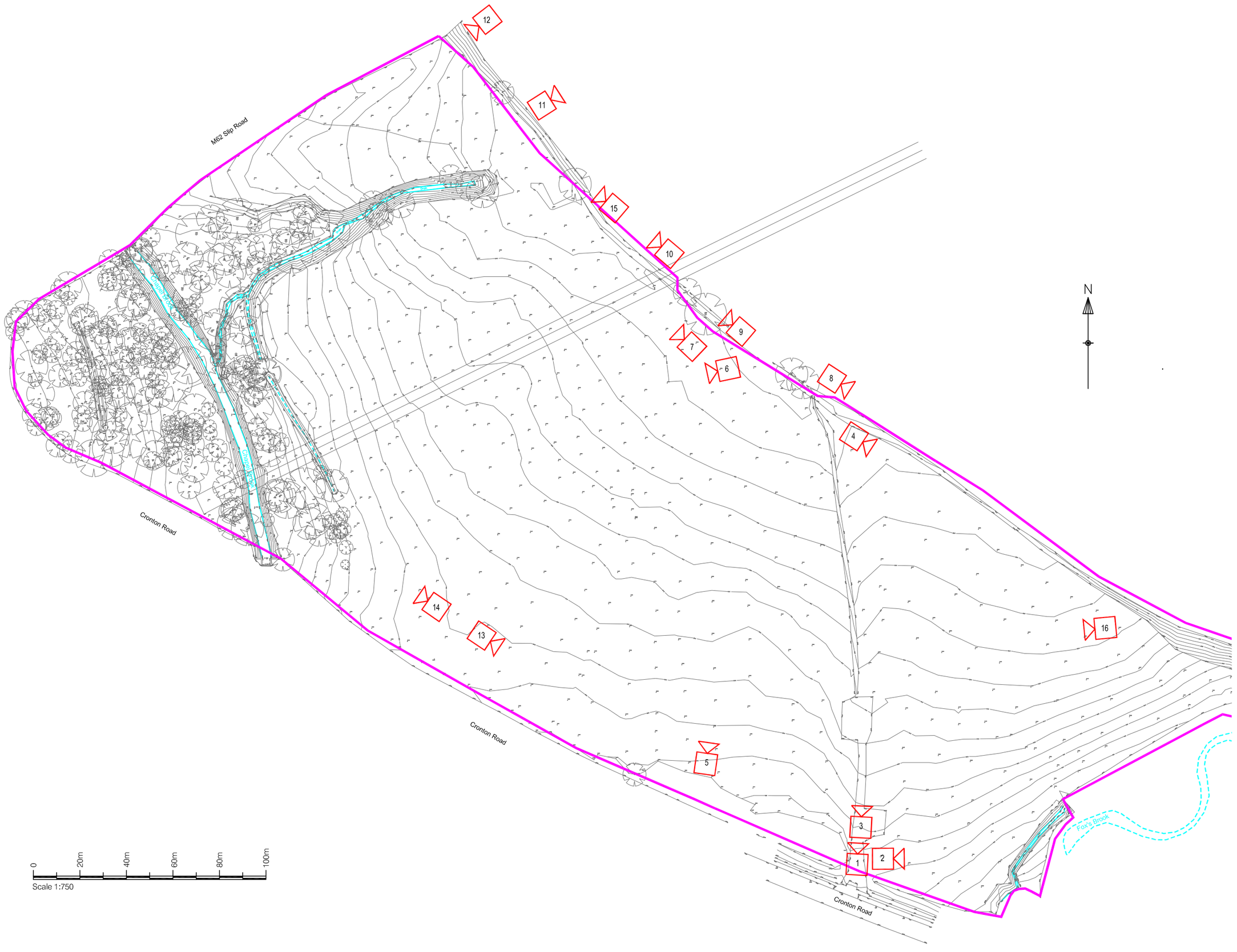
1 All dimensions and levels are in metres unless noted otherwise.

2 This drawing is to be read in conjunction with all relevant Architects and Service Engineers drawings.

Key

Approximate Site Boundary

Plate number, location and direction



Rev	Drawn	Date	Description

Drawing Status
INFORMATION

Contract
CRONTON ROAD, HUYTON

Drawing Title
SITE WALKOVER PHOTOGRAPH PLAN

Integra
consulting environmental

Suite 4, 14-32 Hewitt Street, Manchester, M15 4GB
email: environmental@integraconsulting.co.uk
web: www.integraconsulting.co.uk
tel: 0161 237 9310

Scales 1:750@A1	Date AUGUST 2017
Drawn AJ	Checked AE
Contract No 2956	Drawing No SI–02 P1



Plate 1: View north from the main access point along Cronton Road, showing an area of gavel hardcore and stockpiles of tree chippings to the west of the track.



Plate 2: View north east from the site entrance showing the densely vegetated south eastern corner of the site.



Plate 3: View north west showing the wood chipping stockpiles along the track in the central site section.



Plate 4: View east from the northern boundary showing the north eastern site section.



Plate 5: View north from the southern boundary showing the majority of the site.



Plate 6: View south west from the north eastern corner of the site showing the majority of the site.

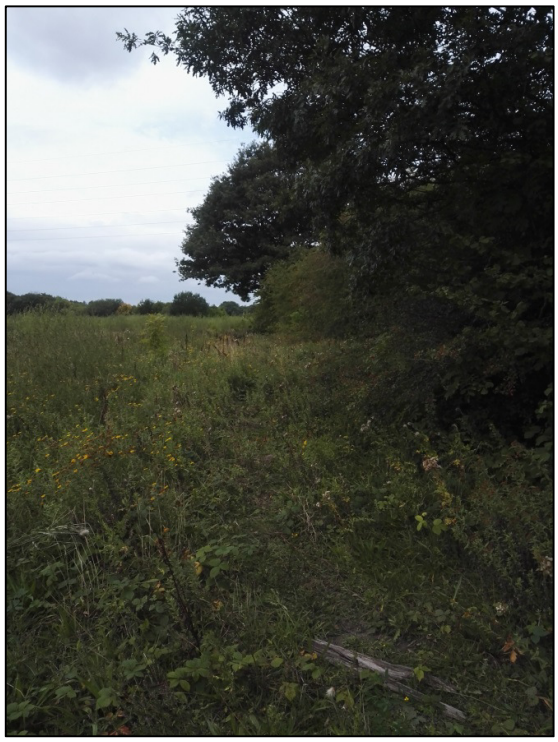


Plate 7: View west from the north eastern site section showing the northern boundary of the site.



Plate 8: View east from off-site adjacent the northern boundary, showing the northern boundary of the site and the area of the historic mineral railway leading to Cronton Colliery.



Plate 9: View west showing the suspected location of the historic mineral railway along the northern boundary.



Plate 10: View west showing gravel in the location of the historic track along the northern boundary.



Plate 11: View north from the northern boundary showing a steep cutting suspected to be the location of the historic mineral railway.



Plate 12: View south west from the north western corner of the site showing a slope down to the site from the northern boundary and wooden fencing and trees along the north western boundary.



Plate 13: View east showing the location of the historic Ravenhurst Pits in the central site section.



Plate 14: View west from the southern boundary showing the woodland area and the electricity pylon in the south western site section.



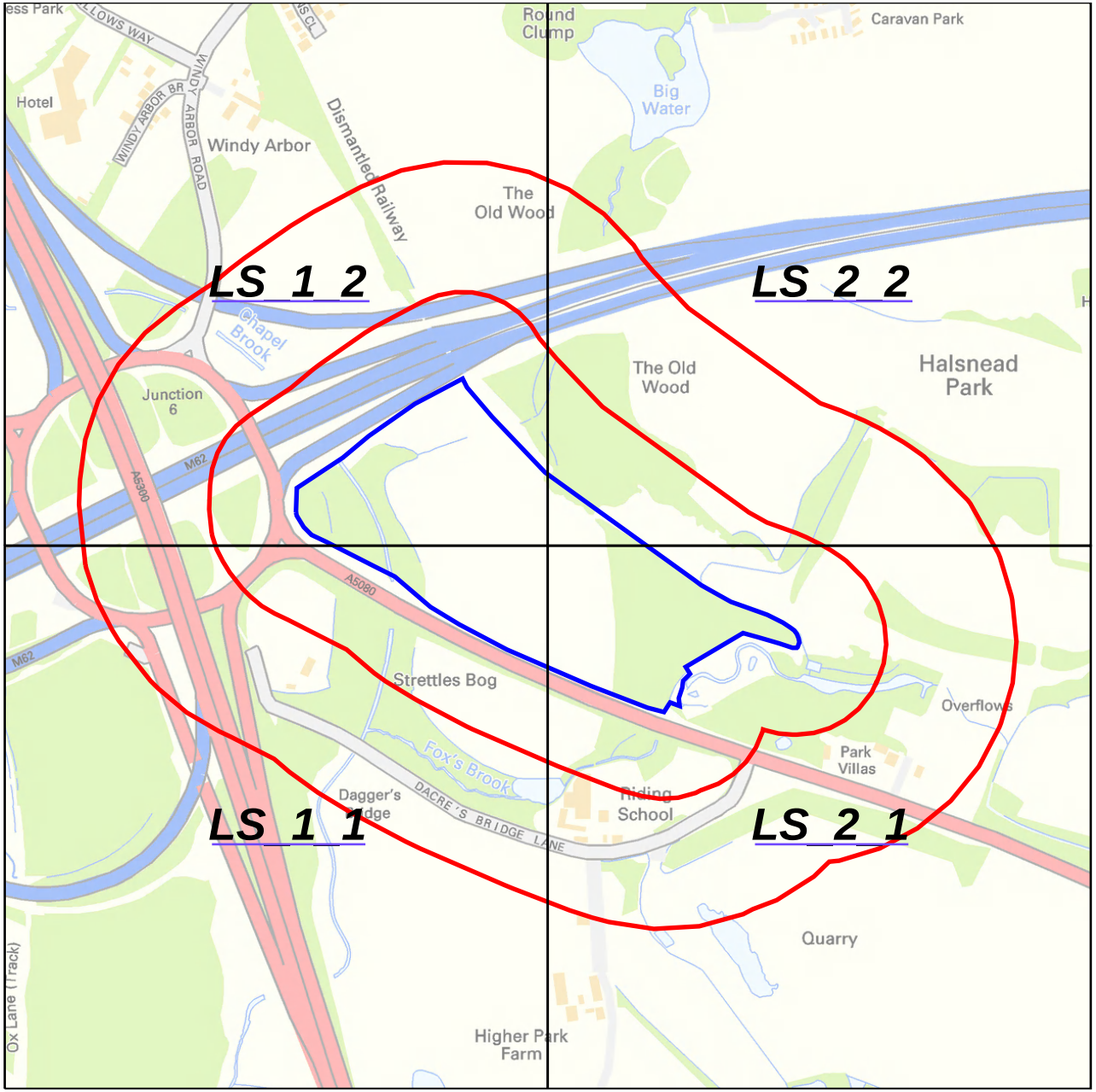
Plate 15: Possible tank base located along the northern boundary.



Plate 16: View west showing the site from the north eastern site section.

APPENDIX 3

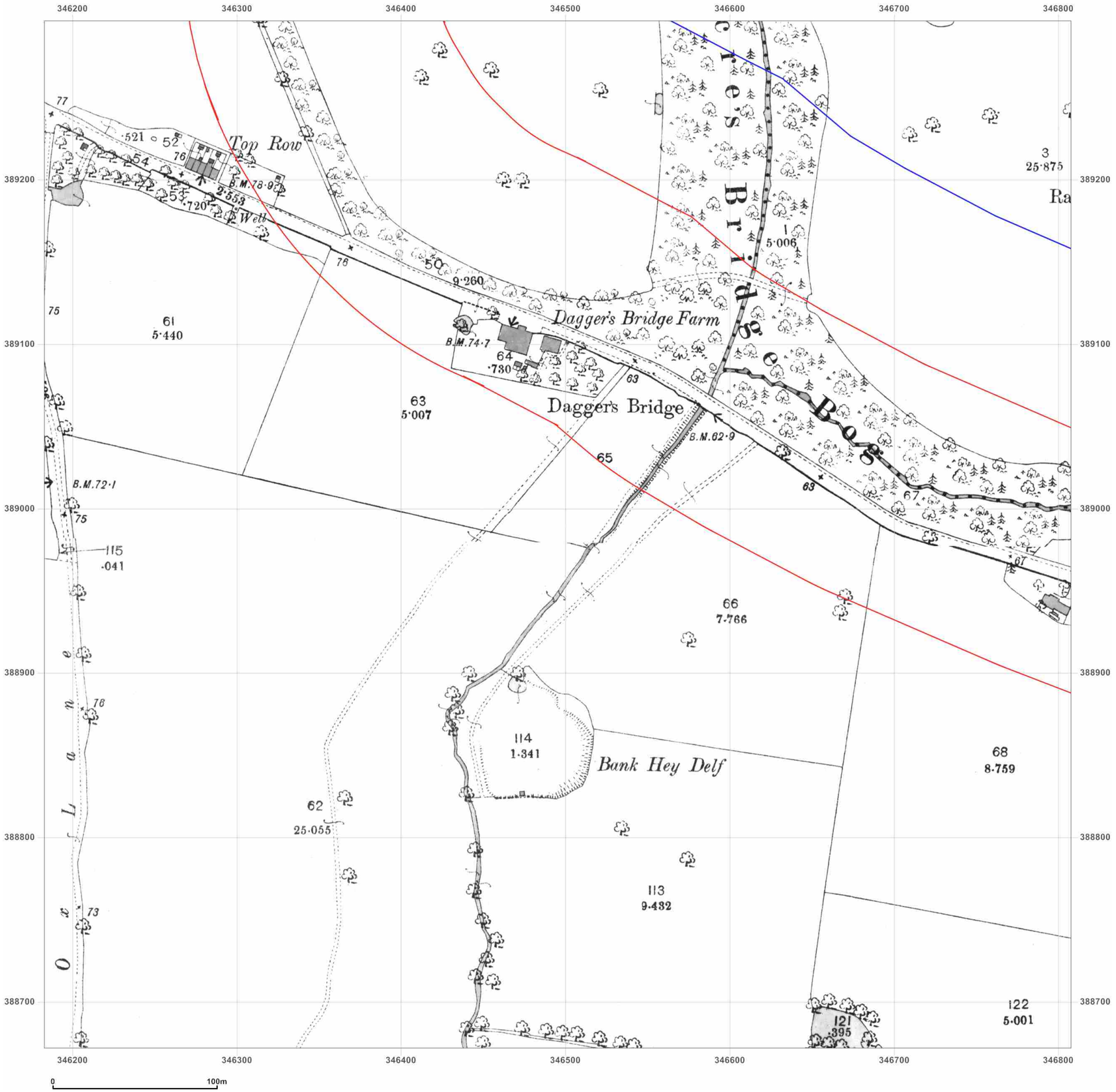
HISTORICAL ORDNANCE SURVEY MAPS



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1:2500 Scale Grid Index



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Report Ref: GS-4206764_LS_1_1
Grid Ref: 346495, 388984

Map Name: County Series

Map date: **1892-1893**

Scale: 1:2,500

Printed at: 1:2,500

N
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Revised 1892
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1893
Revised 1893
Edition N/A
Copyright N/A
Levelled N/A

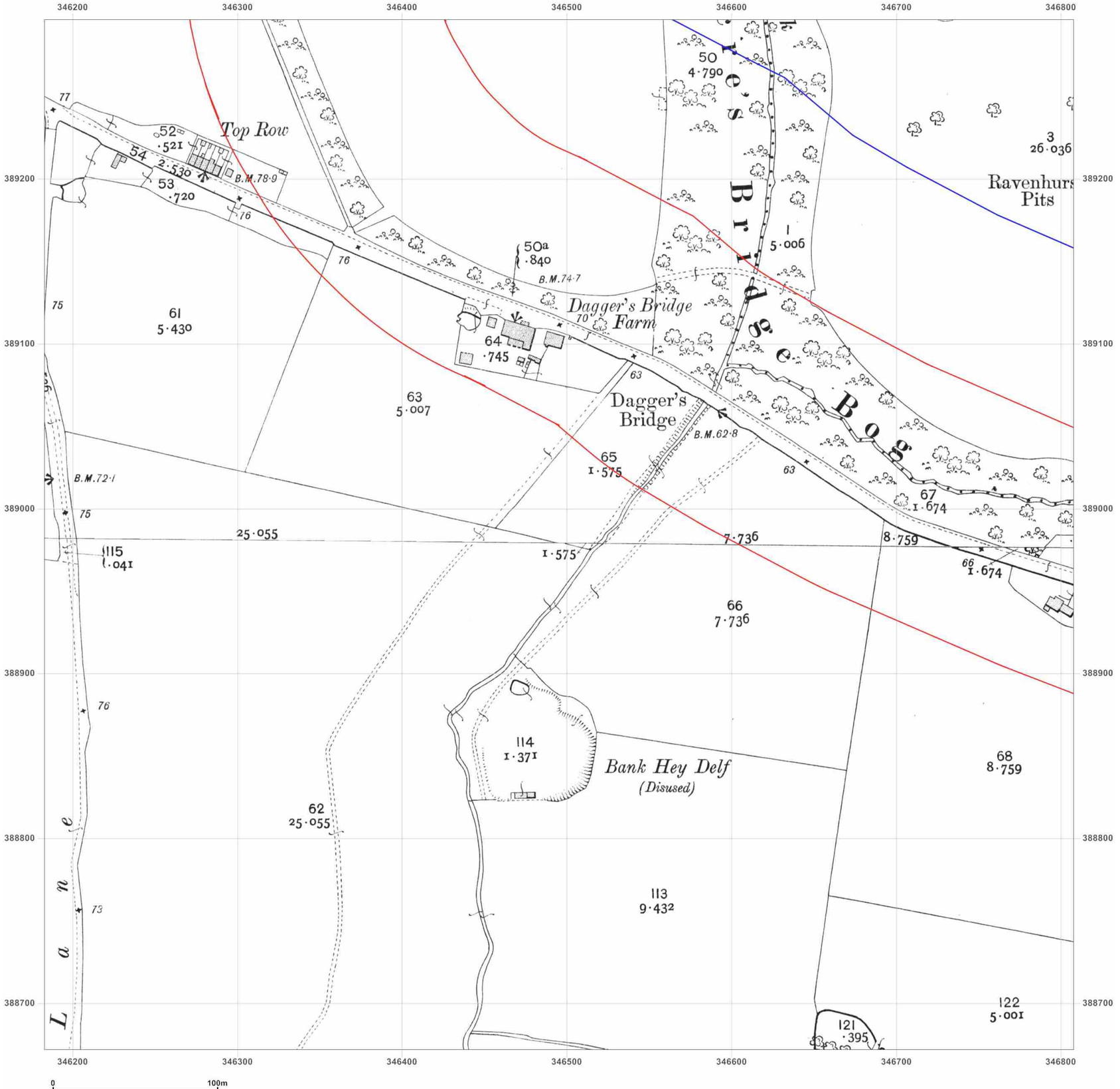
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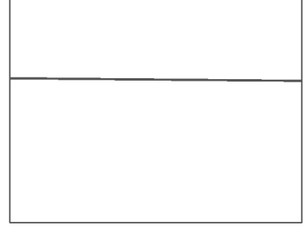
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Map Name: County Series
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Scale: 1:2,500
Printed at: 1:2,500

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Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
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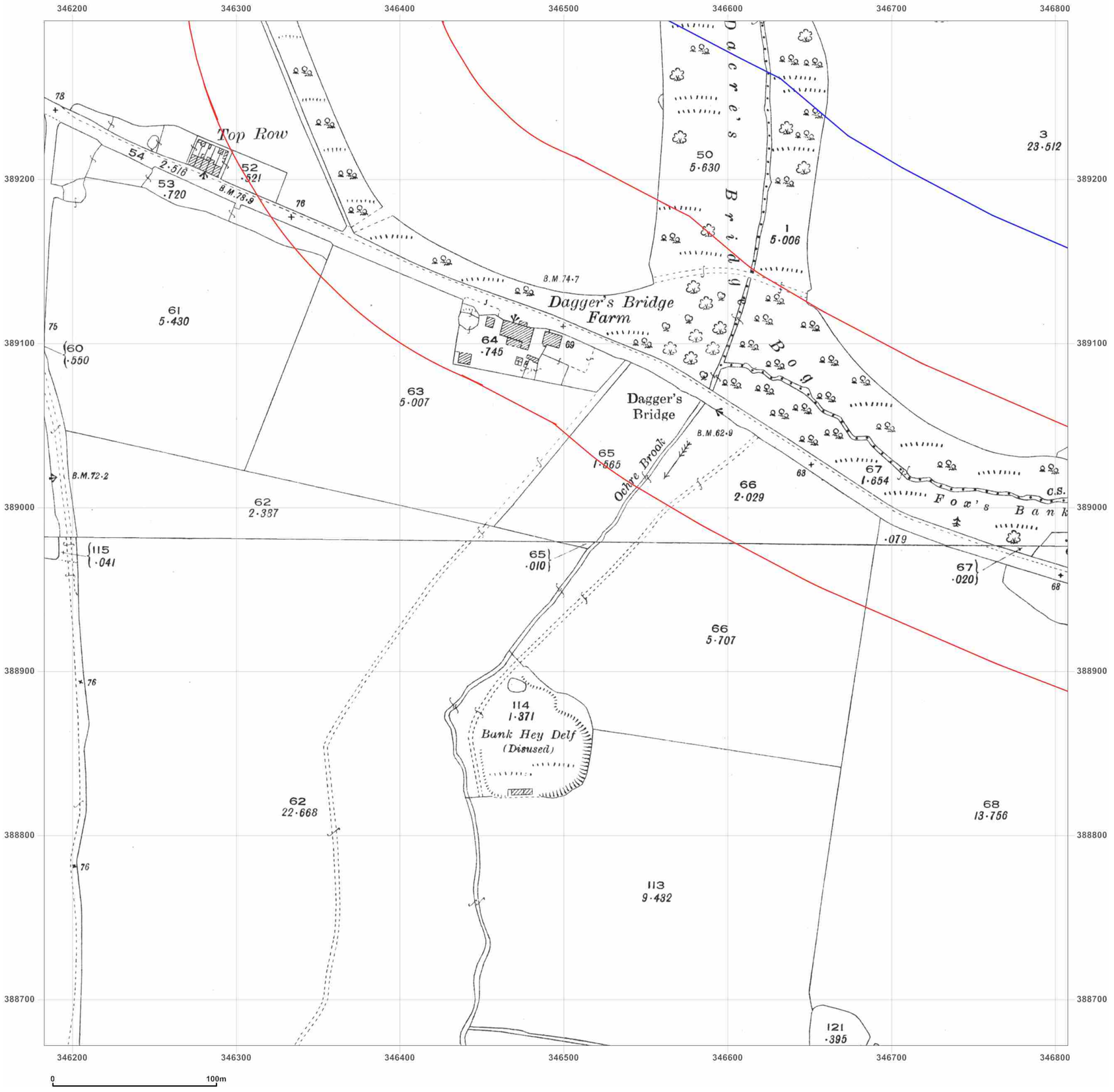
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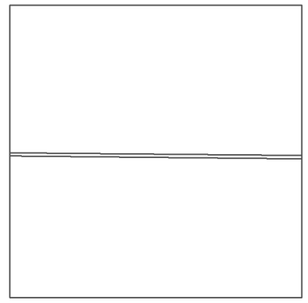
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Grid Ref: 346495, 388984

Map Name: County Series
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Scale: 1:2,500
Printed at: 1:2,500

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Surveyed 1927
Revised 1927
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1927
Revised 1927
Edition N/A
Copyright N/A
Levelled N/A

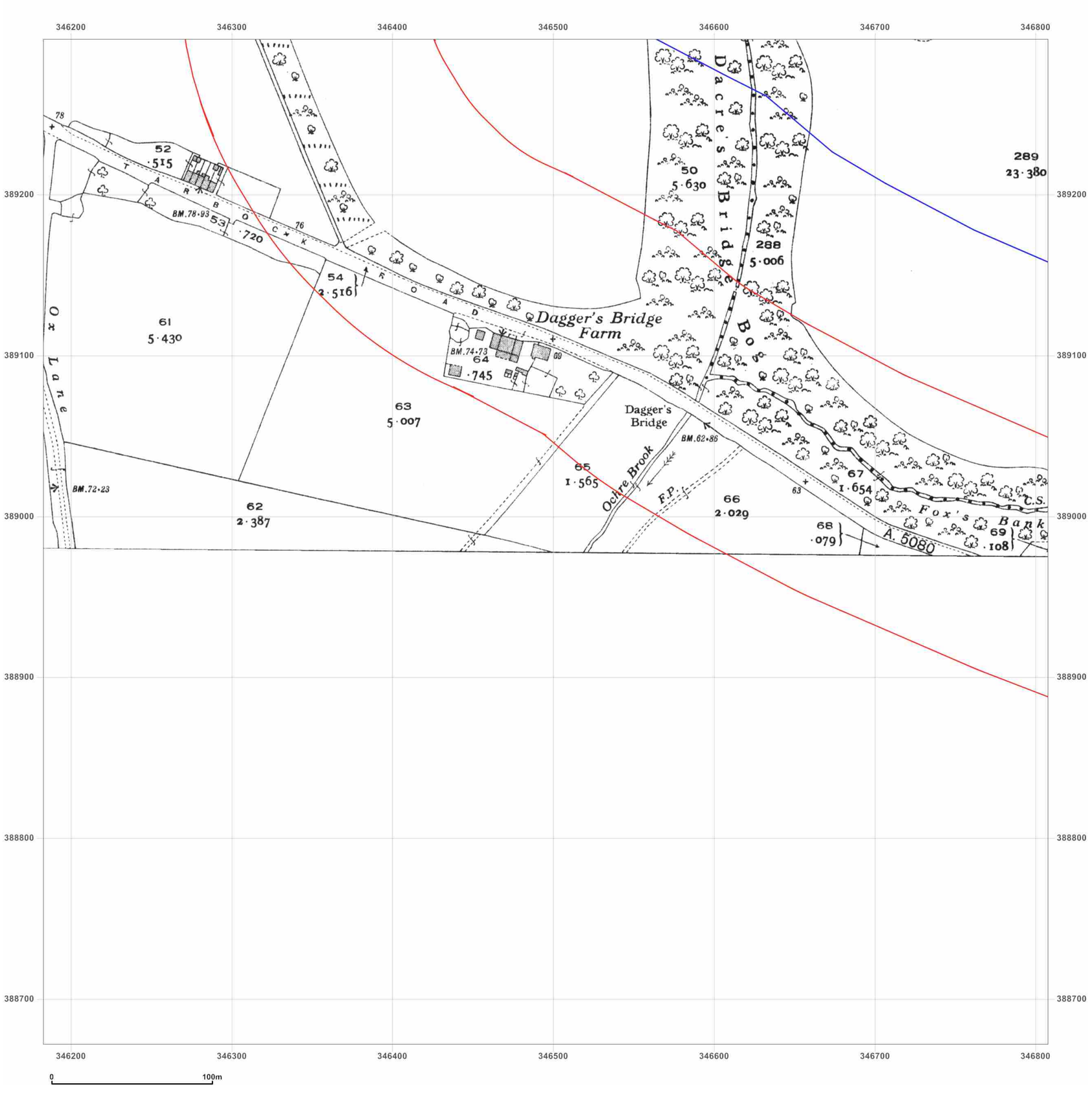
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Report Ref: GS-4206764_LS_1_1
Grid Ref: 346495, 388984

Map Name: County Series

Map date: **1937**

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Printed at: 1:2,500

N
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Surveyed 1937
Revised 1937
Edition N/A
Copyright N/A
Levelled N/A

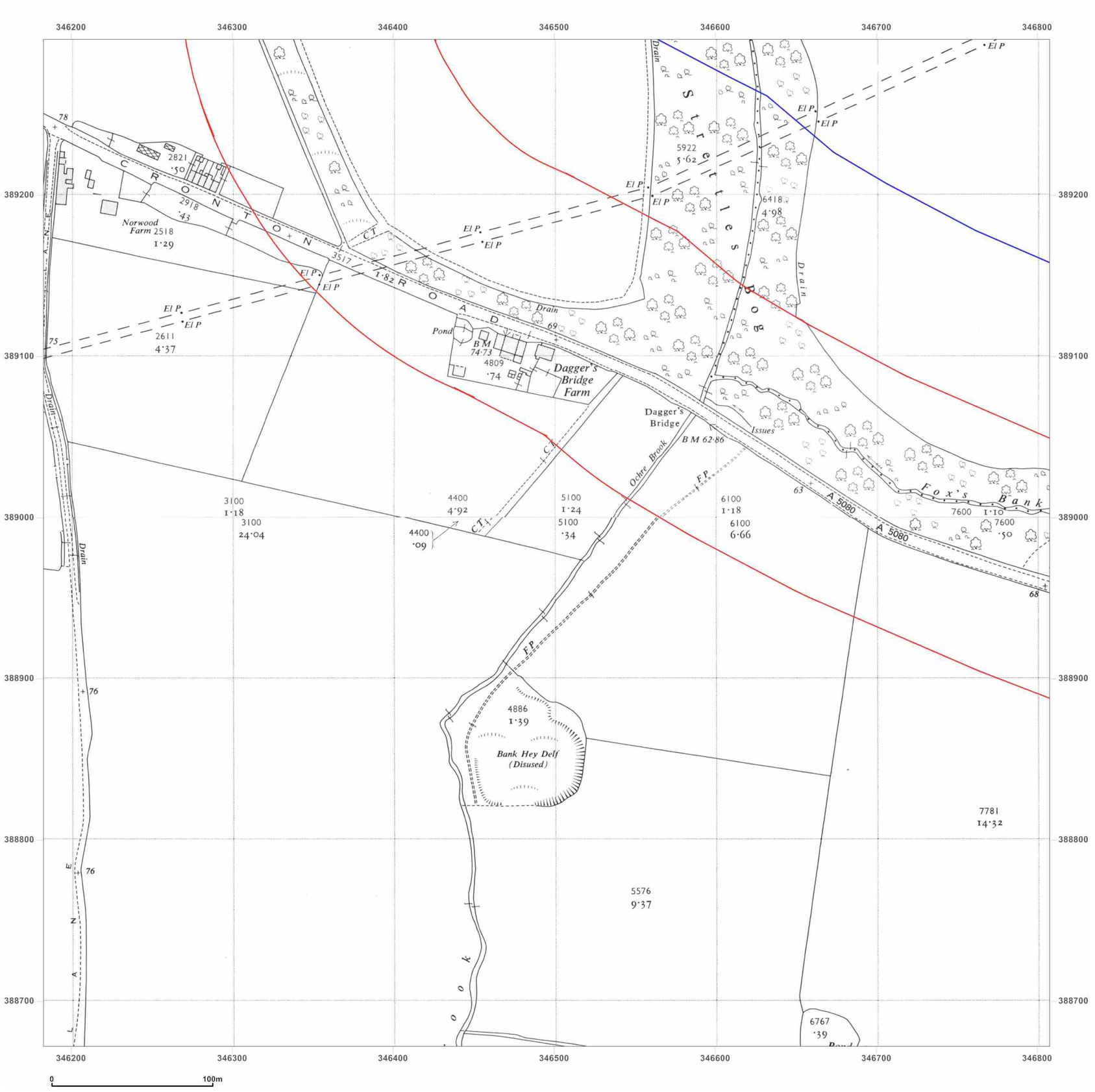
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Map Name: National Grid

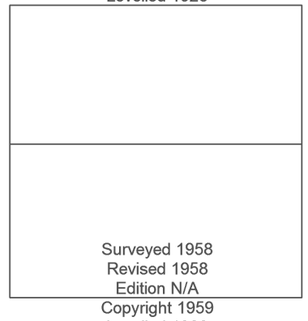
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Surveyed 1958
Revised 1958
Edition N/A
Copyright 1959
Levelled 1926



Surveyed 1958
Revised 1958
Edition N/A
Copyright 1959
Levelled 1926

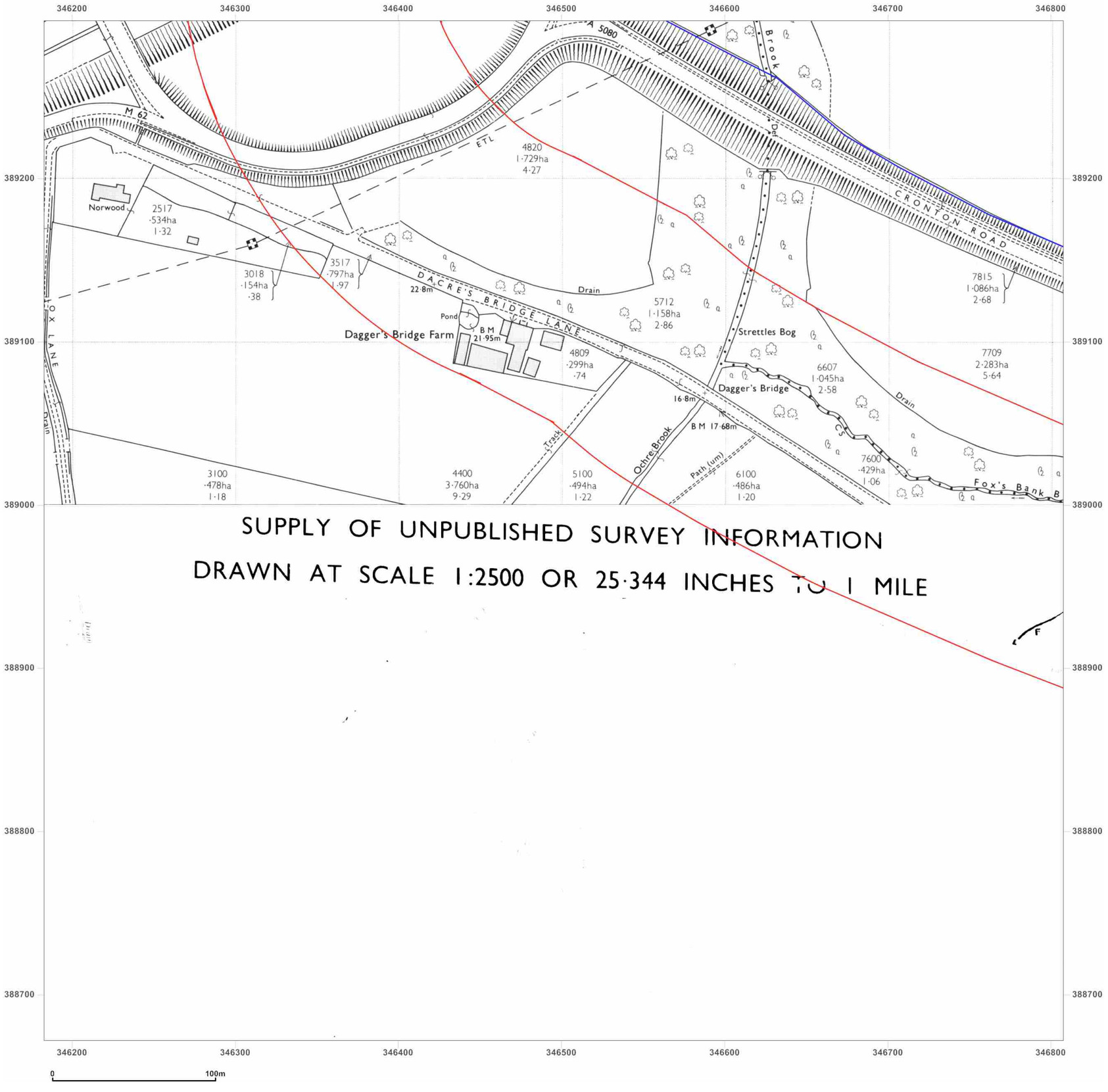
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Report Ref: GS-4206764_LS_1_1
Grid Ref: 346495, 388984

Map Name: National Grid

Map date: **1975-1978**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1978
Revised 1978
Edition N/A
Copyright 1979
Levelled 1963

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

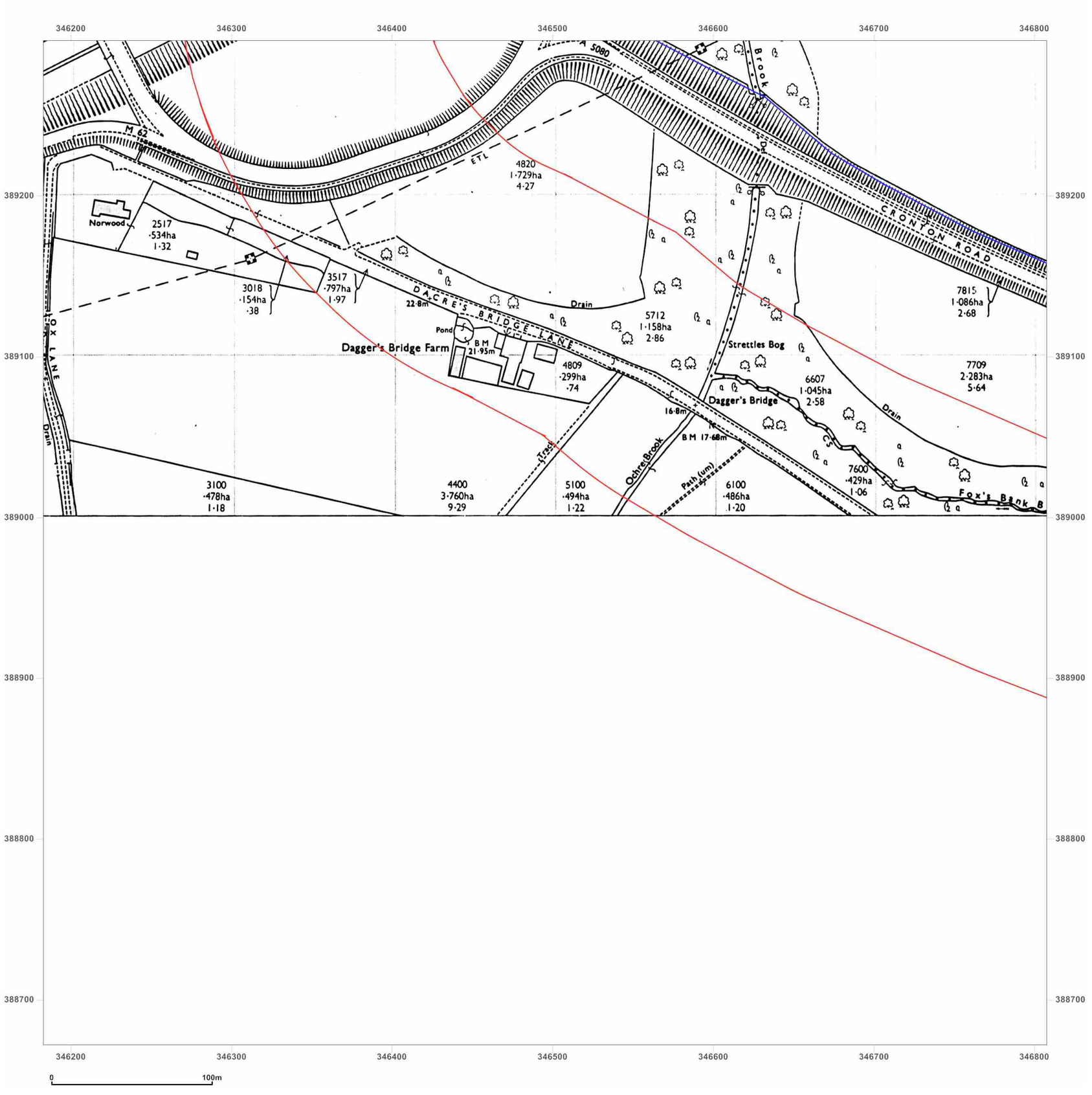
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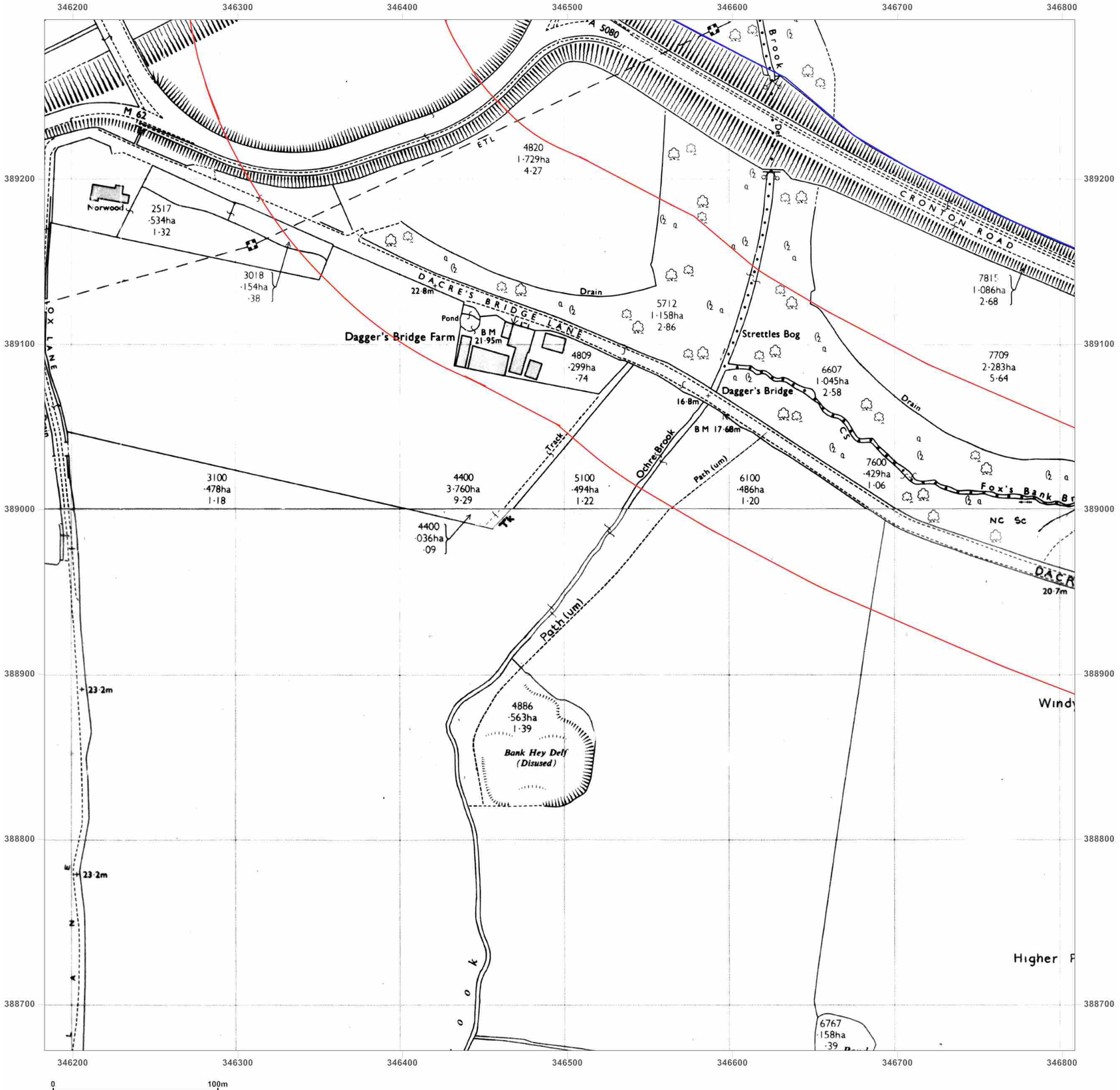
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Report Ref: GS-4206764_LS_1_1
Grid Ref: 346495, 388984

Map Name: National Grid

Map date: **1989**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1963
Revised 1989
Edition N/A
Copyright 1989
Levelled 1963

Surveyed 1963
Revised 1989
Edition N/A
Copyright 1989
Levelled 1963

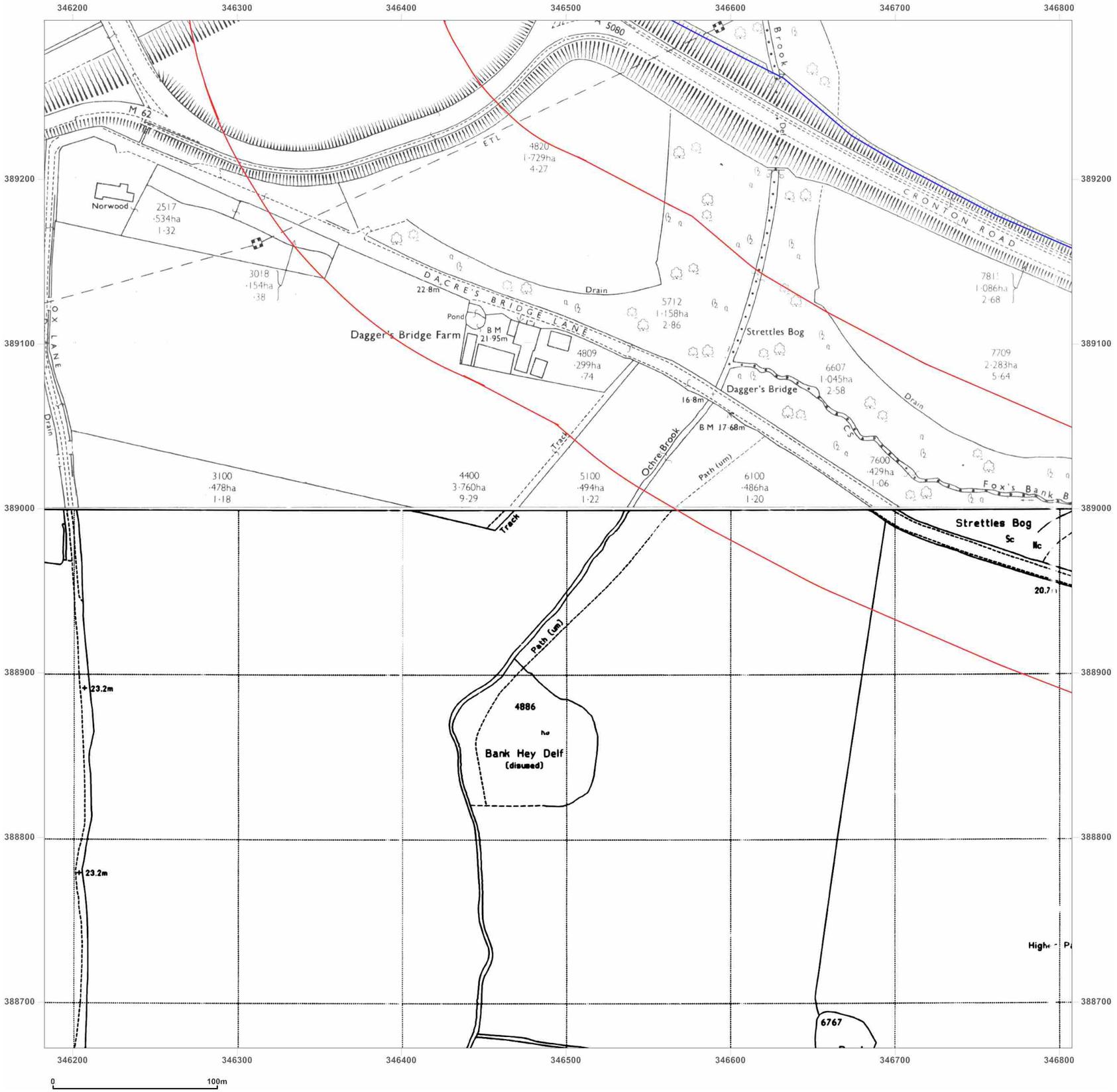
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Report Ref: GS-4206764_LS_1_1
Grid Ref: 346495, 388984

Map Name: National Grid

Map date: **1992-1993**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1963
Revised 1992
Edition N/A
Copyright 1992
Levelled 1963

Surveyed N/A
Revised N/A
Edition N/A
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Levelled N/A

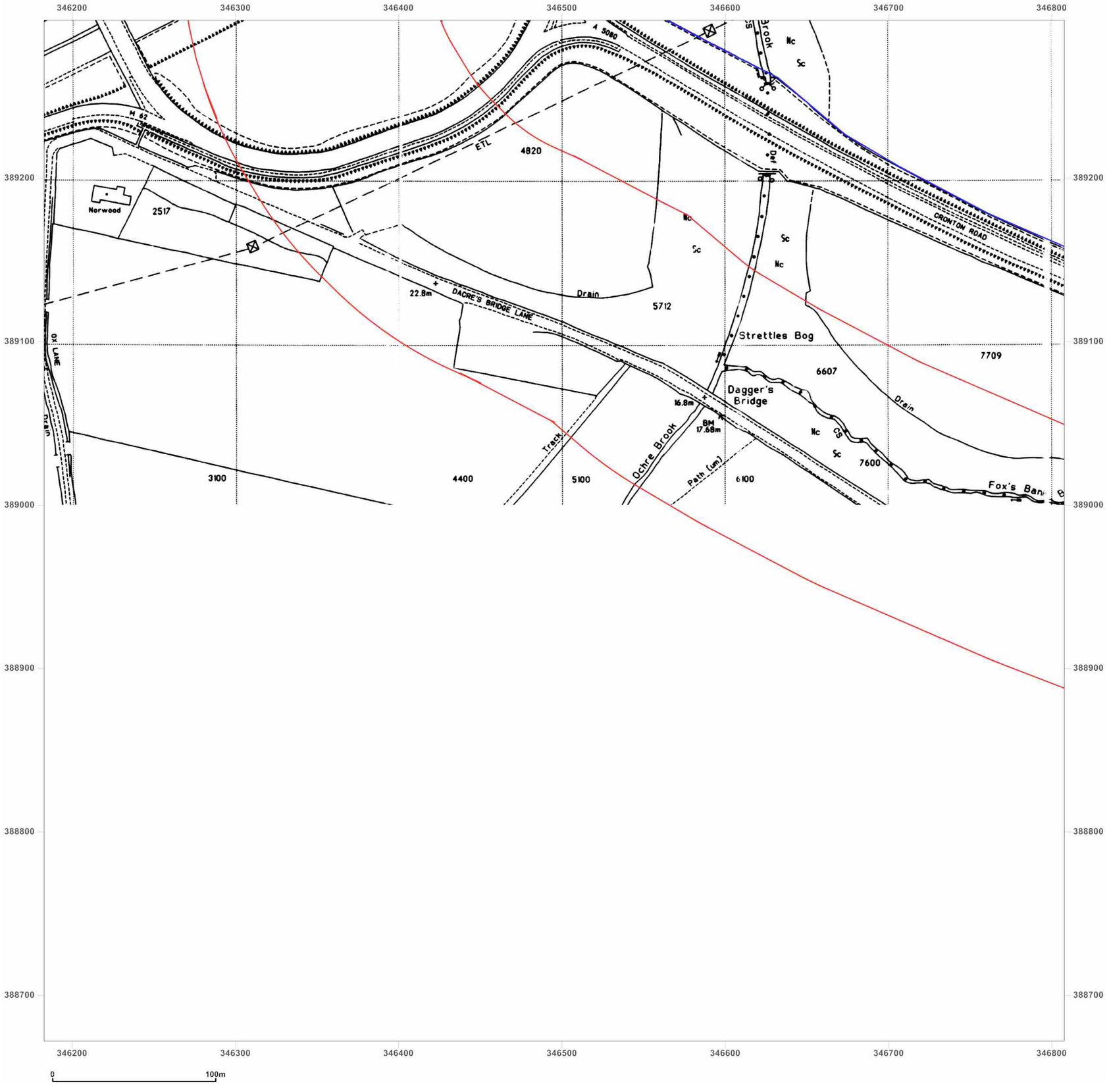
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Client Ref: 2956_
Report Ref: GS-4206764_LS_1_1
Grid Ref: 346495, 388984

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

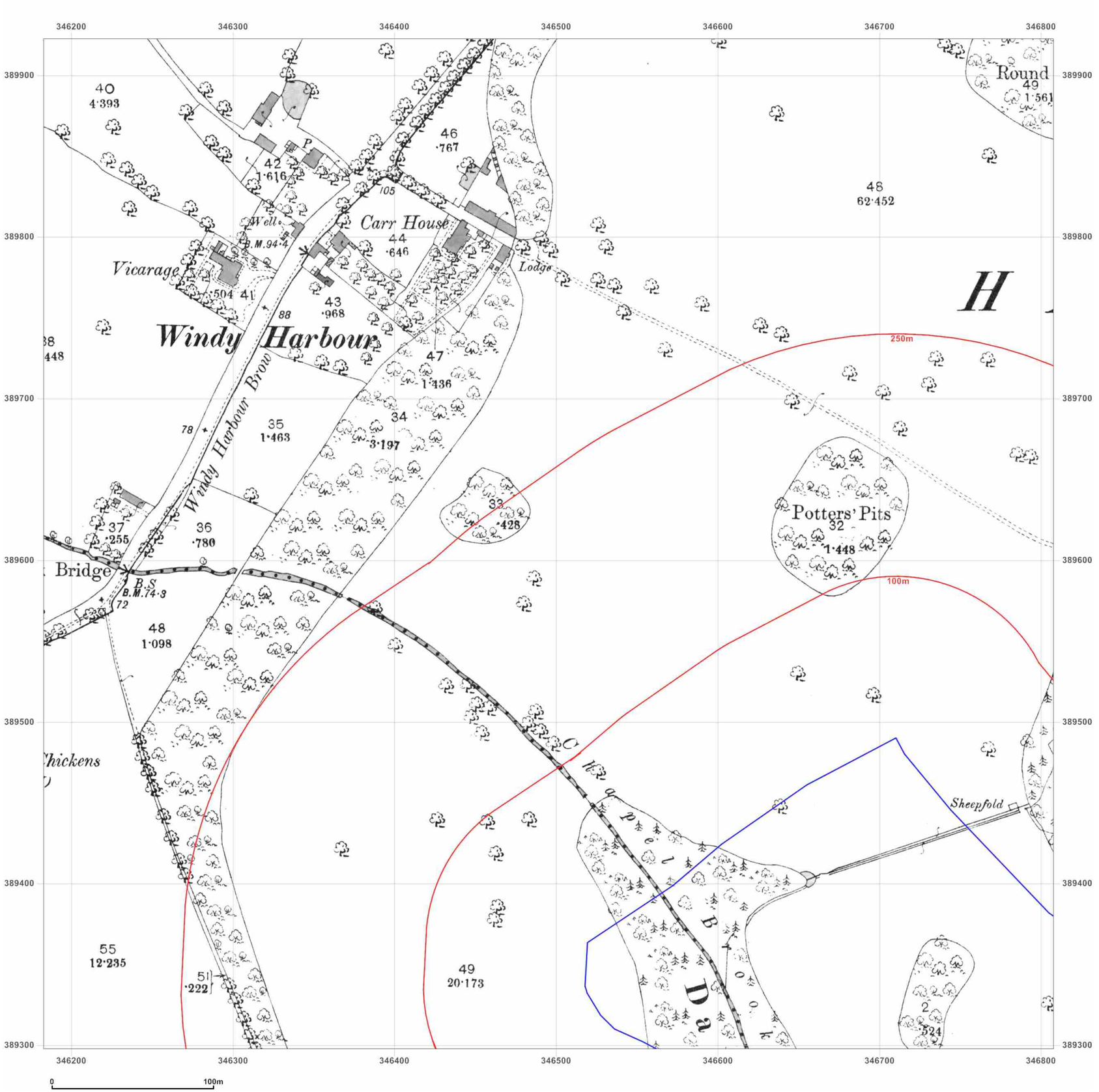
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Client Ref: 2956_
Report Ref: GS-4206764_LS_1_2
Grid Ref: 346495, 389610

Map Name: County Series

Map date: **1892**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1892
Revised 1892
Edition N/A
Copyright N/A
Levelled N/A

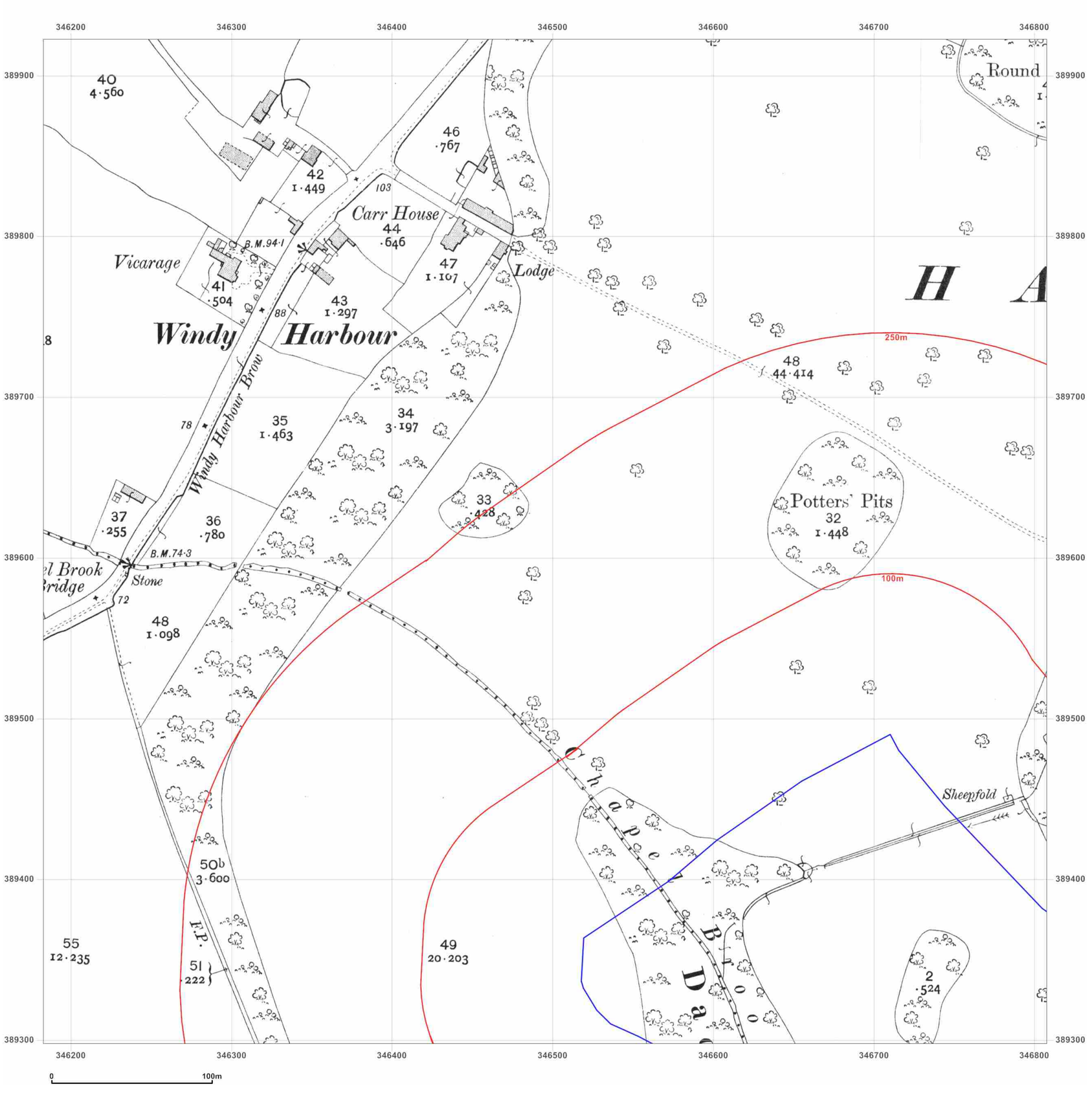
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Client Ref: 2956_
Report Ref: GS-4206764_LS_1_2
Grid Ref: 346495, 389610

Map Name: County Series
Map date: **1907**
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Printed at: 1:2,500

N
W E
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Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

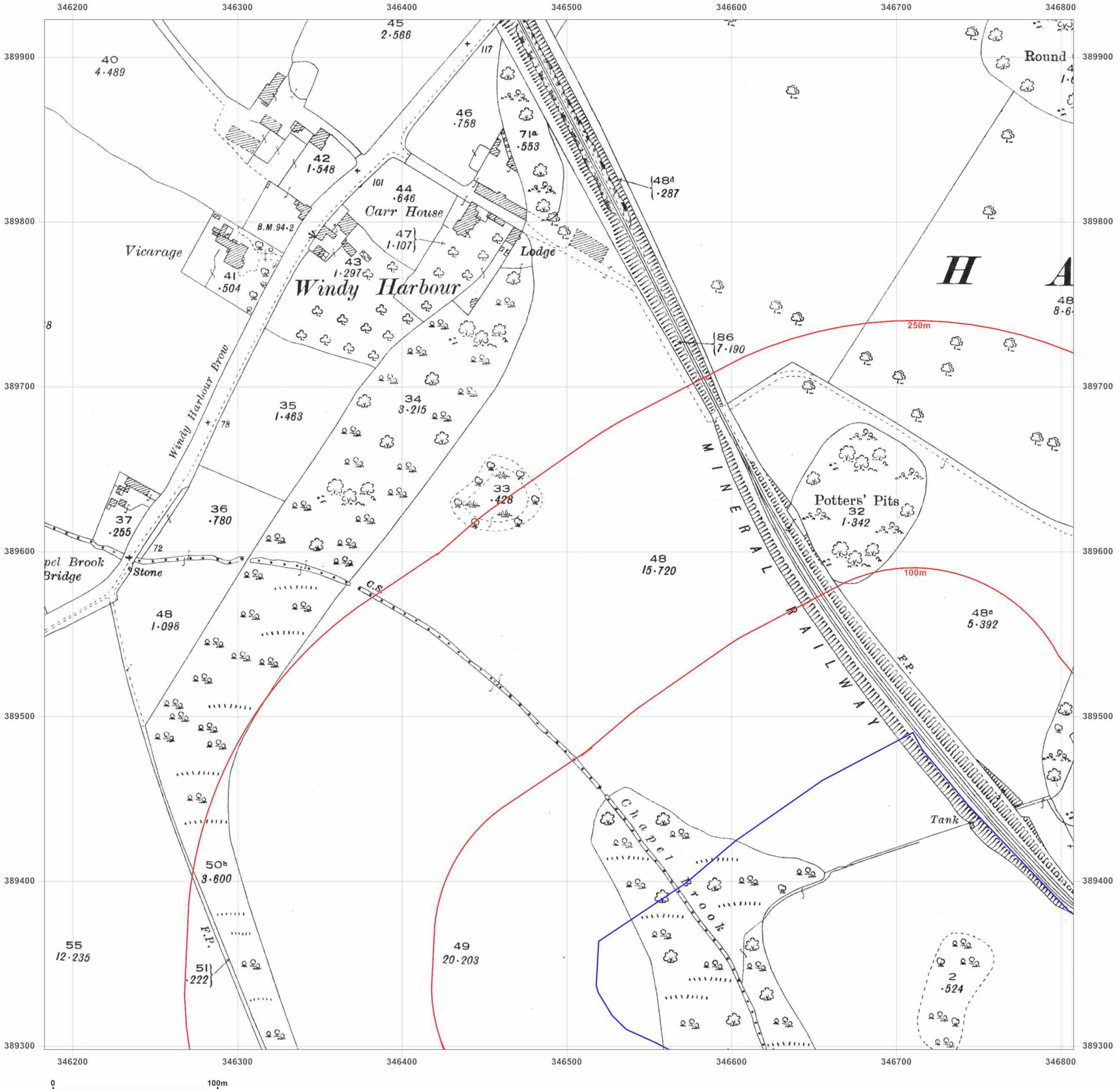
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Report Ref: GS-4206764_LS_1_2
Grid Ref: 346495, 389610

Map Name: County Series

Map date: **1927**

Scale: 1:2,500

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Surveyed 1927
Revised 1927
Edition N/A
Copyright N/A
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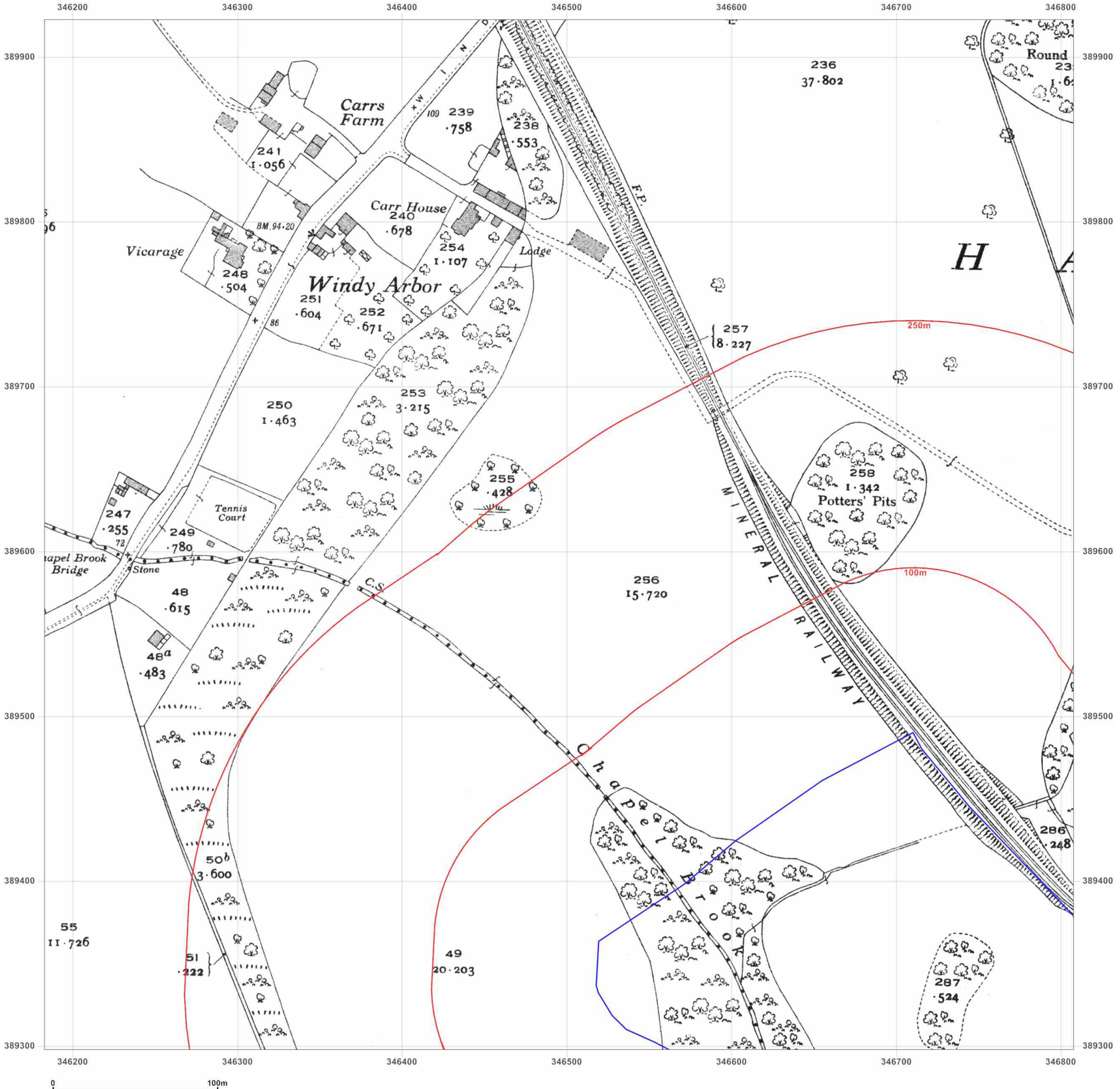
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Site Details:

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Client Ref: 2956_
Report Ref: GS-4206764_LS_1_2
Grid Ref: 346495, 389610

Map Name: County Series

Map date: **1937**

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Revised 1937
Edition N/A
Copyright N/A
Levelled N/A

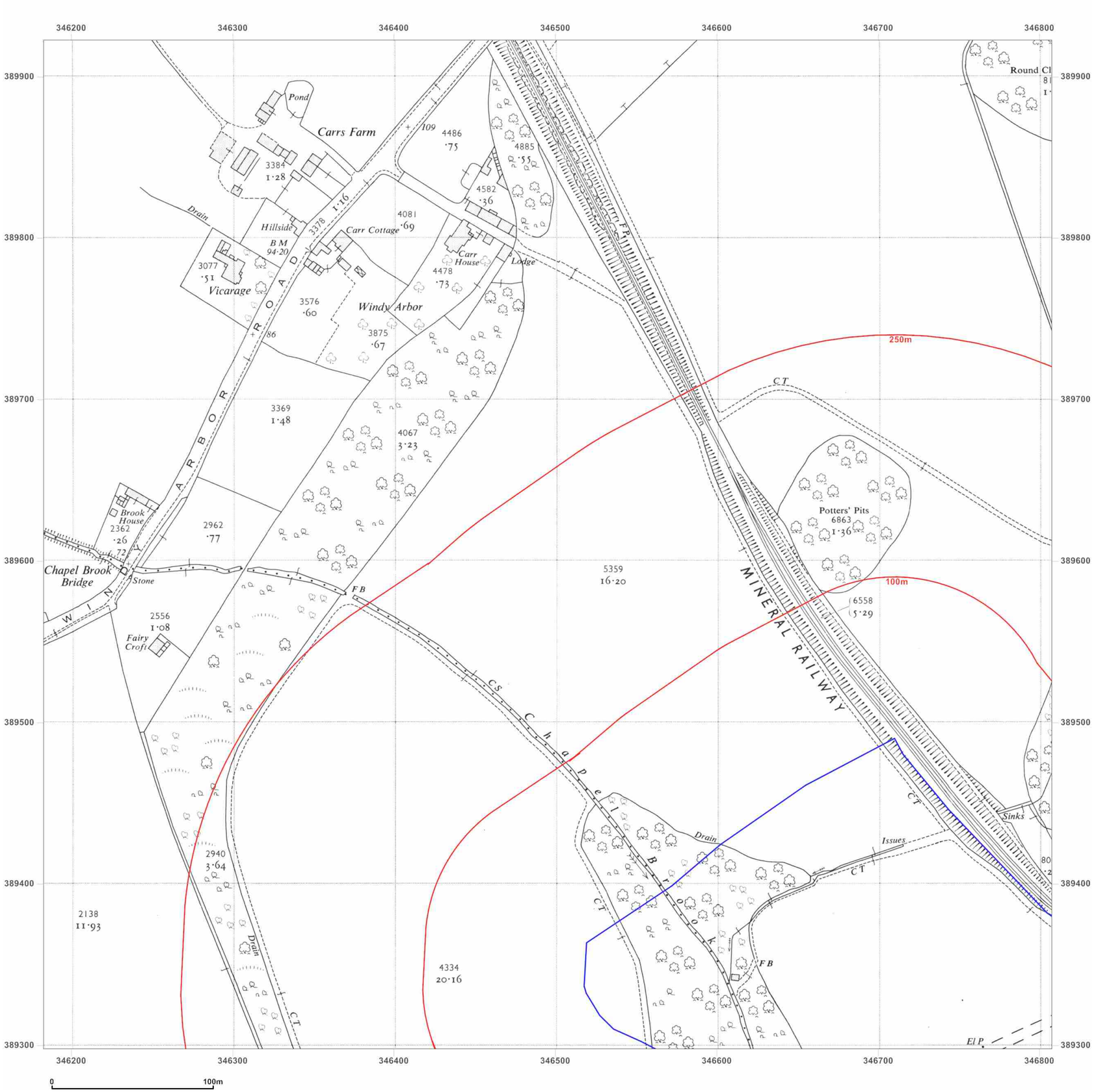
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Groundsure INSIGHTS

Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764_LS_1_2
Grid Ref: 346495, 389610

Map Name: National Grid

Map date: **1958**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1958
Revised 1958
Edition N/A
Copyright 1959
Levelled 1926

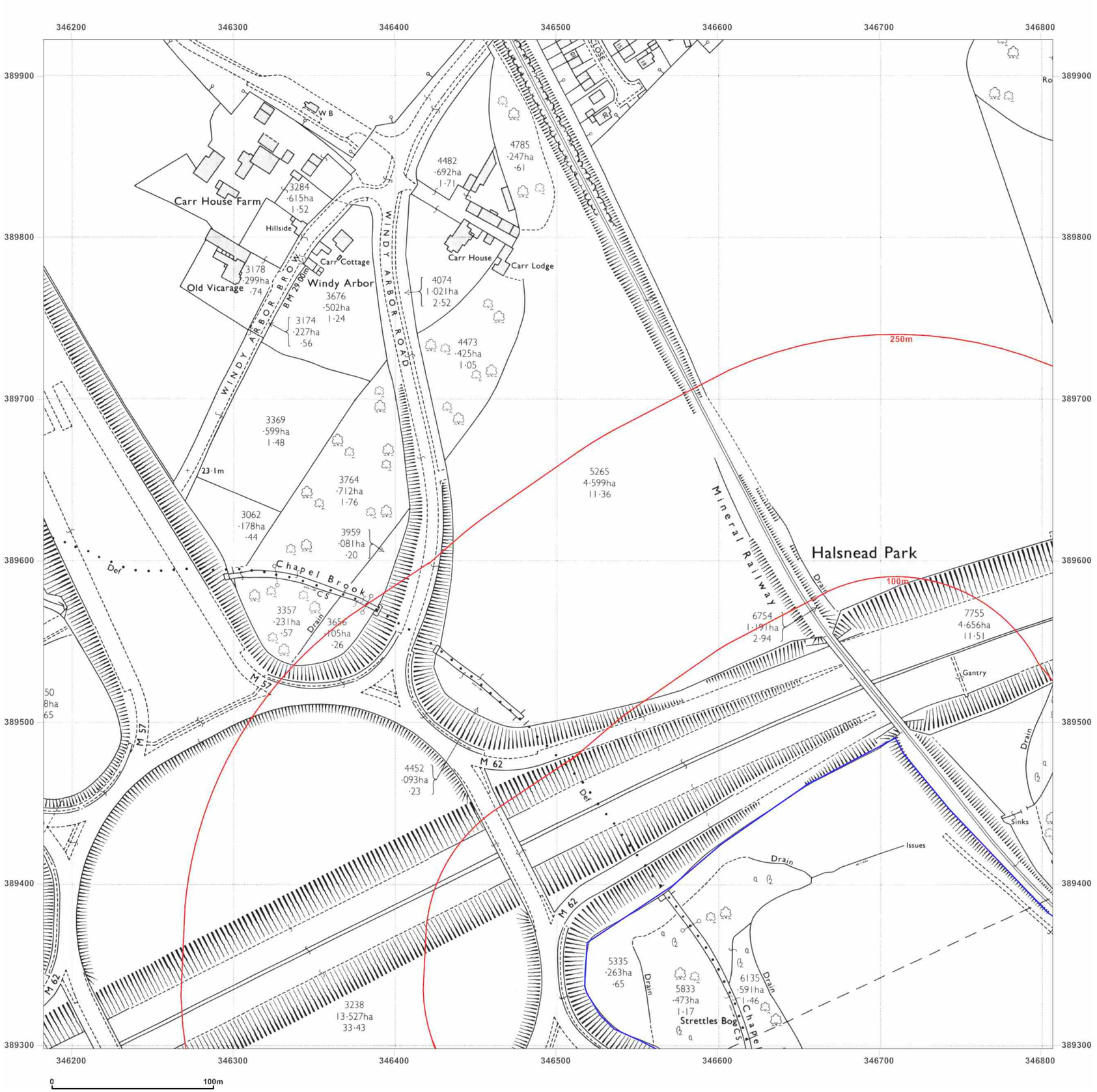
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Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764_LS_1_2
Grid Ref: 346495, 389610

Map Name: National Grid

Map date: **1978**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1978
Revised 1978
Edition N/A
Copyright 1979
Levelled 1963

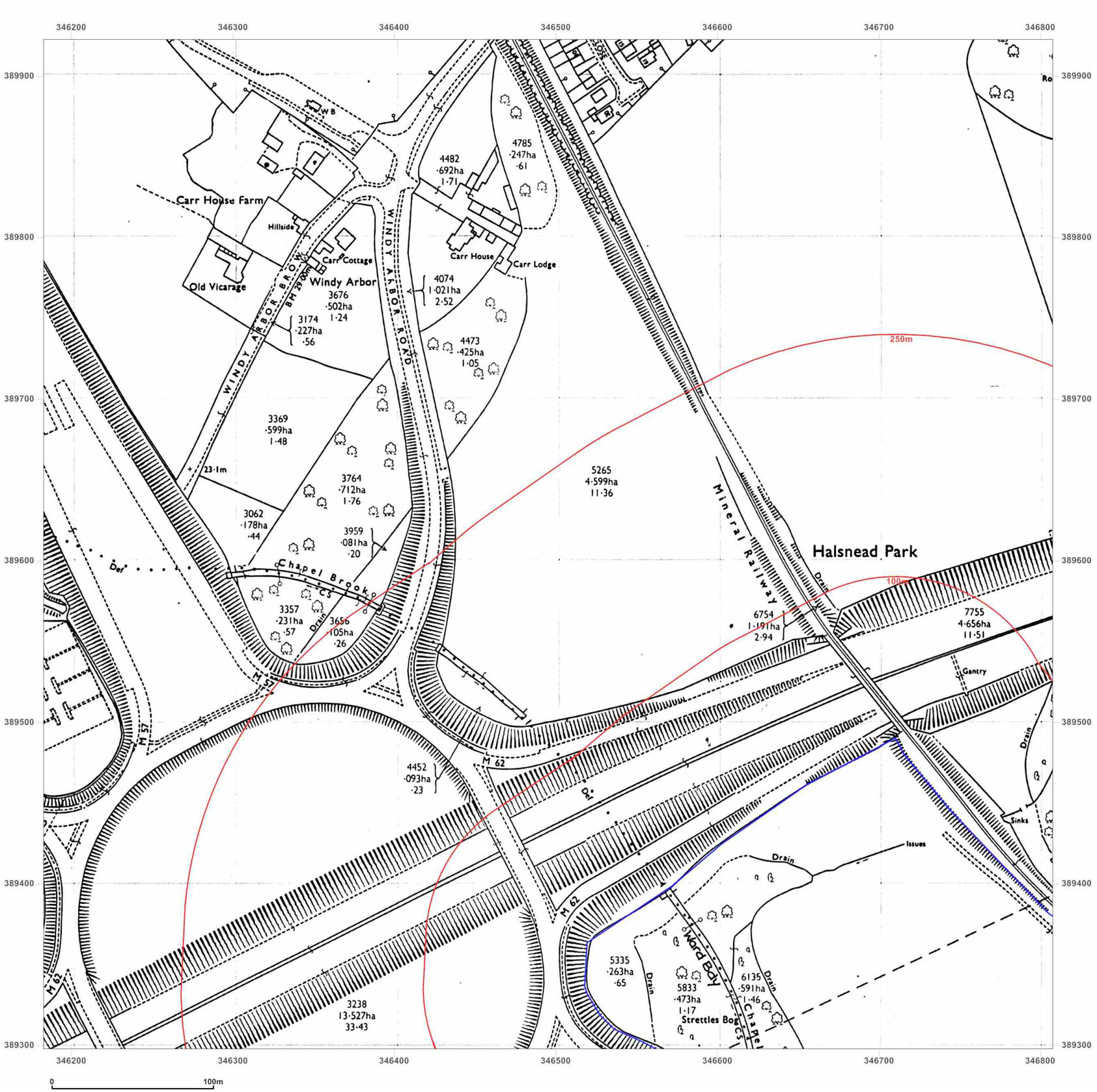
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Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764_LS_1_2
Grid Ref: 346495, 389610

Map Name: National Grid

Map date: **1984**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1963
Revised 1984
Edition N/A
Copyright 1984
Levelled 1963

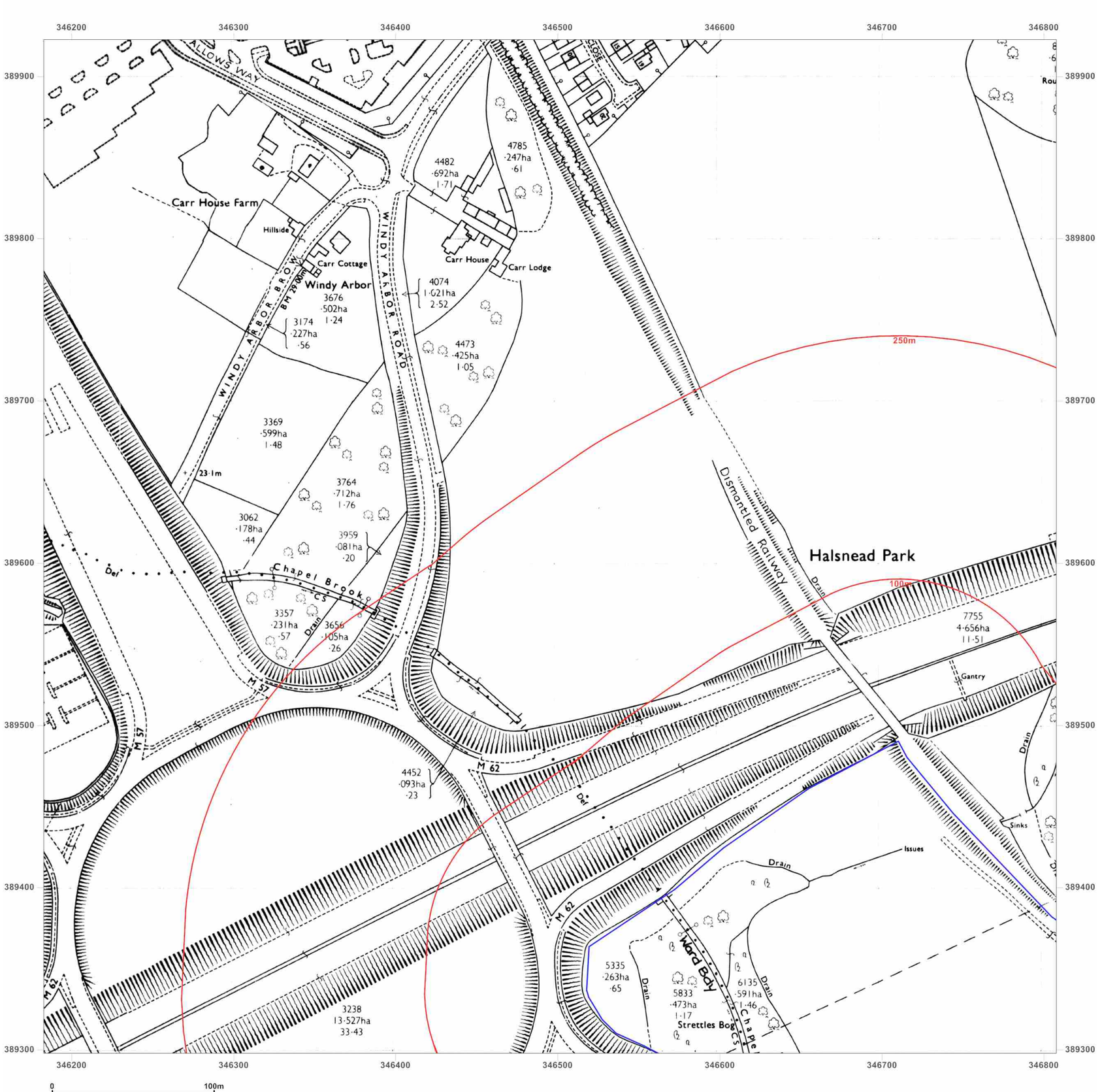
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Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764_LS_1_2
Grid Ref: 346495, 389610

Map Name: National Grid

Map date: **1989**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1963
Revised 1989
Edition N/A
Copyright 1989
Levelled 1963

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Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764_LS_1_2
Grid Ref: 346495, 389610

Map Name: National Grid

Map date: **1992**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1963
Revised 1992
Edition N/A
Copyright 1992
Levelled 1963

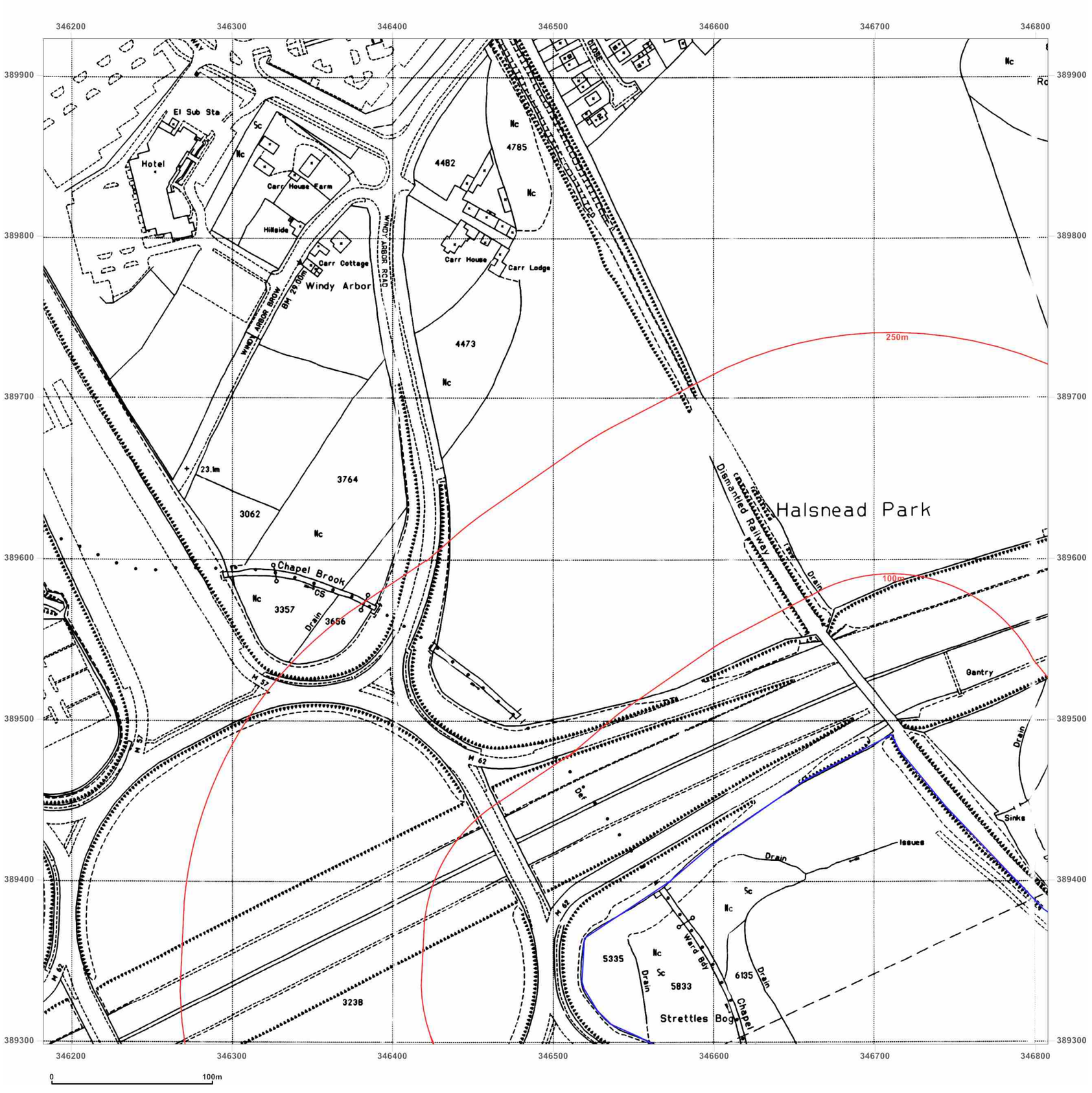
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Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764_LS_1_2
Grid Ref: 346495, 389610

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

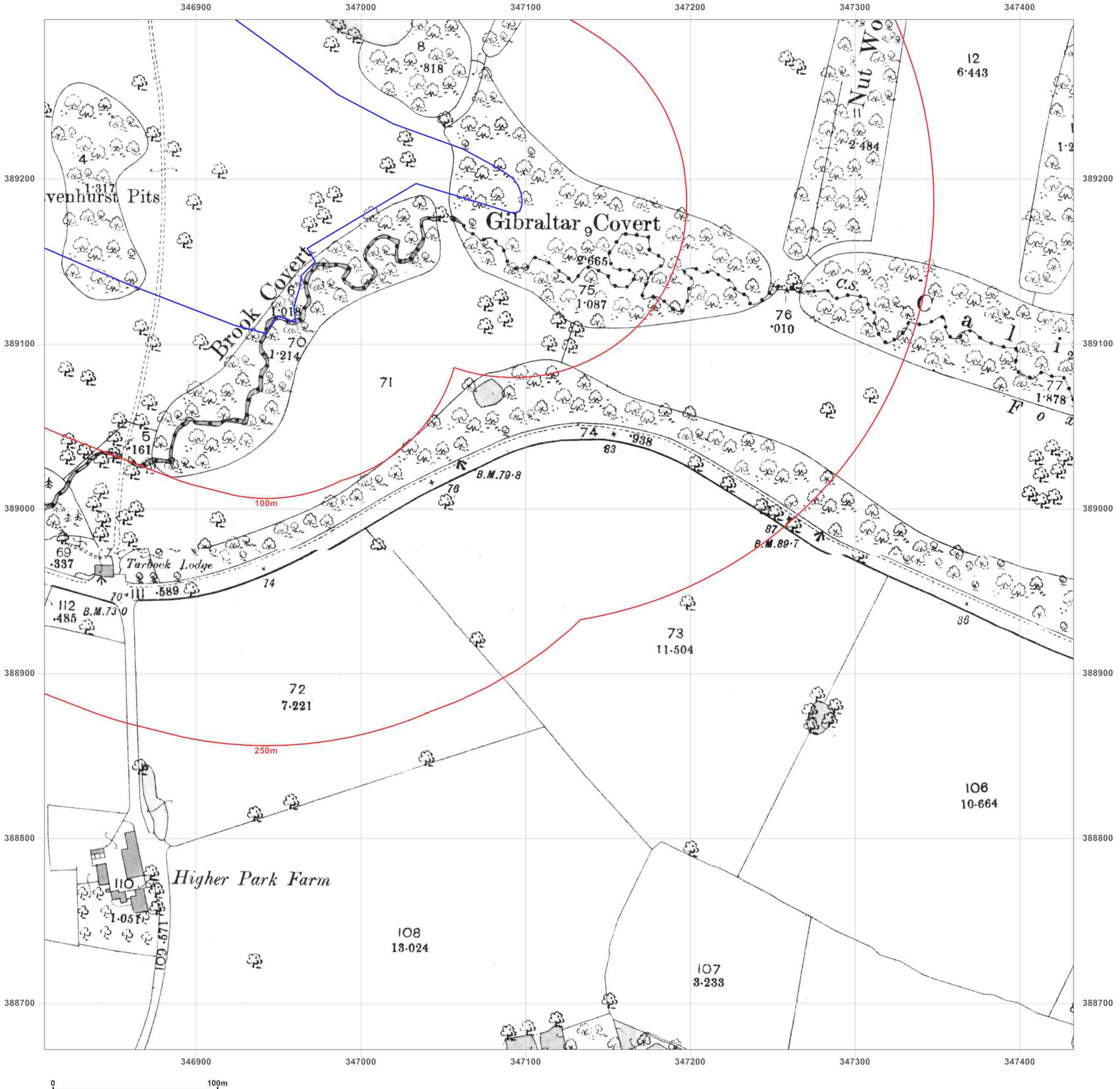
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Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764_LS_2_1
Grid Ref: 347120, 388984

Map Name: County Series

Map date: **1892-1893**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1892
Revised 1892
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1893
Revised 1893
Edition N/A
Copyright N/A
Levelled N/A

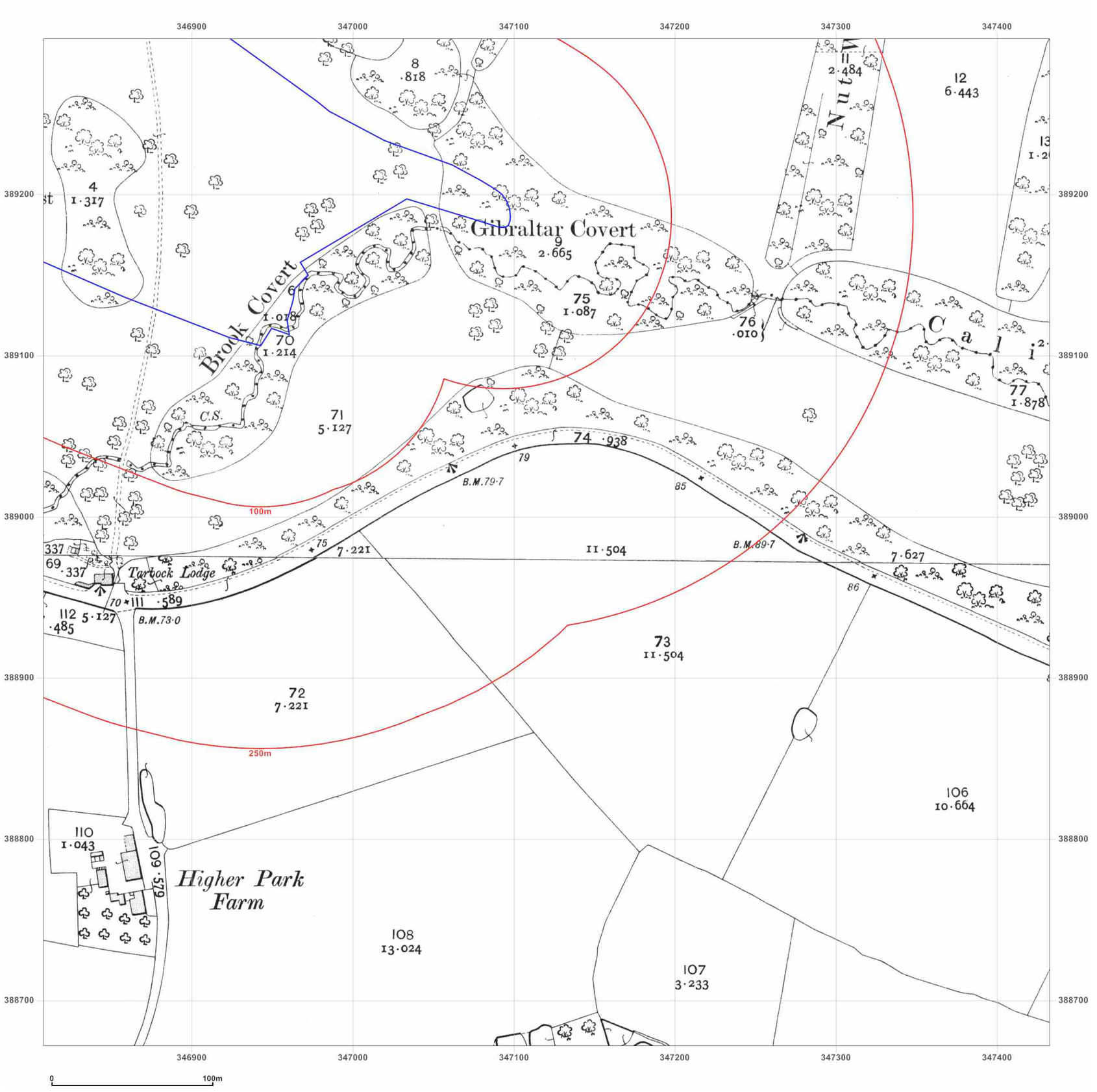
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Site Details:

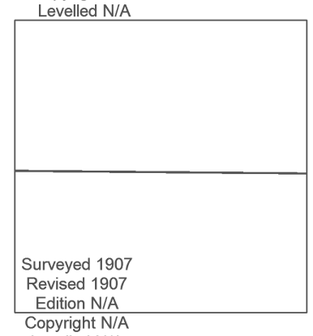
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Client Ref: 2956_
Report Ref: GS-4206764_LS_2_1
Grid Ref: 347120, 388984

Map Name: County Series
Map date: **1907**
Scale: 1:2,500
Printed at: 1:2,500

N W E S

Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

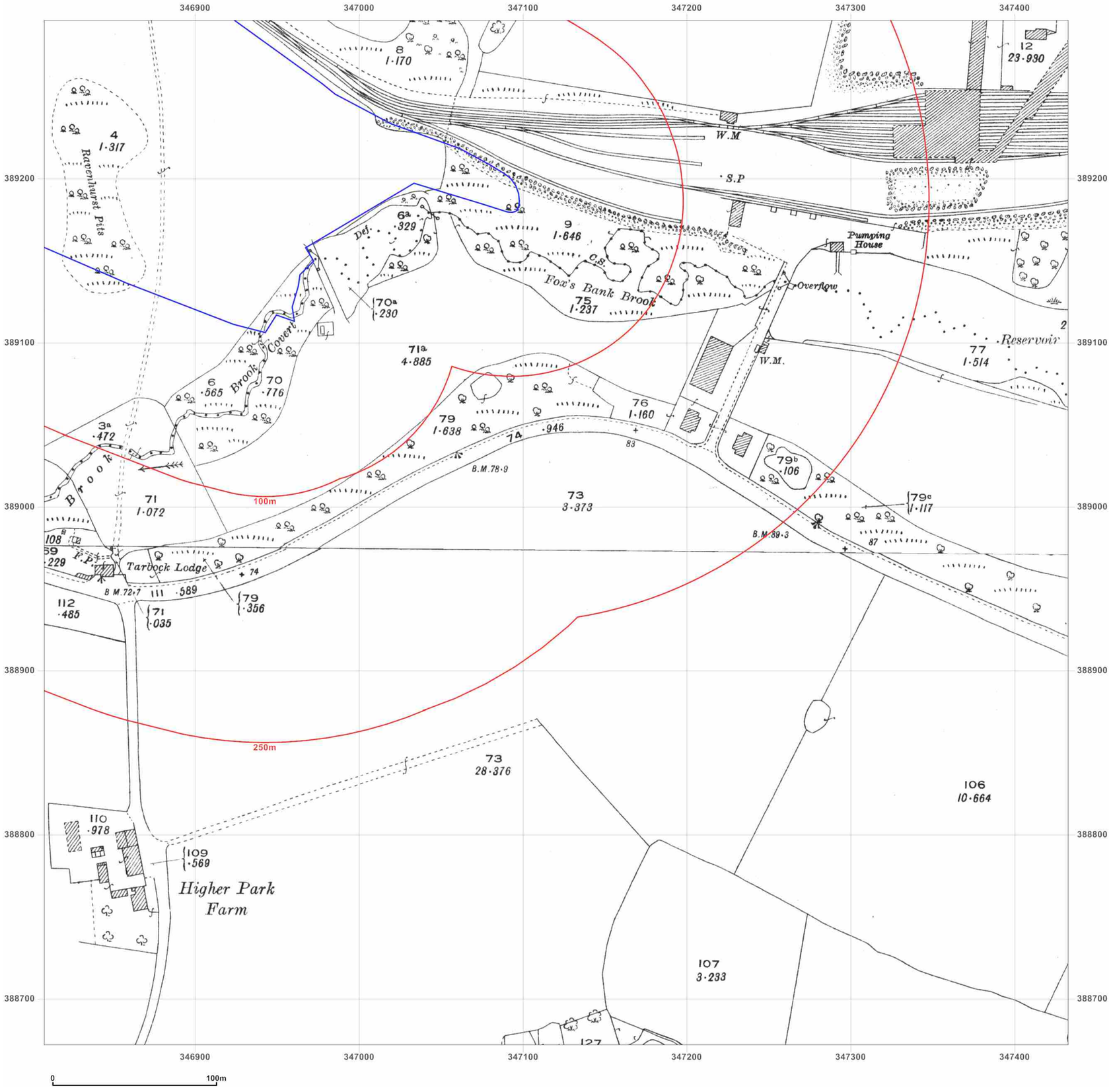
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Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764_LS_2_1
Grid Ref: 347120, 388984

Map Name: County Series

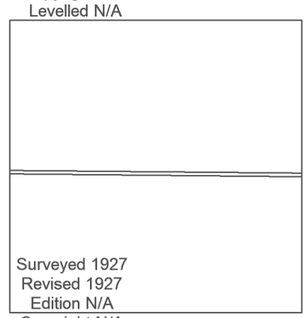
Map date: **1927**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1927
Revised 1927
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1927
Revised 1927
Edition N/A
Copyright N/A
Levelled N/A

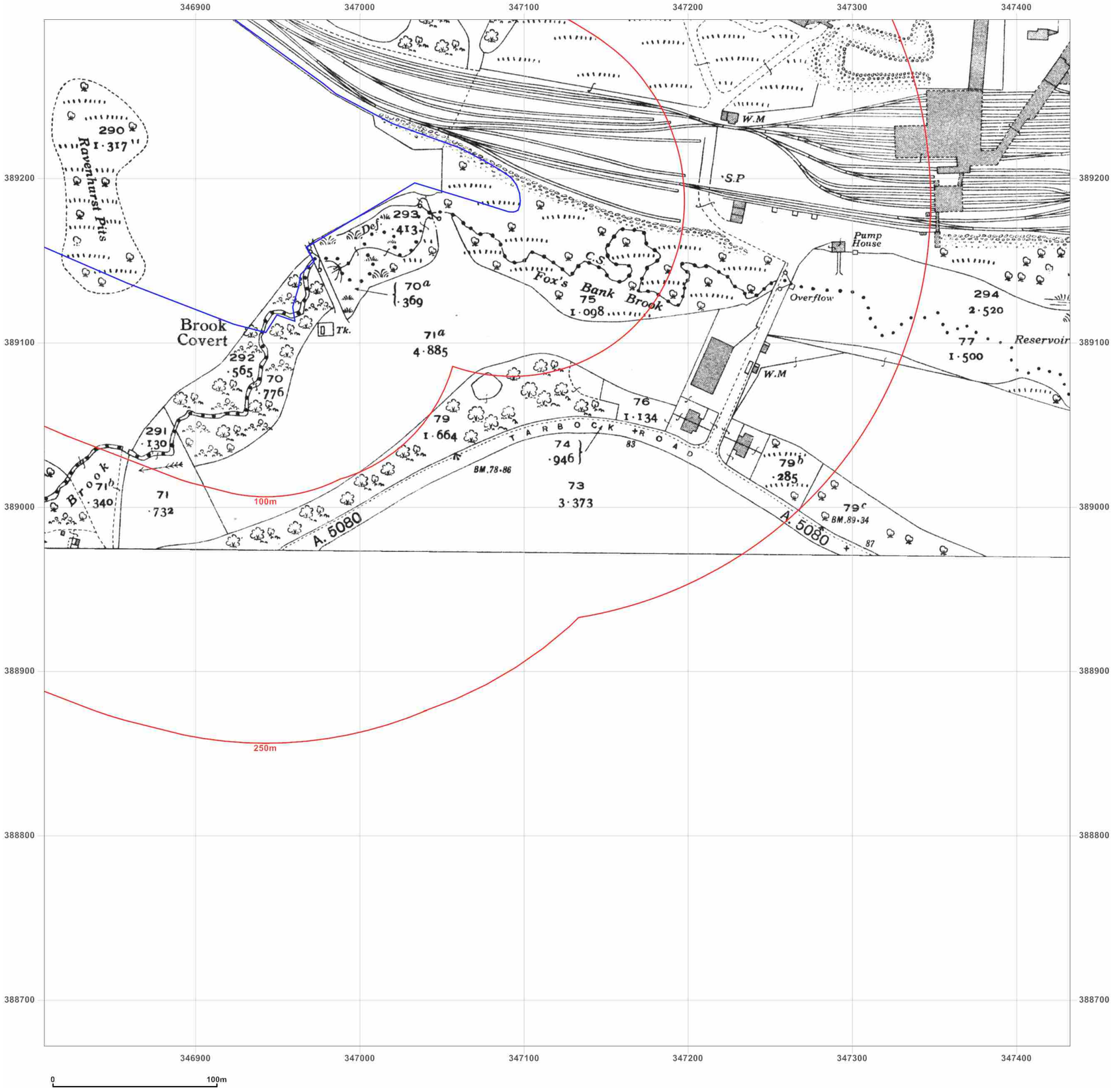
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Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764_LS_2_1
Grid Ref: 347120, 388984

Map Name: County Series

Map date: **1937**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1937
Revised 1937
Edition N/A
Copyright N/A
Levelled N/A

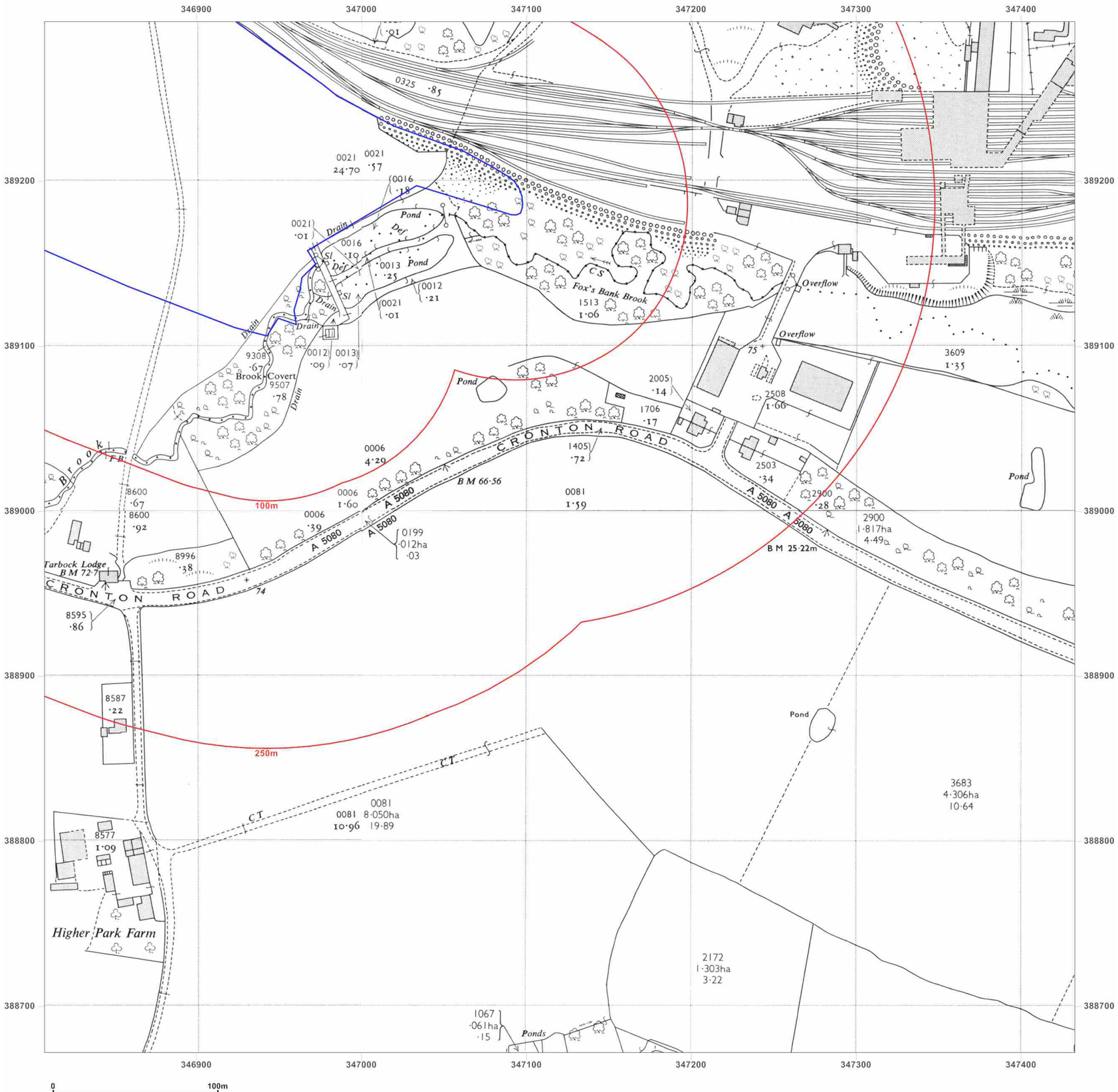
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Client Ref: 2956_
Report Ref: GS-4206764_LS_2_1
Grid Ref: 347120, 388984

Map Name: National Grid

Map date: **1958**

Scale: 1:2,500

Printed at: 1:2,500

N W E S

Surveyed 1958
Revised 1958
Edition N/A
Copyright 1959
Levelled 1926

Surveyed 1958
Revised 1958
Edition N/A
Copyright 1959
Levelled 1957

Surveyed 1958
Revised 1958
Edition N/A
Copyright 1959
Levelled 1926

Surveyed 1958
Revised 1958
Edition N/A
Copyright 1959
Levelled 1957

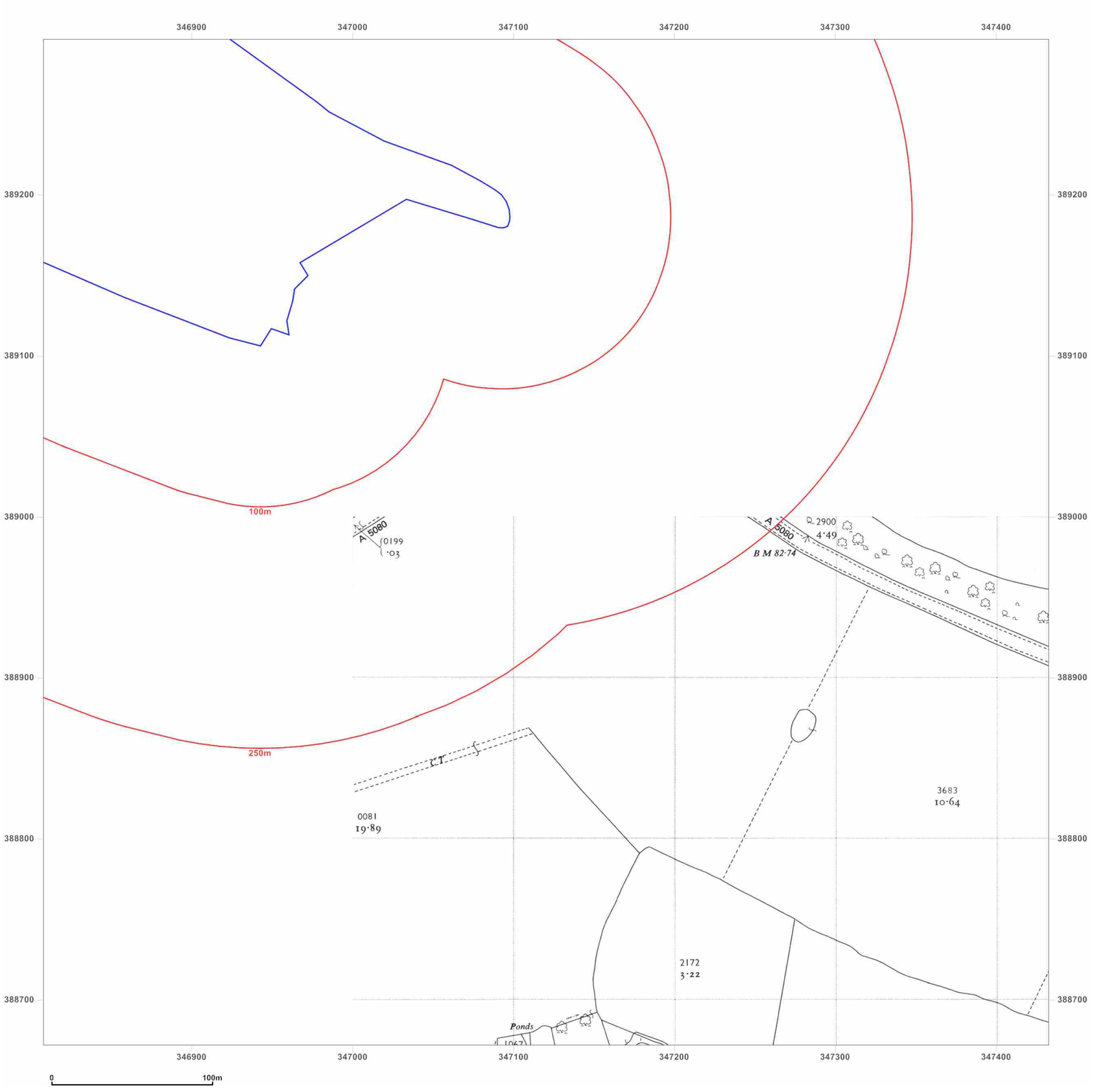
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Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764_LS_2_1
Grid Ref: 347120, 388984

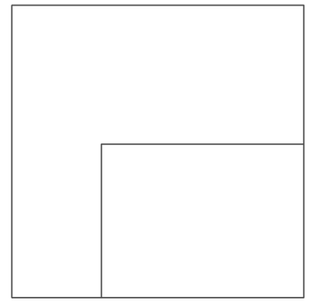
Map Name: National Grid

Map date: **1958**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1958
Revised 1958
Edition 1958
Copyright N/A
Levelled 1957

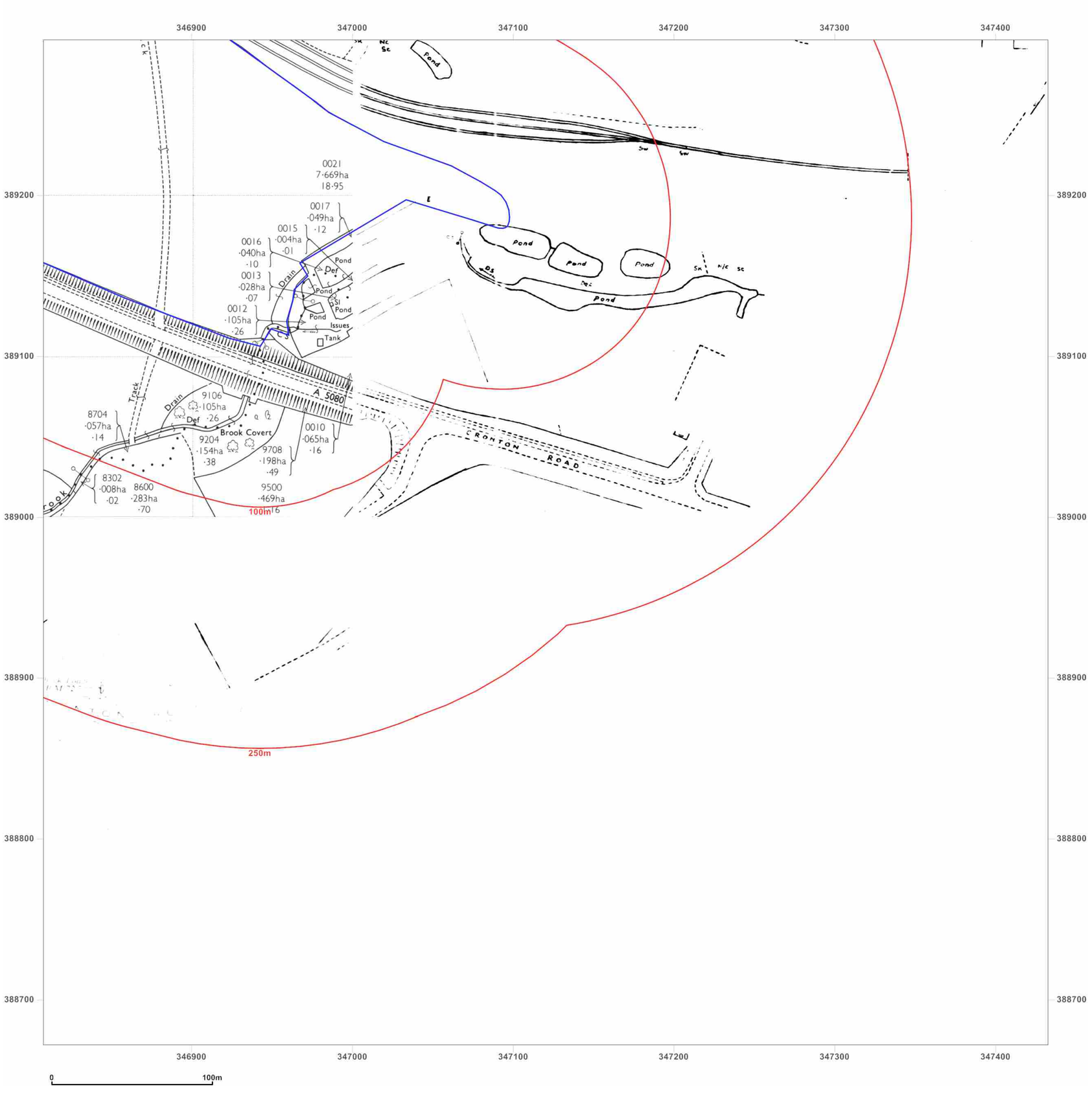
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Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764_LS_2_1
Grid Ref: 347120, 388984

Map Name: National Grid

Map date: **1975-1978**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1978
Revised 1978
Edition N/A
Copyright 1979
Levelled 1963

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

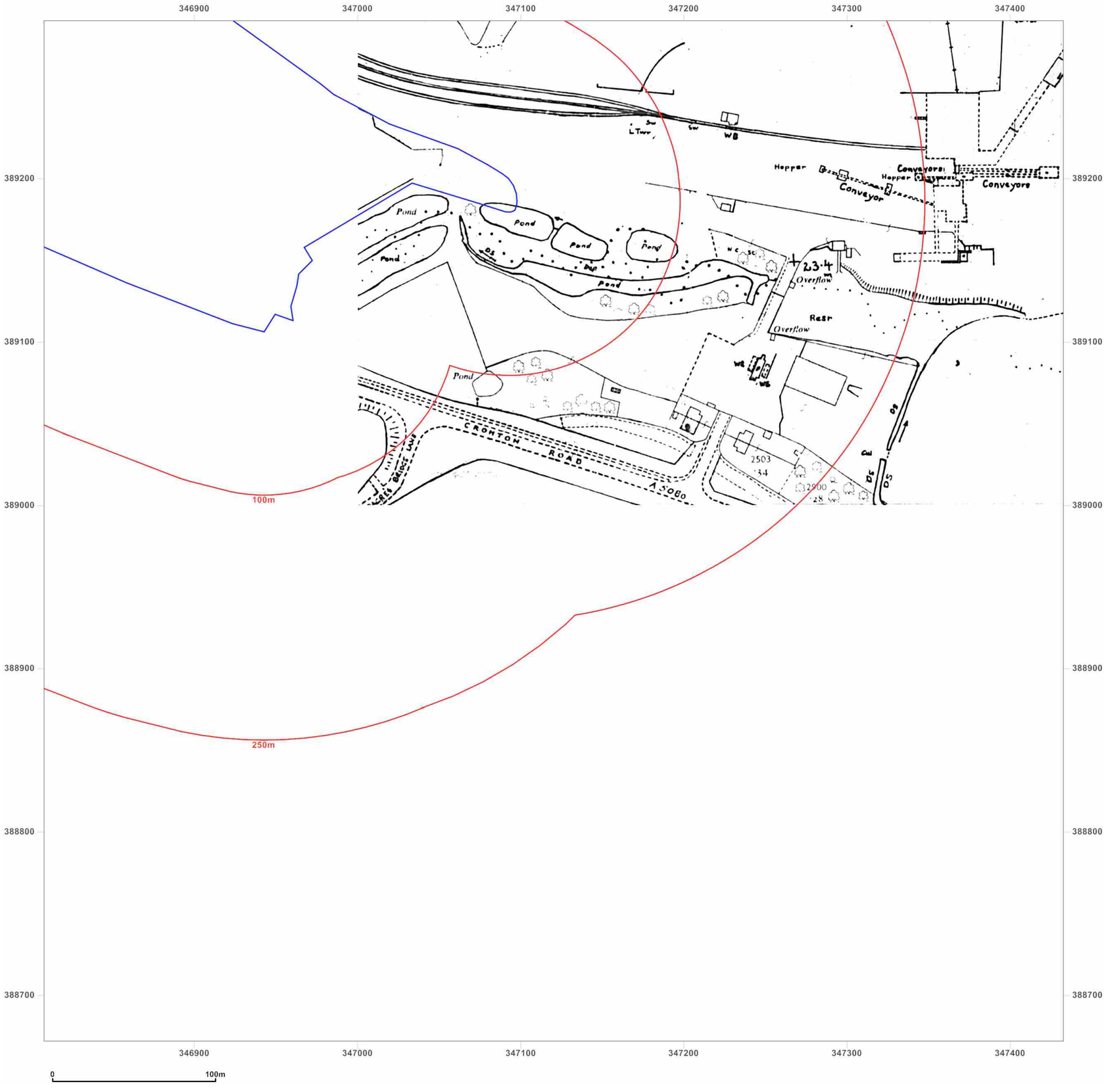
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Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764_LS_2_1
Grid Ref: 347120, 388984

Map Name: National Grid

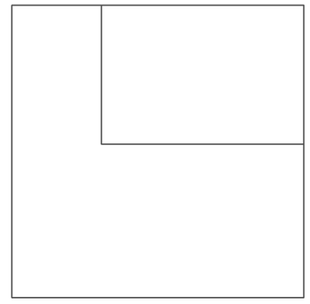
Map date: **1980**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1980
Levelled 1963



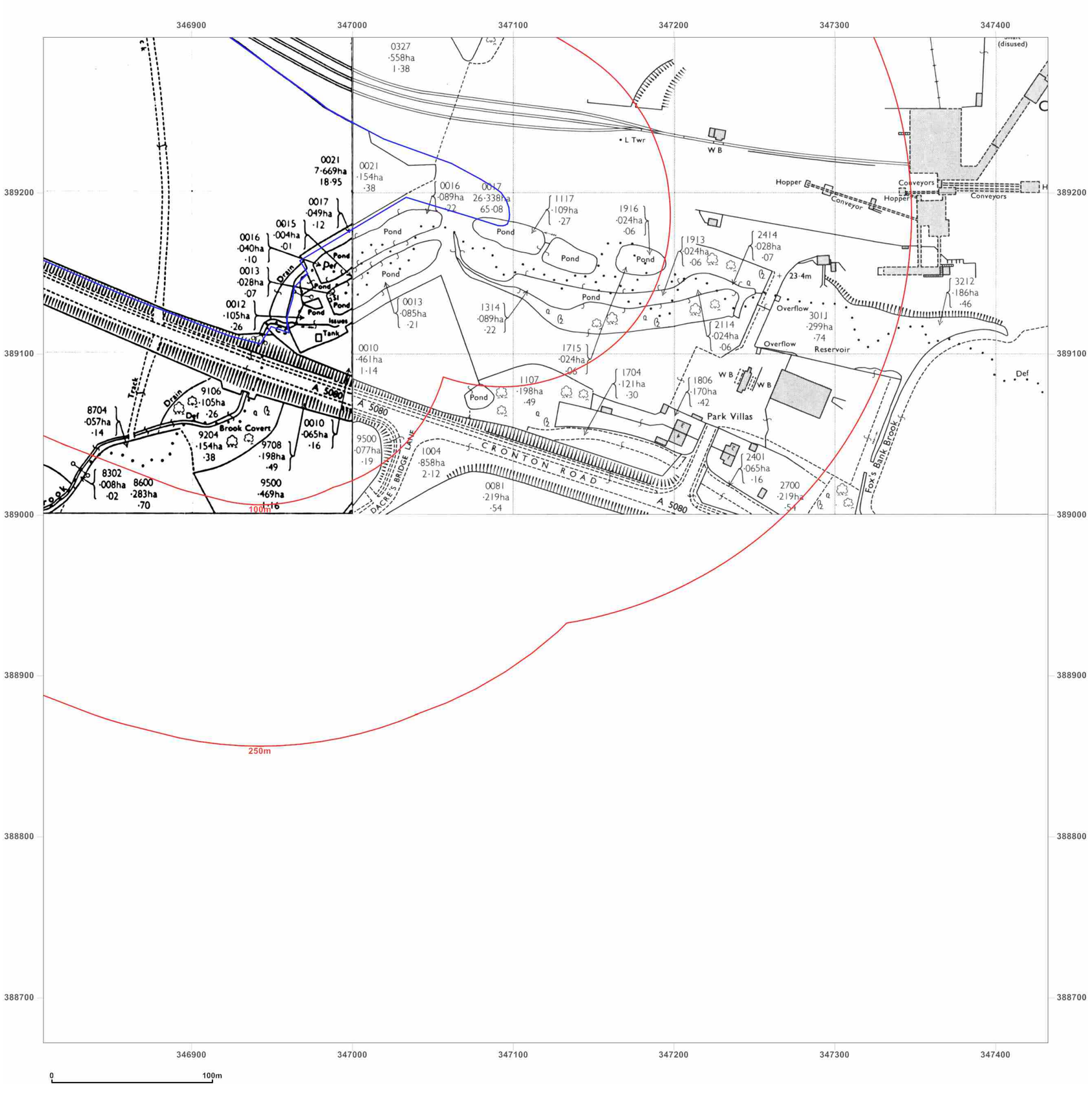
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Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764_LS_2_1
Grid Ref: 347120, 388984

Map Name: National Grid

Map date: **1980-1984**

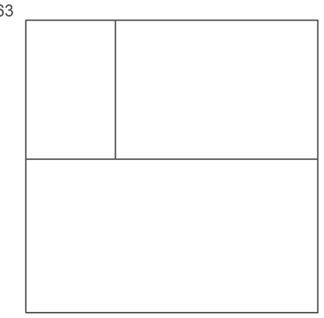
Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1963
Revised 1984
Edition N/A
Copyright 1984
Levelled 1963

Surveyed 1980
Revised 1980
Edition N/A
Copyright 1981
Levelled 1963



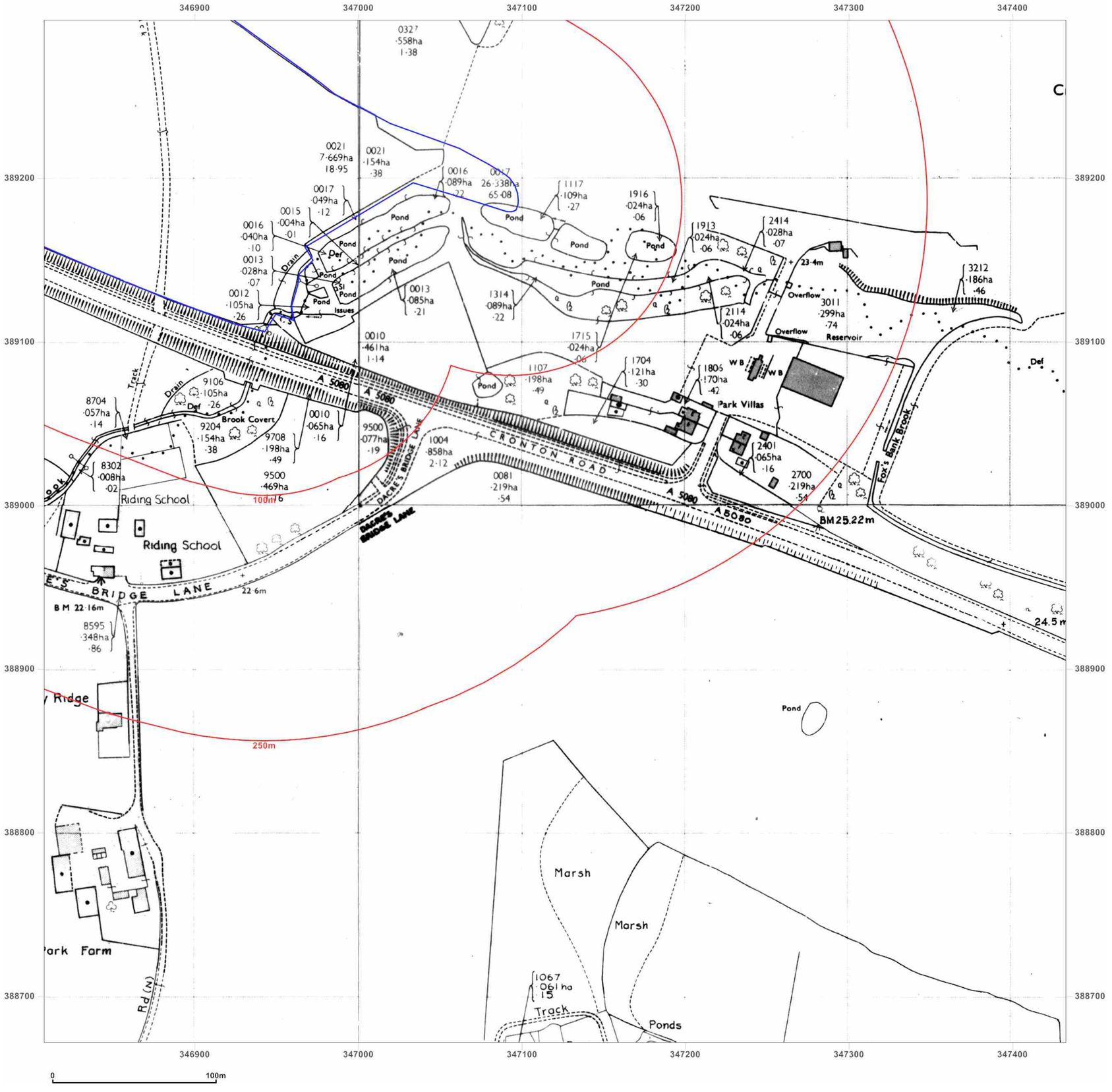
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Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764_LS_2_1
Grid Ref: 347120, 388984

Map Name: National Grid

Map date: **1988-1989**

Scale: 1:2,500

Printed at: 1:2,500

N W E S

Surveyed 1963
Revised 1989
Edition N/A
Copyright 1989
Levelled 1963

Surveyed 1963
Revised 1989
Edition N/A
Copyright 1989
Levelled 1963

Surveyed 1963
Revised 1989
Edition N/A
Copyright 1989
Levelled 1963

Surveyed 1968
Revised 1988
Edition N/A
Copyright 1988
Levelled 1968

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Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764_LS_2_1
Grid Ref: 347120, 388984

Map Name: National Grid

Map date: **1992-1993**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1963
Revised 1992
Edition N/A
Copyright 1992
Levelled 1963

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1992
Levelled N/A

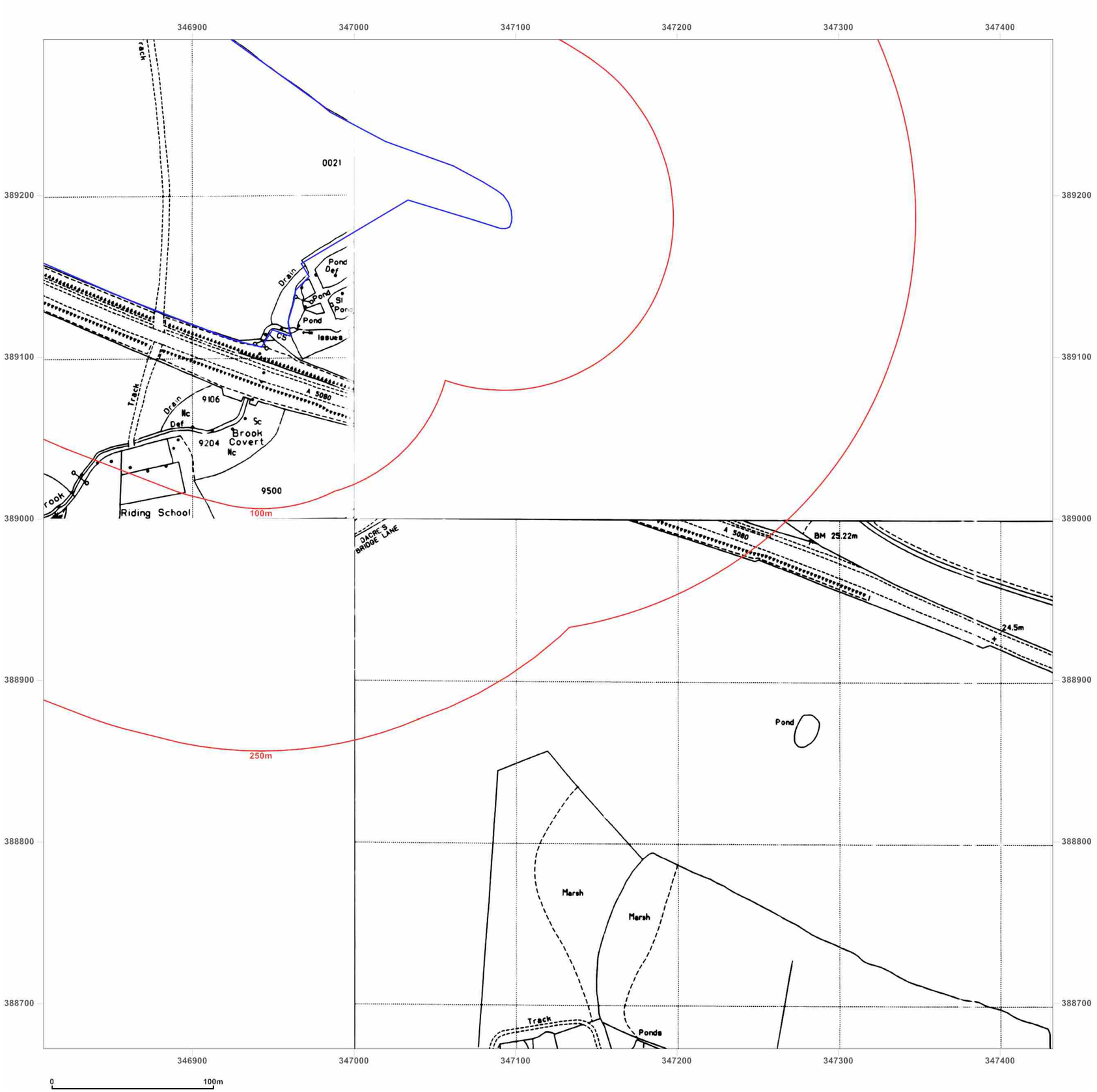
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Site Details:

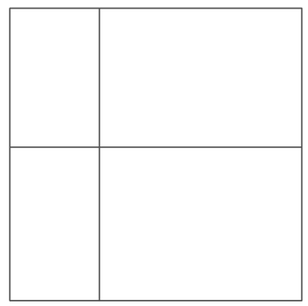
STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764_LS_2_1
Grid Ref: 347120, 388984

Map Name: National Grid
Map date: **1993**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

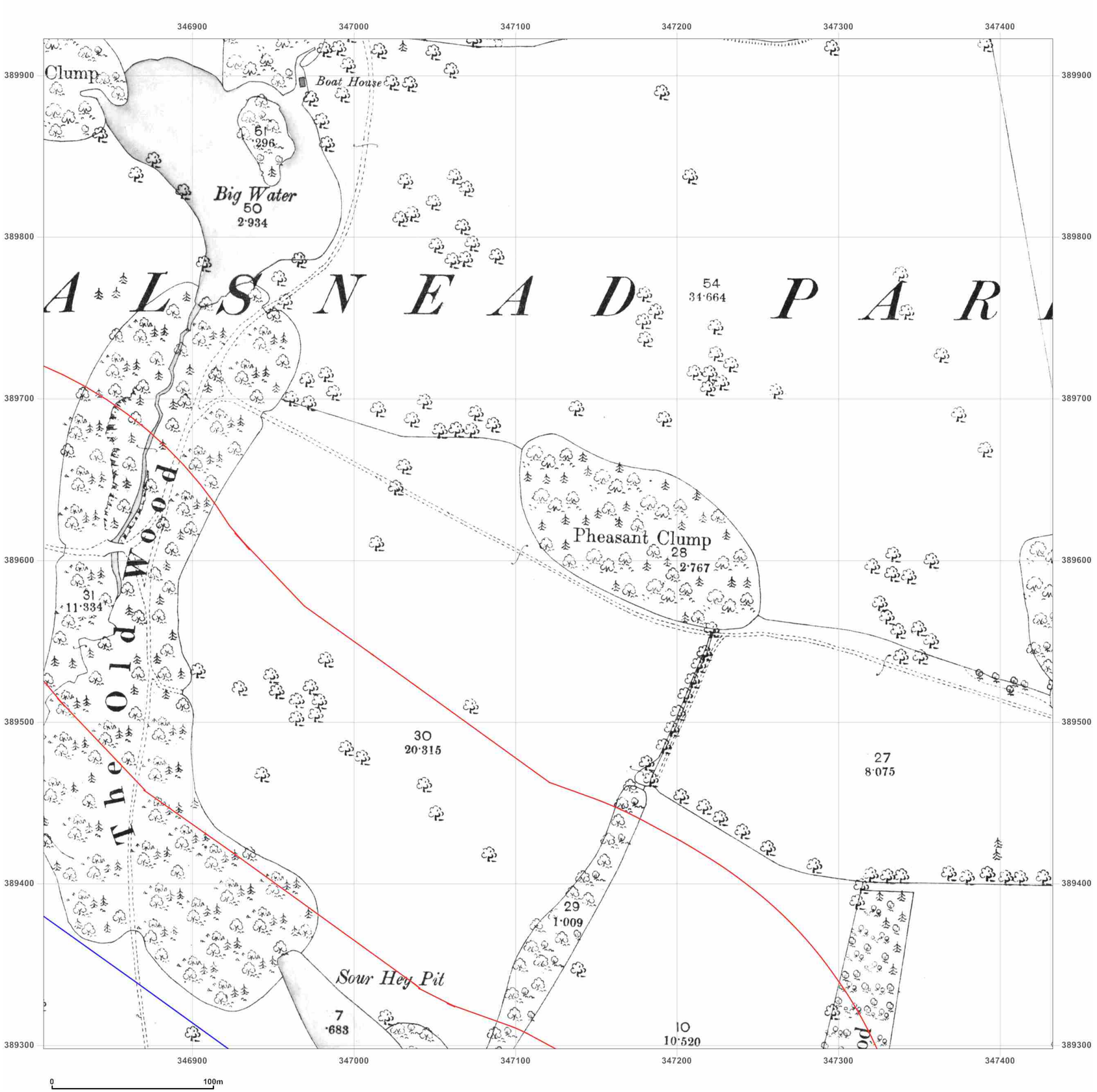
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Site Details:

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Client Ref: 2956_
Report Ref: GS-4206764_LS_2_2
Grid Ref: 347120, 389610

Map Name: County Series

Map date: **1892**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

~~Surveyed 1892~~
Revised 1892
Edition N/A
Copyright N/A
Levelled N/A

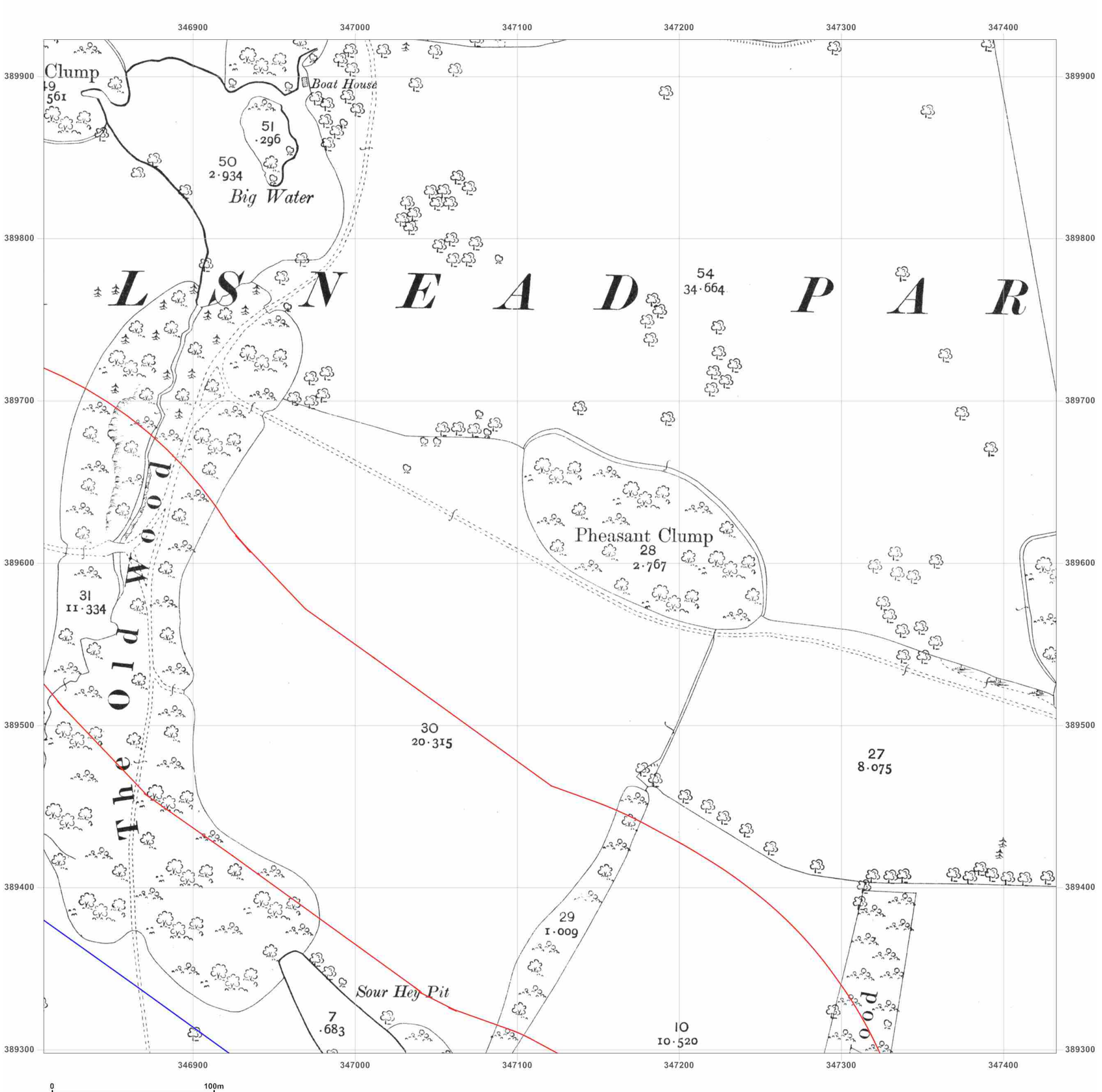
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Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764_LS_2_2
Grid Ref: 347120, 389610

Map Name: County Series

Map date: **1907**

Scale: 1:2,500

Printed at: 1:2,500

N
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~~Surveyed 1907~~
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

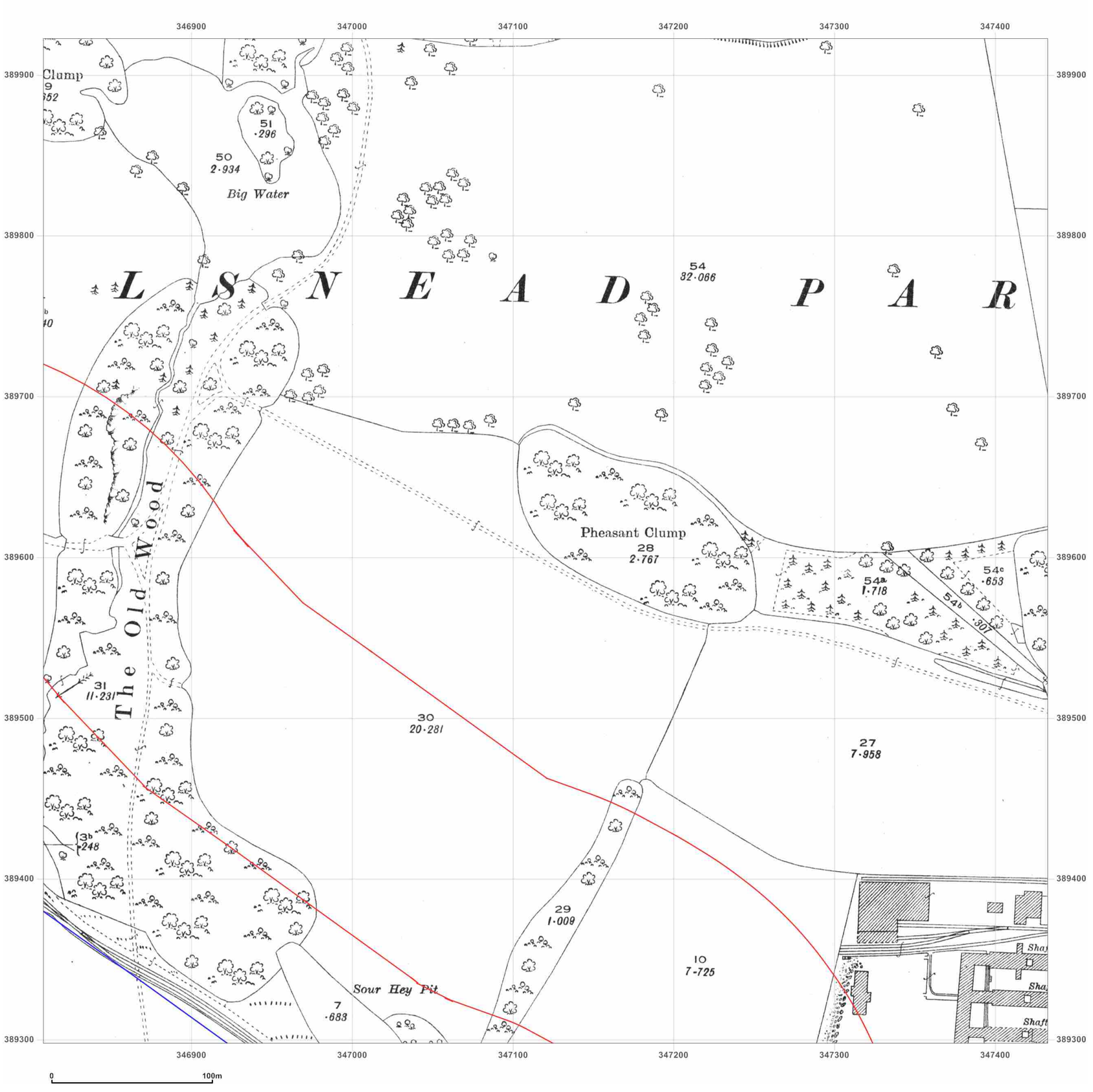
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Site Details:

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Client Ref: 2956_
Report Ref: GS-4206764_LS_2_2
Grid Ref: 347120, 389610

Map Name: County Series

Map date: **1927**

Scale: 1:2,500

Printed at: 1:2,500

N
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~~Surveyed 1927~~
Revised 1927
Edition N/A
Copyright N/A
Levelled N/A

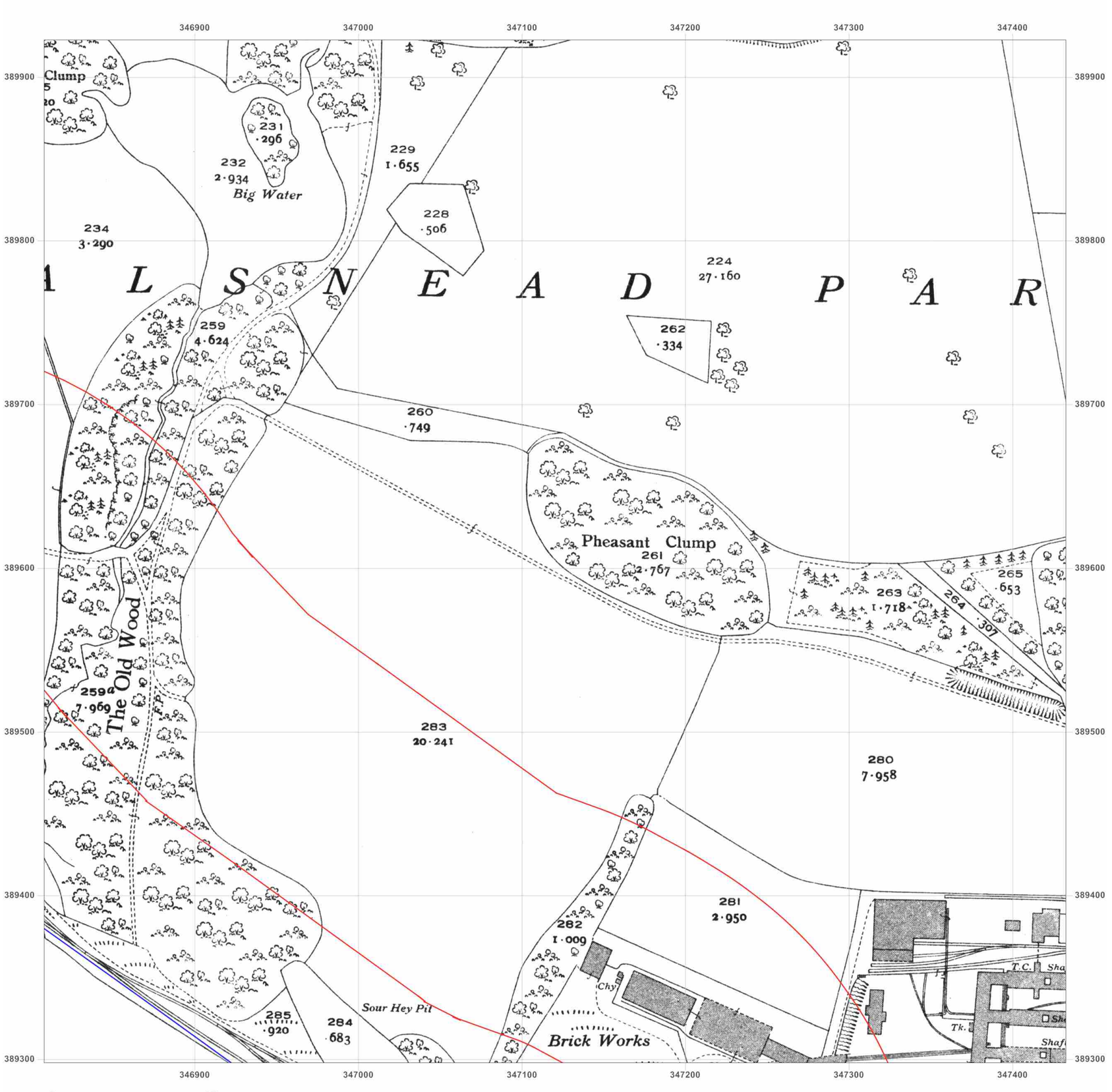
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Site Details:

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Client Ref: 2956_
Report Ref: GS-4206764_LS_2_2
Grid Ref: 347120, 389610

Map Name: County Series

Map date: **1937**

Scale: 1:2,500

Printed at: 1:2,500

N
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~~Surveyed 1937~~
Revised 1937
Edition N/A
Copyright N/A
Levelled N/A

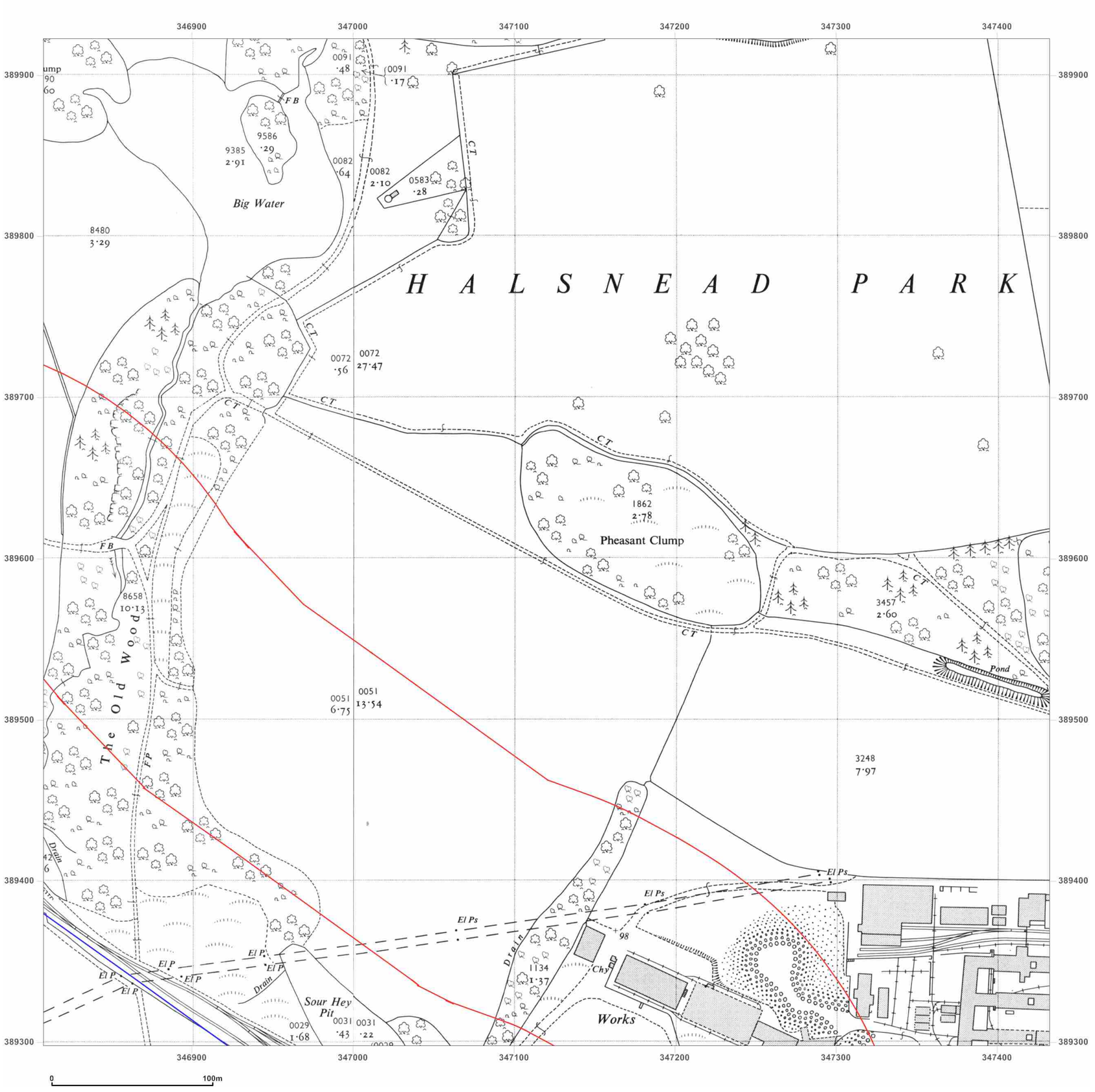
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Site Details:

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Client Ref: 2956_
Report Ref: GS-4206764_LS_2_2
Grid Ref: 347120, 389610

Map Name: National Grid
Map date: **1958**
Scale: 1:2,500
Printed at: 1:2,500

N
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Surveyed 1958	Surveyed 1958
Revised 1958	Revised 1958
Edition N/A	Edition N/A
Copyright 1959	Copyright 1959
Levelled 1926	Levelled 1957

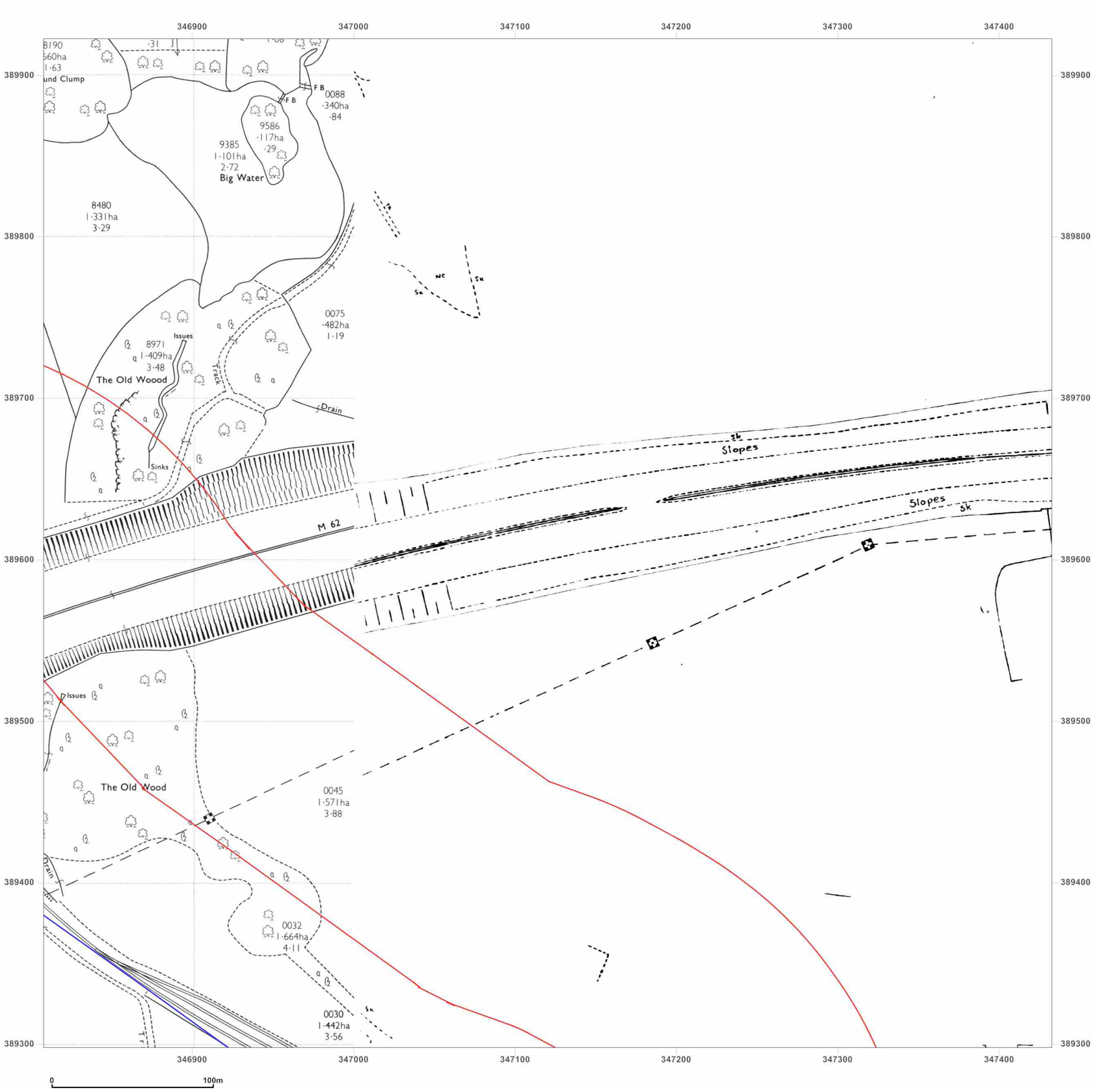
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Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764_LS_2_2
Grid Ref: 347120, 389610

Map Name: National Grid

Map date: **1975-1978**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1978 Revised 1978 Edition N/A Copyright 1979 Levelled 1963	Surveyed N/A Revised N/A Edition N/A Copyright N/A Levelled N/A

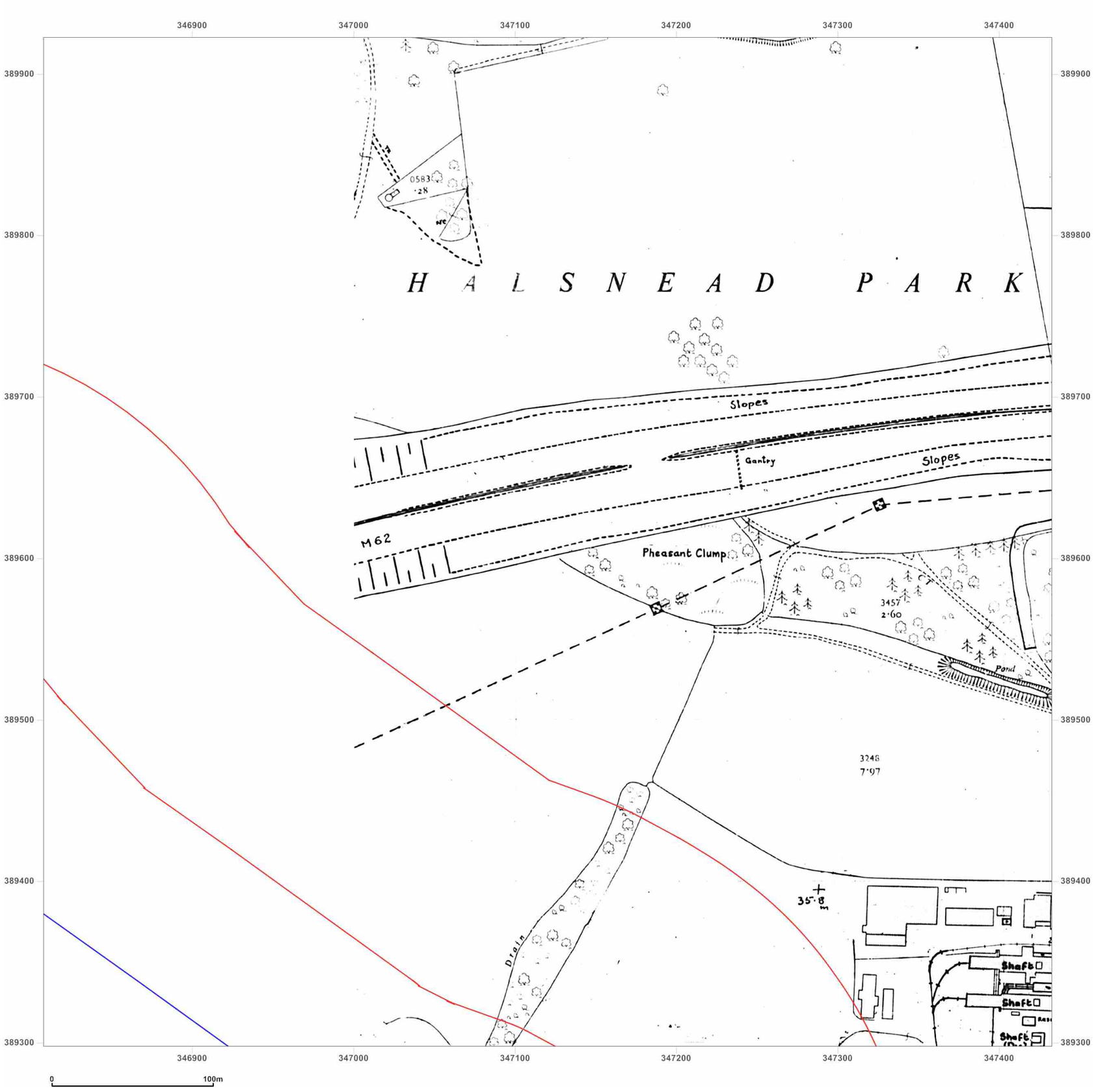
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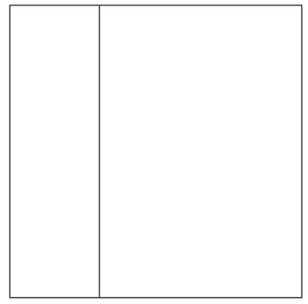
Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764_LS_2_2
Grid Ref: 347120, 389610

Map Name: National Grid
Map date: **1980**
Scale: 1:2,500
Printed at: 1:2,500

N
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1980
Levelled 1963

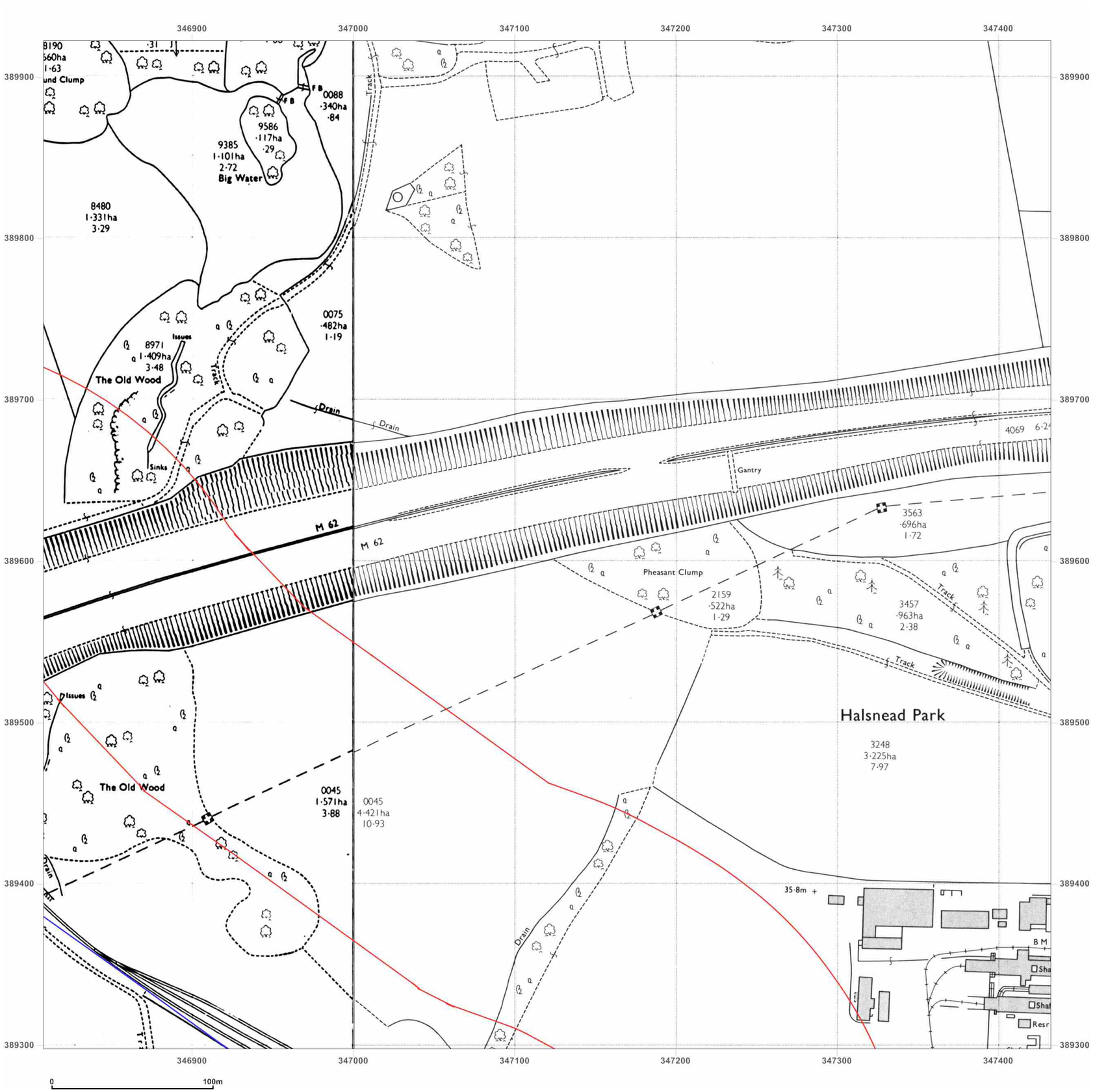
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Site Details:

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Client Ref: 2956_
Report Ref: GS-4206764_LS_2_2
Grid Ref: 347120, 389610

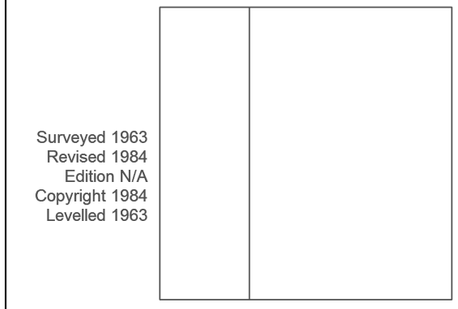
Map Name: National Grid

Map date: **1980-1984**

Scale: 1:2,500

Printed at: 1:2,500

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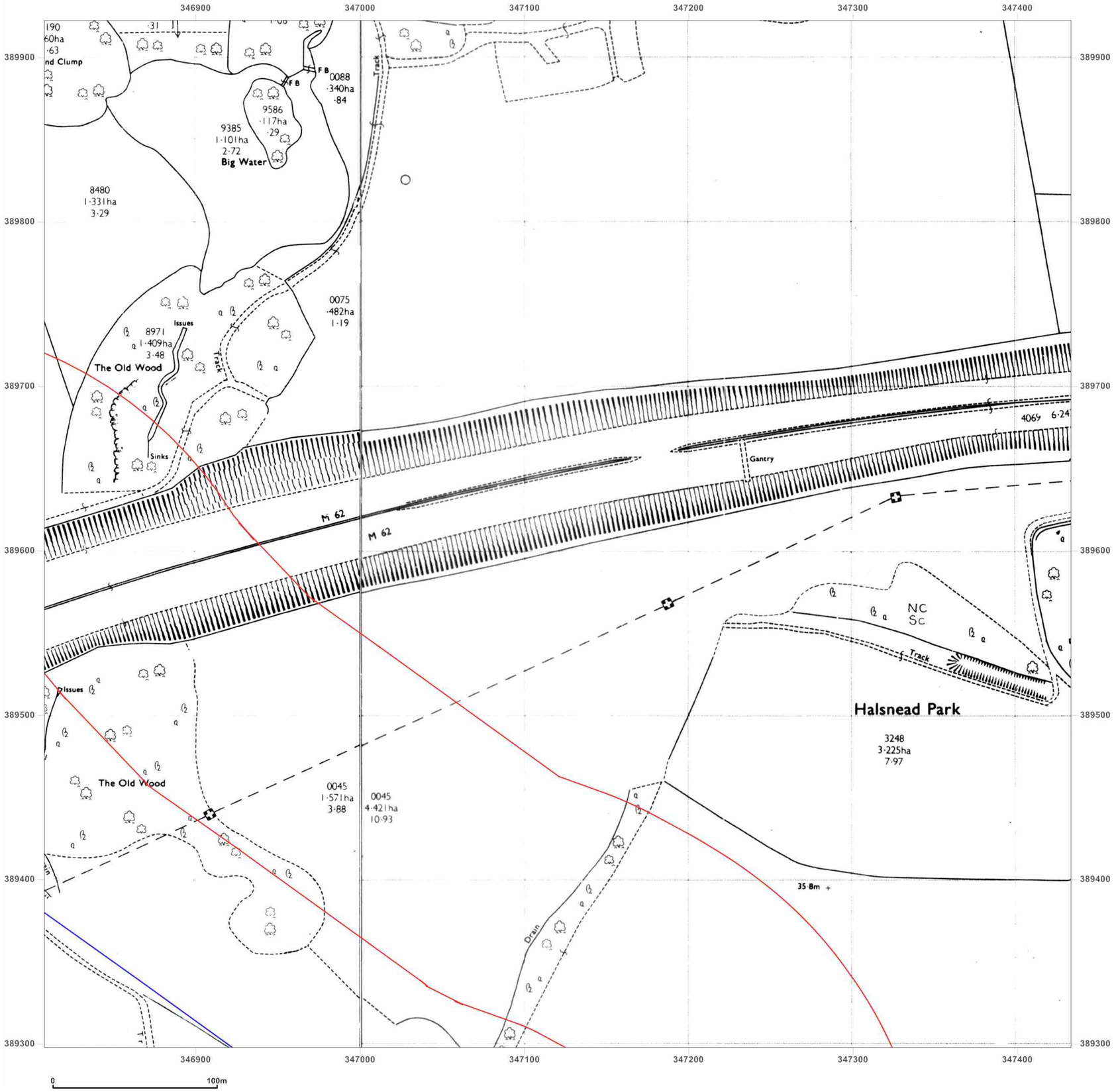
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Site Details:

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Client Ref: 2956_
Report Ref: GS-4206764_LS_2_2
Grid Ref: 347120, 389610

Map Name: National Grid
Map date: **1989**
Scale: 1:2,500
Printed at: 1:2,500

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Surveyed 1963 Revised 1989 Edition N/A Copyright 1989 Levelled 1963		Surveyed 1963 Revised 1989 Edition N/A Copyright 1989 Levelled 1963

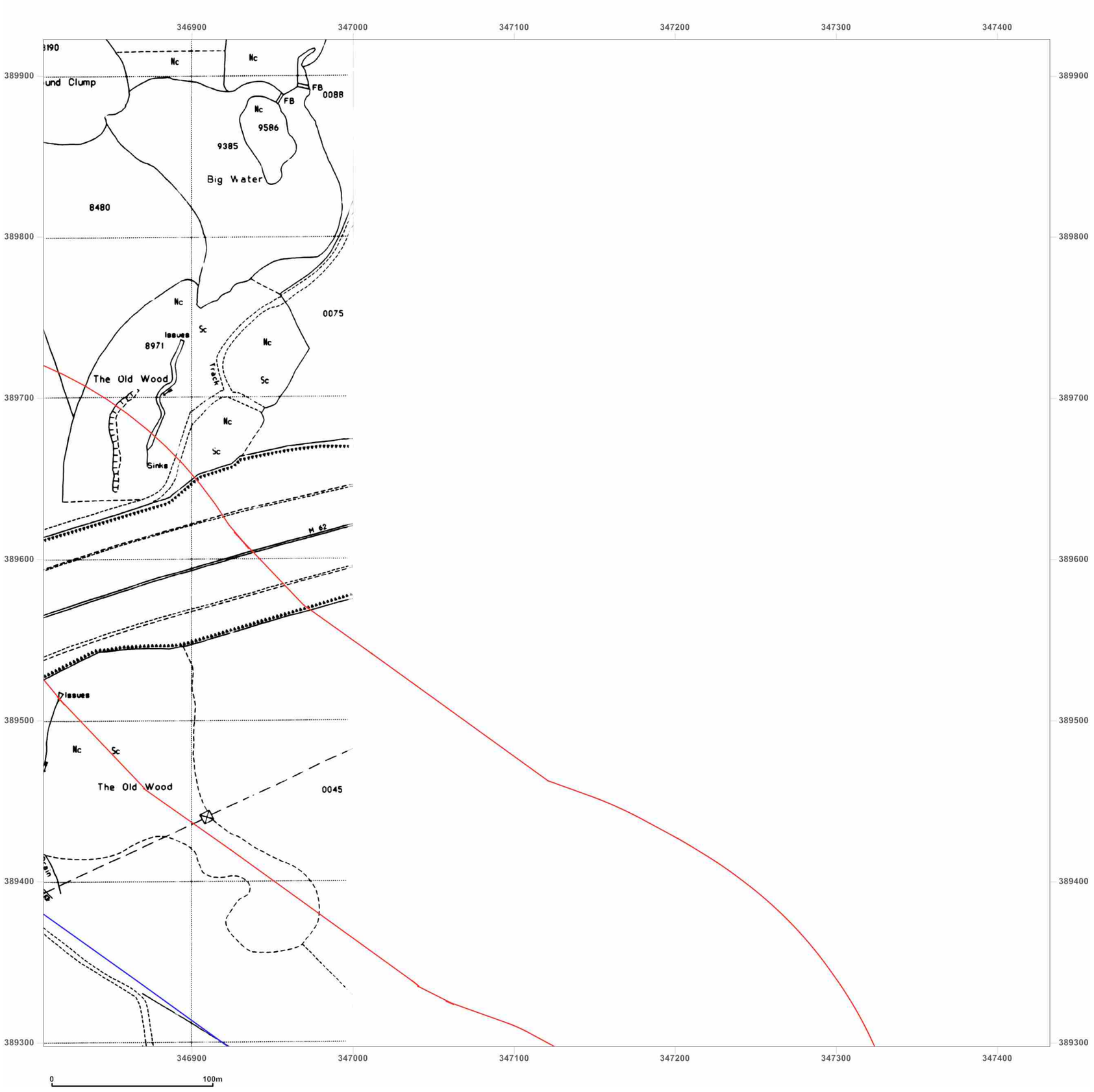
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Client Ref: 2956_
Report Ref: GS-4206764_LS_2_2
Grid Ref: 347120, 389610

Map Name: National Grid
Map date: **1993**
Scale: 1:2,500
Printed at: 1:2,500

N
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

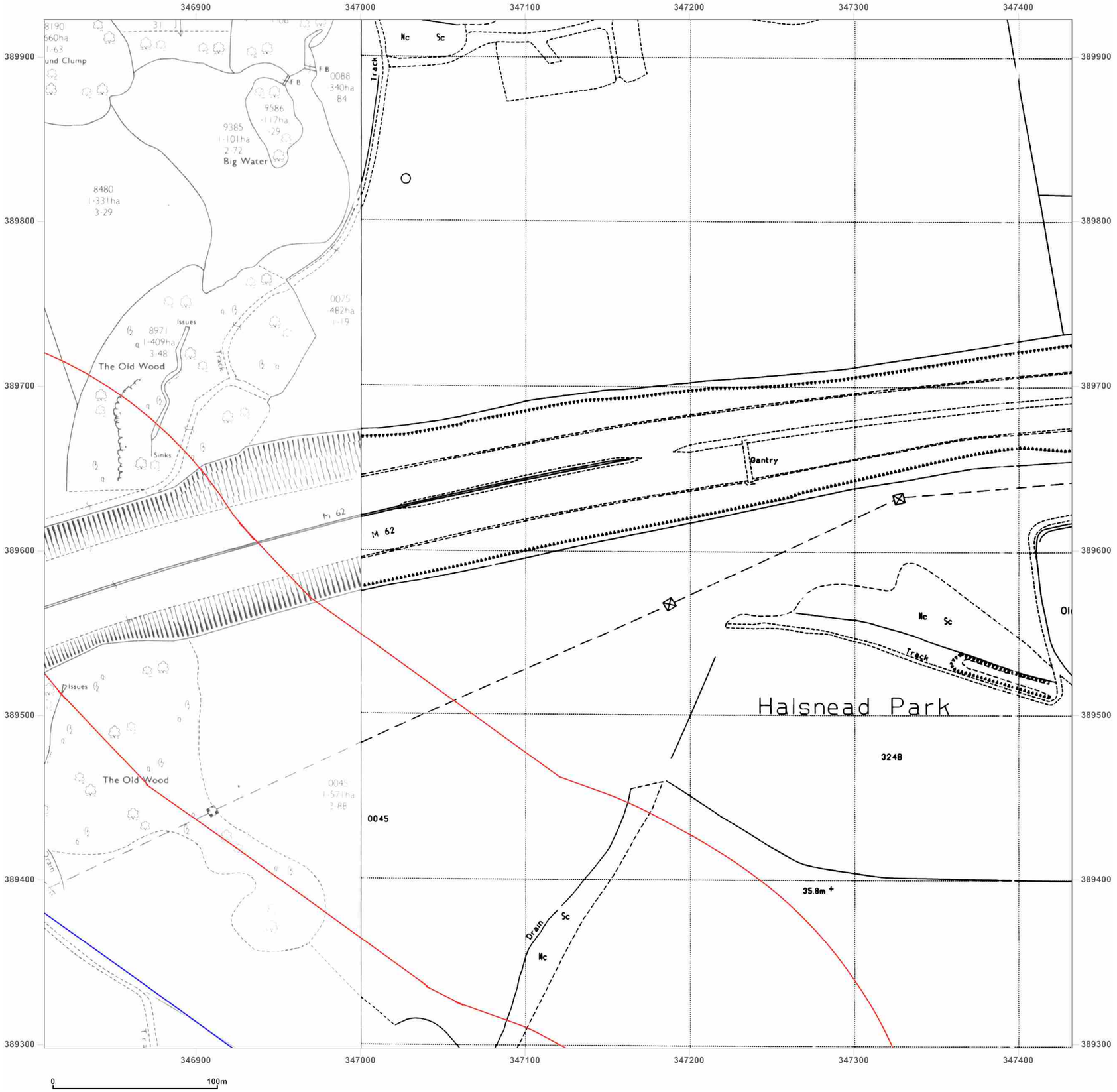
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Site Details:

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Client Ref: 2956_
Report Ref: GS-4206764_LS_2_2
Grid Ref: 347120, 389610

Map Name: National Grid

Map date: **1992-1993**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1963 Revised 1992 Edition N/A Copyright 1992 Levelled 1963	Surveyed N/A Revised N/A Edition N/A Copyright 1993 Levelled N/A

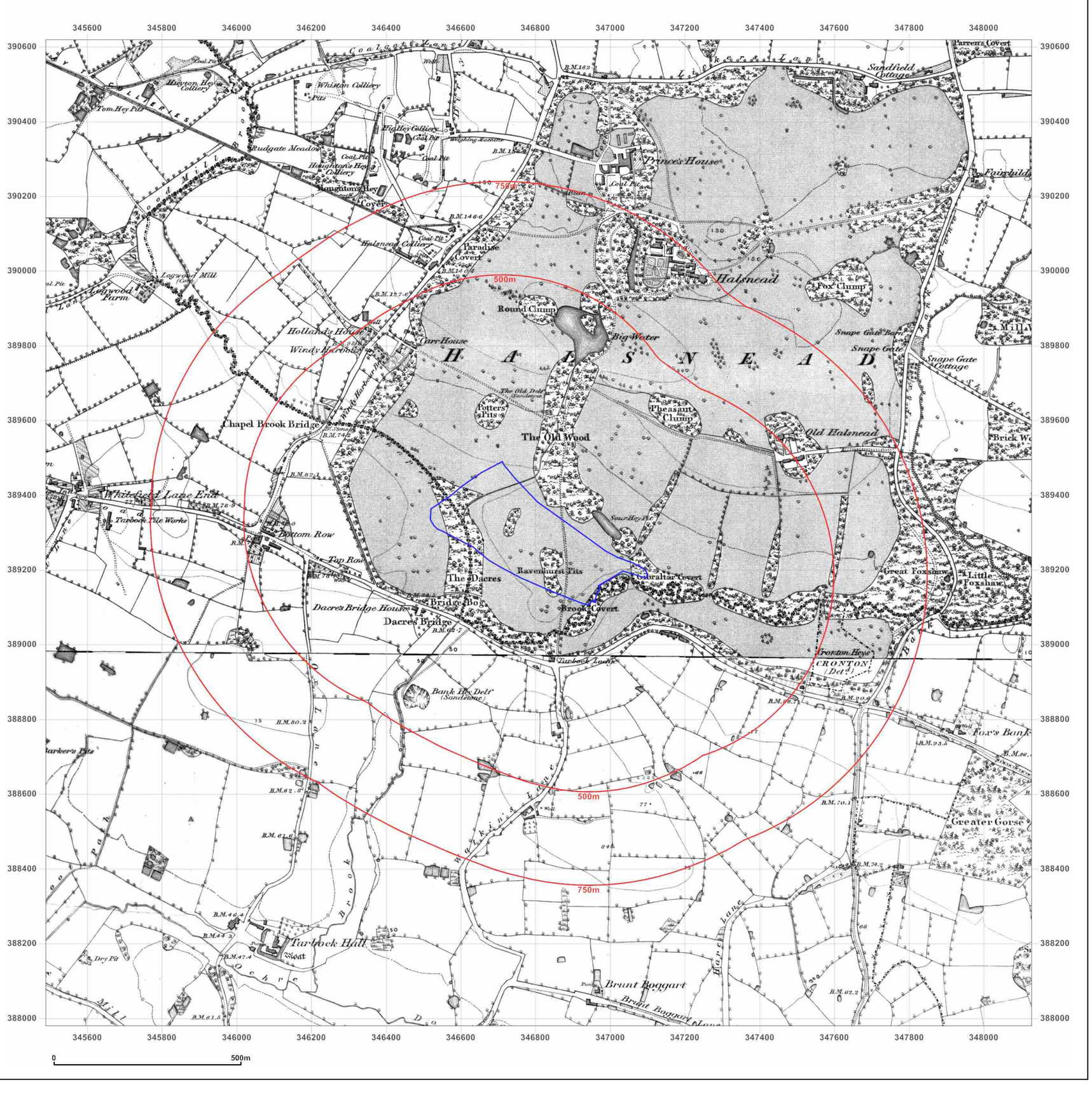
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Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764
Grid Ref: 346808, 389298

Map Name: County Series

Map date: **1849-1850**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1847
Revised N/A
Edition 1850
Copyright N/A
Levelled N/A

Surveyed 1846
Revised N/A
Edition 1849
Copyright N/A
Levelled N/A

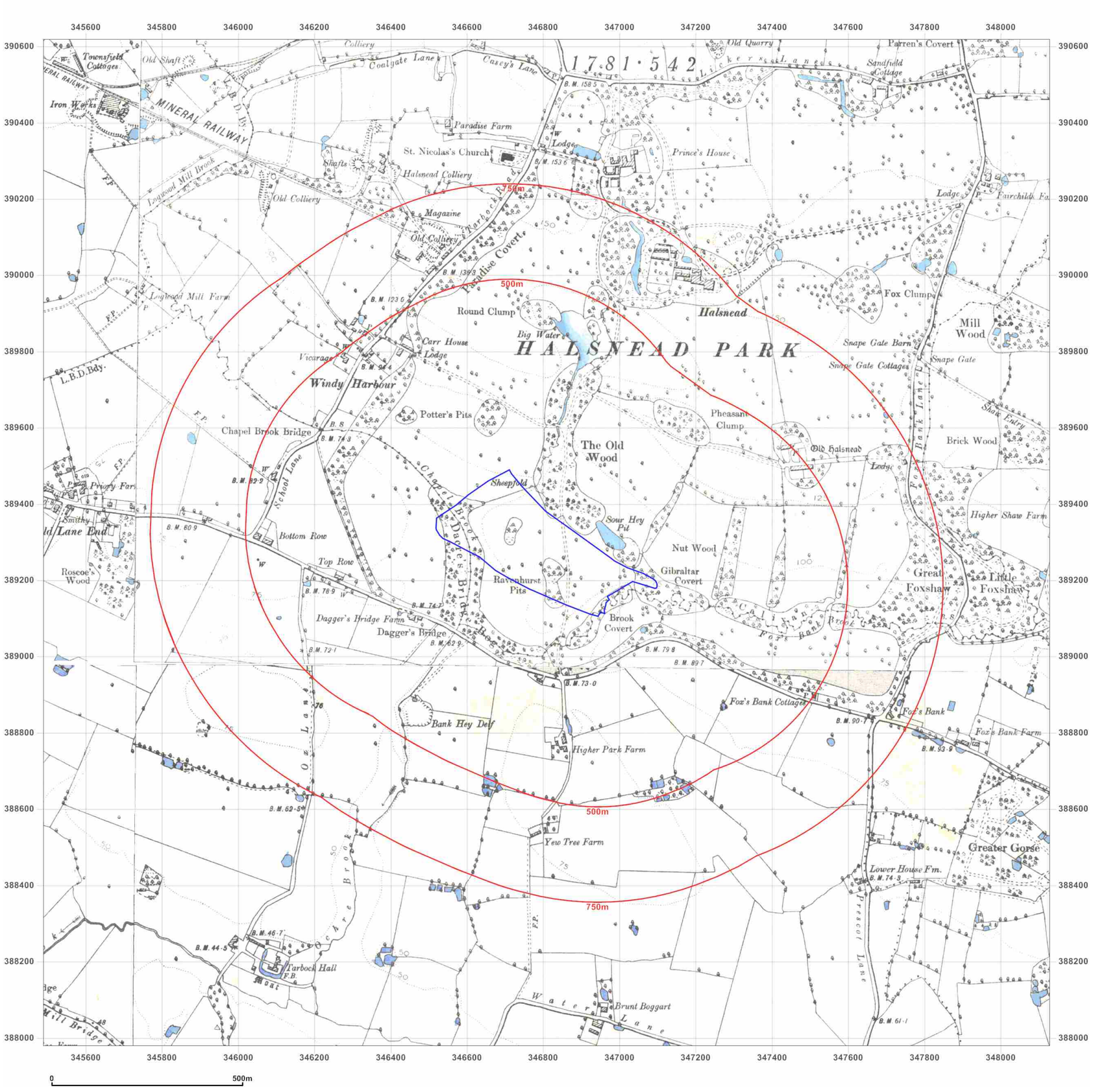
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Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764
Grid Ref: 346808, 389298

Map Name: County Series

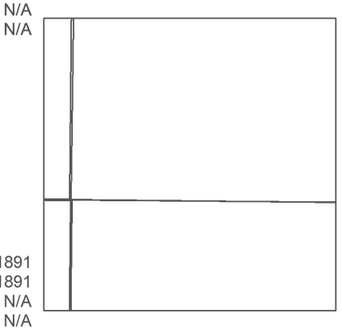
Map date: **1891**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1891
Revised 1891
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1891
Revised 1891
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1891
Revised 1891
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1891
Revised 1891
Edition N/A
Copyright N/A
Levelled N/A

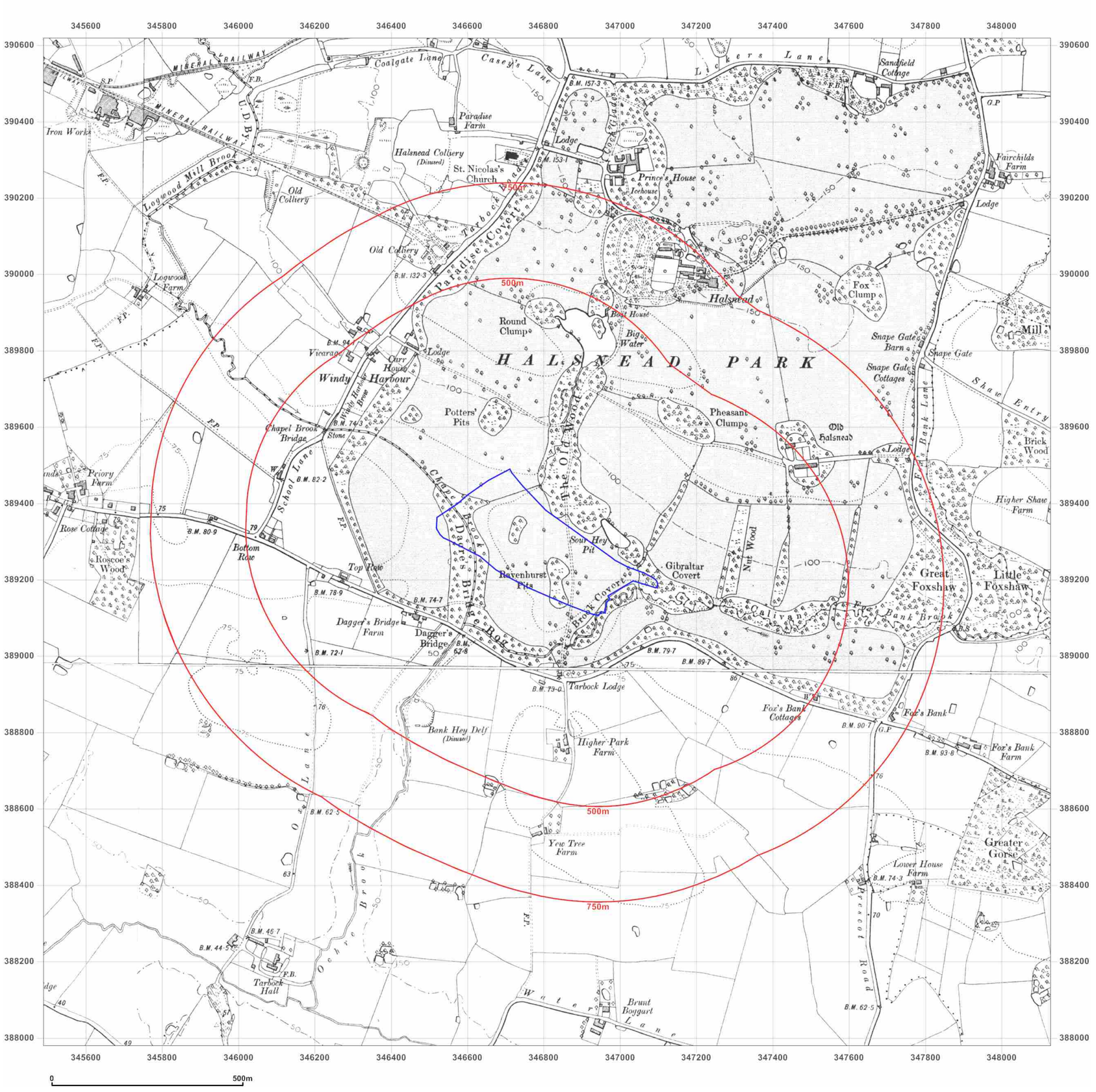
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Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764
Grid Ref: 346808, 389298

Map Name: County Series

Map date: **1904-1906**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1891
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1891
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1891
Revised 1904
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1891
Revised 1905
Edition N/A
Copyright N/A
Levelled N/A

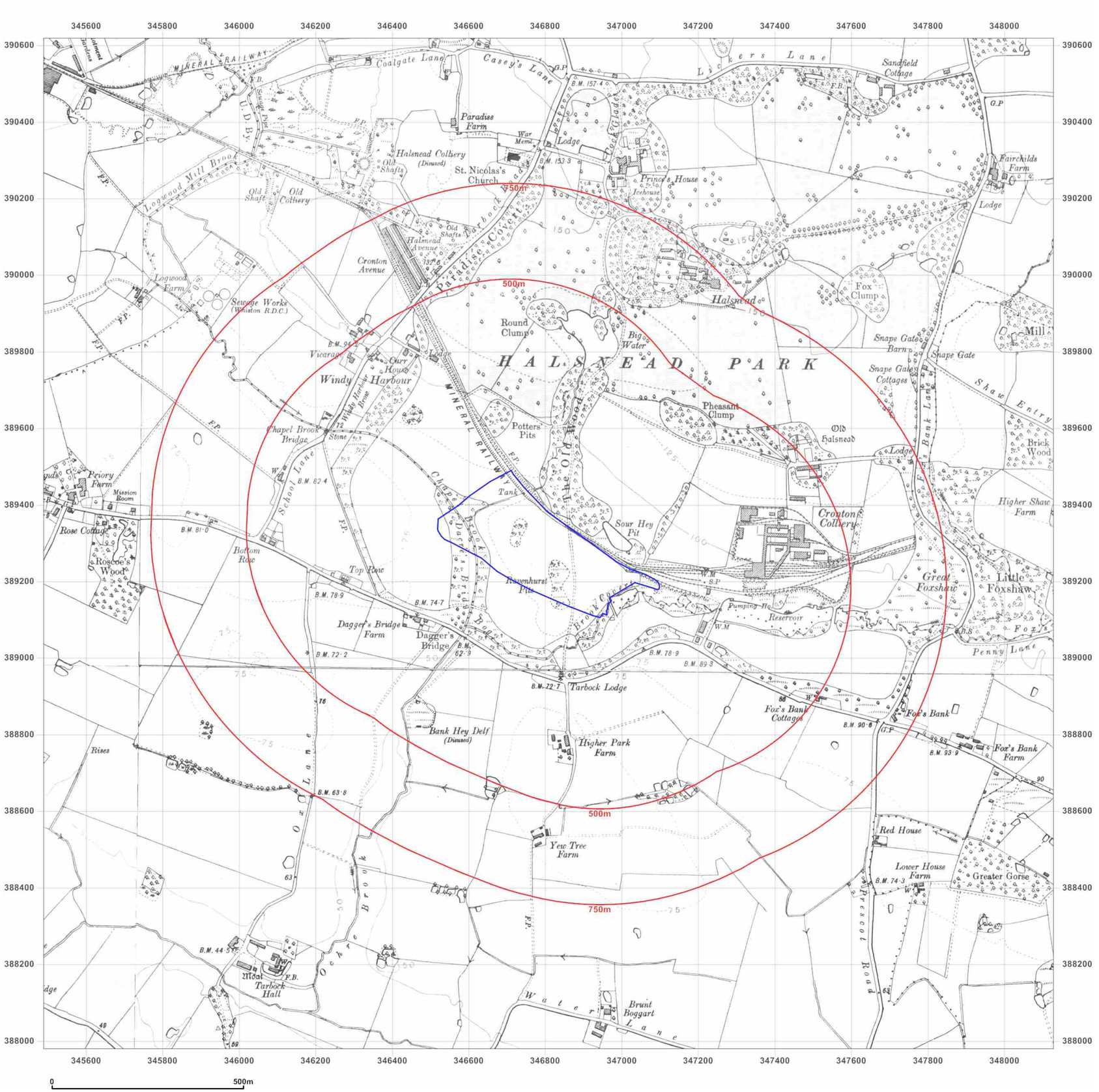
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Site Details:

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Client Ref: 2956_
Report Ref: GS-4206764
Grid Ref: 346808, 389298

Map Name: County Series

Map date: **1925**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1848
Revised 1925
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1846
Revised 1925
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1846
Revised 1925
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1846
Revised 1925
Edition N/A
Copyright N/A
Levelled N/A

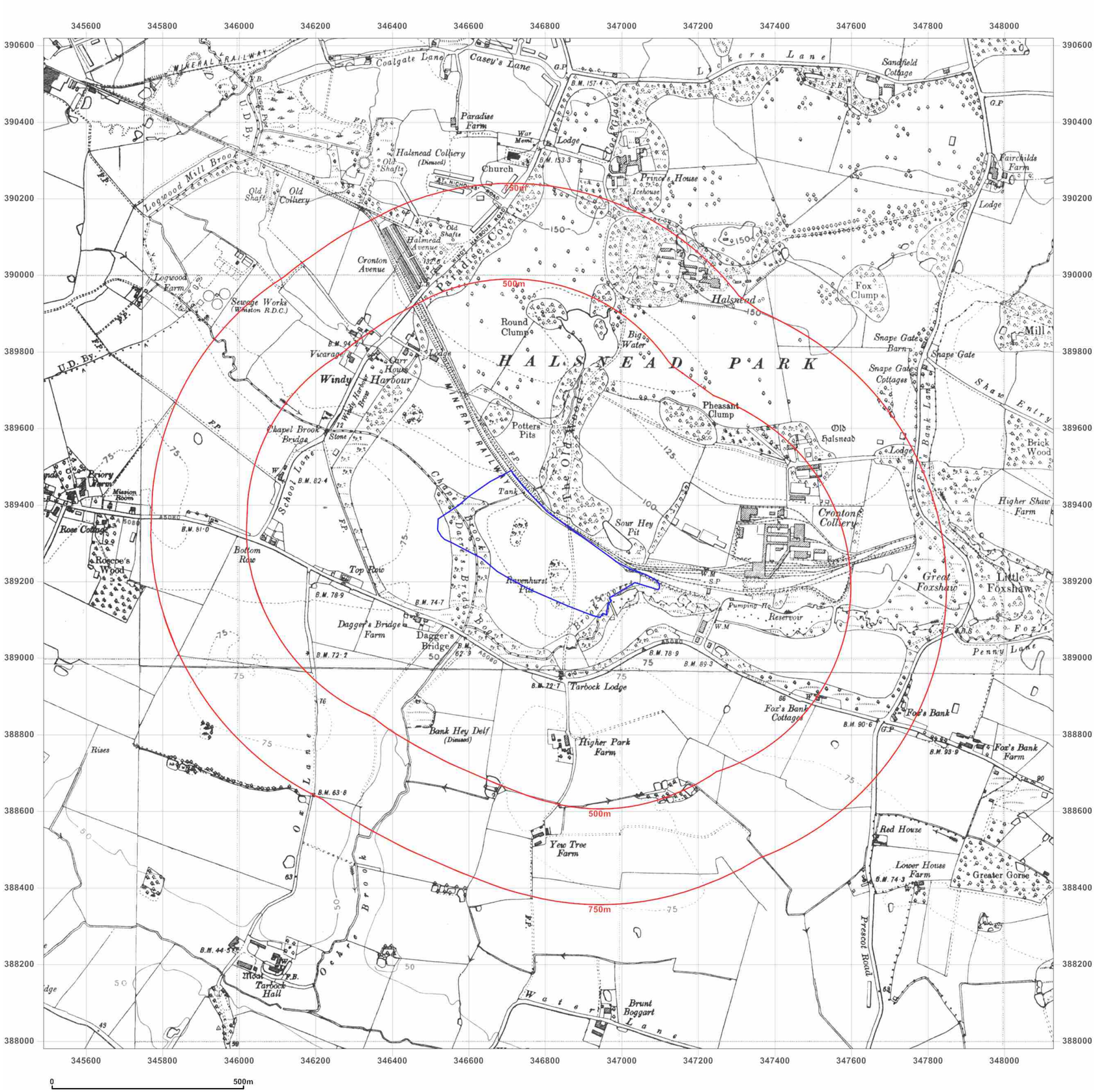
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Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764
Grid Ref: 346808, 389298

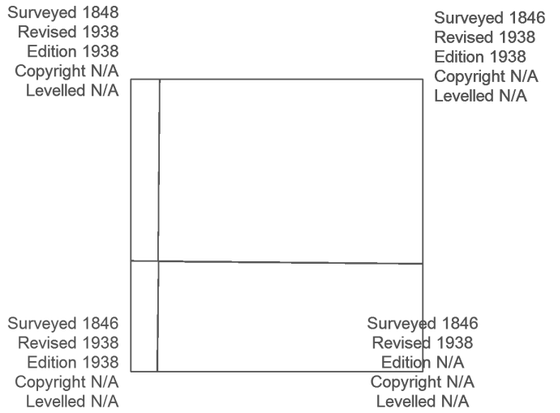
Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

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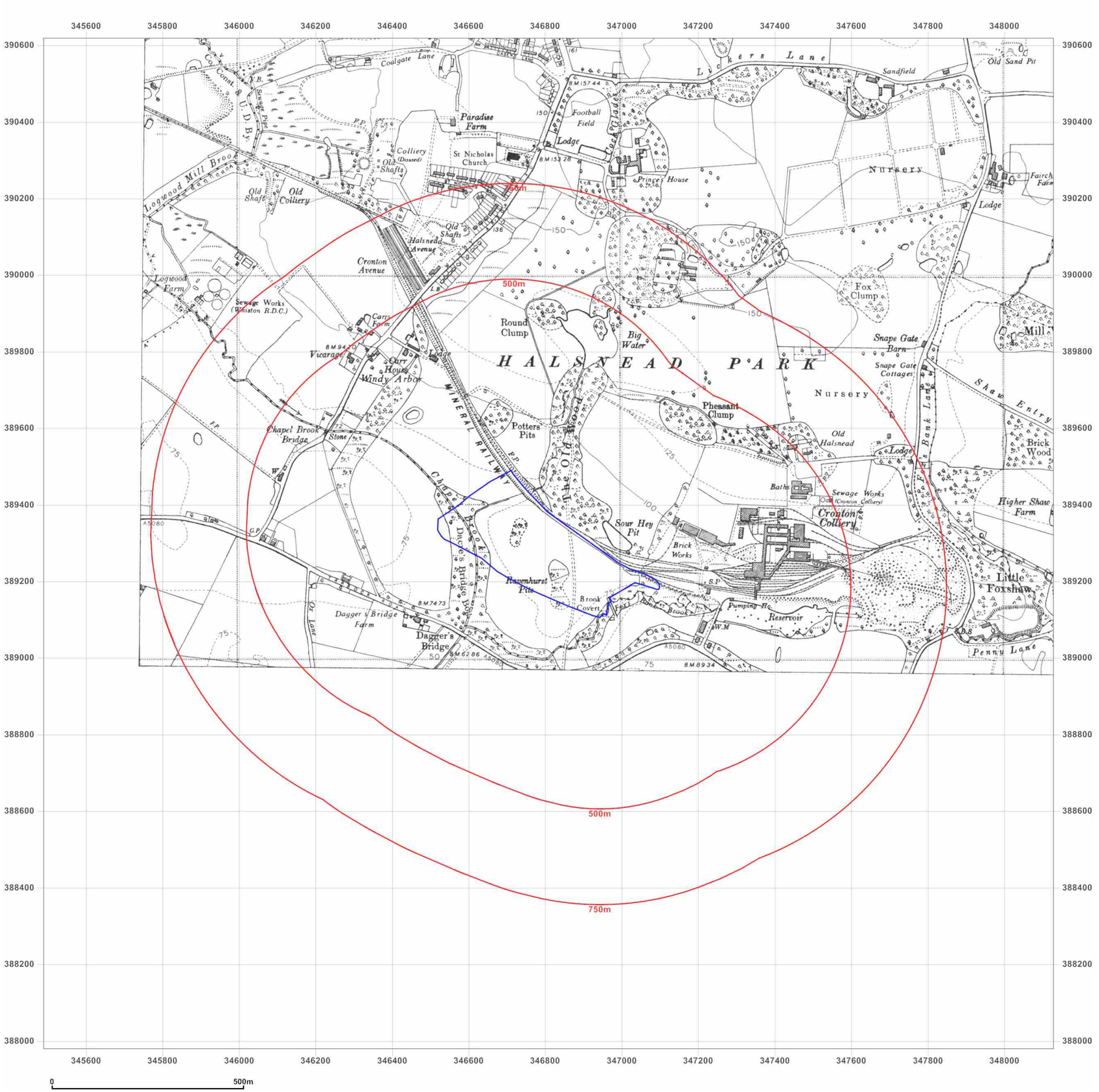
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Site Details:

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Client Ref: 2956_
Report Ref: GS-4206764
Grid Ref: 346808, 389298

Map Name: County Series

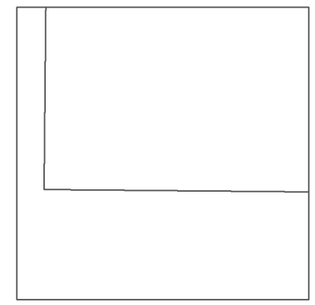
Map date: **1947**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1846
Revised 1947
Edition N/A
Copyright N/A
Levelled N/A



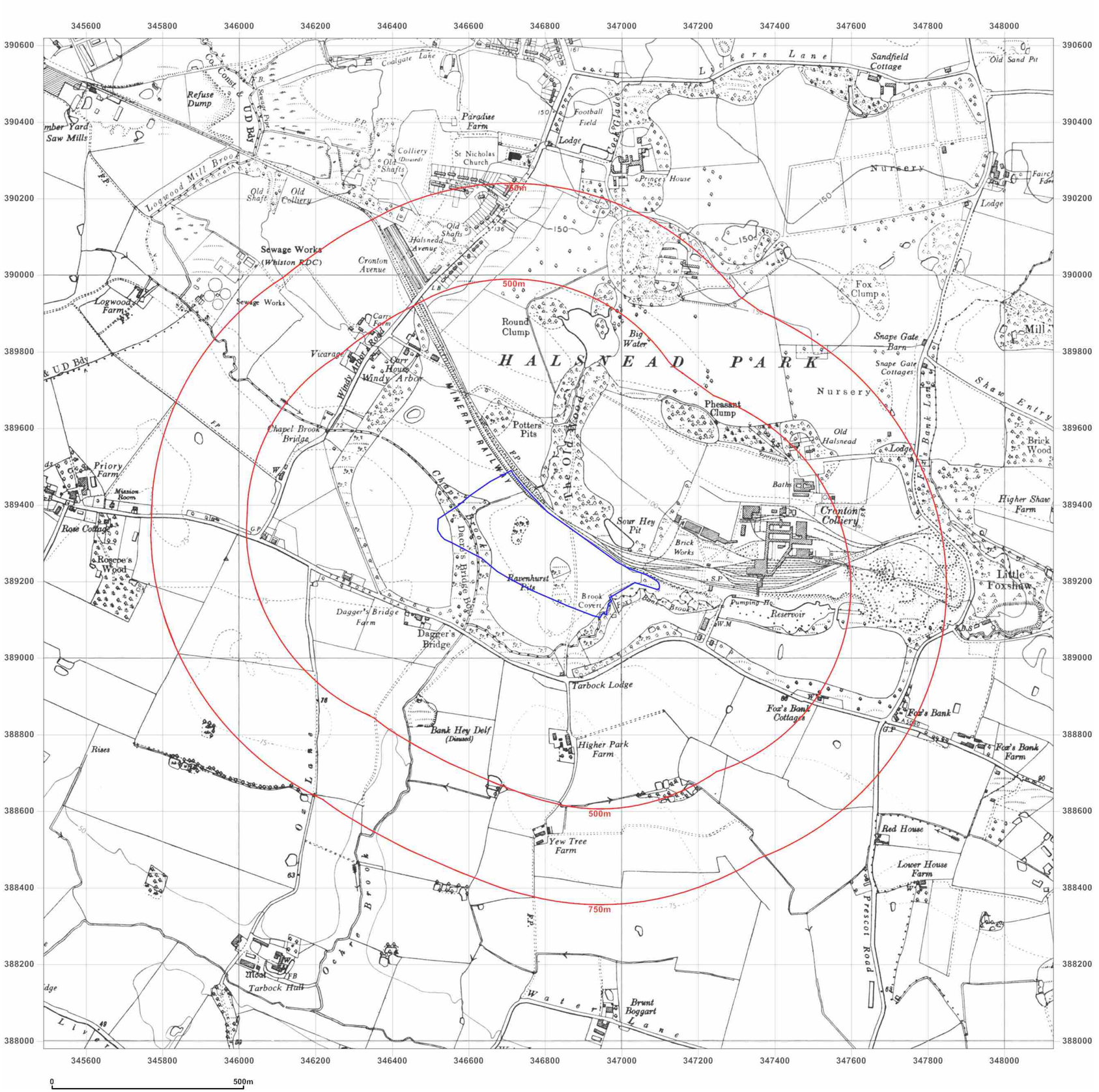
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Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764
Grid Ref: 346808, 389298

Map Name: Provisional
Map date: **1955-1956**
Scale: 1:10,560
Printed at: 1:10,560

N
W E
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Surveyed 1947
Revised 1955
Edition 1956
Copyright N/A
Levelled N/A

Surveyed N/A
Revised 1955
Edition N/A
Copyright 1955
Levelled N/A

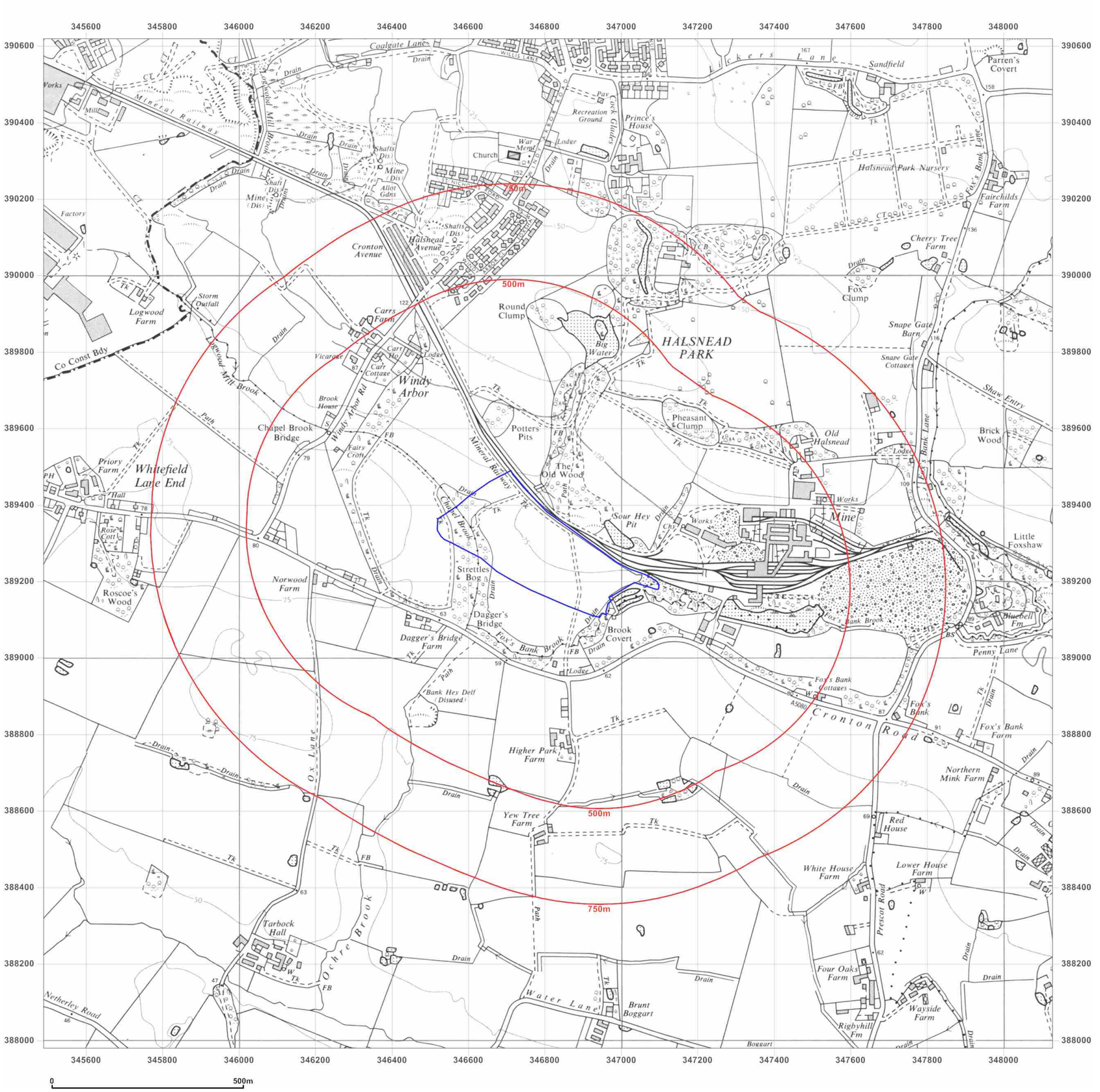
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Site Details:

STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764
Grid Ref: 346808, 389298

Map Name: Provisional

Map date: **1966-1967**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1966
Revised 1966
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1967
Revised 1967
Edition N/A
Copyright N/A
Levelled N/A

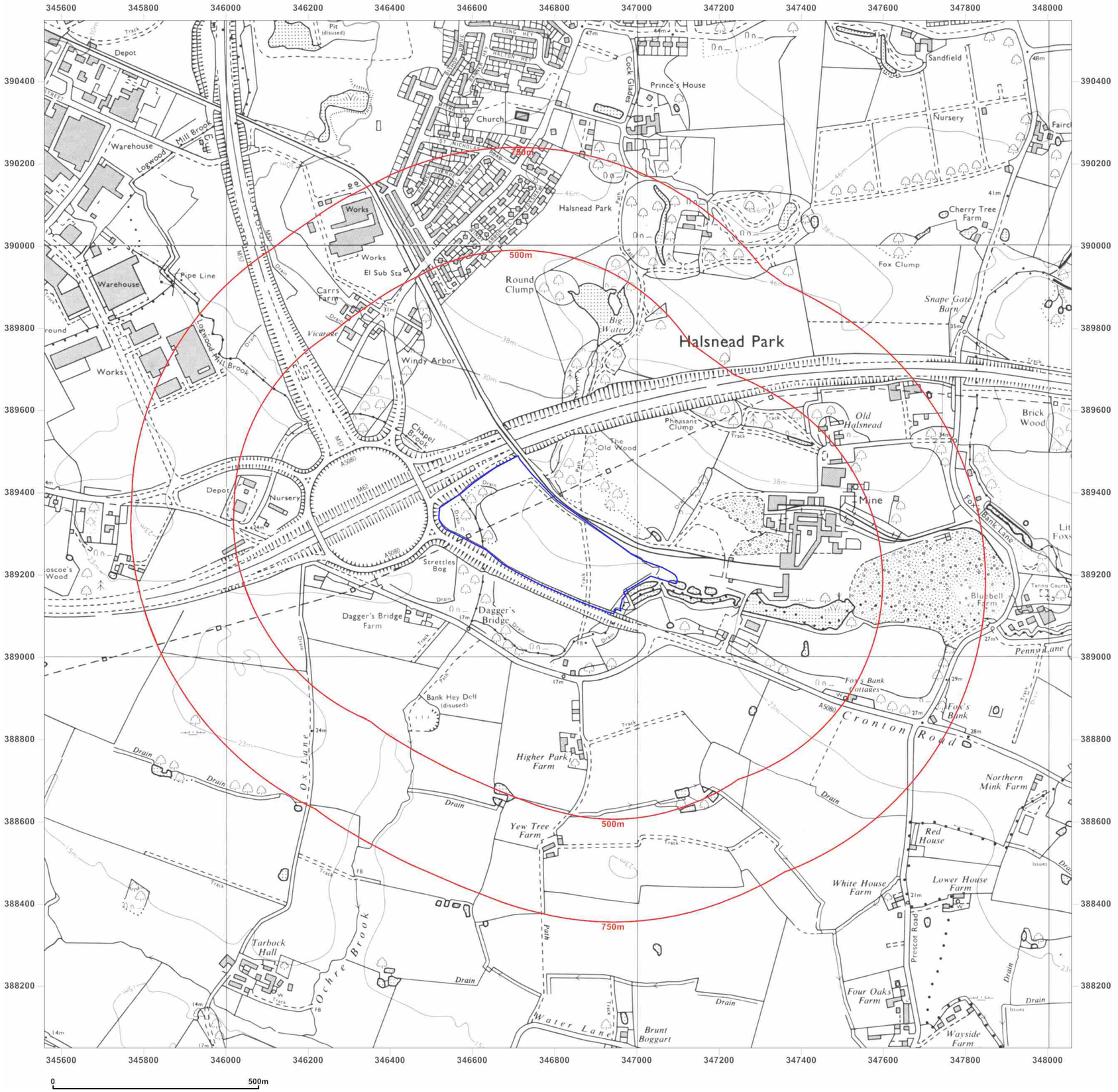
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Client Ref: 2956_
Report Ref: GS-4206764
Grid Ref: 346808, 389298

Map Name: National Grid

Map date: **1977-1978**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
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Surveyed 1975
Revised 1978
Edition N/A
Copyright 1978
Levelled 1964

Surveyed 1975
Revised 1977
Edition N/A
Copyright 1977
Levelled 1964

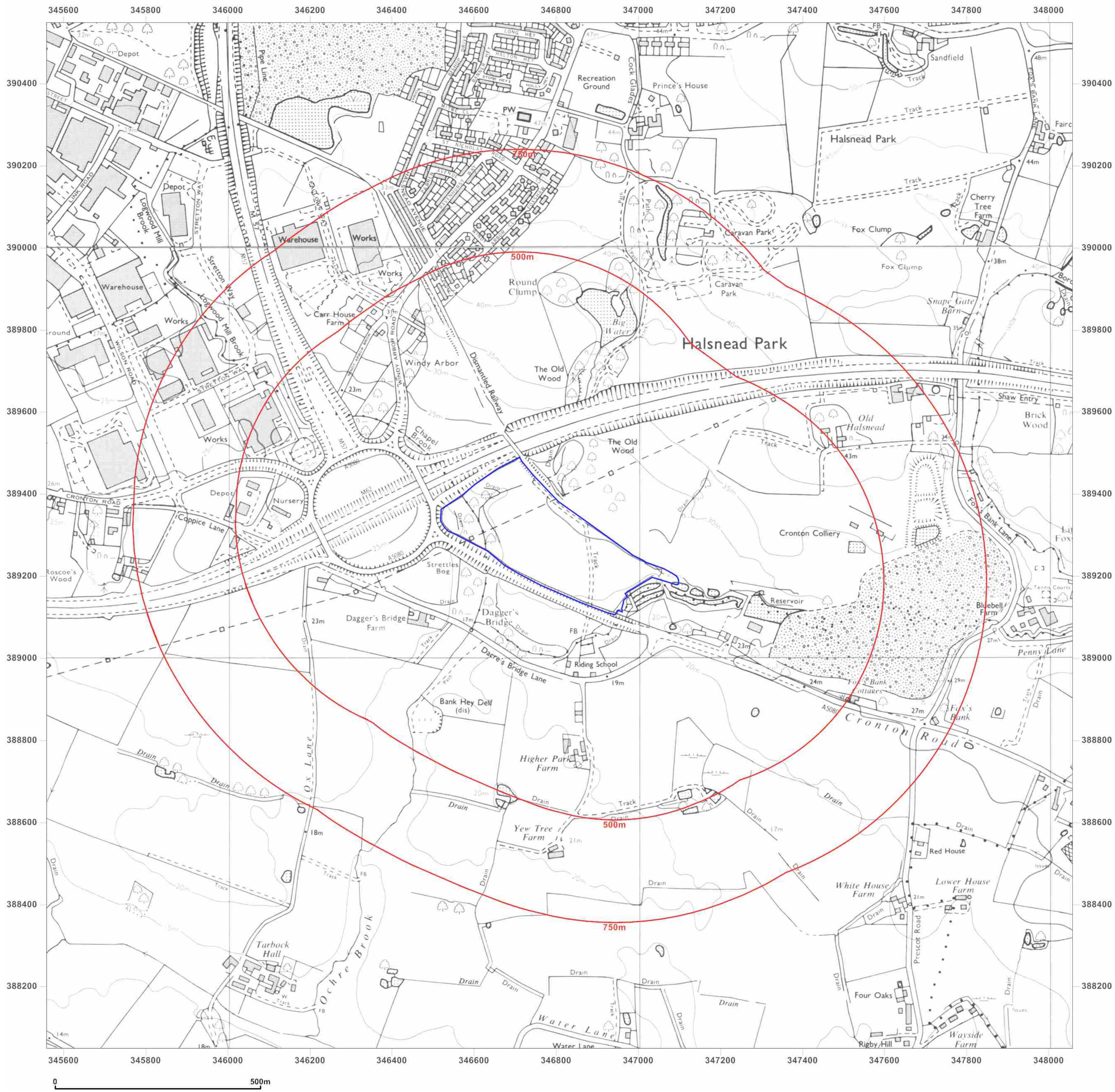
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Site Details:

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Client Ref: 2956_
Report Ref: GS-4206764
Grid Ref: 346808, 389298

Map Name: National Grid

Map date: **1989-1990**

Scale: 1:10,000

Printed at: 1:10,000

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Revised 1990
Edition N/A
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Edition N/A
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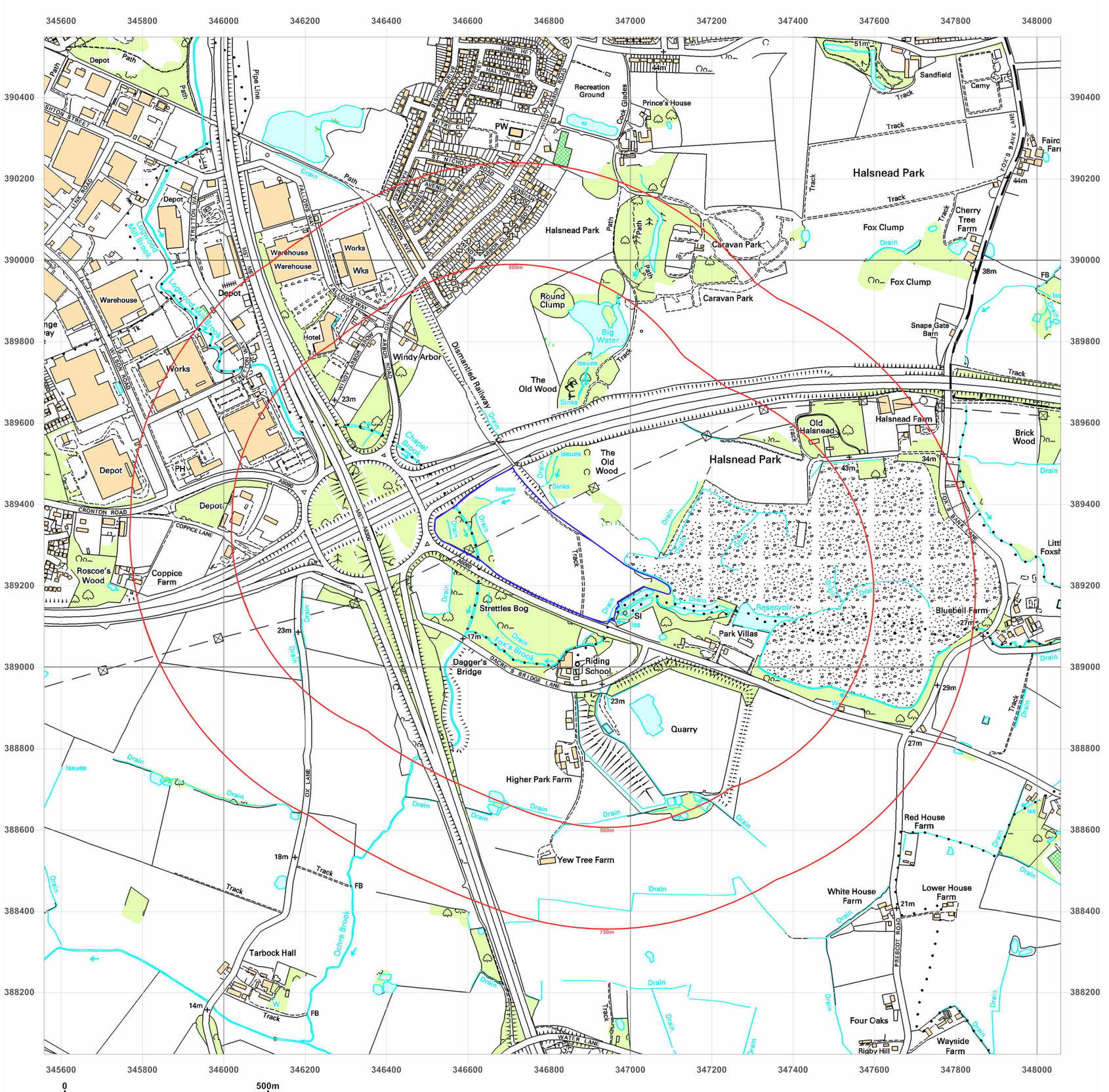
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STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Client Ref: 2956_
Report Ref: GS-4206764
Grid Ref: 346808, 389298

Map Name: 1:10,000 Raster

Map date: **2002**

Scale: 1:10,000

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2002

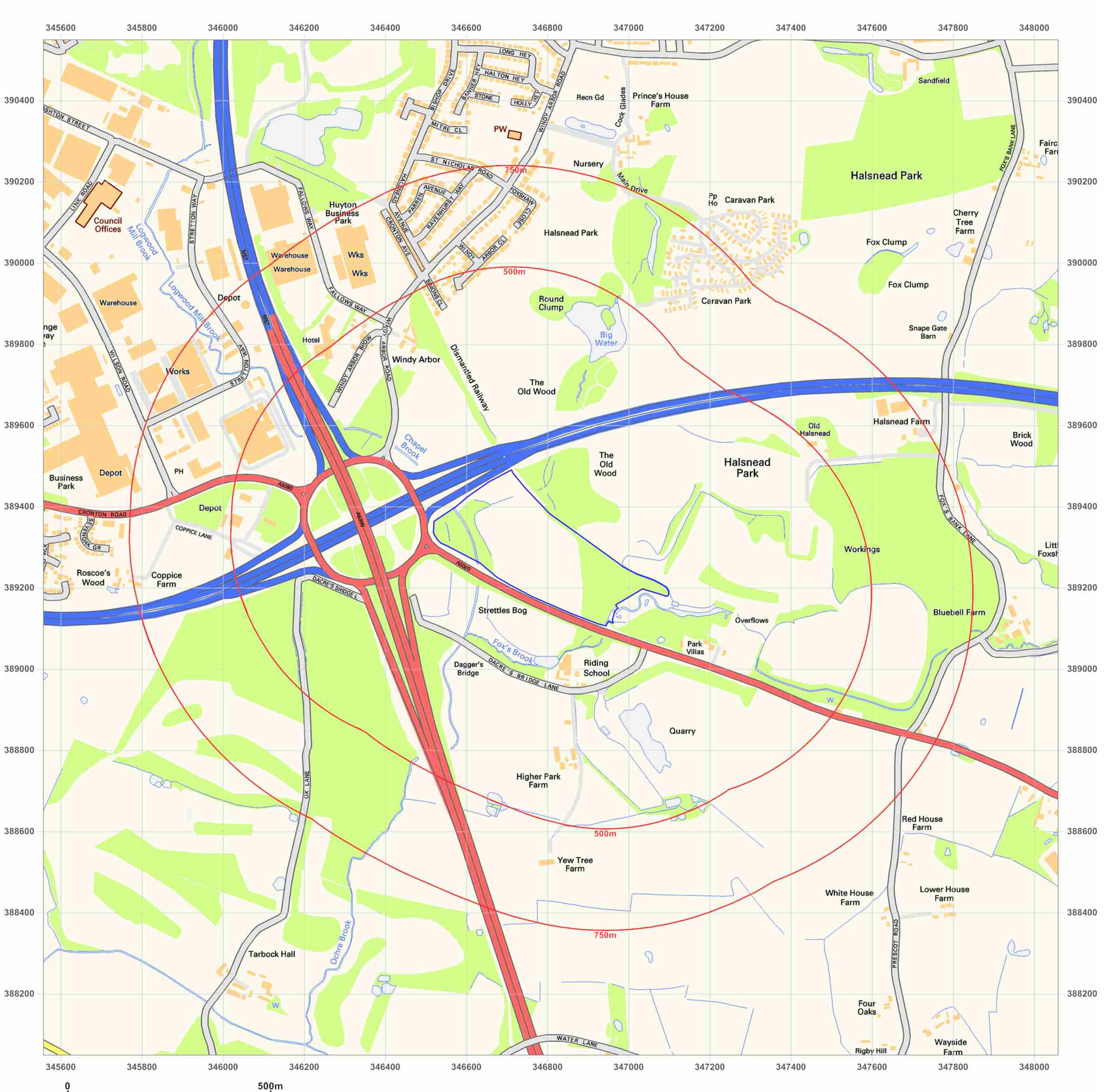
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Client Ref: 2956_
Report Ref: GS-4206764
Grid Ref: 346808, 389298

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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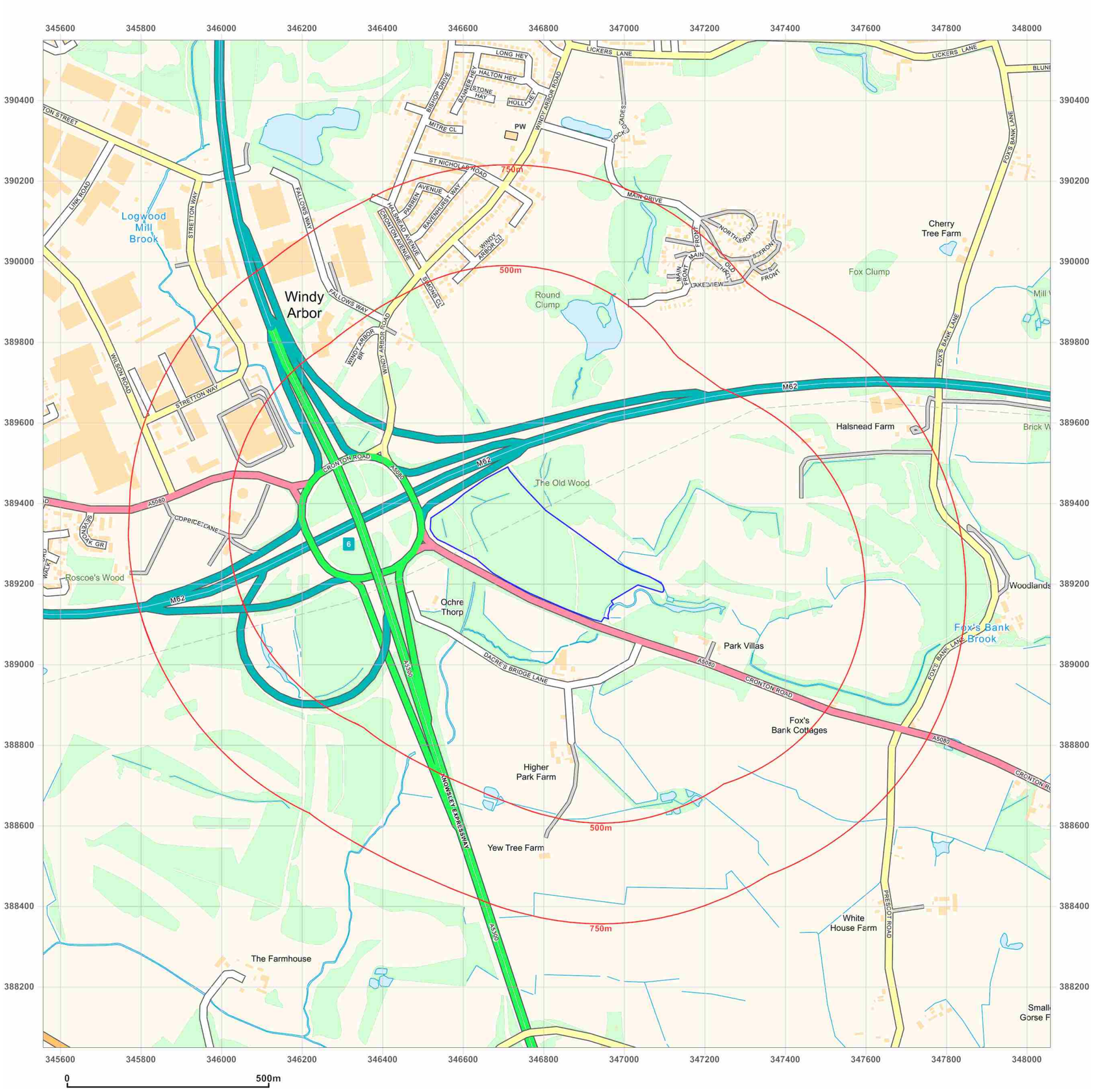
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Groundsure INSIGHTS

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Client Ref: 2956_
Report Ref: GS-4206764
Grid Ref: 346808, 389298

Map Name: National Grid

Map date: **2014**

Scale: 1:10,000

Printed at: 1:10,000

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APPENDIX 4

GROUNDSURE ENVIRO-INSIGHT REPORT

Integra Consulting Environmental Ltd

Integra Consulting Environmental Ltd,14-32,
HEWITT STREET,
MANCHESTER, M15 4GB

Groundsure Reference:	GS-4206762
Your Reference:	2956_
Report Date	23 Aug 2017
Report Delivery Method:	Email - pdf

Enviro Insight

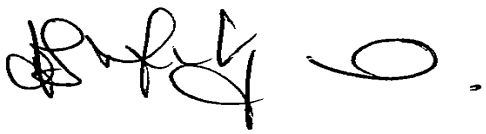
Address: STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Enviro Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above Groundsure reference number.

Yours faithfully,



Managing Director
Groundsure Limited

Enc.
Groundsure Enviroinsight

Enviro Insight

Address:	**STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ**
Date:	**23 Aug 2017**
Reference:	**GS-4206762**
Client:	**Integra Consulting Environmental Ltd**

NW N NE

W E



SW S SE

Aerial Photograph Capture date:	24-Jun-2009
Grid Reference:	346818,389319
Site Size:	9.29ha

Report Reference: GS-4206762
Client Reference: 2956_

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Overview of Findings

For further details on each dataset, please refer to each individual section in the main report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	27	13	31	40
1.2 Additional Information – Historical Tank Database	0	3	0	19
1.3 Additional Information – Historical Energy Features Database	0	0	0	2
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	0	4
1.6 Potentially Infilled Land	23	19	35	73

Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	1
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	0	0
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	2	3	6
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	4	0
2.3.2 National Incidents Recording System, List 1	0	0	1	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	1	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	0	0	1	6
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	1
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	1	3
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	1	0	7	7

Section 4: Current Land Use

	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	1	0	2	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	0
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology

5.1 Are there any records of Artificial Ground and Made Ground present beneath the study site?	No
5.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site?	Yes
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology

	0-500m
6.1 Are there any records of Strata Classification in the Superficial Geology within 500m of the study site?	Yes
6.2 Are there any records of Strata Classification in the Bedrock Geology within 500m of the study site?	Yes

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	15
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	4	0	1	0
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	8
6.6 Source Protection Zones (within 500m of the study site)	0	1	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	2	0	3	2	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

	0-500m					
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site?	No	No	Yes	No	No	No
6.10 Detailed River Network entries within 500m of the site	12	17	14	25	Not searched	Not searched
6.11 Surface water features within 250m of the study site	Yes	Yes	Yes	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Are there any Enviroment Agency Zone 2 floodplains within 250m of the study site?	Yes
7.2 Are there any Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	Yes
7.3 What is the Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site?	High
7.4 Are there any Flood Defences within 250m of the study site?	No
7.5 Are there any areas benefiting from Flood Defences within 250m of the study site?	No
7.6 Are there any areas used for Flood Storage within 250m of the study site?	No
7.7 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Potential at Surface
7.8 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	High

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	1	1	0	0	0
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	1	0	0	0	1	1
8.14 Records of Green Belt land	1	0	0	0	2	2

Section 9: Natural Hazards

9.1 What is the maximum risk of natural ground subsidence?	Moderate
9.1.1 What is the maximum Shrink-Swell hazard rating identified on the study site?	Very Low
9.1.2 What is the maximum Landslides hazard rating identified on the study site?	Very Low
9.1.3 What is the maximum Soluble Rocks hazard rating identified on the study site?	Negligible
9.1.4 What is the maximum Compressible Ground hazard rating identified on the study site?	Moderate
9.1.5 What is the maximum Collapsible Rocks hazard rating identified on the study site?	Very Low
9.1.6 What is the maximum Running Sand hazard rating identified on the study site?	Low
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.

Section 10: Mining

10.1 Are there any coal mining areas within 75m of the study site?	Yes
10.2 Are there any Non-Coal Mining areas within 50m of the study site boundary?	Yes
10.3 Are there any brine affected areas within 75m of the study site?	No

Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between Groundsure and the Client. The document contains the following sections:

1. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

2. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

3. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

4. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure gas pipelines and underground electricity transmission lines.

5. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

6. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licenses, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

7. Flooding

Provides information on river and coastal flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

8. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

9. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence and radon..

10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

11. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, Groundsure provide a free Technical Helpline (08444 159000) for further information and guidance.

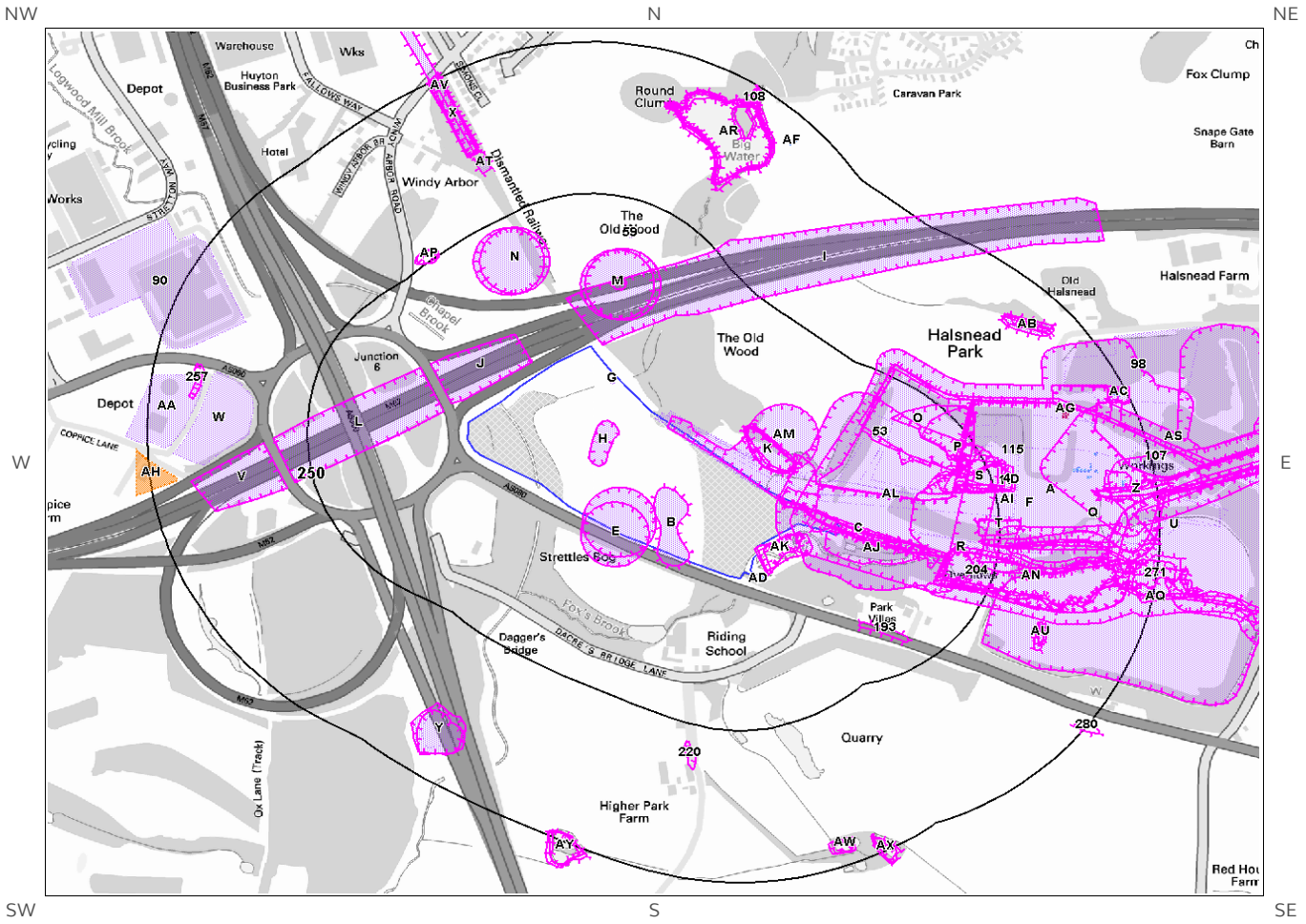
Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier “A” on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as “Not Shown”.

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

1. Historical Land Use



Historical 1:10,000 and 1:10,560 scale mapping

Industrial Land Use

Potentially Infilled Land

Site Outline

250
500
Search Buffers (m)

Historical 1:2,500, 1:1,250 and 1:500 scale mapping

Energy Features

Petrol Stations

Tanks

Garages

Report Reference: GS-4206762
Client Reference: 2956_

1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 111

ID	Distance [m]	Direction	Use	Date
1A	0	On Site	Unspecified Works	1967
2A	0	On Site	Unspecified Mine	1967
3F	0	On Site	Colliery	1938
4	0	On Site	Railway Sidings	1950
5B	0	On Site	Unspecified Pits	1938
6B	0	On Site	Unspecified Pits	1938
7E	0	On Site	Unspecified Pits	1947
8C	0	On Site	Refuse Heap	1938
9C	0	On Site	Refuse Heap	1938
10C	0	On Site	Refuse Heap	1925
11C	0	On Site	Refuse Heap	1947
12C	0	On Site	Refuse Heap	1967
13D	0	On Site	Railway Sidings	1938
14D	0	On Site	Railway Sidings	1925
15D	0	On Site	Railway Sidings	1967
16AI	0	On Site	Colliery	1925
17	0	On Site	Railway Sidings	1947
18E	0	On Site	Unspecified Pits	1891
19E	0	On Site	Unspecified Pits	1906
20E	0	On Site	Unspecified Pits	1950
21F	0	On Site	Colliery	1938
22G	0	On Site	Unspecified Tank	1925
23G	0	On Site	Unspecified Tank	1938
24H	0	On Site	Unspecified Pits	1938
25H	0	On Site	Unspecified Pits	1938
26A	0	On Site	Unspecified Mine	1975
27AL	0	On Site	Unspecified Pit	1950
28I	15	NE	Cuttings	1975
29I	15	NE	Cuttings	1989
30AE	17	N	Railway Sidings	1975
31J	23	NW	Cuttings	1975
32J	23	NW	Cuttings	1989
33K	27	NE	Unspecified Pit	1906
34K	27	NE	Unspecified Pit	1947

35K	27	NE	Unspecified Pit	1925
36K	27	NE	Unspecified Pit	1938
37K	27	NE	Unspecified Pit	1938
38AM	29	NE	Unspecified Pit	1891
39L	43	NW	Cuttings	1975
40L	43	NW	Cuttings	1989
41M	51	N	Unspecified Pits	1947
42M	51	N	Unspecified Pits	1925
43M	54	NE	Unspecified Pits	1967
44M	54	NE	Unspecified Pits	1950
45M	101	NE	Unspecified Pits	1938
46M	101	NE	Unspecified Pits	1938
47Q	110	E	Colliery	1947
48N	125	NW	Unspecified Pits	1891
49N	127	NW	Unspecified Pits	1906
50O	140	NE	Brick Works	1947
51P	141	E	Refuse Heap	1975
52O	152	NE	Brick Works	1950
53	153	NE	Chimney	1967
54P	169	E	Refuse Heap	1967
55Q	170	SE	Colliery	1950
56S	176	E	Refuse Heap	1947
57R	186	E	Pumping House	1947
58R	186	E	Pumping House	1925
59	187	N	Sandstone Delf	1851
60R	187	E	Pumping House	1938
61R	190	E	Pumping House	1950
62S	193	E	Refuse Heap	1925
63S	196	E	Refuse Heap	1938
64S	196	E	Refuse Heap	1938
65AO	214	E	Refuse Heap	1925
66S	214	E	Refuse Heap	1950
67T	216	E	Refuse Heap	1938
68T	216	E	Refuse Heap	1938
69Q	223	E	Refuse Heap	1938
70Q	223	E	Refuse Heap	1938
71U	242	E	Refuse Heap	1950
72U	260	E	Refuse Heap	1947
73AQ	266	E	Refuse Heap	1989
74U	271	E	Refuse Heap	1967
75V	293	W	Cuttings	1975
76V	293	W	Cuttings	1989
77AS	328	E	Colliery	1989
78AT	329	NW	Cuttings	1989
79W	337	W	Nursery	1989
80W	337	W	Nursery	1975

81X	362	NW	Cuttings	1925
82X	362	NW	Cuttings	1947
83X	363	NW	Cuttings	1950
84AV	366	NW	Cuttings	1938
85X	369	NW	Cuttings	1989
86Y	382	SW	Disused Delf	1967
87Y	382	SW	Disused Delf	1975
88Y	382	SW	Disused Delf	1989
89Y	382	SW	Disused Delf	1950
90	385	NW	Unspecified Works	1989
91Y	386	SW	Sandstone Delf	1851
92Y	392	SW	Disused Delf	1938
93Y	392	SW	Disused Delf	1925
94Y	392	SW	Disused Delf	1905
95Y	392	SW	Delf	1891
96Z	406	E	Refuse Heap	1938
97Z	406	E	Refuse Heap	1938
98	415	NE	Unspecified Works	1967
99AA	418	W	Unspecified Depot	1975
100AA	418	W	Unspecified Depot	1989
101AB	418	NE	Unspecified Ground Workings	1947
102U	421	E	Refuse Heap	1975
103AB	423	NE	Unspecified Pit	1950
104Z	444	E	Refuse Heap	1938
105Z	444	E	Refuse Heap	1938
106AC	465	NE	Sewage Works	1947
107	467	E	Railway Sidings	1989
108	473	NE	Boat House	1906
109AC	475	NE	Unspecified Tank	1947
110AC	481	NE	Unspecified Tank	1975
111AC	481	NE	Unspecified Tank	1967

1.2 Additional Information – Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary: 22

ID	Distance (m)	Direction	Use	Date
112AD	12	SE	Unspecified Tank	1937
113AD	17	E	Unspecified Tank	1984
114AD	18	E	Unspecified Tank	1978

115	294	NE	Unspecified Tank	1937
116AE	377	E	Unspecified Tank	1937
117AE	383	E	Unspecified Tank	1980
118AE	395	E	Unspecified Tank	1937
119AE	402	E	Unspecified Tank	1937
120AE	409	E	Unspecified Tank	1937
121AE	415	E	Unspecified Tank	1980
122AE	415	E	Unspecified Tank	1958
123AE	417	E	Unspecified Tank	1980
124Z	446	E	Unspecified Tank	1937
125Z	447	E	Unspecified Tank	1927
126AF	453	NE	Unspecified Tank	1958
127AF	454	NE	Unspecified Tank	1980
128AF	454	NE	Unspecified Tank	1989
129AF	458	NE	Unspecified Tank	1980
130AF	460	NE	Unspecified Tank	1996
131AC	480	NE	Unspecified Tank	1980
132AC	480	NE	Unspecified Tank	1958
133AC	482	NE	Unspecified Tank	1980

1.3 Additional Information – Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary: 2

ID	Distance (m)	Direction	Use	Date
134AG	391	NE	Electricity Substation	1980
135AG	393	NE	Electricity Substation	1980

1.4 Additional Information – Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 4

ID	Distance (m)	Direction	Use	Date
136AH	458	W	Garage	1993
137AH	458	W	Garage	1997
138AH	459	W	Garage	1989
139AH	459	W	Garage	1992

1.6 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 150

The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

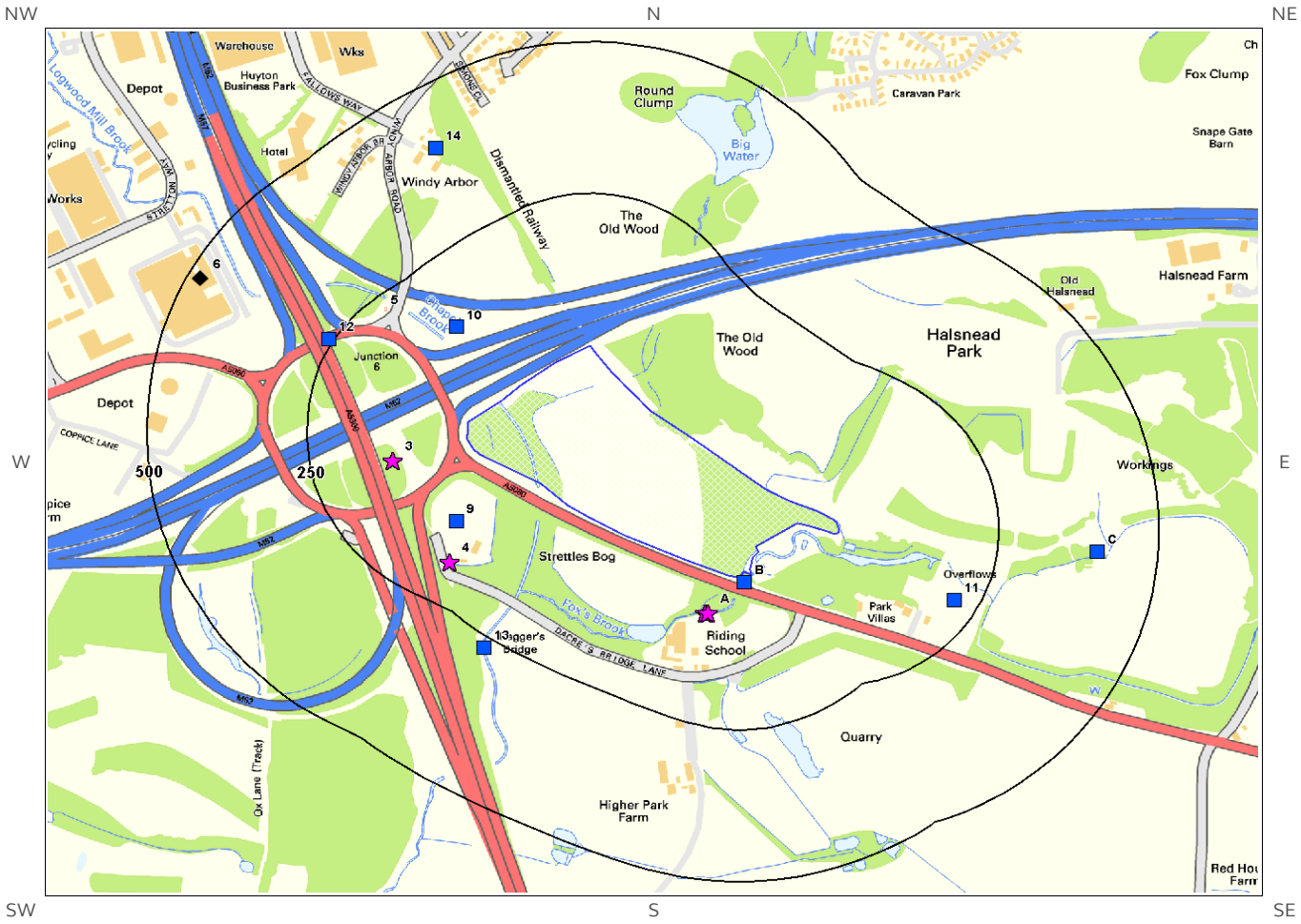
ID	Distance(m)	Direction	Use	Date
140H	0	On Site	Unspecified Pits	1938
141H	0	On Site	Unspecified Pits	1938
142B	0	On Site	Unspecified Pits	1938
143B	0	On Site	Unspecified Pits	1938
144AK	0	On Site	Water Body	1938
145AI	0	On Site	Colliery	1938
146F	0	On Site	Colliery	1938
147C	0	On Site	Refuse Heap	1938
148C	0	On Site	Refuse Heap	1938
149C	0	On Site	Refuse Heap	1947
150C	0	On Site	Refuse Heap	1925
151C	0	On Site	Refuse Heap	1967
152A	0	On Site	Unspecified Mine	1967
153AJ	0	On Site	Ponds	1989
154AJ	0	On Site	Ponds	1975
155AI	0	On Site	Colliery	1925
156AK	0	On Site	Pond	1925
157A	0	On Site	Unspecified Mine	1975
158AL	0	On Site	Unspecified Pit	1950
159E	0	On Site	Unspecified Pits	1947
160E	0	On Site	Unspecified Pits	1906
161E	0	On Site	Unspecified Pits	1891
162E	0	On Site	Unspecified Pits	1950
163AK	6	SE	Ponds	1967
164AK	6	SE	Ponds	1975
165AK	6	SE	Ponds	1989
166I	15	NE	Cuttings	1975
167I	15	NE	Cuttings	1989

168J	23	NW	Cuttings	1989
169J	23	NW	Cuttings	1975
170K	27	NE	Pond	1891
171K	27	NE	Unspecified Pit	1925
172K	27	NE	Unspecified Pit	1947
173K	27	NE	Unspecified Pit	1906
174K	27	NE	Unspecified Pit	1938
175K	27	NE	Unspecified Pit	1938
176AM	29	NE	Unspecified Pit	1891
177AM	34	NE	Pond	1967
178AM	34	NE	Pond	1950
179AM	37	NE	Pond	1851
180L	43	NW	Cuttings	1975
181L	43	NW	Cuttings	1989
182M	51	N	Unspecified Pits	1947
183M	51	N	Unspecified Pits	1925
184M	54	NE	Unspecified Pits	1950
185M	54	NE	Unspecified Pits	1967
186M	101	NE	Unspecified Pits	1938
187M	101	NE	Unspecified Pits	1938
188Q	110	E	Colliery	1947
189N	125	NW	Unspecified Pits	1891
190N	127	NW	Unspecified Pits	1906
191O	140	NE	Brick Works	1947
192P	141	E	Refuse Heap	1975
193	150	S	Ponds	1851
194O	152	NE	Brick Works	1950
195AN	167	E	Reservoir	1925
196AN	167	SE	Reservoir	1947
197AN	168	E	Reservoir	1938
198P	169	E	Refuse Heap	1967
199Q	170	SE	Colliery	1950
200AN	170	SE	Reservoir	1950
201AN	175	E	Pond	1975
202AN	175	E	Pond	1967
203S	176	E	Refuse Heap	1947
204	177	E	Reservoir	1989
205S	193	E	Refuse Heap	1925
206S	196	E	Refuse Heap	1938
207S	196	E	Refuse Heap	1938
208AO	214	E	Refuse Heap	1925
209S	214	E	Refuse Heap	1950
210T	216	E	Refuse Heap	1938
211T	216	E	Refuse Heap	1938
212Q	223	E	Refuse Heap	1938
213Q	223	E	Refuse Heap	1938

214U	242	E	Refuse Heap	1950
215AP	244	NW	Pond	1950
216AP	246	NW	Pond	1947
217U	260	E	Refuse Heap	1947
218AQ	266	E	Refuse Heap	1989
219U	271	E	Refuse Heap	1967
220	279	S	Pond	1891
221V	293	W	Cuttings	1975
222V	293	W	Cuttings	1989
223AR	321	NE	Water Body	1851
224AR	326	NE	Water Body	1906
225AR	326	NE	Water Body	1891
226AR	326	NE	Water Body	1925
227AR	326	NE	Water Body	1947
228AR	327	NE	Water Body	1938
229AS	328	E	Colliery	1989
230AR	329	NE	Pond	1967
231AR	329	NE	Water Body	1950
232AT	329	NW	Cuttings	1989
233AR	329	NE	Water Body	1975
234AR	332	NE	Pond	1989
235AU	342	SE	Pond	1975
236AU	348	SE	Pond	1947
237AU	351	SE	Pond	1967
238AU	351	SE	Pond	1950
239X	362	NW	Cuttings	1925
240X	362	NW	Cuttings	1947
241X	363	NW	Cuttings	1950
242AV	366	NW	Cuttings	1938
243X	369	NW	Cuttings	1989
244Y	382	SW	Disused Delf	1967
245Y	382	SW	Disused Delf	1975
246Y	382	SW	Disused Delf	1950
247Y	382	SW	Disused Delf	1989
248Y	392	SW	Delf	1891
249Y	392	SW	Disused Delf	1905
250Y	392	SW	Disused Delf	1925
251Y	392	SW	Disused Delf	1938
252Z	406	E	Refuse Heap	1938
253Z	406	E	Refuse Heap	1938
254AB	418	NE	Unspecified Ground Workings	1947
255Z	419	E	Pond	1989
256U	421	E	Refuse Heap	1975
257	421	W	Pond	1950
258AB	423	NE	Unspecified Pit	1950

259AB	427	NE	Pond	1975
260Z	444	E	Refuse Heap	1938
261Z	444	E	Refuse Heap	1938
262AW	456	S	Ponds	1950
263AW	456	S	Pond	1975
264AW	456	S	Pond	1967
265AW	456	S	Pond	1989
266AW	456	S	Ponds	1905
267AW	456	S	Ponds	1925
268AW	456	S	Ponds	1938
269AW	456	S	Ponds	1891
270AC	465	NE	Sewage Works	1947
271	466	E	Water Body	1925
272AX	470	SE	Ponds	1905
273AX	470	SE	Ponds	1938
274AX	470	SE	Ponds	1925
275AX	470	SE	Ponds	1891
276AX	472	SE	Ponds	1989
277AX	472	SE	Ponds	1950
278AX	472	SE	Ponds	1967
279AX	472	SE	Ponds	1975
280	483	SE	Pond	1851
281AY	487	SW	Ponds	1950
282AY	487	SW	Ponds	1989
283AY	487	SW	Ponds	1967
284AY	487	SW	Ponds	1975
285AY	488	SW	Ponds	1938
286AY	488	SW	Ponds	1925
287AY	488	SW	Ponds	1905
288AY	488	SW	Ponds	1891
289AY	489	SW	Ponds	1851

2. Environmental Permits, Incidents and Registers Map



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- Site Outline
- Search Buffers (m) 250 500
- Recorded Pollution Incident
- Dangerous Substances (List 1)
- Dangerous Substances (List 2)
- Water Industry Referrals
- Licenced Discharge Consents
- Red List Discharge Consents
- RAS 3 & 4 Authorisations
- Part A(1) Authorised Processes and Historic IPC Authorisations
- Part A(2) and Part B Authorised Processes
- COMAH / NIHHS Sites
- Sites Determined as Contaminated Land
- Hazardous Substance Consents and Enforcements

2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency/Natural Resources Wales and Local Authorities reveal the following information:

2.1.1 Records of historic IPC Authorisations within 500m of the study site:

0

Database searched and no data found.

2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

0

Database searched and no data found.

2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:

0

Database searched and no data found.

2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:

1

The following List 1 Dangerous Substance Inventory Site records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
6	481	NW	346100 389600	Name: Lucas Aerospace Engine Control Ststems Status: Active Receiving Water: Stw Partcons	Authorised Substances: Cadmium, Trichloroethylene

2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

2.1.8 Records of Licensed Discharge Consents within 500m of the study site:

11

The following Licensed Discharge Consents records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
7B	10	SE	346950 389100	Address: CRONTON COLLIERY SPOIL HEAPS, CRONTON ROAD, PRESCOT, LIVERPOOL, MERSEYSIDE Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 016990205 Permit Version: 2	Receiving Water: FOXES BANK BROOK Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 26-Feb-1988 Revocation Date: 23/03/1991
8B	10	SE	346950 389100	Address: CRONTON COLLIERY SPOIL HEAPS, CRONTON ROAD, PRESCOT, LIVERPOOL, MERSEYSIDE Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 016990205 Permit Version: 1	Receiving Water: FOXES BANK BROOK Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01-Jun-1980 Revocation Date: 25/02/1988
9	115	SW	346500 389200	Address: CRONTON COLLIERY TREATMENT PLANT, CRONTON ROAD, CRONTON, LIVERPOOL, MERSEYSIDE Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 016992597 Permit Version: 1	Receiving Water: TRIB DITTON BROOK Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 28-Jan-1994 Revocation Date: -

ID	Distance (m)	Direction	NGR	Details	
10	139	NW	346500 389520	Address: LAING O'ROURKE INFRASTRUCTURE LTD, M62 JNT6 IMPROVMENT OFFICE, WINDY ARBOUR ROAD, TARBOCK, MERSEYSIDE, L35 1RB Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 016993930 Permit Version: 1	Receiving Water: LOGWOOD MILL BROOK Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 03/05/2007 Effective Date: 03-May-2007 Revocation Date: -
11	213	SE	347278 389070	Address: CRONTON COLLIERY TE, WHISTON, NEAR PRESCOT, MERSEYSIDE Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 0165/38 Permit Version: 2	Receiving Water: FOX'S BANK BROOK Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 01-Jan-1995 Revocation Date: -
12	258	NW	346300 389500	Address: HILLSIDE BROW, WINDY ARBOUR BROW, WHISTON, MERSEYSIDE Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 016992445 Permit Version: 1	Receiving Water: CHAPEL BROOK Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 05-Feb-1992 Revocation Date: -
13	268	SW	346543 388992	Address: CRONTON QUARRY, ADJACENT TO HIGHER PARK FARM, DACRES BRIDGE LANE, TARBOCK, PRESCOT, MERSEYSIDE, L35 1QZ Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: NPSWQD001179 Permit Version: 1	Receiving Water: OCHRE BROOK Status: SURRENDERED UNDER EPR 2010 Issue date: 25/07/2008 Effective Date: 25-Jul-2008 Revocation Date: 20/10/2014
14	401	NW	346467 389815	Address: 2 PROPERTIES AT CARR HOUSE, WINDY ARBOUR ROAD, WHISTON, MERSEYSIDE, MERSEYSIDE, L35 1BR Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: NPSWQD005904 Permit Version: 1	Receiving Water: GROUNDWATERS VIA SOAKAWAY Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 28/01/2009 Effective Date: 28-Jan-2009 Revocation Date: -
15C	404	E	347500 389150	Address: CRONTON COLLIERY, CRONTON ROAD, CRONTON, NEAR WIDNES, MERSEYSIDE Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 016990204 Permit Version: 1	Receiving Water: FOXES BANK BROOK Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01-Jun-1980 Revocation Date: 08/08/1991
16C	404	E	347500 389150	Address: CRONTON COLLIERY, CRONTON ROAD, CRONTON, NEAR WIDNES, MERSEYSIDE Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 016990204 Permit Version: 3	Receiving Water: FOXES BANK BROOK Status: SURRENDERED UNDER EPR 2010 Issue date: - Effective Date: 02-Oct-1991 Revocation Date: 26/10/2015
17C	404	E	347500 389150	Address: CRONTON COLLIERY, CRONTON ROAD, CRONTON, NEAR WIDNES, MERSEYSIDE Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 016990204 Permit Version: 2	Receiving Water: FOXES BANK BROOK Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 09-Aug-1991 Revocation Date: 01/10/1991

2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:

0

Database searched and no data found.

2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site: 0

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

4

The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
1A	70	S	346891 389049	Incident Date: 25-Feb-2002 Incident Identification: 60847 Pollutant: Oils and Fuel Pollutant Description: Other Oil or Fuel	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
2A	71	S	346887 389049	Incident Date: 24-Feb-2002 Incident Identification: 60203 Pollutant: Oils and Fuel Pollutant Description: Other Oil or Fuel	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
3	123	W	346400 389300	Incident Date: 18-Oct-2002 Incident Identification: 115489 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
4	180	SW	346488 389133	Incident Date: 06-Sep-2002 Incident Identification: 105908 Pollutant: Specific Waste Materials Pollutant Description: Commercial Waste	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

1

The following NIRS List 1 records are represented as points on the Environmental Permits, Incidents and Registers Map:

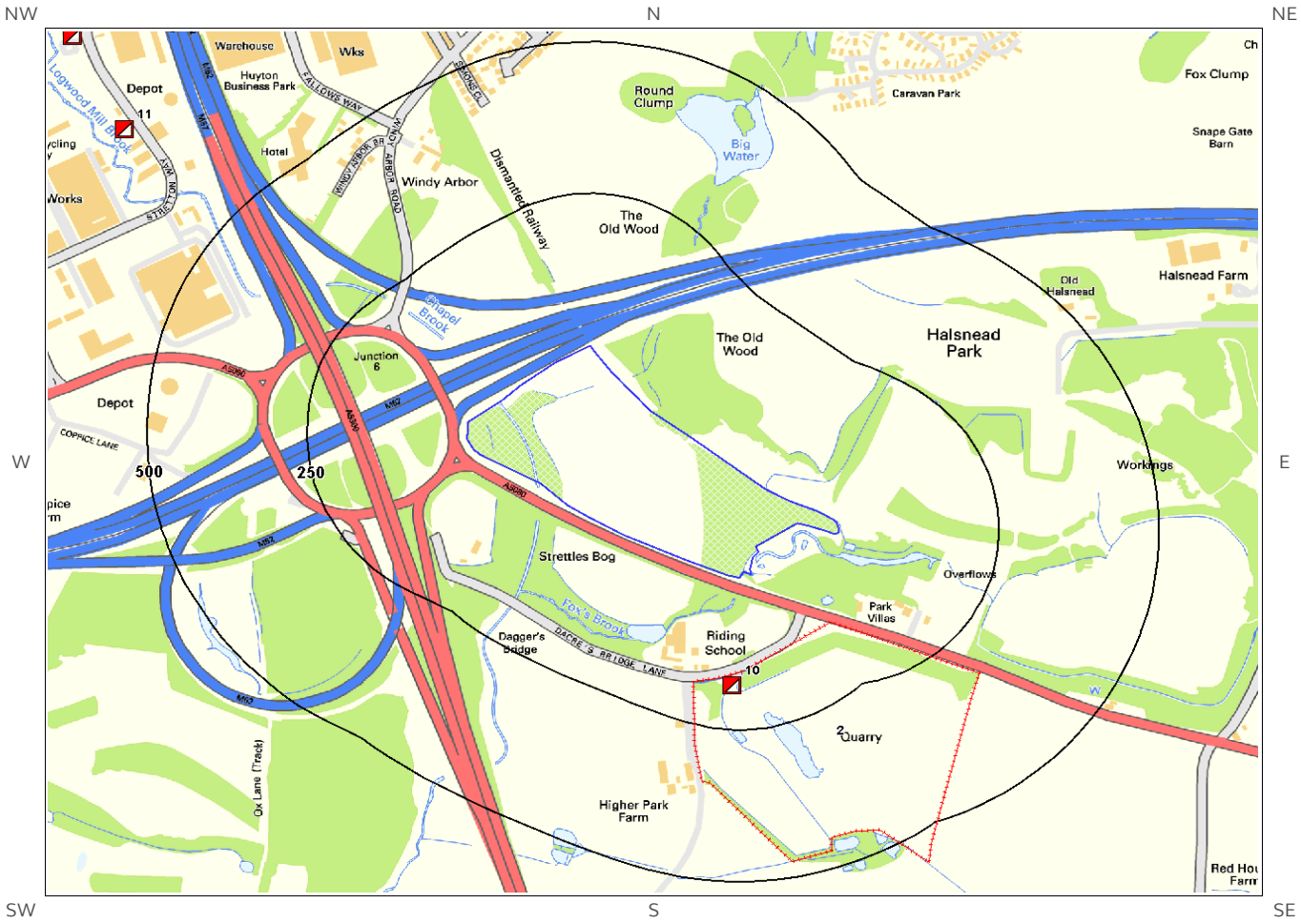
ID	Distance(m)	Direction	NGR	Details	
5	227	NW		Incident Date: 29-Jun-2000 Incident Identification: 40140.0 Catchments Name: RIVER MERSEY (ETHEROW) Water Description: ESTUARY Water Course: COASTLINE TRIB FOR 68/69 Incident Substantiated: Yes	Priority Description: Immediate (2 Hours) Waste Description: Not Available Water Impact: Significant Impact Land Impact: No Impact Air Impact: No Impact Action Taken: Other

2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

How many records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site? 0

Database searched and no data found.

3. Landfill and Other Waste Sites Map



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Site Outline

250
500
Search Buffers (m)

EA/NRW Active Landfill

EA/NRW Historic Landfill

BGS / DoE Survey Landfill

Historic and Planned Waste Sites

EA/NRW Licensed Waste Site

Local Authority/Historical Mapping Landfill Records

3. Landfill and Other Waste Sites

3.1 Landfill Sites

3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site:

1

The following Environment Agency/Natural Resources Wales landfill records are represented as polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
2	131	SE	346930 388930	Address: Cronton Quarry, Dacre's Bridge Lane, Tarbock, Prescot, Merseyside, L35 1QZ Landfill Reference: 400986.0 Environmental Permitting Regulations (Waste) Reference: WAL168 Landfill Type: L05: Inert LF	Operator: Grundy And Co Excavations Limited Status: Modified IPPC Reference: EPR Reference:

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

7

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
Not shown	824	NW	346200 390600	Site Address: Coalgate Lane Landfill Site, Ellis Ashton Street, Huyton, Knowsley, Merseyside Waste Licence: - Site Reference: R13/01, GDO 017, GDO M019, GDO 020 Waste Type: Inert, Industrial, Commercial, Household, Liquid sludge Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: Huyton Urban District Council and Merseyside County Council Licence Holder: Huyton Urban District Council and Merseyside County Council First Recorded: 01-Jan-1972 Last Recorded: 01-Jan-1983

ID	Distance (m)	Direction	NGR	Details	
Not shown	1108	N	346500 390600	Site Address: Coalgate Lane Wimpeym, Tushinghams Quarry, Paradise Lane, Stadt-Moers Park, Knowsley, Merseyside Waste Licence: - Site Reference: GDO M017, 026/01 Waste Type: Industrial Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: Bridle Road, Bootle Operator: G Wimpey and Company Limited Licence Holder: G Wimpey and Company Limited First Recorded: 31-Dec-1976 Last Recorded: 01-Jan-1979
Not shown	1126	N	346500 390700	Site Address: Whiston Tip, St Helens, Lancashire Waste Licence: - Site Reference: - Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: Central Electricity Generating Board - North Western Region Licence Holder: - First Recorded: 07-Jan-1967 Last Recorded: -
Not shown	1162	N	346600 390700	Site Address: Tushinghams Quarry, Coalgate Lane, Paradise Lane, Stadt-Moers Park, Whiston, Merseyside, Knowsley Waste Licence: Yes Site Reference: 026/01,GDO 020 Waste Type: Commercial Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 27-May-1977 Licence Surrendered: Licence Holder Address: Bridle Road, Bootle, Merseyside Operator: W F Doyle and Company Limited Licence Holder: George Wimpey and Company Limited First Recorded: 01-Apr-1976 Last Recorded: 31-Dec-1979
Not shown	1185	NW	345400 390300	Site Address: Brickfields, Knowsley, Merseyside Waste Licence: - Site Reference: GDO M209 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: Tushingham Metallic Brick Works Licence Holder: Tushingham Metallic Brick Works First Recorded: - Last Recorded: -
Not shown	1393	NW	345700 390600	Site Address: West View Tip, Knowsley, Merseyside Waste Licence: - Site Reference: GDO M194 Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: Hoyton with Roby Urban District Council Licence Holder: - First Recorded: 31-Jan-1971 Last Recorded: 01-Jan-1978
Not shown	1487	NW	345400 390600	Site Address: Huyton Quarry, Knowsley, Merseyside Waste Licence: - Site Reference: GDO M087 Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: 01-Oct-1971 Last Recorded: -

3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

1

The following landfill records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1314	N	346600.0 390800.0	Address: Whiston Tip, St Helens, Lancs BGS Number: 2786.0	Risk: No risk to aquifer Waste Type: N/A

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

4

The following landfill records are represented as points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Site Address	Source	Data Type
Not shown	959	N	346511 390465	Refuse Tip	1997 mapping	Polygon
Not shown	1027	N	346511 390514	Refuse Tip	1994 mapping	Polygon
Not shown	1367	NW	345515 390329	Refuse Tip	1967 mapping	Polygon
Not shown	1399	NW	345513 390338	Refuse Tip	1969 mapping	Polygon

3.2 Other Waste Sites

3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

0

Database searched and no data found.

3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

15

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
10	177	S	346930 388930	Site Address: Cronton Quarry, Dacre's Bridge Lane, Tarbock, Prescot, Merseyside, L35 1QZ Type: Inert LF Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WAL168 EPR reference: EA/EPR/AB3909FA/V002 Operator: Grundy And Co Excavations Limited Waste Management licence No: 400986 Annual Tonnage: 20000.0	Issue Date: 03/04/2014 Effective Date: - Modified: 05/08/2014 Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: Modified Site Name: Cronton Quarry Correspondence Address: -
11	723	NW	345981 389846	Site Address: Stretton Way Depot, Stretton Way, Huyton, Knowsley, Merseyside, L36 6JF Type: 75kte HCI Waste Transfer Station Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: KNO020 EPR reference: EA/EPR/EP3491LE/A001 Operator: Knowsley Metropolitan Borough Council Waste Management licence No: 101122 Annual Tonnage: 0.0	Issue Date: 03/11/2009 Effective Date: - Modified: - Surrendered Date: 2.01506e+016 Expiry Date: 0 Cancelled Date: 0 Status: Surrendered Site Name: Stretton Way Bulking Station Correspondence Address: -
Not shown	885	NW	345735 389774	Site Address: Huyton Ind Est, Wilson Road, Huyton, Knowsley, Merseyside, L36 6AD Type: 75kte Non-hazardous & hazardous HWA Site Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: VEO167 EPR reference: EA/EPR/DB3833DK/A001 Operator: Veolia E S Merseyside & Halton Ltd Waste Management licence No: 103677 Annual Tonnage: 74999.0	Issue Date: 12/12/2011 Effective Date: - Modified: - Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: Issued Site Name: Huyton H W R C Correspondence Address: -
13A	888	NW	345900 390000	Site Address: Stretton Way, Huyton Ind Est, Huyton, Merseyside, L36 6JF Type: 75kte HCI Waste TS + treatment Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: FCC004 EPR reference: EA/EPR/JB3633RP/A001 Operator: F C C Recycling (U K) Limited Waste Management licence No: 104504 Annual Tonnage: 74999.0	Issue Date: 23/07/2012 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Stretton Way Correspondence Address: -

ID	Distance (m)	Direction	NGR	Details	
14A	888	NW	345900 390000	Site Address: Stretton Way, Huyton Ind Est, Huyton, Merseyside, L36 6JF Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: FCC004 EPR reference: EA/EPR/JB3633RP/V002 Operator: F C C Recycling (U K) Limited Waste Management licence No: 104504 Annual Tonnage: 120000.0	Issue Date: 23/07/2012 Effective Date: - Modified: 18/12/2012 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Arpley 2 Correspondence Address: -
15A	888	NW	345900 390000	Site Address: Arpley 2, Stretton Way, Huyton Ind Est, Huyton, Merseyside, L36 6JF Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: FCC004 EPR reference: EA/EPR/JB3633RP/V003 Operator: F C C Recycling (U K) Limited Waste Management licence No: 104504 Annual Tonnage: 120000.0	Issue Date: 23/07/2012 Effective Date: - Modified: 08/06/2016 Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: To PPC Site Name: Arpley 2 Correspondence Address: -
Not shown	967	NW	345870 390080	Site Address: Land/premises At, Stretton Way, Huyton, Liverpool, Merseyside, L36 6JF Type: Physical Treatment Facility Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ORC009 EPR reference: EA/EPR/DP3794ST/V004 Operator: Orchid Environmental Ltd Waste Management licence No: 50487 Annual Tonnage: 49999.0	Issue Date: 10/05/2007 Effective Date: 14/01/2009 Modified: 24/09/2010 Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: Modified Site Name: Materials Recycling And Recovery Centre Correspondence Address: -
Not shown	967	NW	345870 390080	Site Address: M W D A Treatment Facility, Stretton Way, Huyton, Nr Liverpool, Merseyside, L36 6JF Type: Physical Treatment Facility Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: FAI011 EPR reference: - Operator: Fairport Engineering Ltd Waste Management licence No: 50487 Annual Tonnage: 0.0	Issue Date: 10/05/2007 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: M W D A Treatment Facility Correspondence Address: Market Place, Adlington, Nr Chorley, Lancashire, PR7 4EZ
Not shown	1108	NW	345848 390245	Site Address: Huyton W T S, Ellis Ashton Street, Huyton Ind Est, Liverpool, Merseyside, L36 6BN Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: VEO092 EPR reference: EA/EPR/EP3695SH/V006 Operator: Veolia Environmental Services Merseyside & Halton Ltd Waste Management licence No: 53645 Annual Tonnage: 500000.0	Issue Date: 15/09/1995 Effective Date: 11/11/2009 Modified: 15/05/2013 Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: Modified Site Name: Huyton Waste Transfer Station Correspondence Address: -

ID	Distance (m)	Direction	NGR	Details	
Not shown	1158	NW	345740 390220	Site Address: Ellis Ashton Street, Huyton, Liverpool, Merseyside, L36 6BJ Type: Special Waste Transfer Station Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MWA006 EPR reference: - Operator: Mersey Waste Holdings Ltd Waste Management licence No: 53645 Annual Tonnage: 6250.0	Issue Date: 15/09/1995 Effective Date: - Modified: 22/03/2002 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Huyton Waste Transfer Station & Waste Reception Centre Correspondence Address: Huyton Waste Transfer Station, Ellis Ashton Street, Huyton, Liverpool, Merseyside, L36 6BJ
Not shown	1158	NW	345740 390220	Site Address: Ellis Ashton Street, Huyton, Liverpool, Merseyside, L36 6BJ Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MWA006 EPR reference: - Operator: Mersey Waste Holdings Ltd Waste Management licence No: 53645 Annual Tonnage: 6250.0	Issue Date: 15/09/1995 Effective Date: - Modified: 20/07/2006 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Huyton W T S / H W R C Correspondence Address: Port Of Liverpool Buildings, 2nd Floor, Pierhead, Liverpool, Merseyside, L3 1BY
Not shown	1332	NW	345506 390229	Site Address: Units 1-3 The Lombard Centre, Link Road, Huyton, Liverpool, Merseyside, L36 6AP Type: 75kte WEEE Treatment Facility Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: RRL004 EPR reference: EA/EPR/AB3603LX/A001 Operator: Restart Recycling Limited Waste Management licence No: 400736 Annual Tonnage: 74999.0	Issue Date: 04/11/2013 Effective Date: - Modified: - Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: Revoked Site Name: Restart Recycling Ltd Correspondence Address: -
Not shown	1332	NW	345506 390229	Site Address: Unit 1, 2 & 3, The Lombard Centre, Link Road, Huyton, Merseyside, L36 6AP Type: 75kte Materials Recycling Facility Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LRL101 EPR reference: EA/EPR/CB3806XX/A001 Operator: Link Recycling Limited Waste Management licence No: 402341 Annual Tonnage: 75000.0	Issue Date: 22/07/2015 Effective Date: - Modified: - Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: Issued Site Name: Link Recycling Limited Correspondence Address: -
Not shown	1457	NW	345420 390320	Site Address: Land/premises At, Ellis Ashton Street, Huyton, Merseyside, L36 6AH Type: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MAI002 EPR reference: EA/EPR/ZP3294CU/A001 Operator: Mainsway Ltd Waste Management licence No: 50376 Annual Tonnage: 75000.0	Issue Date: 01/04/2005 Effective Date: - Modified: - Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: Issued Site Name: Mainsway Ltd Correspondence Address: -

ID	Distance (m)	Direction	NGR	Details	
Not shown	1457	NW	345420 390320	Site Address: Ellis Ashton Street, Huyton, Merseyside, L36 6AH Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MAI002 EPR reference: - Operator: Mainsway Ltd Waste Management licence No: 50376 Annual Tonnage: 0.0	Issue Date: 01/04/2005 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Mainsway Ltd Correspondence Address: Keith Lewis, Pearl Environmental Ltd, 13, Middleton Road, Reddish, Stockport, SK5 6SG

4. Current Land Use Map



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Site Outline

Search Buffers (m)
250
500

Current Industrial Sites

Petrol & Fuel Sites

Electricity Transmission Cables

Gas Transmission Pipelines

4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 3

The following records are represented as points on the Current Land Uses map.

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	0	On Site	Pylon	346602 389286	L35	Electrical Features	Infrastructure and Facilities
2	70	NE	Gantry	346767 389530	L35	Travelling Cranes and Gantries	Industrial Features
3	107	NE	Pylon	346908 389440	L35	Electrical Features	Infrastructure and Facilities

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 0

Database searched and no data found.

4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site: 0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site: 0

Database searched and no data found.

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

5.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON

5.3 Bedrock and Solid Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
ETM-MDSC	ETRURIA FORMATION	MUDSTONE, SANDSTONE AND CONGLOMERATE
PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION	MUDSTONE, SILTSTONE AND SANDSTONE
PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION	MUDSTONE, SILTSTONE AND SANDSTONE
PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION	SANDSTONE
PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION	SANDSTONE
ETM-MDSC	ETRURIA FORMATION	MUDSTONE, SANDSTONE AND CONGLOMERATE
PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION	MUDSTONE, SILTSTONE AND SANDSTONE
PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION	MUDSTONE, SILTSTONE AND SANDSTONE
PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION	SANDSTONE
PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION	MUDSTONE, SILTSTONE AND SANDSTONE
ETM-MDSC	ETRURIA FORMATION	MUDSTONE, SANDSTONE AND CONGLOMERATE

Lex Code	Description	Rock Type
PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION	MUDSTONE, SILTSTONE AND SANDSTONE
ETM-MDSC	ETRURIA FORMATION	MUDSTONE, SANDSTONE AND CONGLOMERATE
KNSF-SDST	KINNERTON SANDSTONE FORMATION	SANDSTONE

(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

6a. Aquifer Within Superficial Geology



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Site Outline

250
500
Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

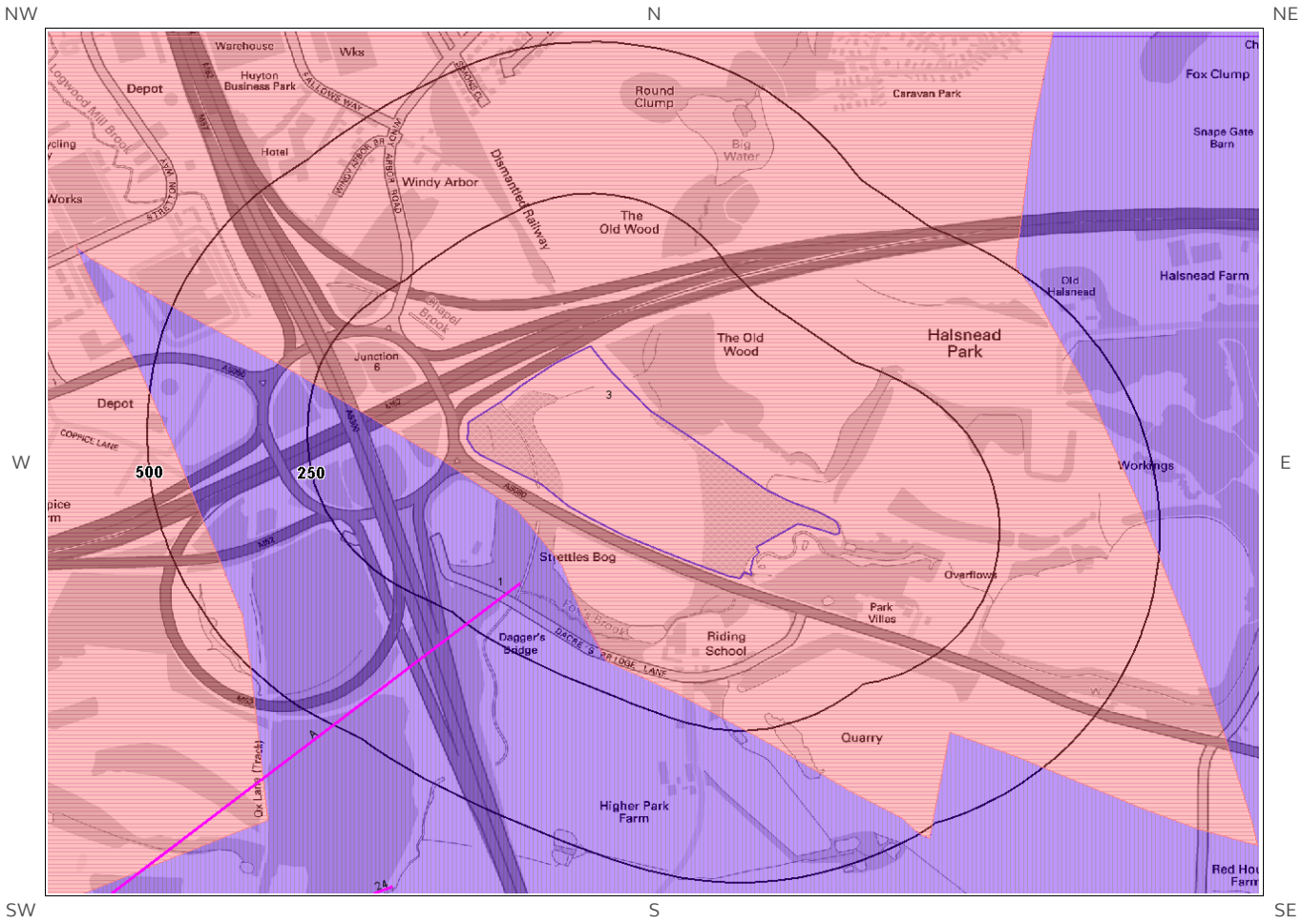
Secondary (B) Aquifer - Lower Permeability Layers

Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

6b. Aquifer Within Bedrock Geology and Abstraction Licenses



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Site Outline

250
500
Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

Secondary (B) Aquifer - Lower Permeability Layers

Groundwater Abstraction Licence

Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

Surface Water Abstraction Licence

6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



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Site Outline

250
500
Search Buffers (m)

Source Protection Zone 1 - Inner Catchment

Source Protection Zone 2 - Outer Catchment

Source Protection Zone 3 - Total Catchment

Source Protection Zone 4 - Zone of Special Interest

Potable Water Abstraction Licence

6d. Hydrogeology – Source Protection Zones within confined aquifer



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Site Outline

250 500 Search Buffers (m)

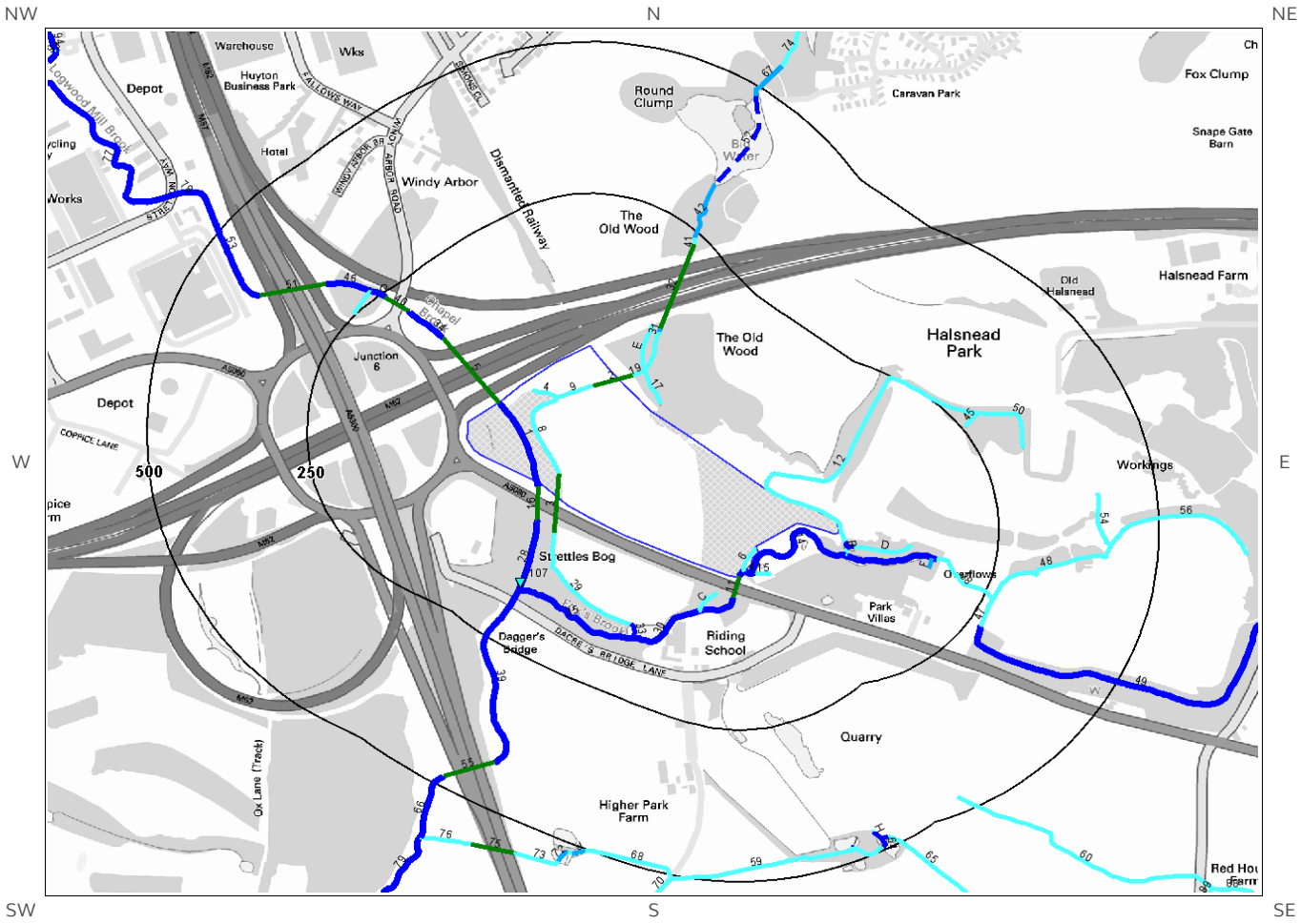
Source Protection Zone 1 - Inner Catchment

Source Protection Zone 2C - Outer Catchment within Confined Aquifer

Source Protection Zone 3C - Total Catchment within Confined Aquifer

Potable Water Abstraction Licence

6e. Hydrology – Detailed River Network and River Quality



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Site Outline

250
500
Search Buffers (m)

Primary River
Secondary River
Tertiary River
Lake/Reservoir
Underground River (inferred)
General Quality Assessment: Biology
General Quality Assessment: Chemistry

Canal
Canal Tunnel
Culvert
Multiple Channel Culvert
Underground River (Potential Sewer)
Underground River (local knowledge)

6.Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Are there records of strata classification within the superficial geology at or in proximity to the property? Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
3	0	On Site	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
2	229	E	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

6.2 Aquifer within Bedrock Deposits

Are there records of strata classification within the bedrock geology at or in proximity to the property? Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
3	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
1	40	SW	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers

6.3 Groundwater Abstraction Licences

Are there any Groundwater Abstraction Licences within 2000m of the study site? Yes

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details	
Not shown	1230	S	346700 387900	Status: Historical Licence No: 2569028011 Details: Potable Water Supply - Direct Direct Source: Ground Water - North West Region Point: "b/holes (2) At Water La Pumping Station, Whiston, Merseyside" Data Type: Point Name: UNITED UTILITIES WATER PLC	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: 1608 Original Start Date: 23/3/1966 Expiry Date: - Issue No: 101 Version Start Date: 1/9/2001 Version End Date:
Not shown	1230	S	346700 387900	Status: Active Licence No: 2569028011 Details: Potable Water Supply - Direct Direct Source: Ground Water - North West Region Point: B/holes (2) At Water La Pumping Station, Whiston, Merseyside Data Type: Point Name: UNITED UTILITIES WATER LTD	Annual Volume (m^3): 1750000 Max Daily Volume (m^3): 11400 Original Application No: 1608 Original Start Date: 23/3/1966 Expiry Date: - Issue No: 101 Version Start Date: 1/9/2001 Version End Date:
Not shown	1479	SE	347880 387926	Status: Historical Licence No: 2569028024 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: Borehole At Alder Lane, Cronton, Widnes Data Type: Point Name: MORPHET	Annual Volume (m^3): 34000 Max Daily Volume (m^3): 108.97 Original Application No: 7457 Original Start Date: 3/12/2002 Expiry Date: 31/3/2015 Issue No: 2 Version Start Date: 1/2/2007 Version End Date:
Not shown	1479	SE	347880 387926	Status: Historical Licence No: 2569028024 Details: Water Bottling Direct Source: Ground Water - North West Region Point: Borehole At Alder Lane, Cronton, Widnes Data Type: Point Name: MORPHET	Annual Volume (m^3): 34000 Max Daily Volume (m^3): 108.97 Original Application No: 7457 Original Start Date: 3/12/2002 Expiry Date: 31/3/2015 Issue No: 2 Version Start Date: 1/2/2007 Version End Date:
Not shown	1479	SE	347880 387926	Status: Active Licence No: 2569028024R01 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: Borehole At Alder Lane, Cronton, Widnes Data Type: Point Name: MORPHET	Annual Volume (m^3): 34000 Max Daily Volume (m^3): 110 Original Application No: NPS/WR/017518 Original Start Date: 1/4/2015 Expiry Date: 31/3/2028 Issue No: 1 Version Start Date: 1/4/2015 Version End Date:
Not shown	1479	SE	347880 387926	Status: Active Licence No: 2569028024R01 Details: Water Bottling Direct Source: Ground Water - North West Region Point: Borehole At Alder Lane, Cronton, Widnes Data Type: Point Name: MORPHET	Annual Volume (m^3): 34000 Max Daily Volume (m^3): 110 Original Application No: NPS/WR/017518 Original Start Date: 1/4/2015 Expiry Date: 31/3/2028 Issue No: 1 Version Start Date: 1/4/2015 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1485	SE	347880 387920	Status: Historical Licence No: 2569028024 Details: Water Bottling Direct Source: Ground Water - North West Region Point: "borehole At Alder Lane, Cronton, Widnes" Data Type: Point Name: C S MORPHET & SONS LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: S7457 Original Start Date: 3/12/2002 Expiry Date: 31/3/2015 Issue No: 1 Version Start Date: 3/12/2002 Version End Date:
Not shown	1485	SE	347880 387920	Status: Historical Licence No: 2569028024 Details: Water Bottling Direct Source: Ground Water - North West Region Point: Borehole At Alder Lane, Cronton, Widnes Data Type: Point Name: MORPHET	Annual Volume (m^3): 34000 Max Daily Volume (m^3): 108.97 Original Application No: 7457 Original Start Date: 3/12/2002 Expiry Date: 31/3/2015 Issue No: 2 Version Start Date: 1/2/2007 Version End Date:
Not shown	1485	SE	347880 387920	Status: Historical Licence No: 2569028024 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: "borehole At Alder Lane, Cronton, Widnes" Data Type: Point Name: C S MORPHET & SONS LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: S7457 Original Start Date: 3/12/2002 Expiry Date: 31/3/2015 Issue No: 1 Version Start Date: 3/12/2002 Version End Date:
Not shown	1485	SE	347880 387920	Status: Historical Licence No: 2569028024 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: Borehole At Alder Lane, Cronton, Widnes Data Type: Point Name: MORPHET	Annual Volume (m^3): 34000 Max Daily Volume (m^3): 108.97 Original Application No: 7457 Original Start Date: 3/12/2002 Expiry Date: 31/3/2015 Issue No: 2 Version Start Date: 1/2/2007 Version End Date:
Not shown	1485	SE	347880 387920	Status: Historical Licence No: 2569028023 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: Borehole At Alder Lane, Cronton, Widnes Data Type: Point Name: C S MORPHET & SONS LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: 7457 Original Start Date: - Expiry Date: 31/03/2005 Issue No: 1 Version Start Date: 10/3/2000 Version End Date:
Not shown	1850	NE	348550 390340	Status: Historical Licence No: 2569028021 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "b/hole At Blundells Hill Golf Club, Blundells Lane, Rainhill" Data Type: Point Name: BLUNDELLS HILL GOLF CLUB LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: S 7282 Original Start Date: 6/9/1994 Expiry Date: - Issue No: 101 Version Start Date: 19/2/2001 Version End Date:
Not shown	1850	NE	348550 390340	Status: Historical Licence No: 2569028021 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: "b/hole At Blundells Hill Golf Club, Blundells Lane, Rainhill" Data Type: Point Name: BLUNDELLS HILL GOLF CLUB LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: S 7282 Original Start Date: 6/9/1994 Expiry Date: - Issue No: 101 Version Start Date: 19/2/2001 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1850	NE	348550 390340	Status: Active Licence No: 2569028021 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: B/hole At Blundells Hill Golf Club, Blundells Lane, Rainhill Data Type: Point Name: BLUNDELLS HILL GOLF CLUB LTD	Annual Volume (m^3): 21966.87 Max Daily Volume (m^3): 191.81 Original Application No: 7282 Original Start Date: 6/9/1994 Expiry Date: - Issue No: 102 Version Start Date: 11/2/2007 Version End Date:
Not shown	1850	NE	348550 390340	Status: Active Licence No: 2569028021 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: B/hole At Blundells Hill Golf Club, Blundells Lane, Rainhill Data Type: Point Name: BLUNDELLS HILL GOLF CLUB LTD	Annual Volume (m^3): 21966.87 Max Daily Volume (m^3): 191.81 Original Application No: 7282 Original Start Date: 6/9/1994 Expiry Date: - Issue No: 102 Version Start Date: 11/2/2007 Version End Date:

6.4 Surface Water Abstraction Licences

Are there any Surface Water Abstraction Licences within 2000m of the study site? Yes

The following Surface Water Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details	
20A	146	SW	346600 389100	Status: Historical Licence No: 2569028018 Details: Spray Irrigation - Direct Direct Source: "surface, Non-tidal - North West Region" Point: "ochre & Dog Clog Brks, Tarbock Hall Farm, Tarbock, Prescot" Data Type: Line Name: T H CRITCHLEY & SON	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: 2457 Original Start Date: 13/5/1976 Expiry Date: - Issue No: 100 Version Start Date: 1/4/1993 Version End Date:
21A	146	SW	346600 389100	Status: Historical Licence No: 2569028018 Details: Spray Irrigation - Direct Direct Source: Surface, Non-tidal - North West Region Point: Ochre & Dog Clog Brks, Tarbock Hall Farm, Tarbock, Prescot Data Type: Line Name: T H CRITCHLEY & SON	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: 2457 Original Start Date: 13/5/1976 Expiry Date: - Issue No: 100 Version Start Date: 1/4/1993 Version End Date:
22A	146	SW	346600 389100	Status: Historical Licence No: 2569028018 Details: Spray Irrigation - Direct Direct Source: Surface, Non-tidal - North West Region Point: Ochre And Dog Clog Brooks Tarbock Hall Farm Prescot Data Type: Line Name: T H CRITCHLEY & SON	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: 2457 Original Start Date: 13/5/1976 Expiry Date: - Issue No: 100 Version Start Date: 1/4/1993 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
23A	146	SW	346600 389100	Status: Historical Licence No: 2569028018 Details: Spray Irrigation - Direct Direct Source: Surface, Non-tidal - North West Region Point: Ochre And Dog Clog Brooks Tarbock Hall Farm Prescot Data Type: Line Name: T H CRITCHLEY & SON	Annual Volume (m^3): 2098 Max Daily Volume (m^3): 636 Application No: 2457 Original Start Date: 13/5/1976 Expiry Date: - Issue No: 100 Version Start Date: 1/4/1993 Version End Date:
24	680	SW	346400 388600	Status: Active Licence No: 2569028018 Details: Spray Irrigation - Direct Direct Source: Surface, Non-tidal - North West Region Point: Ochre And Dog Clog Brooks Tarbock Hall Farm Prescot Data Type: Line Name: BELPOOL DEVELOPMENTS LTD	Annual Volume (m^3): 2098 Max Daily Volume (m^3): 636 Application No: NPS/WR/006330 Original Start Date: 13/5/1976 Expiry Date: - Issue No: 102 Version Start Date: 31/1/2011 Version End Date:

6.5 Potable Water Abstraction Licences

Are there any Potable Water Abstraction Licences within 2000m of the study site? Yes

The following Potable Water Abstraction Licences records are represented as points, lines and regions on the SPZ and Potable Water Abstraction Licences Map (6c):

ID	Distance (m)	Direction	NGR	Details	
Not shown	1230	S	346700 387900	Status: Historical Licence No: 2569028011 Details: Potable Water Supply - Direct Direct Source: Ground Water - North West Region Point: "b/holes (2) At Water La Pumping Station, Whiston, Merseyside" Data Type: Point Name: UNITED UTILITIES WATER PLC	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: 1608 Original Start Date: 23/3/1966 Expiry Date: - Issue No: 101 Version Start Date: Version End Date:
Not shown	1230	S	346700 387900	Status: Active Licence No: 2569028011 Details: Potable Water Supply - Direct Direct Source: Ground Water - North West Region Point: B/holes (2) At Water La Pumping Station, Whiston, Merseyside Data Type: Point Name: UNITED UTILITIES WATER LTD	Annual Volume (m^3): 1750000 Max Daily Volume (m^3): 11400 Original Application No: 1608 Original Start Date: 23/3/1966 Expiry Date: - Issue No: 101 Version Start Date: Version End Date:
Not shown	1479	SE	347880 387926	Status: Historical Licence No: 2569028024 Details: Water Bottling Direct Source: Ground Water - North West Region Point: Borehole At Alder Lane, Cronton, Widnes Data Type: Point Name: MORPHET	Annual Volume (m^3): 34000 Max Daily Volume (m^3): 108.97 Original Application No: 7457 Original Start Date: 3/12/2002 Expiry Date: 31/3/2015 Issue No: 2 Version Start Date: Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1479	SE	347880 387926	Status: Active Licence No: 2569028024R01 Details: Water Bottling Direct Source: Ground Water - North West Region Point: Borehole At Alder Lane, Cronton, Widnes Data Type: Point Name: MORPHET	Annual Volume (m^3): 34000 Max Daily Volume (m^3): 110 Original Application No: NPS/WR/017518 Original Start Date: 1/4/2015 Expiry Date: 31/3/2028 Issue No: 1 Version Start Date: Version End Date:
Not shown	1485	SE	347880 387920	Status: Historical Licence No: 2569028024 Details: Water Bottling Direct Source: Ground Water - North West Region Point: "borehole At Alder Lane, Cronton, Widnes" Data Type: Point Name: C S MORPHET & SONS LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: S7457 Original Start Date: 3/12/2002 Expiry Date: 31/3/2015 Issue No: 1 Version Start Date: Version End Date:
Not shown	1485	SE	347880 387920	Status: Historical Licence No: 2569028024 Details: Water Bottling Direct Source: Ground Water - North West Region Point: Borehole At Alder Lane, Cronton, Widnes Data Type: Point Name: MORPHET	Annual Volume (m^3): 34000 Max Daily Volume (m^3): 108.97 Original Application No: 7457 Original Start Date: 3/12/2002 Expiry Date: 31/3/2015 Issue No: 2 Version Start Date: Version End Date:
Not shown	1850	NE	348550 390340	Status: Historical Licence No: 2569028021 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "b/hole At Blundells Hill Golf Club, Blundells Lane, Rainhill" Data Type: Point Name: BLUNDELLS HILL GOLF CLUB LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: S 7282 Original Start Date: 6/9/1994 Expiry Date: - Issue No: 101 Version Start Date: Version End Date:
Not shown	1850	NE	348550 390340	Status: Active Licence No: 2569028021 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: B/hole At Blundells Hill Golf Club, Blundells Lane, Rainhill Data Type: Point Name: BLUNDELLS HILL GOLF CLUB LTD	Annual Volume (m^3): 21966.87 Max Daily Volume (m^3): 191.81 Original Application No: 7282 Original Start Date: 6/9/1994 Expiry Date: - Issue No: 102 Version Start Date: Version End Date:

6.6 Source Protection Zones

Are there any Source Protection Zones within 500m of the study site? Yes

The following Source Protection Zones records are represented on the SPZ and Potable Water Abstraction Map (6c):

ID	Distance (m)	Direction	Zone	Description
1	39	SW	3	Total catchment

6.7 Source Protection Zones within Confined Aquifer

Are there any Source Protection Zones within the Confined Aquifer within 500m of the study site? No

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Is there any Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site? Yes

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.
0	On Site	Minor Aquifer/Low Leaching Potential	L	Soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal, or they have the ability to attenuate diffuse pollutants.
54	SW	Major Aquifer/Low Leaching Potential	L	Soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal, or they have the ability to attenuate diffuse pollutants.
98	N	Minor Aquifer/Low Leaching Potential	L	Soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal, or they have the ability to attenuate diffuse pollutants.
206	SW	Major Aquifer/High Leaching Potential	H1	Soils which readily transmit liquid discharges because they are shallow or susceptible to rapid flow directly to rock, gravel or groundwater.
419	NE	Major Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.
439	W	Minor Aquifer/Low Leaching Potential	L	Soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal, or they have the ability to attenuate diffuse pollutants.

6.9 River Quality

Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site? Yes

6.9.1 Biological Quality:

Biological Quality data describes water quality in terms of 83 groups of macroinvertebrates, some of which are pollution sensitive. The results are graded from A ('Very Good') to F ('Bad').

The following Biological Quality records are shown on the Hydrology Map (6e):

ID	Distance (m)	Direction	NGR	River Quality Grade	Biological Quality Grade				
					2005	2006	2007	2008	2009
107	146	SW	346600 389100	River Name: Ditton Bk Reach: Prescot Stw To Fox's Bank Bk. End/Start of Stretch: End of Stretch NGR	E	E	E	E	E

6.9.2 Chemical Quality:

Database searched and no data found.

6.10 Detailed River Network

Are there any Detailed River Network entries within 500m of the study site? Yes

The following Detailed River Network records are represented on the Hydrology Map (6e):

ID	Distance (m)	Direction	Details	
1	0	On Site	River Name: Chapel Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
2	0	On Site	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
3	0	On Site	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
4	0	On Site	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
5	0	On Site	River Name: Chapel Brook Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
6	0	On Site	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
7A	0	On Site	River Name: Fox's Bank Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined

ID	Distance (m)	Direction	Details	
8	0	On Site	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
9	0	On Site	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
10A	0	On Site	River Name: Fox's Bank Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
11	0	On Site	River Name: Fox's Bank Brook Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
12	0	NE	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
13A	2	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
14	2	E	River Name: Fox's Bank Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
15	5	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
16	6	SW	River Name: Chapel Brook Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
17	16	NE	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
18B	18	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Lake/Reservoir Main River Status: Currently Undefined
19	19	NE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
20B	28	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Lake/Reservoir Main River Status: Currently Undefined
21B	28	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
22C	33	S	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
23C	33	S	River Name: Fox's Bank Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
24D	34	SE	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
25D	38	S	River Name: Fox's Bank Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
26E	39	NE	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined

ID	Distance (m)	Direction	Details	
27E	39	NE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
28	49	SW	River Name: Chapel Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
29	49	SW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
30	70	S	River Name: Fox's Bank Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
31	98	NE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
32	104	NE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
33	131	SW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Lake/Reservoir Main River Status: Currently Undefined
34	138	NW	River Name: Chapel Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
35	148	SW	River Name: Fox's Bank Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
36F	152	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
37F	152	E	River Name: Fox's Bank Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
38	159	E	River Name: Fox's Bank Brook Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
39	161	SW	River Name: Ochre Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
40	202	NW	River Name: Chapel Brook Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
41	232	NE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
42	239	NE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
43G	243	NW	River Name: Chapel Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
44G	253	NW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
45	255	NE	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined

ID	Distance (m)	Direction	Details	
46	264	NW	River Name: Logwood Mill Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
47	265	SE	River Name: Fox's Bank Brook Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
48	265	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
49	271	SE	River Name: Fox's Bank Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
50	285	NE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
51	318	NW	River Name: Logwood Mill Brook Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
52	329	NE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Lake/Reservoir Main River Status: Currently Undefined
53	386	NW	River Name: Logwood Mill Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
54	404	E	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
55	425	SW	River Name: Ochre Brook Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
56	426	E	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
57H	463	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
58H	465	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Lake/Reservoir Main River Status: Currently Undefined
59	471	S	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
60	472	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
61I	476	S	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Lake/Reservoir Main River Status: Currently Undefined
62I	477	S	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
63H	481	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Lake/Reservoir Main River Status: Currently Undefined
64	482	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Lake/Reservoir Main River Status: Currently Undefined

ID	Distance (m)	Direction	Details	
65	483	SE	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
66	484	SW	River Name: Ochre Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
67	485	NE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
68	492	S	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined

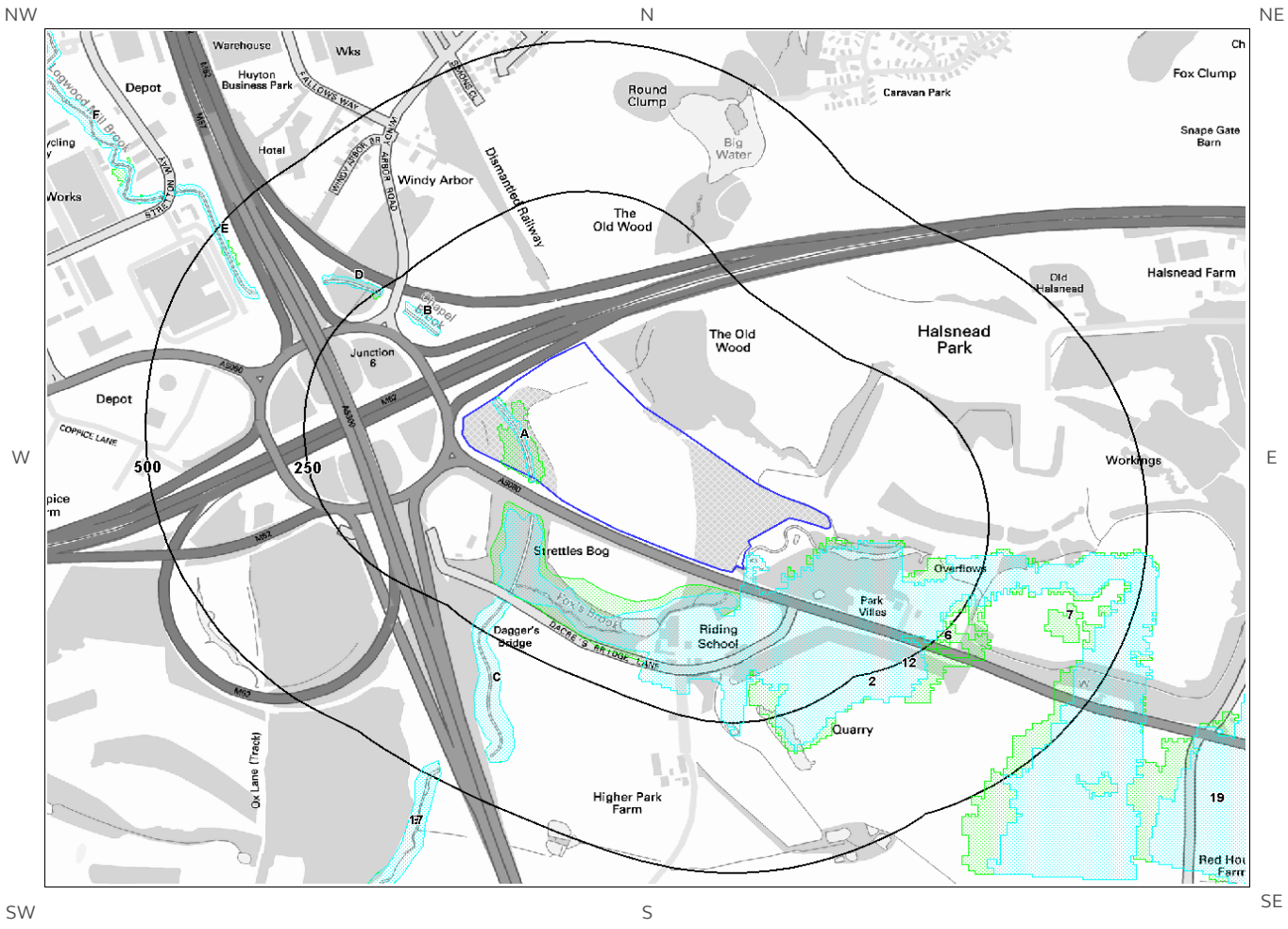
6.11 Surface Water Features

Are there any surface water features within 250m of the study site? Yes

The following surface water records are not represented on mapping:

Distance (m)	Direction
0	NE
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
2	SE
5	E
16	NE
18	SE
19	NE
26	NE
33	S
33	S
34	SE
39	NE
39	NE
47	SW
49	SW
53	SW
64	N
120	NW
145	S
162	S
177	E
184	SW
224	S
232	NE
239	NE

7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



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Site Outline

100
250
Search Buffers (m)

Zone 2 Floodplain

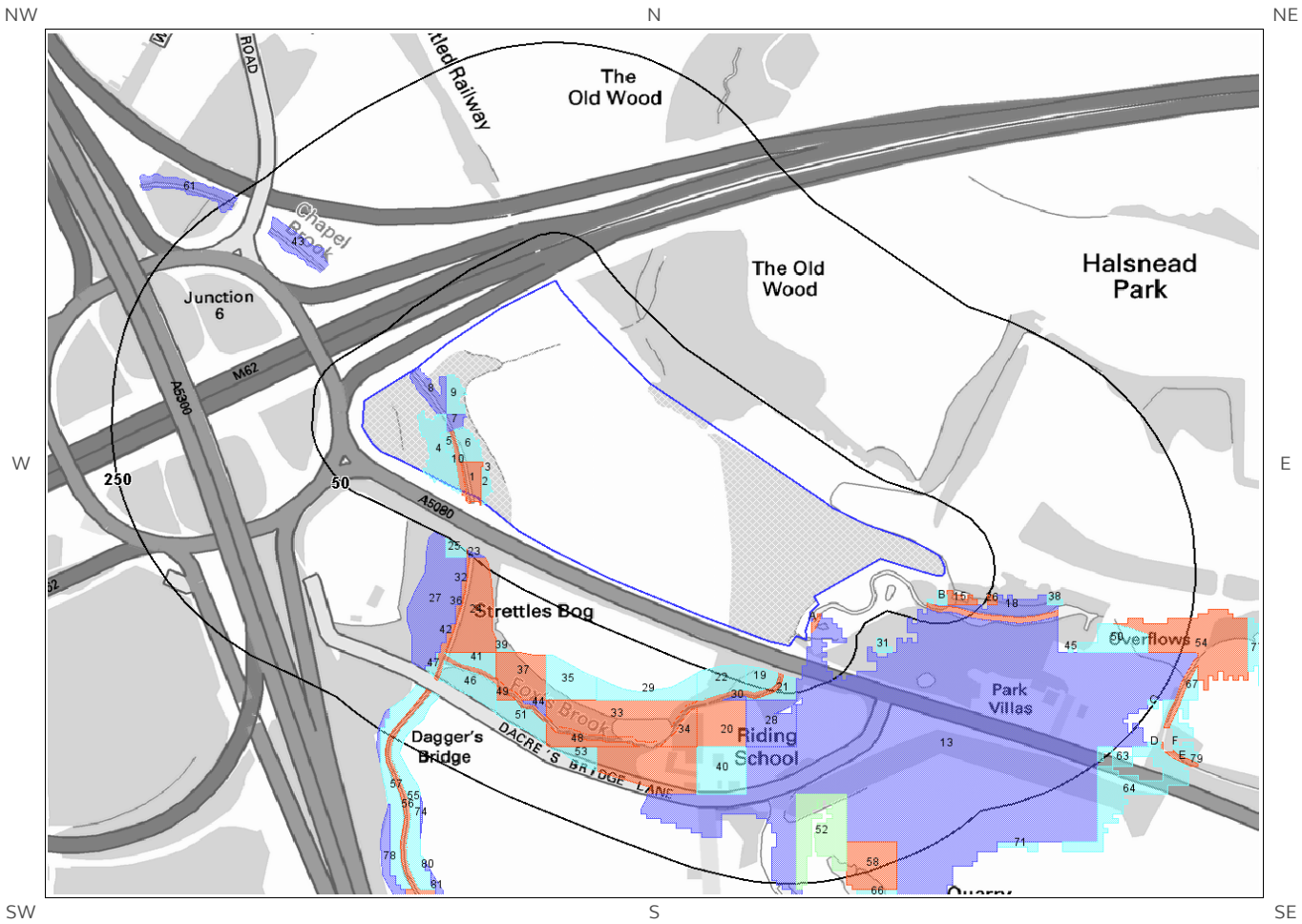
Zone 3 Floodplain

Flood Defences

Area used for Flood Storage

Area Benefiting from Flood Defences

7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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Site Outline

100 250 Search Buffers (m)

RoFRaS Rating

- Very Low
- Low
- Medium
- High

7 Flooding

7.1 River and Coastal Zone 2 Flooding

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 2 floodplain? Yes

Environment Agency/Natural Resources Wales Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

ID	Distance (m)	Direction	Update	Type
1A	0	On Site	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
2	2	E	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
3B	138	NW	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
4C	189	SW	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
5D	241	NW	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 3 floodplain? Yes

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

ID	Distance (m)	Direction	Update	Type
1A	0	On Site	19-Jun-2017	Zone 3 - (Fluvial Models)
2	2	E	19-Jun-2017	Zone 3 - (Fluvial Models)
3B	138	NW	19-Jun-2017	Zone 3 - (Fluvial Models)
4C	189	SW	19-Jun-2017	Zone 3 - (Fluvial Models)
5D	243	NW	19-Jun-2017	Zone 3 - (Fluvial Models)

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

What is the highest risk of flooding onsite? High

The Environment Agency/Natural Resources Wales RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a High (1 in 30 or greater) chance of flooding in any given year.

Any relevant data within 250m is represented on the RoFRaS Flood map. Data to 50m is reported in the table below.

ID	Distance (m)	Direction	RoFRas flood Risk
1	0.0	On Site	High
2	0.0	On Site	Low
3	0.0	On Site	High
4	0.0	On Site	Low
5	0.0	On Site	Low
6	0.0	On Site	Low
7	0.0	On Site	Medium
8	0.0	On Site	Medium
9	0.0	On Site	Low
10	0.0	On Site	High
11A	2.0	E	Medium
12A	3.0	E	High
13	5.0	E	Medium
14B	15.0	S	Low
15	16.0	S	High
16B	25.0	S	Low
17	29.0	S	High
18	30.0	S	Medium
19	30.0	S	Low
20	31.0	S	High
21	31.0	S	Low
22	33.0	S	Low
23	42.0	SW	Medium
24	43.0	SW	High
25	48.0	SW	Low
26	48.0	SE	High

7.4 Flood Defences

Are there any Flood Defences within 250m of the study site? No

Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Are there any areas benefiting from Flood Defences within 250m of the study site? No

7.6 Areas benefiting from Flood Storage

Are there any areas used for Flood Storage within 250m of the study site? No

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site? Yes

Does this relate to Clearwater Flooding or Superficial Deposits Flooding? Superficial Deposits Flooding

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

7.7.2 What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions?

Potential at Surface

Where potential for groundwater flooding to occur at surface is indicated, this means that given the geological conditions in the area groundwater flooding hazard should be considered in all land-use planning decisions. It is recommended that other relevant information e.g. records of previous incidence of groundwater flooding, rainfall, property type, and land drainage information be investigated in order to establish relative, but not absolute, risk of groundwater flooding.

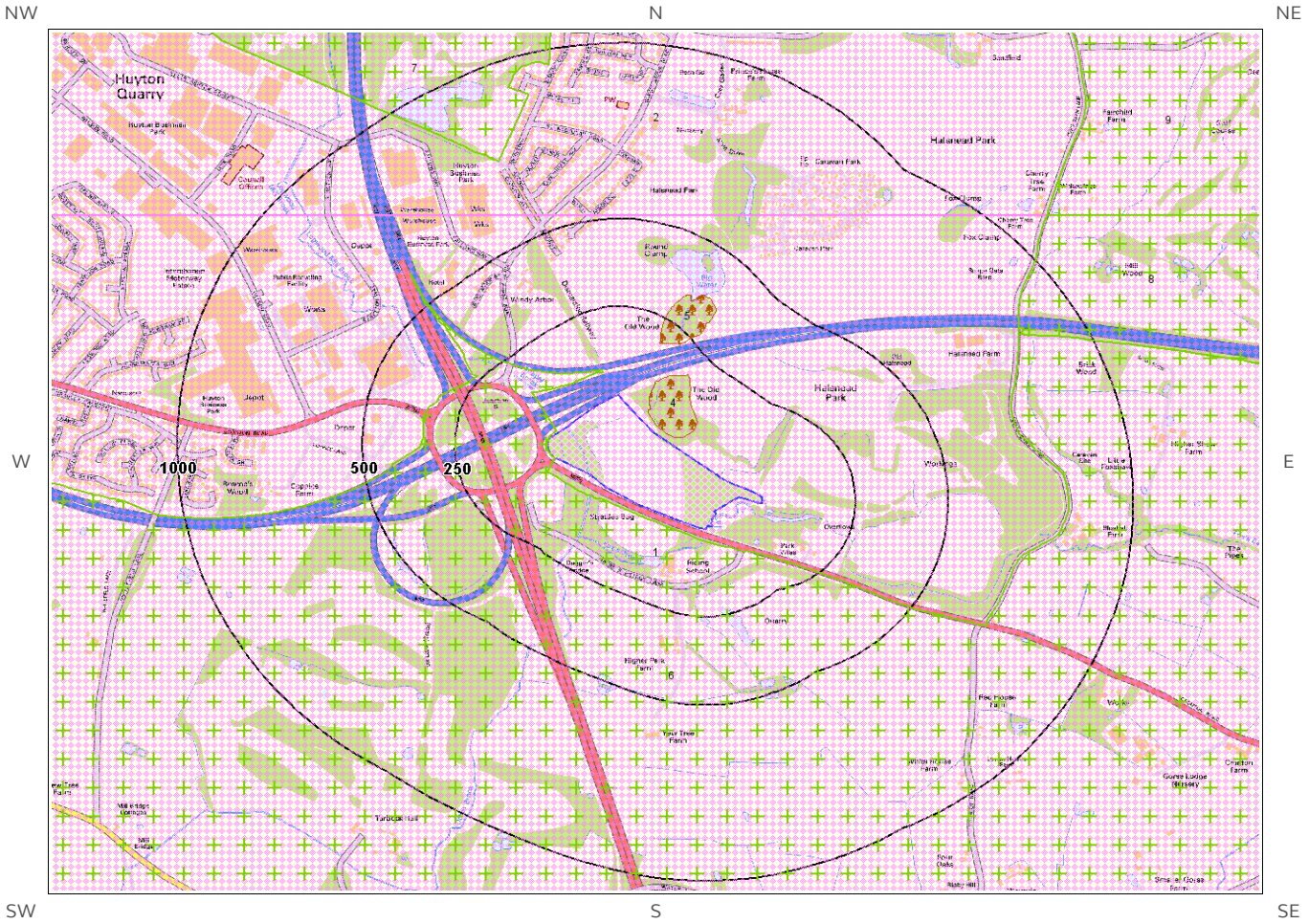
7.8 Groundwater Flooding Confidence Areas

What is the British Geological Survey confidence rating in this result? High

Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

8. Designated Environmentally Sensitive Sites Map



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Site Outline

100
250
Search Buffers (m)

AONB
National Park
SSSI
Special Protection Areas
Nitrate Vulnerable Zones

Green Belt
Environmentally Sensitive Areas
Special Areas of Conservation
World Heritage Sites
Nitrate Sensitive Areas

Ancient Woodland
National Nature Reserve
Local Nature Reserves
Ramsar Sites

8. Designated Environmentally Sensitive Sites

Presence of Designated Environmentally Sensitive Sites within 2000m of the study site?	Yes

8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:

0

Database searched and no data found.

8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:

0

Database searched and no data found.

8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:

0

Database searched and no data found.

8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:

0

Database searched and no data found.

8.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

8.6 Records of Ancient Woodland within 2000m of the study site:

2

The following records of Designated Ancient Woodland provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
4	15	NE	UNKNOWN	Ancient and Semi-Natural Woodland
5	182	NE	UNKNOWN	Ancient and Semi-Natural Woodland

8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

0

Database searched and no data found.

8.8 Records of World Heritage Sites within 2000m of the study site:

0

Database searched and no data found.

8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

0

Database searched and no data found.

8.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

3

The following Nitrate Vulnerable Zone records produced by DEFRA are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	NVZ Name	Data Source
1	0	On Site	Existing	DEFRA
2	510	N	Existing	DEFRA
Not shown	1891	NW	Existing	DEFRA

8.14 Records of Green Belt land within 2000m of the study site:

5

Green Belt data contains Ordnance Survey data © Crown copyright and database right [2015].

ID	Distance	Direction	Green Belt Name	Local Authority Name
6	0	On Site	Liverpool, Manchester and West Yorks Greenbelt	Knowsley
7	738	NW	Liverpool, Manchester and West Yorks Greenbelt	Knowsley
8	840	NE	Liverpool, Manchester and West Yorks Greenbelt	St. Helens District (B)
9	1111	NE	Liverpool, Manchester and West Yorks Greenbelt	St. Helens District (B)
Not shown	1841	W	Liverpool, Manchester and West Yorks Greenbelt	Liverpool District (B)

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a Groundsure Geo Insight, available from our website. The following information has been found:

9.1.1 Shrink Swell

What is the maximum Shrink-Swell*[*] hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

9.1.2 Landslides

What is the maximum Landslide* hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

9.1.3 Soluble Rocks

What is the maximum Soluble Rocks* hazard rating identified on the study site? Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This indicates an automatically generated 50m buffer and site.

9.1.4 Compressible Ground

What is the maximum Compressible Ground* hazard rating identified on the study site? Moderate

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.

9.1.5 Collapsible Rocks

What is the maximum Collapsible Rocks* hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

9.1.6 Running Sand

What is the maximum Running Sand*[*] hazard rating identified on the study site? Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Possibility of running sand problems after major changes in ground conditions. Normal maintenance to avoid leakage of water-bearing services or water bodies (ponds, swimming pools) should reduce likelihood of problems due to running sand. For new build consider possibility of running sand into trenches or excavations if water table is high or sandy strata are exposed to water. Avoid concentrated water inputs to site. Unlikely to be an increase in construction costs due to potential for running sand. For existing property no significant increase in insurance risk due to running sand problems is likely.

9.2 Radon

9.2.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

* This indicates an automatically generated 50m buffer and site.

9.2.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing
ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

10. Mining

10.1 Coal Mining

Are there any coal mining areas within 75m of the study site? Yes

The following coal mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

10.2 Non-Coal Mining

Are there any Non-Coal Mining areas within 50m of the study site boundary? Yes

The following non-coal mining information is provided by the BGS:

Distance (m)	Direction	Name	Commodity	Assessment of likelihood
0.0	On Site	Not available	Vein Mineral	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered

Past underground mine workings are uncommon, localised and of limited area. The rock types present in this area are such that minor mineral veins may be present within them on which it is possible that there have been attempts to work these by underground methods and/or it is possible that small scale underground extraction of other materials may have occurred. All such occurrences are likely to be restricted in size and infrequent. It should be noted, however, that there is always the possibility of the existence of other sub-surface excavations, such as wells, cess pits, follies, air raid shelters/bunkers and other military structures etc. that could affect surface ground stability but which are outside the scope of this dataset. However, if in a coalfield area you should still consider a Coal Authority mining search for the area of interest.

10.3 Brine Affected Areas

Are there any brine affected areas within 75m of the study site? No
Guidance: No Guidance Required.

Contact Details

Groundsure Helpline
Telephone: 08444 159 000
info@groundsure.com

British Geological Survey Enquiries
Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:
Web:**www.bgs.ac.uk**
BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk

Environment Agency
National Customer Contact Centre, PO Box 544
Rotherham, S60 1BY
Tel: 03708 506 506
Web: **www.environment-agency.gov.uk**
Email: enquiries@environment-agency.gov.uk

Public Health England
Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
www.gov.uk/phe
Email:**enquiries@phe.gov.uk**
Main switchboard**: 020 7654 8000**

The Coal Authority
200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk

Ordnance Survey
Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505

Local Authority
Authority: Knowsley Metropolitan Borough Council
Phone: 0151 489 6000
Web: http://www.knowsley.gov.uk/
Address: Municipal Buildings, Cherryfield Drive, Knowsley, L32 1TX

Gemapping PLC
Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444

Acknowledgements: Site of Special Scientific Interest, National Nature Reserve, Ramsar Site, Special Protection Area, Special Area of Conservation data is provided by, and used with the permission of, Natural England who retain the Copyright and Intellectual Property Rights for the data.
PointX © Database Right/Copyright, Thomson Directories Limited © Copyright Link Interchange Network Limited © Database Right/Copyright and Ordnance Survey © Crown Copyright and/or Database Right. All Rights Reserved. Licence Number [03421028].
This report has been prepared in accordance with the Groundsure Ltd standard Terms and Conditions of business for work of this nature.

Standard Terms and Conditions

Groundsure's Terms and Conditions can be viewed online at this link:
https://www.groundsure.com/terms-and-conditions-sept-2016

APPENDIX 5

GROUNDSURE GEO-INSIGHT REPORT

Groundsure
LOCATION INTELLIGENCE

Integra Consulting Environmental Ltd

Integra Consulting Environmental Ltd,14-32,
HEWITT STREET,
MANCHESTER, M15 4GB

Groundsure Reference:	GS-4206763
Your Reference:	2956_
Report Date	23 Aug 2017
Report Delivery Method:	Email - pdf

Geo Insight

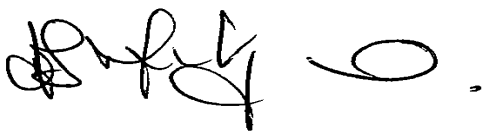
Address: STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Geo Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above Groundsure reference number.

Yours faithfully,



Managing Director
Groundsure Limited

Enc.
Groundsure Geo Insight

Geo Insight

Address:	**STREET RECORD, M62 JUNCTION 6 TO BOROUGH BOUNDARY, WHISTON, L35 1QZ**
Date:	**23 Aug 2017**
Reference:	**GS-4206763**
Client:	**Integra Consulting Environmental Ltd**

NW N NE

W E



SW S SE

Aerial Photograph Capture date:	24-Jun-2009
Grid Reference:	346818,389319
Site Size:	9.29ha

Groundsure
LOCATION INTELLIGENCE

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Overview of Findings

The Groundsure Geo Insight provides high quality geo-environmental information that allows geo-environmental professionals and their clients to make informed decisions and be forewarned of potential ground instability problems that may affect the ground investigation, foundation design and possibly remediation options that could lead to possible additional costs.

The report is based on the BGS 1:50,000 and 1:10,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Non-coal mining data and Borehole Records, Coal Authority data including brine extraction areas, PBA non-coal mining and natural cavities database, Johnson Poole and Bloomer mining data and Groundsure's unique database including historical surface ground and underground workings.

For further details on each dataset, please refer to each individual section in the report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Geology 1:10,000 Scale		
1.1 Artificial Ground	1.1 Is there any Artificial Ground/ Made Ground present beneath the study site at 1:10,000 scale?	No
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site at 1:10,000 scale?*	Yes
	1.2.2 Are there any records of landslip within 500m of the study site boundary at 1:10,000 scale?	No
1.3 Bedrock, Solid Geology and Faults	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records of faults within 500m of the study site boundary at 1:10,000 scale?	Yes

Section 2: Geology 1:50,000 Scale		
2.1 Artificial Ground	2.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	No
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	No
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	Yes
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	Yes
	2.2.3 Are there any records of landslip within 500m of the study site boundary?	No
	2.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No

Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and Faults	2.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	2.3.2 Are there any records relating to permeability of bedrock ground within the study site boundary?	Yes
	2.3.3 Are there any records of faults within 500m of the study site boundary?	Yes

Section 3: Radon

3. Radon	3.1Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
	3.2Radon Protection	No radon protective measures are necessary.

Section 4: Ground Workings	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	7	15	18	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	2	0	2	8	41
4.3 Current Ground Workings	0	0	0	2	15

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	2	0	2	8	41
5.2 Coal Mining	1	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	1	0	0	1	1
5.5 Non–Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	0

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0

Section 6: Natural Ground Subsidence	On-site
6.1 Shrink-Swell Clay	Very Low
6.2 Landslides	Very Low
6.3 Ground Dissolution of Soluble Rocks	Negligible
6.4 Compressible Deposits	Moderate
6.5 Collapsible Deposits	Very Low
6.5 Running Sand	Low

Section 7: Borehole Records	On-site	0-50m	51-250
7 BGS Recorded Boreholes	6	17	69

Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250
8 Records of Background Soil Chemistry	18	16	0

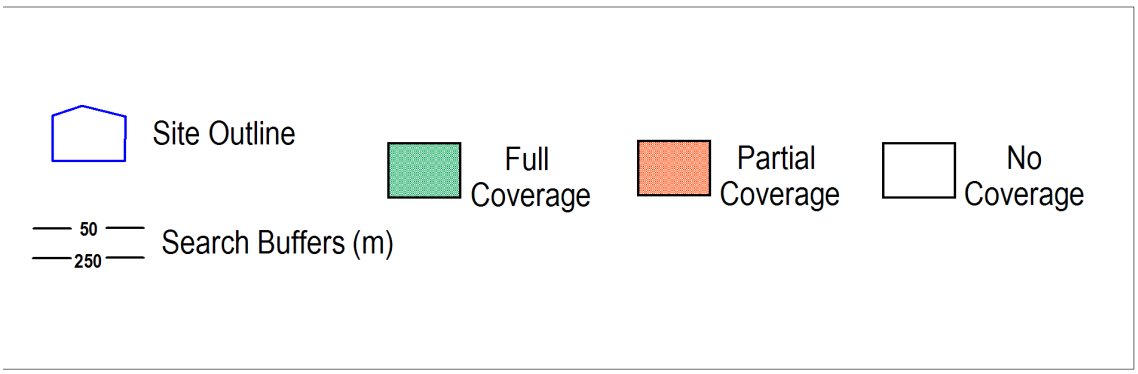
Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500
9.1 Tunnels	0	0	0	Not Searched
9.2 Historical Railway and Tunnel Features	8	3	0	Not Searched
9.3 Historical Railways	0	0	0	Not Searched
9.4 Active Railways	0	0	0	Not Searched
9.5 Railway Projects	0	0	0	0

1:10,000 Scale Availability



1_10,000 Availability Legend

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Availability of 1:10,000 Scale Geology Mapping

The following information represents the availability of the key components of the 1:10,000 scale geological data.

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	No deposits are mapped	Full	Full	No coverage
2	510.0	No deposits are mapped	No coverage	No coverage	No coverage
N3	1518.0	No deposits are mapped	Full	Full	No coverage

Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not all themes are mapped or available on every map sheet. Therefore a coverage layer showing the availability of the four themes is presented above.

The definitions of coverage are as follows:

Geology	Full Coverage	Partial Coverage	No Coverage
Bedrock	The whole tile has been mapped	Some but not all the tile has been mapped	No coverage
Superficial	The whole tile has been mapped	Some but not all of the tile has been mapped	No coverage
Artificial	Some deposits are mapped on this tile	-	No deposits are mapped
Mass Movement	Some deposits are mapped on this tile	-	No coverage

1 Geology (1:10,000 scale).

1.1 Artificial Ground Map (1:10,000 scale)



Artificial Ground Legend

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Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Disturbed Ground (undivided)

Worked Ground (undivided)

Landscaped Ground (undivided)

Infilled Ground

Reclaimed Ground

1. Geology 1:10,000 scale

1.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

Are there any records of Artificial/ Made Ground within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found.

1.2 Superficial Deposits and Landslips Map (1:10,000 scale)



Artificial Ground Legend

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Site Outline

500
1000
Search Buffers (m)

1.2 Superficial Deposits and Landslips

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
2	0.0	On Site	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
3	3.0	SE	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton

1.2.2 Landslip

Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale?

No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:10,000 scale

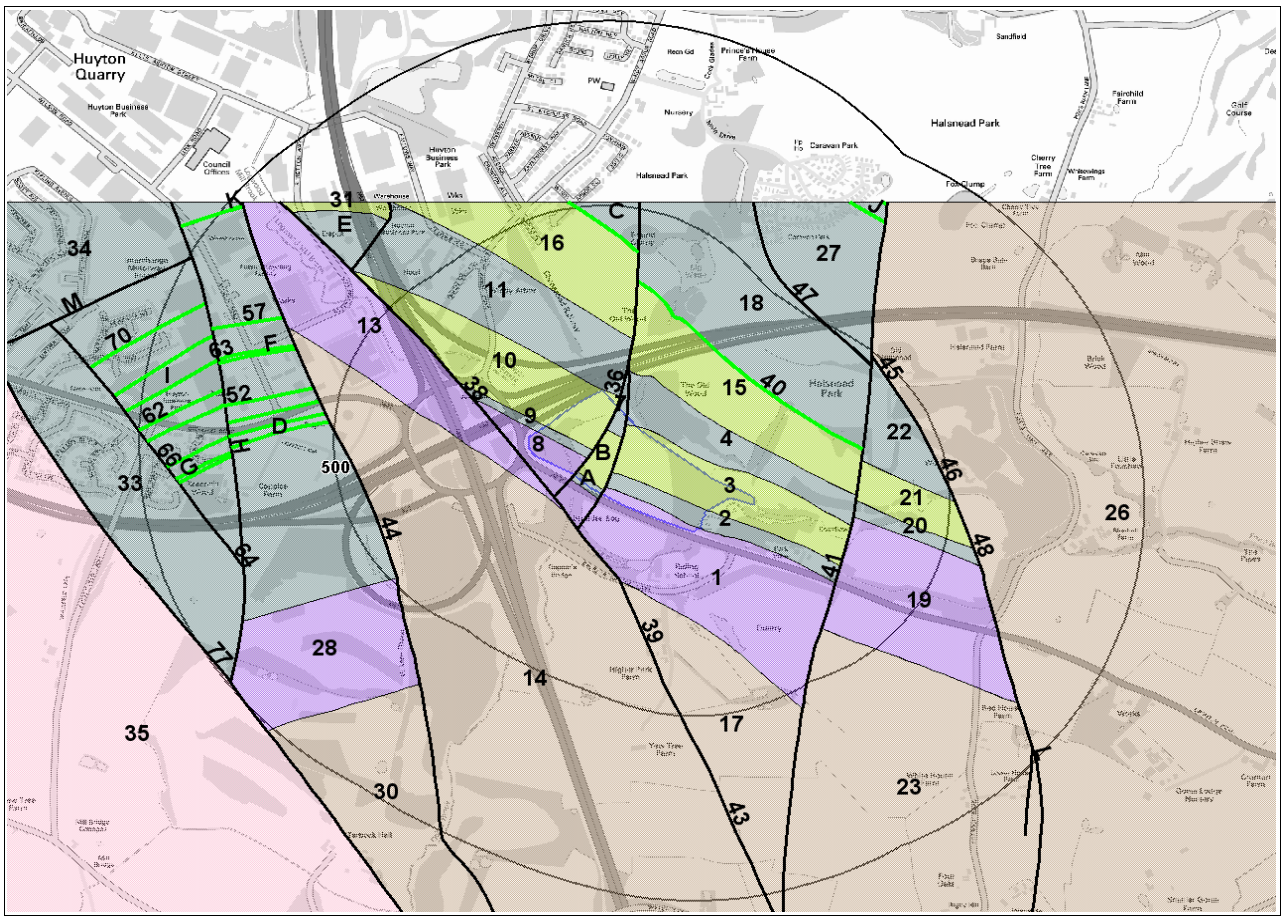
This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

1.3 Bedrock and Faults Map (1:10,000 scale)

NW N NE

W E

SW S SE



Bedrock and Faults Legend

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Site Outline

500
1000
Search Buffers (m)

1.3 Bedrock and Faults

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

1.3.1 Bedrock/ Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary at 1:10,000 scale.

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	ETM-MDSC	Etruria Formation - Mudstone, Sandstone And Conglomerate	Westphalian Age
2	0.0	On Site	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
3	0.0	On Site	PMCM-SDST	Pennine Middle Coal Measures Formation - Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
4	0.0	On Site	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
5A	0.0	On Site	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
6B	0.0	On Site	PMCM-SDST	Pennine Middle Coal Measures Formation - Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
7	0.0	On Site	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
8	0.0	On Site	ETM-MDSC	Etruria Formation - Mudstone, Sandstone And Conglomerate	Westphalian Age
9	0.0	On Site	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
10	0.0	On Site	PMCM-SDST	Pennine Middle Coal Measures Formation - Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
11	0.0	On Site	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
12A	11.0	SW	ETM-MDSC	Etruria Formation - Mudstone, Sandstone And Conglomerate	Westphalian Age
13	29.0	SW	ETM-MDSC	Etruria Formation - Mudstone, Sandstone And Conglomerate	Westphalian Age
14	73.0	SW	KNSF-SDST	Kinnerton Sandstone Formation - Sandstone	Early Triassic Epoch
15	85.0	NE	PMCM-SDST	Pennine Middle Coal Measures Formation - Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
16	156.0	NE	PMCM-SDST	Pennine Middle Coal Measures Formation - Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
17	194.0	SW	KNSF-SDST	Kinnerton Sandstone Formation - Sandstone	Early Triassic Epoch
18	255.0	NE	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
19	256.0	E	ETM-MDSC	Etruria Formation - Mudstone, Sandstone And Conglomerate	Westphalian Age
20	257.0	E	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
21	260.0	E	PMCM-SDST	Pennine Middle Coal Measures Formation - Sandstone	Bolsovian Sub-age - Duckmantian Sub-age

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
22	294.0	E	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
23	378.0	SE	KNSF-SDST	Kinnerton Sandstone Formation - Sandstone	Early Triassic Epoch
24C	382.0	N	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
25D	434.0	W	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
26	463.0	NE	KNSF-SDST	Kinnerton Sandstone Formation - Sandstone	Early Triassic Epoch
27	470.0	NE	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
28	485.0	SW	ETM-MDSC	Etruria Formation - Mudstone, Sandstone And Conglomerate	Westphalian Age

1.3.2 Faults

Are there any records of Faults within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance (m)	Direction	Category Description	Feature Description
36	0.0	On Site	FAULT	Normal fault, observed; crossmark on downthrow side
37B	0.0	On Site	FAULT	Normal fault, observed; crossmark on downthrow side
38	29.0	SW	FAULT	Normal fault, inferred; crossmarks on downthrow side
39	190.0	SW	FAULT	Normal fault, observed; crossmark on downthrow side
40	255.0	NE	ROCK	Coal seam, observed (Coal_Obs+BedRock)
41	256.0	E	FAULT	Normal fault, observed; crossmark on downthrow side
42C	382.0	N	ROCK	Coal seam, inferred (Coal_Inf+BedRock)
43	418.0	S	FAULT	Normal fault, inferred; crossmarks on downthrow side
44	434.0	W	FAULT	Normal fault, inferred; crossmarks on downthrow side
45	463.0	NE	FAULT	Normal fault, inferred; crossmarks on downthrow side
46	466.0	NE	FAULT	Normal fault, observed; crossmark on downthrow side
47	470.0	NE	FAULT	Normal fault, observed; crossmark on downthrow side

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of great Britain at 1:10,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as Faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2 Geology 1:50,000 Scale

2.1 Artificial Ground Map



Ground Workings Legend

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Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Disturbed Ground (undivided)

Worked Ground (undivided)

Landscaped Ground (undivided)

Infilled Ground

Reclaimed Ground

2. Geology 1:50,000 scale

2.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 097

2.1.1 Artificial/ Made Ground

Are there any records of Artificial/ Made Ground within 500m of the study site boundary? No

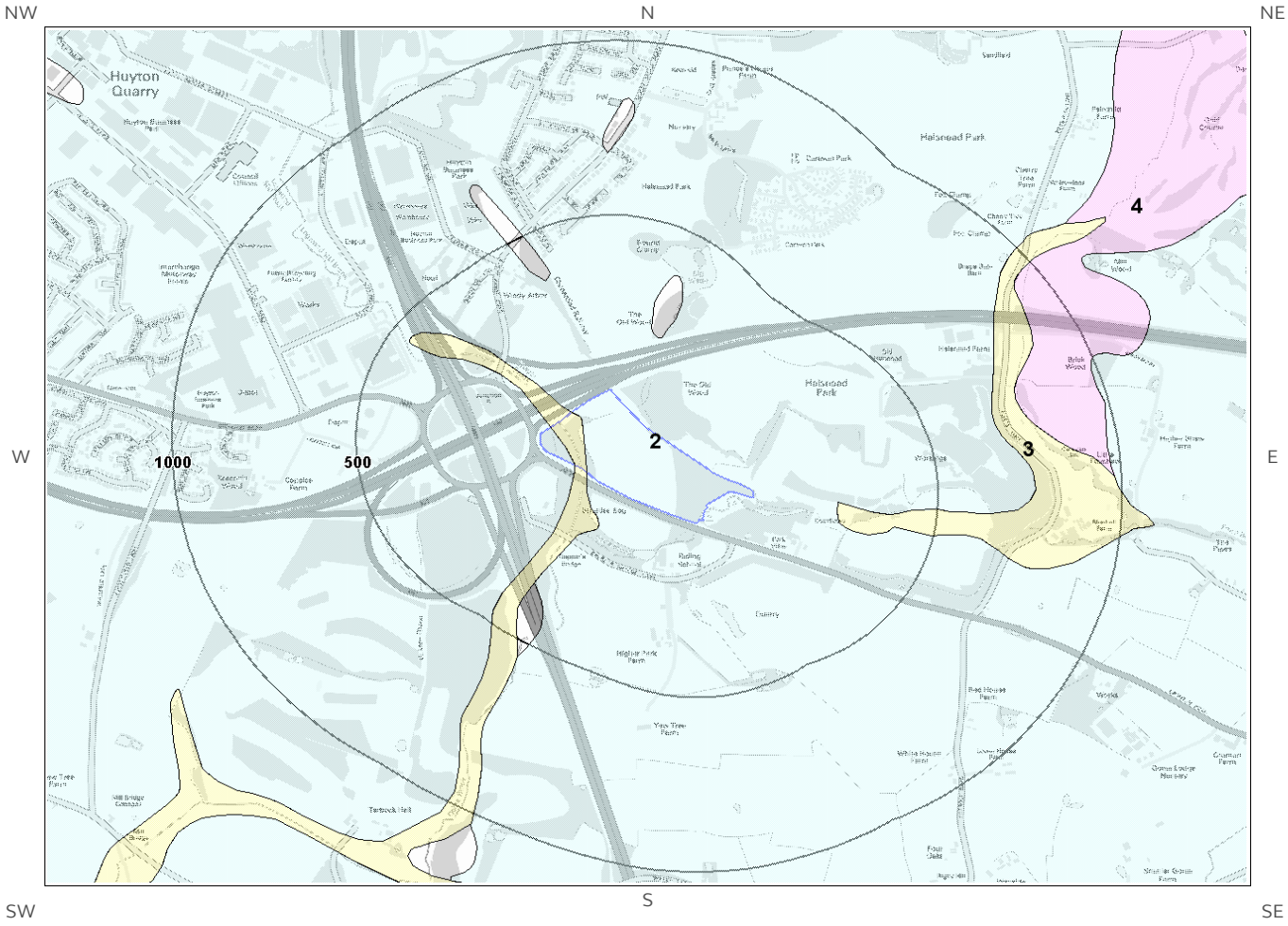
Database searched and no data found.

2.1.2 Permeability of Artificial Ground

Are there any records relating to permeability of artificial ground within the study site boundary? No

Database searched and no data found.

2.2 Superficial Deposits and Landslips Map (1:50,000 scale)



Ground Workings Legend

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Site Outline

500
1000
Search Buffers (m)

2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary? Yes

ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
2	0.0	On Site	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
3	229.0	E	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

2.2.2 Permeability of Superficial Ground

Are there any records relating to permeability of superficial ground within the study site boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	High	Low
0.0	On Site	Intergranular	High	Very Low

2.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

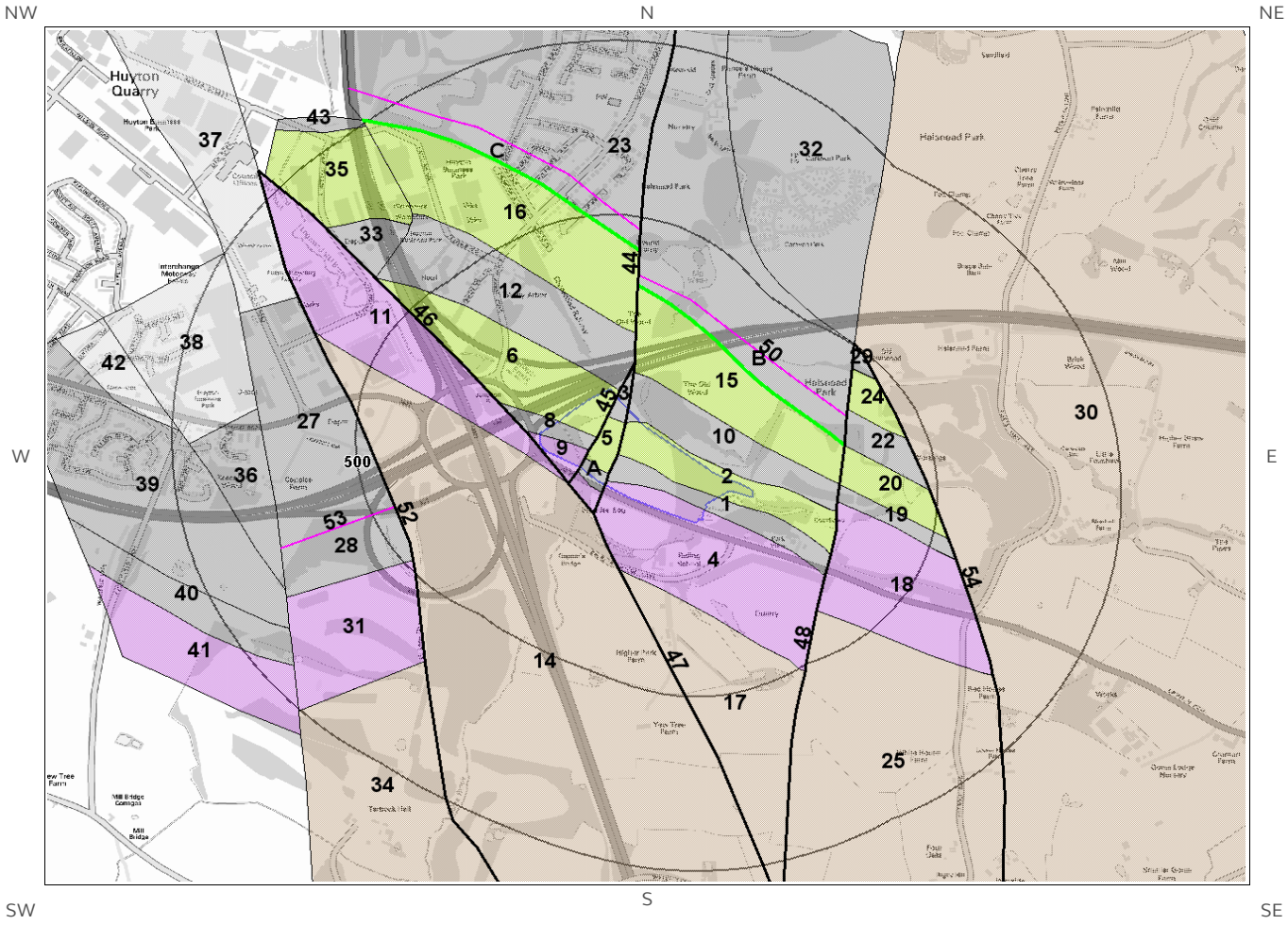
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2.2.4 Landslip Permeability

Are there any records relating to permeability of landslips within the study site boundary? No

Database searched and no data found.

2.3 Bedrock and Faults Map (1:50,000 scale)



Ground Workings Legend

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Site Outline

500
1000
Search Buffers (m)

2.3 Bedrock, Solid Geology & Faults

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 097

2.3.1 Bedrock/Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary:

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
1	0.0	On Site	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
2	0.0	On Site	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
3	0.0	On Site	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
4	0.0	On Site	ETM-MDSC	ETRURIA FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE	WESTPHALIAN
5	0.0	On Site	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
6	0.0	On Site	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
7A	0.0	On Site	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
8	0.0	On Site	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
9	0.0	On Site	ETM-MDSC	ETRURIA FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE	WESTPHALIAN
10	0.0	On Site	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
11	7.0	SW	ETM-MDSC	ETRURIA FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE	WESTPHALIAN
12	10.0	NE	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
13A	12.0	SW	ETM-MDSC	ETRURIA FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE	WESTPHALIAN
14	40.0	SW	KNSF-SDST	KINNERTON SANDSTONE FORMATION - SANDSTONE	-
15	81.0	NE	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
16	173.0	NE	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
17	200.0	SW	KNSF-SDST	KINNERTON SANDSTONE FORMATION - SANDSTONE	-
18	229.0	E	ETM-MDSC	ETRURIA FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE	WESTPHALIAN
19	229.0	E	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
20	236.0	E	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
21B	256.0	NE	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
22	283.0	NE	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
23	324.0	NE	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
24	348.0	NE	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
25	370.0	SE	KNSF-SDST	KINNERTON SANDSTONE FORMATION - SANDSTONE	-
26C	406.0	N	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
27	433.0	W	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
28	434.0	SW	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
29	444.0	NE	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
30	445.0	NE	KNSF-SDST	KINNERTON SANDSTONE FORMATION - SANDSTONE	-
31	478.0	SW	ETM-MDSC	ETRURIA FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE	WESTPHALIAN

2.3.2 Permeability of Bedrock Ground

Are there any records relating to permeability of bedrock ground within the study site boundary? Yes

Distance	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Fracture	Moderate	Low
0.0	On Site	Fracture	Moderate	Low
0.0	On Site	Fracture	High	Moderate
0.0	On Site	Fracture	Moderate	Low
0.0	On Site	Fracture	Moderate	Low
40.0	SW	Intergranular	High	High

2.3.3 Faults

Are there any records of Faults within 500m of the study site boundary? Yes

ID	Distance	Direction	Category Description	Feature Description
44	0.0	On Site	FAULT	Fault, observed
45	0.0	On Site	FAULT	Fault, inferred, displacement unknown
46	7.0	SW	FAULT	Fault, inferred

ID	Distance	Direction	Category Description	Feature Description
47	55.0	SW	FAULT	Fault, inferred
48	229.0	E	FAULT	Fault, observed
49B	256.0	NE	ROCK	Coal seam, inferred
50	324.0	NE	FOSSIL_HORIZON	Marine band
51C	406.0	N	ROCK	Coal seam, inferred
52	433.0	W	FAULT	Fault, inferred
53	434.0	SW	FOSSIL_HORIZON	Marine band
54	445.0	NE	FAULT	Fault, observed
55C	463.0	N	FOSSIL_HORIZON	Marine band

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/Solid Geology and linear features such as Faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nation wide coverage.

3 Radon Data

3.1 Radon Affected Areas

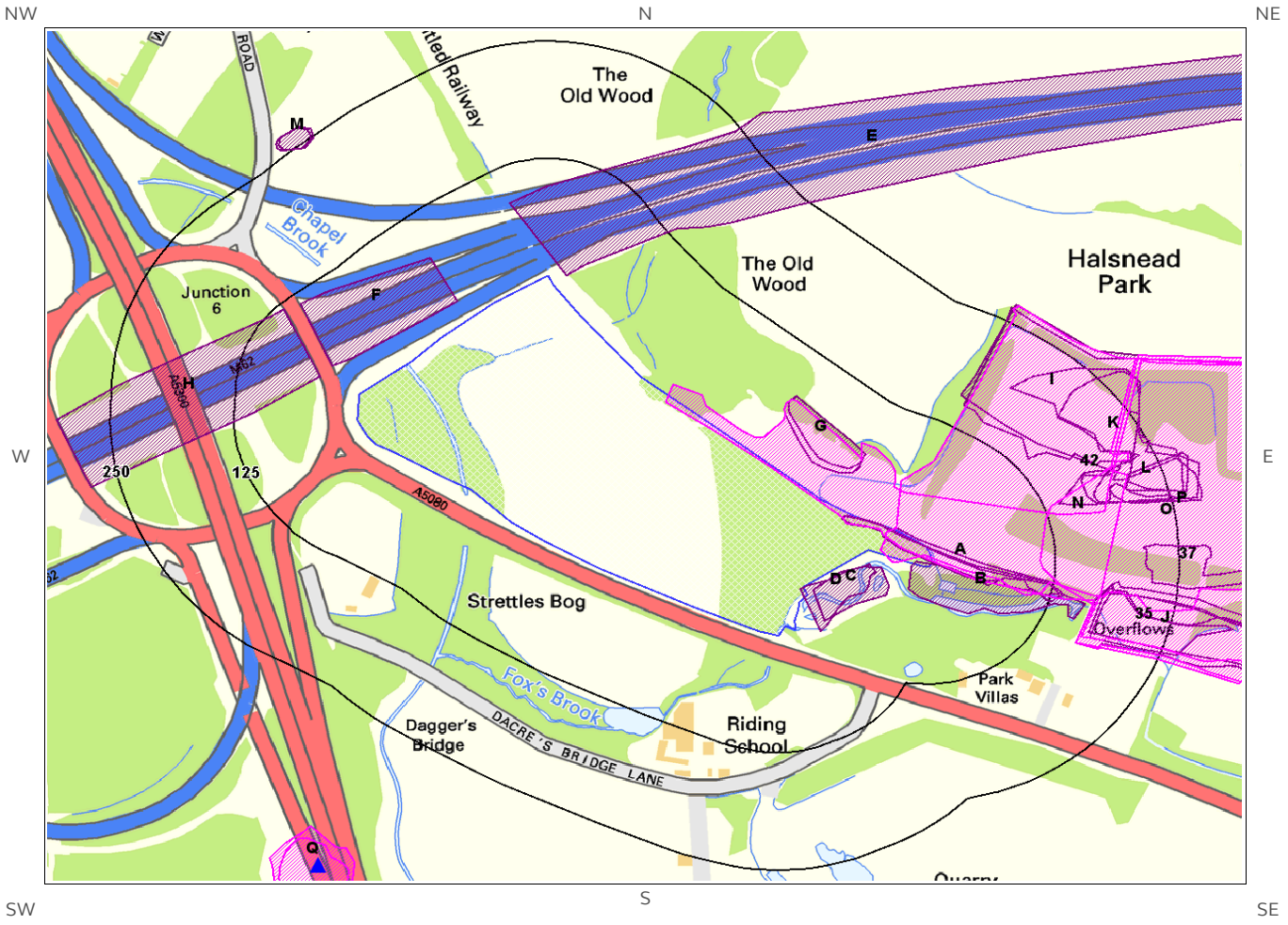
Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

3.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

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4 Ground Workings Map



Ground Workings Legend

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Site Outline

125
250
Search Buffers (m)

Historic Surface Ground Workings

Historic Underground Workings

Current Ground Workings

4 Ground Workings

4.1 Historical Surface Ground Working Features derived from Historical Mapping

This dataset is based on Groundsure's unique Historical Land Use Database derived from 1:10,560 and 1:10,000 scale historical mapping

Are there any Historical Surface Ground Working Features within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Use	Date
1A	0.0	On Site	347119 389187	Refuse Heap	1947
2A	0.0	On Site	347101 389190	Refuse Heap	1925
3A	0.0	On Site	347131 389186	Refuse Heap	1967
4N	0.0	On Site	347298 389238	Colliery	1925
5B	0.0	On Site	347164 389155	Ponds	1975
6B	0.0	On Site	347164 389155	Ponds	1989
7D	0.0	On Site	347004 389147	Pond	1925
8C	6.0	SE	347016 389151	Ponds	1989
9C	6.0	SE	347016 389151	Ponds	1967
10D	6.0	SE	347016 389151	Ponds	1975
11E	15.0	NE	347090 389612	Cuttings	1989
12E	15.0	NE	347090 389612	Cuttings	1975
13F	23.0	NW	346539 389452	Cuttings	1989
14F	23.0	NW	346539 389452	Cuttings	1975
15G	27.0	NE	346988 389319	Pond	1891
16G	27.0	NE	346988 389319	Unspecified Pit	1906
17G	27.0	NE	346988 389319	Unspecified Pit	1925
18G	27.0	NE	346988 389319	Unspecified Pit	1947
19G	34.0	NE	346992 389323	Pond	1949
20G	34.0	NE	346992 389323	Pond	1967
21H	43.0	NW	346347 389360	Cuttings	1975

ID	Distance (m)	Direction	NGR	Use	Date
22H	43.0	NW	346347 389360	Cuttings	1989
23O	110.0	E	347560 389208	Colliery	1947
24I	140.0	NE	347217 389372	Brick Works	1947
25K	141.0	E	347273 389319	Refuse Heap	1975
26I	152.0	NE	347178 389341	Brick Works	1949
27J	167.0	E	347397 389106	Reservoir	1925
28J	167.0	SE	347398 389106	Reservoir	1947
29K	169.0	E	347298 389318	Refuse Heap	1967
30J	170.0	SE	347403 389112	Reservoir	1949
31P	170.0	SE	347481 389289	Colliery	1949
32J	175.0	E	347393 389108	Pond	1967
33J	175.0	E	347393 389108	Pond	1975
34L	176.0	E	347306 389272	Refuse Heap	1947
35	177.0	E	347329 389120	Reservoir	1989
36L	193.0	E	347293 389296	Refuse Heap	1925
37	214.0	E	347598 389226	Refuse Heap	1925
38L	214.0	E	347326 389281	Refuse Heap	1949
39M	244.0	NW	346456 389637	Pond	1949
40M	246.0	NW	346453 389636	Pond	1947

4.2 Historical Underground Working Features derived from Historical Mapping

This data is derived from the Groundsure unique Historical Land Use Database. It contains data derived from 1:10,000 and 1:10,560 historical Ordnance Survey Mapping and includes some natural topographical features (Shake Holes for example) as well as manmade features that may have implications for ground stability. Underground and mining features have been identified from surface features such as shafts. The distance that these extend underground is not shown.

Are there any Historical Underground Working Features within 1000m of the study site boundary? Yes

The following Historical Underground Working Features are provided by Groundsure:

ID	Distance (m)	Direction	NGR	Use	Date
41N	0.0	On Site	347298 389238	Colliery	1925

ID	Distance (m)	Direction	NGR	Use	Date
42	0.0	On Site	347474 389254	Unspecified Mine	1967
43O	110.0	E	347560 389208	Colliery	1947
44P	170.0	SE	347481 389289	Colliery	1949
45Q	382.0	SW	346471 388861	Disused Delf	1975
46Q	382.0	SW	346471 388861	Disused Delf	1967
47Q	382.0	SW	346471 388861	Disused Delf	1949
48Q	382.0	SW	346471 388861	Disused Delf	1989
49Q	392.0	SW	346474 388853	Disused Delf	1905
50Q	392.0	SW	346474 388853	Disused Delf	1938
51Q	392.0	SW	346474 388853	Disused Delf	1925
52Q	392.0	SW	346474 388853	Delf	1891
Not shown	543.0	NW	346260 390259	Disused Colliery	1925
Not shown	543.0	NW	346260 390259	Disused Colliery	1947
Not shown	547.0	N	346525 390078	Old Colliery	1906
Not shown	553.0	N	346513 390079	Old Colliery	1891
Not shown	576.0	N	346514 390037	Unspecified Disused Shafts	1966
Not shown	589.0	N	346532 390057	Unspecified Disused Shafts	1966
Not shown	589.0	N	346528 390054	Unspecified Old Shafts	1947
Not shown	589.0	N	346528 390054	Unspecified Old Shafts	1925
Not shown	590.0	N	346530 390056	Unspecified Old Shaft	1947
Not shown	613.0	N	346559 390088	Unspecified Old Shafts	1947
Not shown	613.0	N	346559 390088	Unspecified Old Shafts	1925
Not shown	614.0	N	346563 390092	Unspecified Disused Shafts	1966
Not shown	615.0	N	346561 390091	Unspecified Old Shaft	1947
Not shown	634.0	N	346596 390120	Unspecified Disused Shafts	1966
Not shown	635.0	N	346519 390099	Unspecified Old Shaft	1947
Not shown	635.0	N	346590 390118	Unspecified Old Shafts	1947
Not shown	635.0	N	346590 390118	Unspecified Old Shafts	1925
Not shown	637.0	N	346593 390119	Unspecified Old Shaft	1947

ID	Distance (m)	Direction	NGR	Use	Date
Not shown	682.0	NW	346326 390266	Colliery	1891
Not shown	709.0	N	346361 390283	Disused Colliery	1906
Not shown	798.0	N	346351 390316	Unspecified Disused Mine	1966
Not shown	856.0	NW	346370 390282	Unspecified Disused Shaft	1966
Not shown	861.0	NW	346363 390282	Unspecified Old Shafts	1947
Not shown	861.0	NW	346363 390282	Unspecified Old Shafts	1925
Not shown	862.0	NW	346364 390283	Unspecified Old Shaft	1947
Not shown	867.0	NW	346351 390283	Unspecified Shafts	1891
Not shown	870.0	NW	346326 390292	Unspecified Old Shaft	1947
Not shown	871.0	NW	346369 390298	Unspecified Disused Shaft	1966
Not shown	875.0	NW	346364 390298	Unspecified Old Shafts	1947
Not shown	875.0	NW	346364 390298	Unspecified Old Shafts	1925
Not shown	875.0	NW	346366 390299	Unspecified Old Shaft	1947
Not shown	897.0	NW	346085 390224	Old Colliery	1906
Not shown	897.0	NW	346085 390224	Old Colliery	1891
Not shown	897.0	NW	346085 390224	Old Colliery	1925
Not shown	897.0	NW	346085 390224	Old Colliery	1947
Not shown	897.0	NW	346088 390225	Old Colliery	1947
Not shown	898.0	NW	346096 390220	Unspecified Disused Mine	1966
Not shown	927.0	NW	346097 390210	Unspecified Disused Shaft	1966
Not shown	934.0	NW	346095 390214	Unspecified Old Shaft	1947
Not shown	936.0	NW	346092 390213	Unspecified Old Shaft	1925
Not shown	936.0	NW	346092 390213	Unspecified Old Shaft	1947

4.3 Current Ground Workings

This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

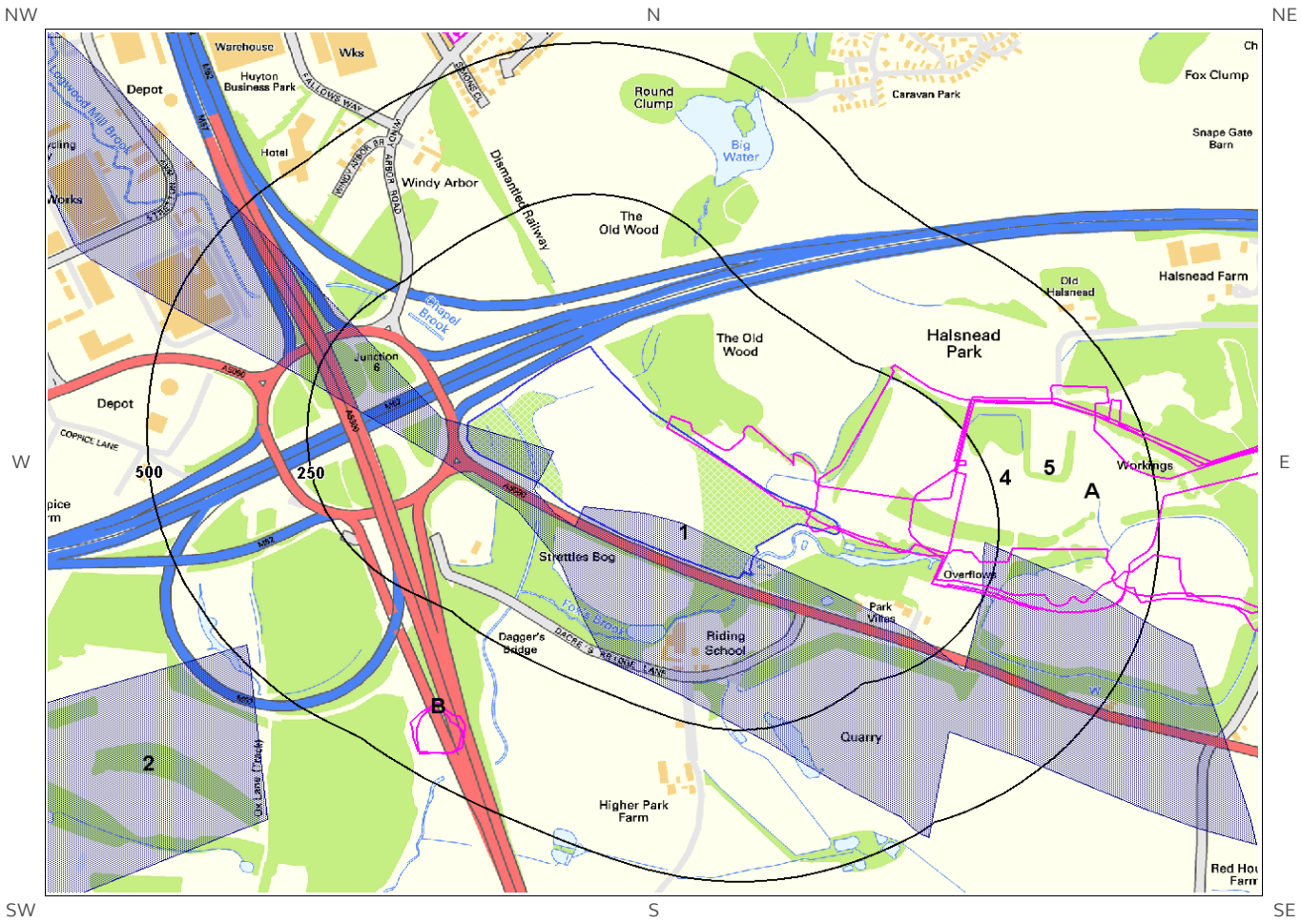
Are there any BGS Current Ground Workings within 1000m of the study site boundary? Yes

The following Current Ground Workings information is provided by British Geological Survey:

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	325.0	SE	347111 388825	Clay & Shale	Cronton Claypit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Active
95Q	415.0	SW	346477 388861	Sandstone	Bank Hey Delf	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	582.0	N	346514 390038	Coal, Deep	Halsnead Colliery, Bye Pit	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
Not shown	594.0	N	346530 390056	Coal, Deep	Halsnead Colliery, No. 1 Pit	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
Not shown	617.0	N	346562 390089	Coal, Deep	Halsnead Colliery, No. 2 Pit	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
Not shown	641.0	N	346596 390121	Coal, Deep	Halsnead Colliery, No. 3 Pit	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
Not shown	841.0	N	346486 390301	Coal, Deep	Hig Hey Colliery Coal Pit	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
Not shown	862.0	NW	346364 390280	Coal, Deep	Houghton's Hey Colliery	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
Not shown	875.0	NW	346367 390295	Coal, Deep	Halsnead Colliery Shaft No 5	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
Not shown	881.0	NW	346327 390284	Coal, Deep	Houghton's Hey Colliery Shaft	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
Not shown	891.0	N	346494 390355	Coal, Deep	Hig Hey Colliery Coal Pit	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased

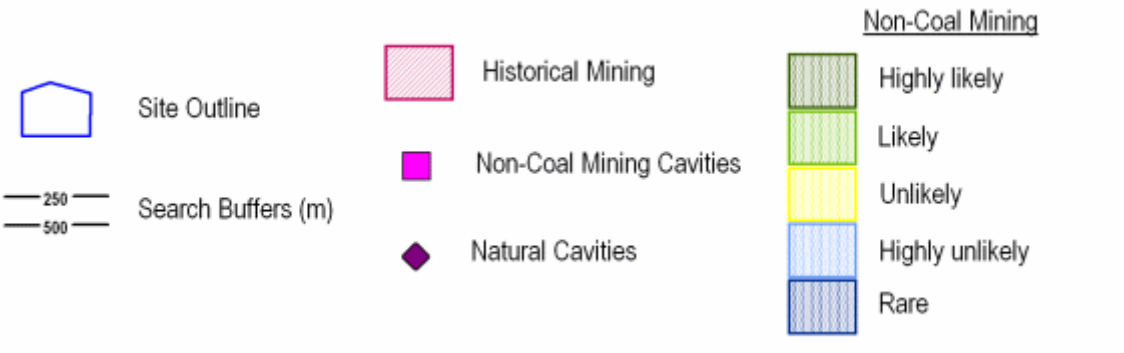
ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	934.0	NW	346095 390210	Coal, Deep	Cronton Colliery Pit	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
Not shown	936.0	N	346370 390362	Coal, Deep	Hig Hey Colliery Shaft	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
Not shown	946.0	N	346371 390373	Coal, Deep	Hig Hey Colliery Shaft	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
Not shown	946.0	E	348000 388900	Sandstone	Fox's Bank	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	959.0	NW	346108 390249	Coal, Deep	Cronton Colliery Pit	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
Not shown	973.0	N	346377 390404	Coal, Deep	Hig Hey Colliery Shaft	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased

5 Mining, Extraction & Natural Cavities Map



Mining, Extraction and Natural Cavities Legend

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5 Mining, Extraction & Natural Cavities

5.1 Historical Mining

This dataset is derived from Groundsure unique Historical Land-use Database that are indicative of mining or extraction activities.

Are there any Historical Mining areas within 1000m of the study site boundary? Yes

The following Historical Mining information is provided by Groundsure:

ID	Distance (m)	Direction	NGR	Details	Date
4	0.0	On Site	347298 389238	Colliery	1925
5	0.0	On Site	347474 389254	Unspecified Mine	1967
6A	110.0	E	347560 389208	Colliery	1947
7A	170.0	SE	347481 389289	Colliery	1949
8B	382.0	SW	346471 388861	Disused Delf	1989
9B	382.0	SW	346471 388861	Disused Delf	1975
10B	382.0	SW	346471 388861	Disused Delf	1967
11B	382.0	SW	346471 388861	Disused Delf	1949
12B	392.0	SW	346474 388853	Disused Delf	1925
13B	392.0	SW	346474 388853	Disused Delf	1905
14B	392.0	SW	346474 388853	Delf	1891
15B	392.0	SW	346474 388853	Disused Delf	1938
16C	543.0	NW	346260 390259	Disused Colliery	1947
17C	543.0	NW	346260 390259	Disused Colliery	1925
18D	547.0	N	346525 390078	Old Colliery	1906
19D	553.0	N	346513 390079	Old Colliery	1891
Not shown	576.0	N	346514 390037	Unspecified Disused Shafts	1966
Not shown	589.0	N	346532 390057	Unspecified Disused Shafts	1966
Not shown	589.0	N	346528 390054	Unspecified Old Shafts	1947
Not shown	589.0	N	346528 390054	Unspecified Old Shafts	1925

ID	Distance (m)	Direction	NGR	Details	Date
Not shown	590.0	N	346530 390056	Unspecified Old Shaft	1947
Not shown	613.0	N	346559 390088	Unspecified Old Shafts	1925
Not shown	613.0	N	346559 390088	Unspecified Old Shafts	1947
Not shown	614.0	N	346563 390092	Unspecified Disused Shafts	1966
Not shown	615.0	N	346561 390091	Unspecified Old Shaft	1947
Not shown	634.0	N	346596 390120	Unspecified Disused Shafts	1966
Not shown	635.0	N	346519 390099	Unspecified Old Shaft	1947
Not shown	635.0	N	346590 390118	Unspecified Old Shafts	1947
Not shown	635.0	N	346590 390118	Unspecified Old Shafts	1925
Not shown	637.0	N	346593 390119	Unspecified Old Shaft	1947
Not shown	682.0	NW	346326 390266	Colliery	1891
Not shown	709.0	N	346361 390283	Disused Colliery	1906
Not shown	798.0	N	346351 390316	Unspecified Disused Mine	1966
Not shown	856.0	NW	346370 390282	Unspecified Disused Shaft	1966
Not shown	861.0	NW	346363 390282	Unspecified Old Shafts	1925
Not shown	861.0	NW	346363 390282	Unspecified Old Shafts	1947
Not shown	862.0	NW	346364 390283	Unspecified Old Shaft	1947
Not shown	867.0	NW	346351 390283	Unspecified Shafts	1891
Not shown	870.0	NW	346326 390292	Unspecified Old Shaft	1947
Not shown	871.0	NW	346369 390298	Unspecified Disused Shaft	1966
Not shown	875.0	NW	346364 390298	Unspecified Old Shafts	1925
Not shown	875.0	NW	346364 390298	Unspecified Old Shafts	1947
Not shown	875.0	NW	346366 390299	Unspecified Old Shaft	1947
Not shown	897.0	NW	346085 390224	Old Colliery	1891
Not shown	897.0	NW	346085 390224	Old Colliery	1906
Not shown	897.0	NW	346085 390224	Old Colliery	1925
Not shown	897.0	NW	346085 390224	Old Colliery	1947
Not shown	897.0	NW	346088 390225	Old Colliery	1947
Not shown	898.0	NW	346096 390220	Unspecified Disused Mine	1966

ID	Distance (m)	Direction	NGR	Details	Date
Not shown	927.0	NW	346097 390210	Unspecified Disused Shaft	1966
Not shown	934.0	NW	346095 390214	Unspecified Old Shaft	1947
Not shown	936.0	NW	346092 390213	Unspecified Old Shaft	1947
Not shown	936.0	NW	346092 390213	Unspecified Old Shaft	1925

5.2 Coal Mining

This dataset provides information as to whether the study site lies within a known coal mining affected area as defined by the coal authority.

Are there any Coal Mining areas within 1000m of the study site boundary? Yes

The following Coal Mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0.0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

5.3 Johnson Poole and Bloomer

This dataset provides information as to whether the study site lies within an area where JPB hold information relating to mining.

Are there any JPB Mining areas within 1000m of the study site boundary? No

The following information provided by JPB is not represented on mapping: Database searched and no data found.

5.4 Non-Coal Mining

This dataset provides information as to whether the study site lies within an area which may have been subject to non-coal historic mining.

Are there any Non-Coal Mining areas within 1000m of the study site boundary? Yes

The following non-coal mining information is provided by the BGS:

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
1	0.0	On Site	Not available	Vein Mineral	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
2	478.0	SW	Not available	Vein Mineral	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
3	898.0	NW	Not available	Vein Mineral	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered

5.5 Non-Coal Mining Cavities

This dataset provides information from the Peter Brett Associates (PBA) mining cavities database (compiled for the national study entitled "Review of mining instability in Great Britain, 1990" PBA has also continued adding to this database) on mineral extraction by mining.

Are there any Non-Coal Mining cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.6 Natural Cavities

This dataset provides information based on Peter Brett Associates natural cavities database.

Are there any Natural Cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.7 Brine Extraction

This data provides information from the Coal Authority issued on behalf of the Cheshire Brine Subsidence Compensation Board.

Are there any Brine Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.8 Gypsum Extraction

This dataset provides information on Gypsum extraction from British Gypsum records.

Are there any Gypsum Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.9 Tin Mining

This dataset provides information on tin mining areas and is derived from tin mining records. This search is based upon postcode information to a sector level..

Are there any Tin Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.10 Clay Mining

This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

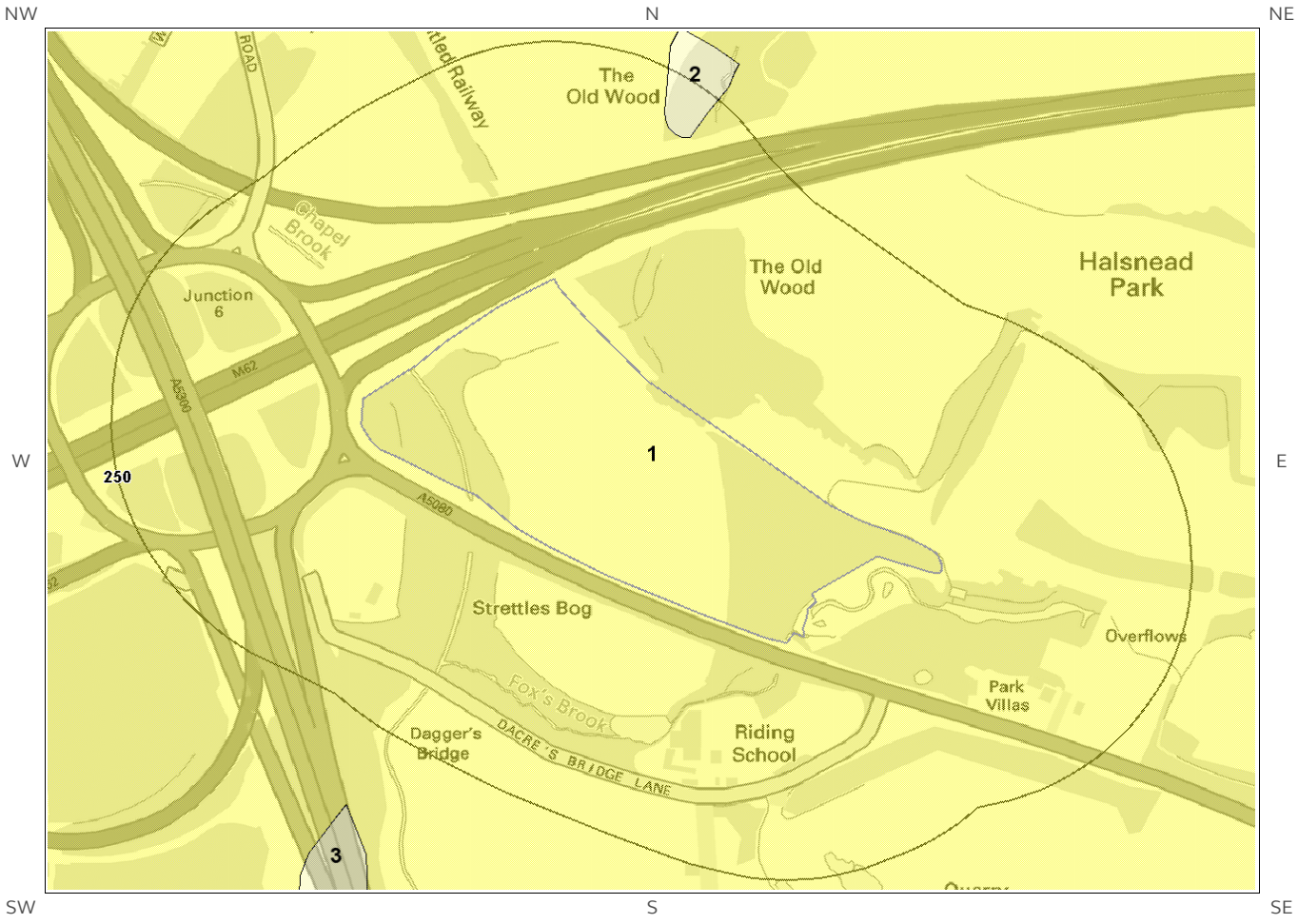
Are there any Clay Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

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6 Natural Ground Subsidence

6.1 Shrink-Swell Clay Map



Shrink Swell Clay Legend

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6.2 Landslides Map

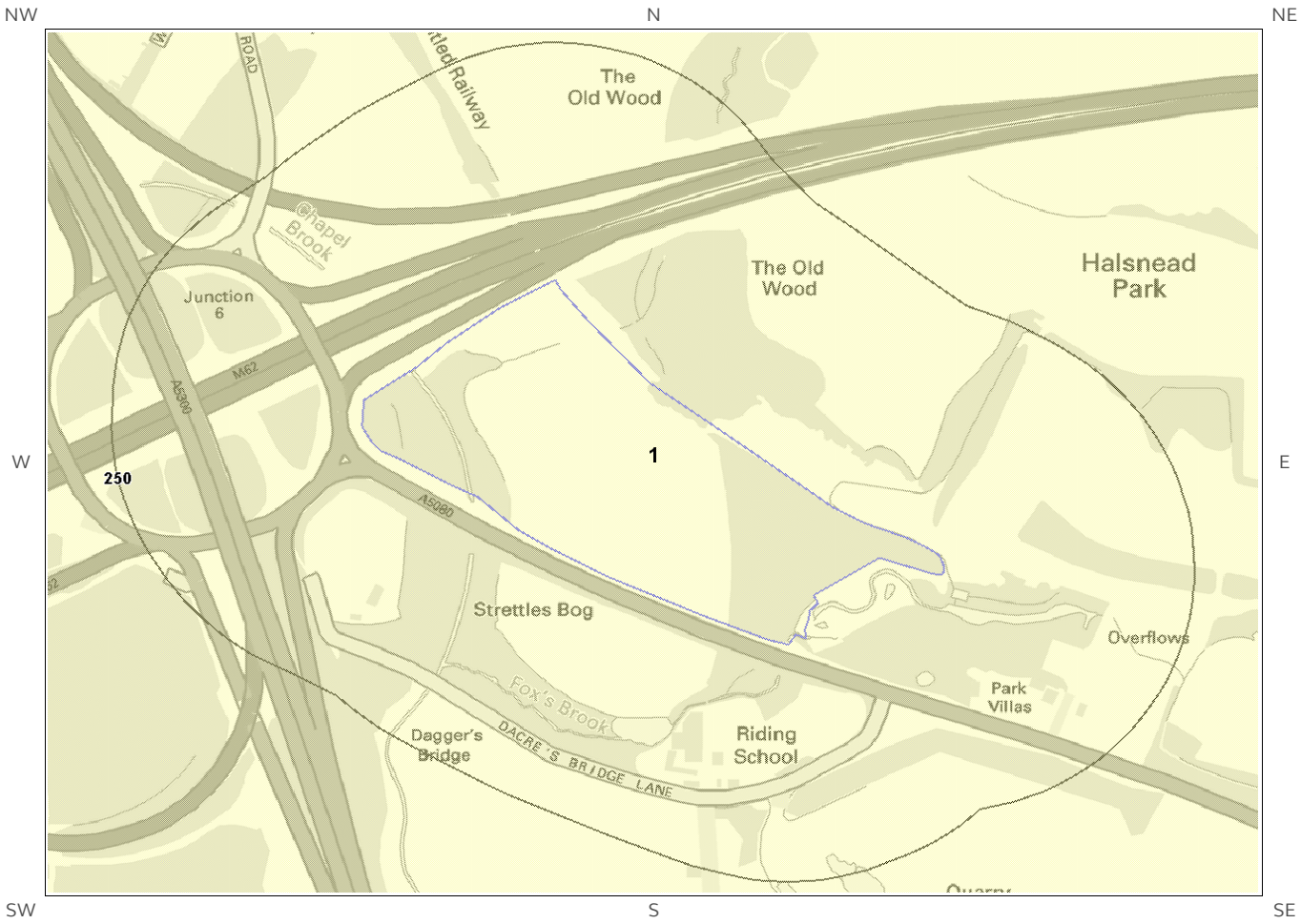


Landslides Legend

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6.3 Ground Dissolution of Soluble Rocks Map



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Ground Dissolution Soluble Rocks Legend



6.4 Compressible Deposits Map



Compressible Deposits Legend

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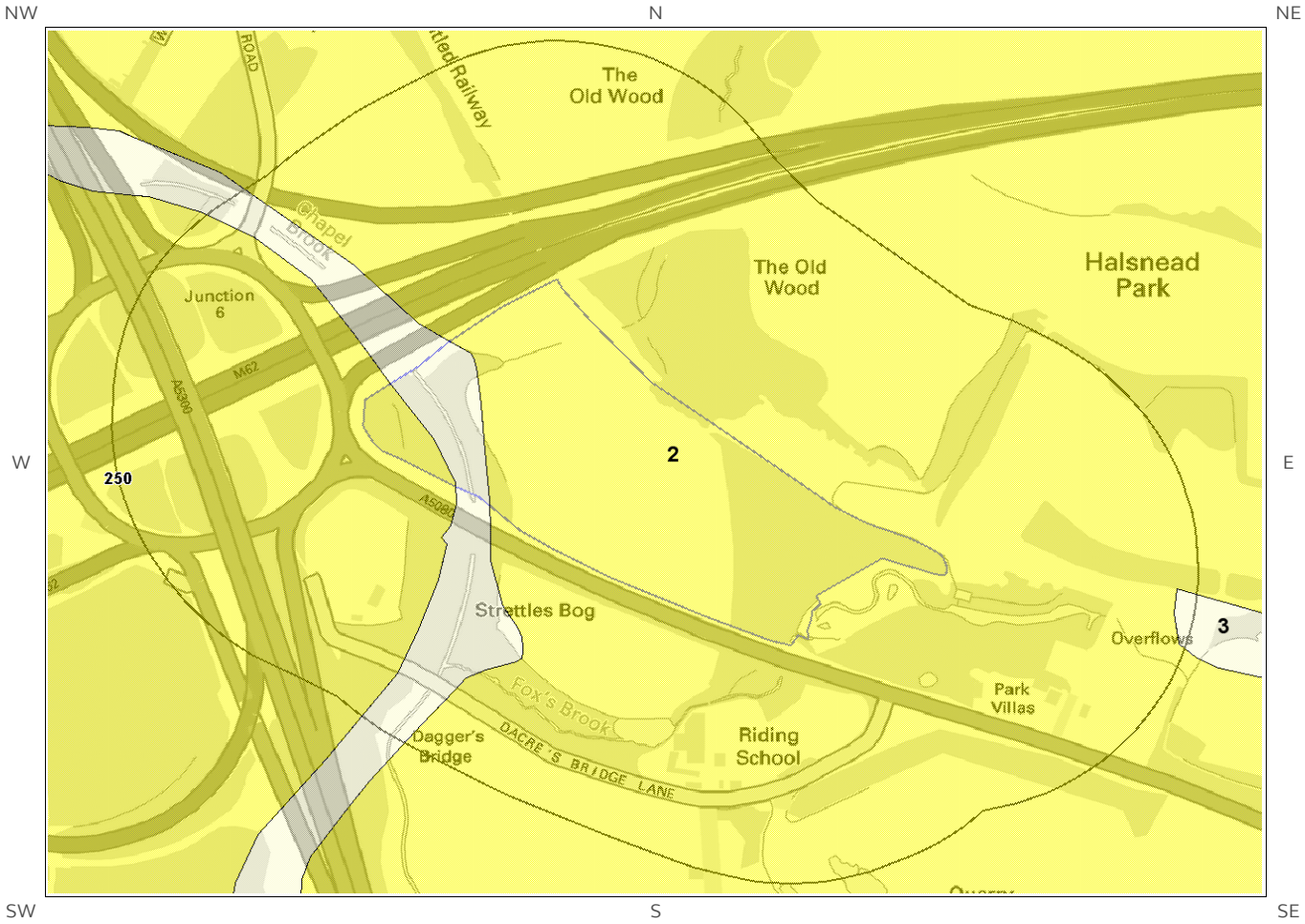
Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

6.5 Collapsible Deposits Map

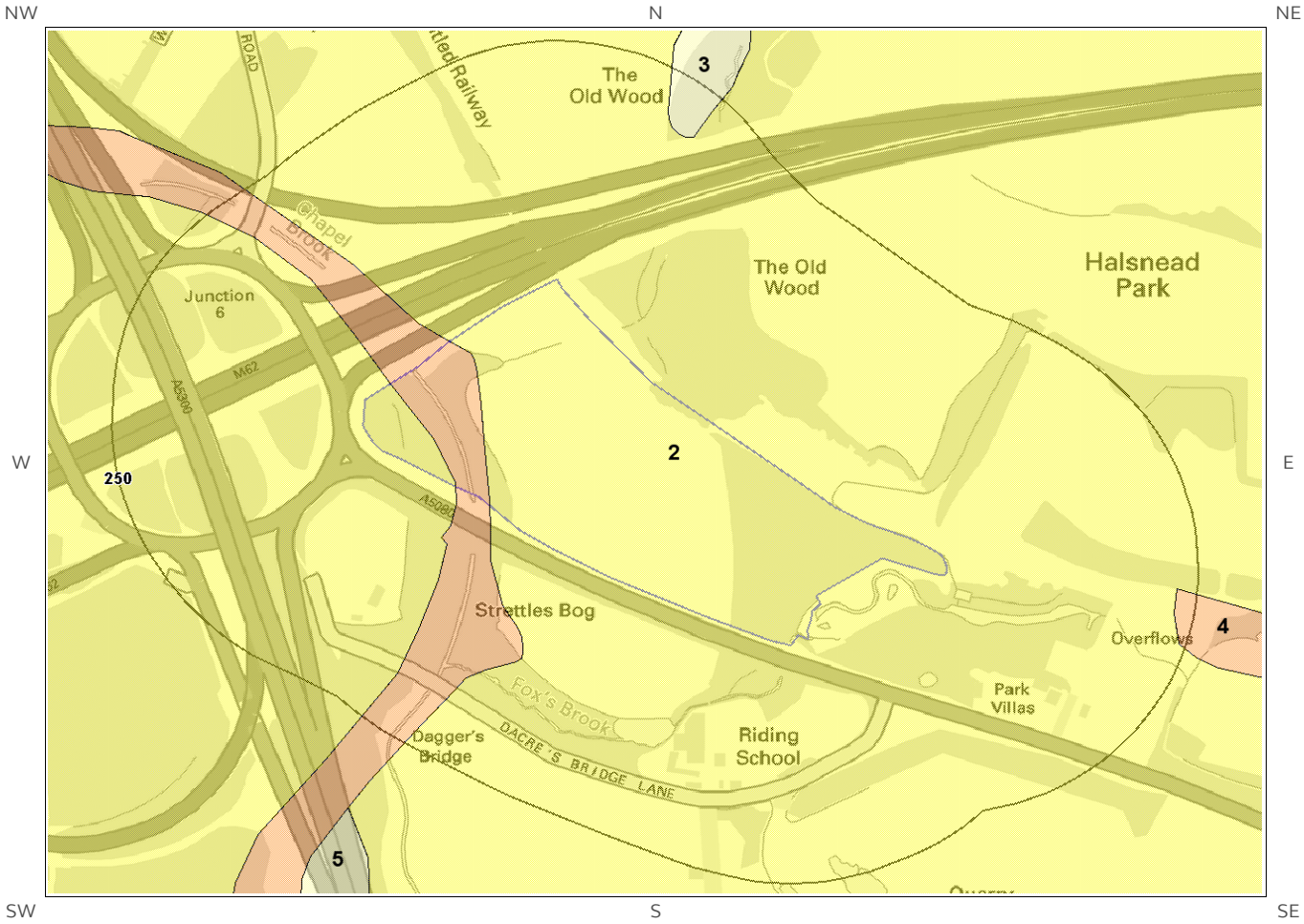


Collapsible Deposits Legend

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6.6 Running Sand Map



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Running Sand Legend



6 Natural Ground Subsidence

The National Ground Subsidence rating is obtained through the 6 natural ground stability hazard datasets, which are supplied by the British Geological Survey (BGS).

The following GeoSure data represented on the mapping is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale.

What is the maximum hazard rating of natural subsidence within the study site*[*] boundary? Moderate

6.1 Shrink-Swell Clays

The following Shrink Swell information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

6.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

6.3 Ground Dissolution of Soluble Rocks

The following Ground Dissolution information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This includes an automatically generated 50m buffer zone around the site

6.4 Compressible Deposits

The following Compressible Deposits information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Moderate	Significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build - consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property - possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.
2	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

6.5 Collapsible Deposits

The following Collapsible Rocks information provided by the British Geological Survey:

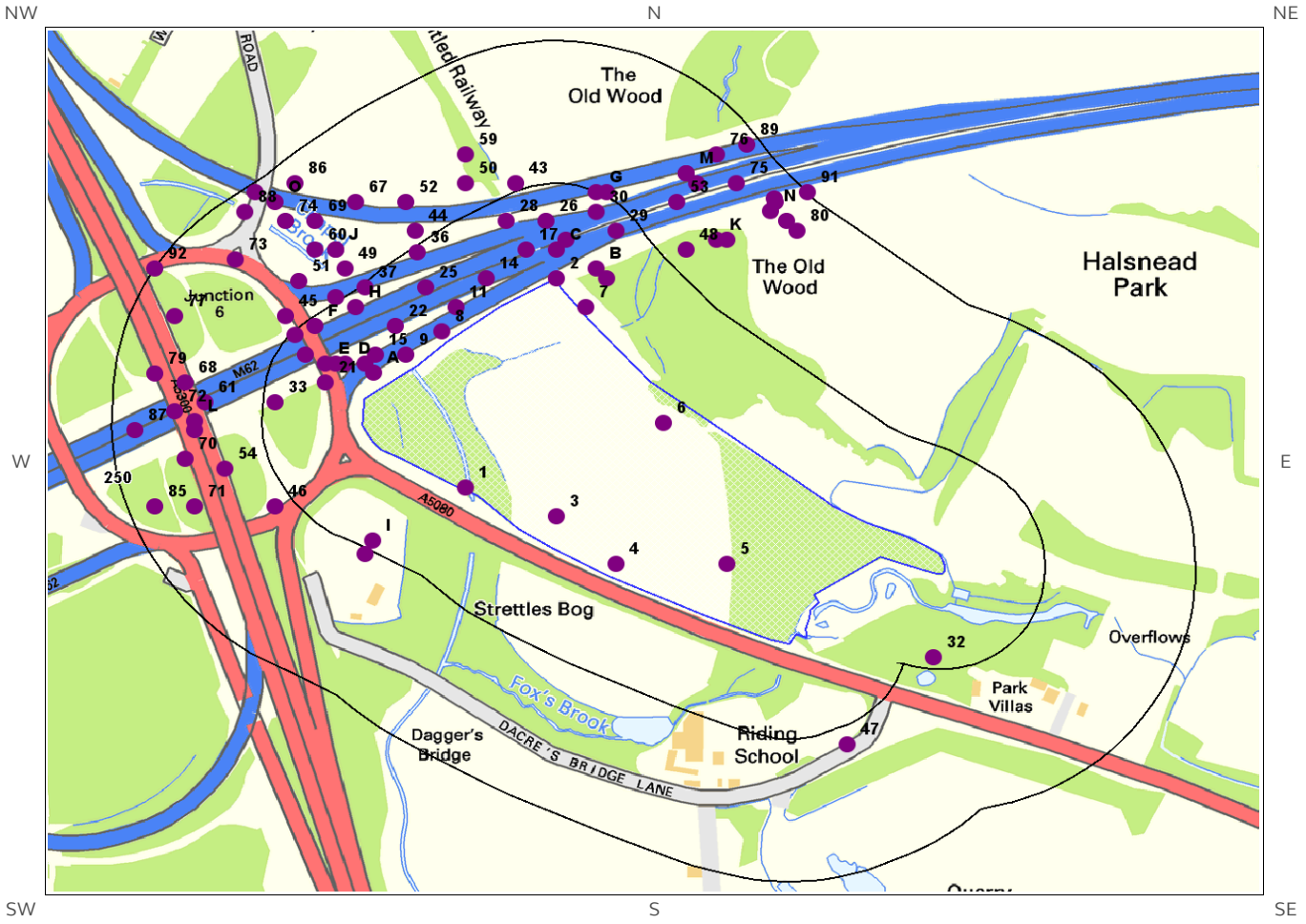
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for collapsible deposits identified. No actions required to avoid problems due to collapsible deposits. No special ground investigation required, or increased construction costs or increased financial risk due to potential problems with collapsible deposits.
2	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

6.6 Running Sands

The following Running Sands information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Low	Possibility of running sand problems after major changes in ground conditions. Normal maintenance to avoid leakage of water-bearing services or water bodies (ponds, swimming pools) should reduce likelihood of problems due to running sand. For new build - consider possibility of running sand into trenches or excavations if water table is high or sandy strata are exposed to water. Avoid concentrated water inputs to site. Unlikely to be an increase in construction costs due to potential for running sand. For existing property - no significant increase in insurance risk due to running sand problems is likely.
2	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

7 Borehole Records Map



Borehole Records Legend

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Site Outline

Borehole Locations

125
250
Search Buffers (m)

7 Borehole Records

The systematic analysis of data extracted from the BGS Borehole Records database provides the following information.

Records of boreholes within 250m of the study site boundary: 92

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	0.0	On Site	346620 389270	SJ48NE39	3.96	LANCS/YORKS M/WAY TARBOCK-CROFT B28
2	0.0	On Site	346710 389490	SJ48NE58	7.92	LANCS/YORKS M/WAY TARBOCK-CROFT 5729/5
3	0.0	On Site	346710 389240	SJ48NE40	7.62	LANCS/YORKS M/WAY TARBOCK-CROFT B29
4	0.0	On Site	346770 389190	SJ48NE41	4.57	LANCS/YORKS M/WAY TARBOCK-CROFT B30
5	0.0	On Site	346880 389190	SJ48NE42	4.57	LANCS/YORKS M/WAY TARBOCK-CROFT B31
6	0.0	On Site	346817 389338	SJ48NE496	1.8	M62 PACKAGE 1 (FOX'S BACK LANE TO J6) DS/M62/1/12
7	6.0	NE	346740 389460	SJ48NE320	11.36	M62 IMPROVEMENT JUNCTION 6 TO 7
8	11.0	NW	346596 389434	SJ48NE516	5.0	M62 PACKAGE 1 (FOX'S BACK LANE TO J6) WS/M62/1/22
9	16.0	NW	346560 389410	SJ48NE53	4.26	LANCS/YORKS M/WAY TARBOCK-CROFT B25
10A	18.0	NW	346528 389391	SJ48NE497	3.0	M62 PACKAGE 1 (FOX'S BACK LANE TO J6) DS/M62/1/14
11	25.0	NW	346610 389460	SJ48NE52	1.83	LANCS/YORKS M/WAY TARBOCK-CROFT 24
12A	30.0	NW	346520 389400	SJ48NE318	12.65	M62 IMPROVEMENT JUNCTION 6 TO 7
13C	30.0	N	346710 389520	SJ48NE392	2.7	M62 IMPROVEMENT JUNCTION 6 TO 7 TRIAL PIT TN27
14	32.0	NW	346640 389490	SJ48NE391	3.55	M62 IMPROVEMENT JUNCTION 6 TO 7 TRIAL PIT TN24
15	33.0	NW	346530 389410	SJ48NE317	14.38	M62 IMPROVEMENT JUNCTION 6 TO 7
16B	39.0	NE	346750 389500	SJ48NE59	7.32	LANCS/YORKS M/WAY TARBOCK-CROFT 5729/6
17	40.0	NW	346680 389520	SJ48NE56	2.74	LANCS/YORKS M/WAY TARBOCK-CROFT 5729/3
18B	41.0	NE	346760 389490	SJ48NE393	3.1	M62 IMPROVEMENT JUNCTION 6 TO 7 TRIAL PIT TN28
19D	41.0	NW	346500 389400	SJ48NE144	-1.0	RAINHILL/GATEACRE 132KV BQ35R
20C	41.0	N	346720 389530	SJ48NE57	7.62	LANCS/YORKS M/WAY TARBOCK-CROFT 5729/4

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
21	42.0	NW	346480 389380	SJ48NE327	12.77	M62 IMPROVEMENT JUNCTION 6 TO 7
22	46.0	NW	346550 389440	SJ48NE390	5.0	M62 IMPROVEMENT JUNCTION 6 TO 7 TRIAL PIT TN22
23D	47.0	NW	346490 389400	SJ48NE389	1.8	M62 IMPROVEMENT JUNCTION 6 TO 7 TRIAL PIT TN20
24E	53.0	NW	346480 389400	SJ48NE141	13.72	LANCS/YORKS M/WAY TARBOCK-CROFT 5731/4
25	58.0	NW	346580 389480	SJ48NE51	4.57	LANCS/YORKS M/WAY TARBOCK-CROFT 23
26	61.0	N	346700 389550	SJ48NE55	7.62	LANCS/YORKS M/WAY TARBOCK-CROFT 5729/2
27E	75.0	NW	346460 389410	SJ48NE140	4.27	LANCS/YORKS M/WAY TARBOCK-CROFT 5731/3
28	76.0	NW	346660 389550	SJ48NE54	15.24	LANCS/YORKS M/WAY TARBOCK-CROFT 5729/1
29	78.0	NE	346770 389540	SJ48NE60	3.66	LANCS/YORKS M/WAY TARBOCK-CROFT B35
30	80.0	NE	346750 389560	SJ48NE349	1.4	M62 IMPROVEMENT JUNCTION 6 TO 7
31H	85.0	NW	346510 389460	SJ48NE47	12.19	LANCS/YORKS M/WAY TARBOCK-CROFT B21A
32	88.0	S	347086 389092	SJ48NE12	140.21	A3/8/2 WHITEFIELD LANE
33	89.0	W	346430 389360	SJ48NE388	2.1	M62 IMPROVEMENT JUNCTION 6 TO 7 TRIAL PIT TN18
34I	90.0	SW	346527 389214	SJ48NE488	-1.0	CRONTON 2
35F	91.0	NW	346470 389440	SJ48NE139	21.34	LANCS/YORKS M/WAY TARBOCK-CROFT 5731/2
36	93.0	NW	346572 389517	SJ48NE504	3.0	M62 PACKAGE 1 (FOX'S BACK LANE TO J6) DS/M62/1/24
37	95.0	NW	346520 389480	SJ48NE49	3.05	LANCS/YORKS M/WAY TARBOCK-CROFT 5730/2
38F	96.0	NW	346450 389430	SJ48NE326	8.79	M62 IMPROVEMENT JUNCTION 6 TO 7
39G	98.0	NE	346750 389580	SJ48NE350	3.7	M62 IMPROVEMENT JUNCTION 6 TO 7
40G	103.0	NE	346760 389580	SJ48NE305	2.85	M62 IMPROVEMENT JUNCTION 6 TO 7
41H	105.0	NW	346490 389470	SJ48NE319	14.93	M62 IMPROVEMENT JUNCTION 6 TO 7
42I	106.0	SW	346520 389200	SJ48NE38	1.22	LANCS/YORKS M/WAY TARBOCK-CROFT B26
43	107.0	N	346670 389590	SJ48NE306	11.37	M62 IMPROVEMENT JUNCTION 6 TO 7
44	113.0	NW	346570 389540	SJ48NE50	1.83	LANCS/YORKS M/WAY TARBOCK-CROFT 22
45	117.0	NW	346440 389450	SJ48NE138	4.57	LANCS/YORKS M/WAY TARBOCK-CROFT 5731/1
46	119.0	SW	346430 389250	SJ48NE36	5.49	LANCS/YORKS M/WAY TARBOCK-CROFT B26A
47	120.0	S	347000 389000	SJ48NE89	4.01	LANCS/YORKS M/WAY TARBOCK-CROFT B54A

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
48	121.0	NE	346840 389520	SJ48NE394	3.9	M62 IMPROVEMENT JUNCTION 6 TO 7 TRIAL PIT TN29
49	124.0	NW	346500 389500	SJ48NE48	3.05	LANCS/YORKS M/WAY TARBOCK-CROFT 5730/1
50	130.0	NW	346620 389590	SJ48NE348	2.8	M62 IMPROVEMENT JUNCTION 6 TO 7
51	139.0	NW	346454 389487	SJ48NE503	3.7	M62 PACKAGE 1 (FOX'S BACK LANE TO J6) DS/M62/1/23
52	143.0	NW	346560 389570	SJ48NE296	6.95	M62 IMPROVEMENT JUNCTION 6 TO 7
53	144.0	NE	346830 389570	SJ48NE61	12.19	LANCS/YORKS M/WAY TARBOCK-CROFT B36
54	145.0	W	346380 389290	SJ48NE214	4.5	M57 TO A562 LINK ROAD TP 5
55J	145.0	NW	346490 389520	SJ48NE46	4.57	LANCS/YORKS M/WAY TARBOCK-CROFT B21
56J	145.0	NW	346490 389520	SJ48NE346	3.8	M62 IMPROVEMENT JUNCTION 6 TO 7
57K	149.0	NE	346870 389530	SJ48NE323	7.42	M62 IMPROVEMENT JUNCTION 6 TO 7
58K	157.0	NE	346880 389530	SJ48NE62	30.48	LANCS/YORKS M/WAY TARBOCK-CROFT B36A
59	157.0	NW	346620 389620	SJ48NE297	12.07	M62 IMPROVEMENT JUNCTION 6 TO 7
60	157.0	NW	346470 389520	SJ48NE345	3.8	M62 IMPROVEMENT JUNCTION 6 TO 7
61	159.0	W	346360 389360	SJ48NE135	6.4	LANCS/YORKS M/WAY TARBOCK-CROFT B15B
62L	168.0	W	346350 389340	SJ48NE136	5.79	LANCS/YORKS M/WAY TARBOCK-CROFT B15C
63L	168.0	W	346350 389330	SJ48NE387	2.1	M62 IMPROVEMENT JUNCTION 6 TO 7 TRIAL PIT TN16
64M	170.0	NE	346840 389600	SJ48NE64	35.05	LANCS/YORKS M/WAY TARBOCK-CROFT B26C
65M	170.0	NE	346840 389600	SJ48NE351	3.4	M62 IMPROVEMENT JUNCTION 6 TO 7
66M	172.0	NE	346850 389590	SJ48NE298	2.45	M62 IMPROVEMENT JUNCTION 6 TO 7
67	172.0	NW	346510 389570	SJ48NE347	3.4	M62 IMPROVEMENT JUNCTION 6 TO 7
68	180.0	W	346340 389380	SJ48NE134	6.4	LANCS/YORKS M/WAY TARBOCK-CROFT B15A
69	181.0	NW	346470 389550	SJ48NE344	3.8	M62 IMPROVEMENT JUNCTION 6 TO 7
70	181.0	W	346340 389300	SJ48NE213	4.5	M57 TO A562 LINK ROAD TP 4
71	188.0	SW	346350 389250	SJ48NE215	4.5	M57 TO A562 LINK ROAD TP 6
72	188.0	W	346330 389350	SJ48NE137	13.72	LANCS/YORKS M/WAY TARBOCK-CROFT B15D
73	195.0	NW	346390 389510	SJ48NE35	1.22	LANCS/YORKS M/WAY TARBOCK-CROFT B20
74	199.0	NW	346440 389550	SJ48NE294	9.77	M62 IMPROVEMENT JUNCTION 6 TO 7
75	205.0	NE	346890 389590	SJ48NE65	9.14	LANCS/YORKS M/WAY TARBOCK-CROFT B37

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
76	206.0	NE	346870 389620	SJ48NE352	4.4	M62 IMPROVEMENT JUNCTION 6 TO 7
77	208.0	NW	346330 389450	SJ48NE211	4.3	M57 TO A562 LINK ROAD TP 2
78N	210.0	NE	346924 389561	SJ48NE495	0.5	M62 PACKAGE 1 (FOX'S BACK LANE TO J6) DS/M62/1/11
79	211.0	W	346310 389390	SJ48NE212	4.5	M57 TO A562 LINK ROAD TP 3
80	213.0	NE	346950 389540	SJ48NE324	8.38	M62 IMPROVEMENT JUNCTION 6 TO 7
81N	214.0	NE	346940 389550	SJ48NE395	1.9	M62 IMPROVEMENT JUNCTION 6 TO 7 TRIAL PIT TN30
82N	219.0	NE	346928 389570	SJ48NE494	0.8	M62 PACKAGE 1 (FOX'S BACK LANE TO J6) DS/M62/1/10
83N	221.0	NE	346927 389574	SJ48NE512	0.55	M62 PACKAGE 1 (FOX'S BACK LANE TO J6) WS/M62/1/9
84O	221.0	NW	346430 389570	SJ48NE343	3.9	M62 IMPROVEMENT JUNCTION 6 TO 7
85	225.0	W	346310 389250	SJ48NE37	2.44	LANCS/YORKS M/WAY TARBOCK-CROFT B27
86	225.0	NW	346450 389590	SJ48NE295	10.98	M62 IMPROVEMENT JUNCTION 6 TO 7
87	228.0	W	346290 389330	SJ48NE133	7.62	LANCS/YORKS M/WAY TARBOCK-CROFT B15
88	229.0	NW	346400 389560	SJ48NE341	4.3	M62 IMPROVEMENT JUNCTION 6 TO 7
89	236.0	NE	346900 389630	SJ48NE63	30.48	LANCS/YORKS M/WAY TARBOCK-CROFT B36B
90O	241.0	NW	346410 389580	SJ48NE342	4.3	M62 IMPROVEMENT JUNCTION 6 TO 7
91	249.0	NE	346960 389580	SJ48NE67	3.4	LANCS/YORKS M/WAY TARBOCK-CROFT B39
92	250.0	NW	346310 389500	SJ48NE34	4.27	LANCS/YORKS M/WAY TARBOCK-CROFT B19A

The borehole records are available using the hyperlinks below: Please note that if the donor of the borehole record has requested the information be held as commercial-in-confidence, the additional data will be held separately by the BGS and a formal request must be made for its release.

#1: scans.bgs.ac.uk/sobi_scans/boreholes/163814
#2: scans.bgs.ac.uk/sobi_scans/boreholes/163833
#3: scans.bgs.ac.uk/sobi_scans/boreholes/163815
#4: scans.bgs.ac.uk/sobi_scans/boreholes/163816
#5: scans.bgs.ac.uk/sobi_scans/boreholes/163817
#6: scans.bgs.ac.uk/sobi_scans/boreholes/18913253
#7: scans.bgs.ac.uk/sobi_scans/boreholes/164095
#8: scans.bgs.ac.uk/sobi_scans/boreholes/18913273
#9: scans.bgs.ac.uk/sobi_scans/boreholes/163828
#10A: scans.bgs.ac.uk/sobi_scans/boreholes/18913254
#11: scans.bgs.ac.uk/sobi_scans/boreholes/163827
#12A: scans.bgs.ac.uk/sobi_scans/boreholes/164093
#13C: scans.bgs.ac.uk/sobi_scans/boreholes/164167
#14: scans.bgs.ac.uk/sobi_scans/boreholes/164166
#15: scans.bgs.ac.uk/sobi_scans/boreholes/164092
#16B: scans.bgs.ac.uk/sobi_scans/boreholes/163834
#17: scans.bgs.ac.uk/sobi_scans/boreholes/163831
#18B: scans.bgs.ac.uk/sobi_scans/boreholes/164168
#20C: scans.bgs.ac.uk/sobi_scans/boreholes/163832
#21: scans.bgs.ac.uk/sobi_scans/boreholes/164102
#22: scans.bgs.ac.uk/sobi_scans/boreholes/164165
#23D: scans.bgs.ac.uk/sobi_scans/boreholes/164164
#24E: scans.bgs.ac.uk/sobi_scans/boreholes/163916
#25: scans.bgs.ac.uk/sobi_scans/boreholes/163826
#26: scans.bgs.ac.uk/sobi_scans/boreholes/163830
#27E: scans.bgs.ac.uk/sobi_scans/boreholes/163915
#28: scans.bgs.ac.uk/sobi_scans/boreholes/163829
#29: scans.bgs.ac.uk/sobi_scans/boreholes/163835
#30: scans.bgs.ac.uk/sobi_scans/boreholes/164124
#31H: scans.bgs.ac.uk/sobi_scans/boreholes/163822
#32: scans.bgs.ac.uk/sobi_scans/boreholes/163787
#33: scans.bgs.ac.uk/sobi_scans/boreholes/164163
#35F: scans.bgs.ac.uk/sobi_scans/boreholes/163914
#36: scans.bgs.ac.uk/sobi_scans/boreholes/18913261
#37: scans.bgs.ac.uk/sobi_scans/boreholes/163824
#38F: scans.bgs.ac.uk/sobi_scans/boreholes/164101
#39G: scans.bgs.ac.uk/sobi_scans/boreholes/164125
#40G: scans.bgs.ac.uk/sobi_scans/boreholes/164080
#41H: scans.bgs.ac.uk/sobi_scans/boreholes/164094
#42I: scans.bgs.ac.uk/sobi_scans/boreholes/163813
#43: scans.bgs.ac.uk/sobi_scans/boreholes/164081
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#46: scans.bgs.ac.uk/sobi_scans/boreholes/163811
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#50: scans.bgs.ac.uk/sobi_scans/boreholes/164123
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#53: scans.bgs.ac.uk/sobi_scans/boreholes/163836
#54: scans.bgs.ac.uk/sobi_scans/boreholes/163989
#55J: scans.bgs.ac.uk/sobi_scans/boreholes/163821
#56J: scans.bgs.ac.uk/sobi_scans/boreholes/164121
#57K: scans.bgs.ac.uk/sobi_scans/boreholes/164098
#58K: scans.bgs.ac.uk/sobi_scans/boreholes/163837

#59: scans.bgs.ac.uk/sobi_scans/boreholes/164072
#60: scans.bgs.ac.uk/sobi_scans/boreholes/164120
#61: scans.bgs.ac.uk/sobi_scans/boreholes/163910
#62L: scans.bgs.ac.uk/sobi_scans/boreholes/163911
#63L: scans.bgs.ac.uk/sobi_scans/boreholes/164162
#64M: scans.bgs.ac.uk/sobi_scans/boreholes/163839
#65M: scans.bgs.ac.uk/sobi_scans/boreholes/164126
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#69: scans.bgs.ac.uk/sobi_scans/boreholes/164119
#70: scans.bgs.ac.uk/sobi_scans/boreholes/163988
#71: scans.bgs.ac.uk/sobi_scans/boreholes/163990
#72: scans.bgs.ac.uk/sobi_scans/boreholes/163912
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#74: scans.bgs.ac.uk/sobi_scans/boreholes/164069
#75: scans.bgs.ac.uk/sobi_scans/boreholes/163840
#76: scans.bgs.ac.uk/sobi_scans/boreholes/164127
#77: scans.bgs.ac.uk/sobi_scans/boreholes/163986
#78N: scans.bgs.ac.uk/sobi_scans/boreholes/18913252
#79: scans.bgs.ac.uk/sobi_scans/boreholes/163987
#80: scans.bgs.ac.uk/sobi_scans/boreholes/164099
#81N: scans.bgs.ac.uk/sobi_scans/boreholes/164170
#82N: scans.bgs.ac.uk/sobi_scans/boreholes/18913251
#83N: scans.bgs.ac.uk/sobi_scans/boreholes/18913269
#84O: scans.bgs.ac.uk/sobi_scans/boreholes/164118
#85: scans.bgs.ac.uk/sobi_scans/boreholes/163812
#86: scans.bgs.ac.uk/sobi_scans/boreholes/164070
#87: scans.bgs.ac.uk/sobi_scans/boreholes/163908
#88: scans.bgs.ac.uk/sobi_scans/boreholes/164116
#89: scans.bgs.ac.uk/sobi_scans/boreholes/163838
#90O: scans.bgs.ac.uk/sobi_scans/boreholes/164117
#91: scans.bgs.ac.uk/sobi_scans/boreholes/163842
#92: scans.bgs.ac.uk/sobi_scans/boreholes/163809

8 Estimated Background Soil Chemistry

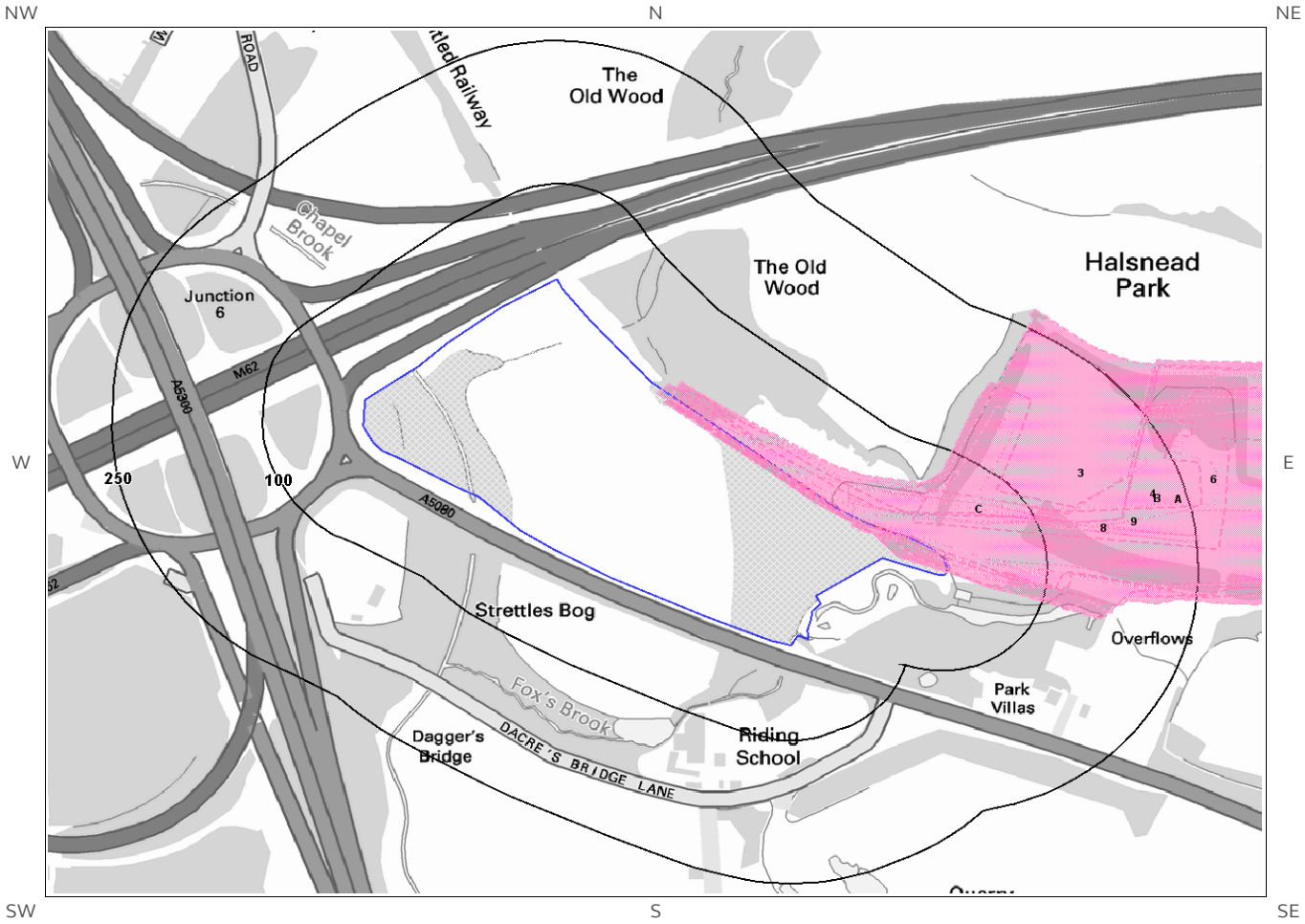
Records of background estimated soil chemistry within 250m of the study site boundary: 34

For further information on how this data is calculated and limitations upon its use, please see the Groundsure Geo Insight User Guide, available on request.

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
7.0	SW	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
10.0	N	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	200 - 300 mg/kg
10.0	N	RuralSoil	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	200 - 300 mg/kg
10.0	NE	RuralSoil	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
12.0	SW	RuralSoil	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
18.0	W	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
18.0	W	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
19.0	NE	RuralSoil	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
19.0	W	RuralSoil	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
20.0	SW	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
33.0	NE	RuralSoil	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	200 - 300 mg/kg
37.0	SE	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
39.0	NW	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
40.0	SW	RuralSoil	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
40.0	SW	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
42.0	SW	RuralSoil	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg

*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

9 Railways and Tunnels Map



Railways and Tunnels Legend

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- Site Outline
- Search Buffers (m) — 250 / 500
- Underground or Partially Underground Railway / Subway System
- Railway Tunnel (OS Mapping)
- Abandoned or Dismantled Railway (OpenStreetMap)
- Railway Track (OS Mapping)
- Railway Track (OpenStreetMap)
- High Speed 2
- High Speed 2 Revised Proposed Route
- Crossrail 1
- Railway and/or Tunnel Feature from Historical Mapping

9 Railways and Tunnels

9.1 Tunnels

This data is derived from OpenStreetMap and provides information on the possible locations of underground railway systems in the UK - the London Underground, the Tyne & Wear Metro and the Glasgow Subway.

Have any underground railway lines been identified within the study site boundary? No

Have any underground railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels Map.

This data is derived from Ordnance Survey mapping and provides information on the possible locations of railway tunnels forming part of the UK overground railway network.

Have any other railway tunnels been identified within the site boundary? No

Have any other railway tunnels been identified within 250m of the site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels Map.

9.2 Historical Railway and Tunnel Features

This data is derived from Groundsure's unique Historical Land-use Database and contains features relating to tunnels, railway tracks or associated works that have been identified from historical Ordnance Survey mapping.

Have any historical railway or tunnel features been identified within the study site boundary? Yes

Have any historical railway or tunnel features been identified within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Details	Date
1A	0	On Site	347298 389265	Railway Sidings	1925
2B	0	On Site	347407 389263	Railway Sidings	1947
3	0	On Site	347387 389237	Railway Sidings	1967
4	0	On Site	347376 389258	Railway Sidings	1950
5A	0	On Site	347384 389275	Railway Sidings	1938
7B	0	On Site	347447 389282	Railway Sidings	1958

ID	Distance (m)	Direction	NGR	Details	Date
8	0	On Site	347568 389272	Railway Sidings	1927
9	0	On Site	346972 389274	Railway Sidings	1937
10C	11	NE	347174 389246	Railway Sidings	1980
11C	15	NE	347103 389248	Railway Sidings	1980
6	17	N	347363 389284	Railway Sidings	1975

Any records that have been identified are represented on the Railways and Tunnels Map.

9.3 Historical Railways

This data is derived from OpenStreetMap and provides information on the possible alignments of abandoned or dismantled railway lines in proximity to the study site.

Have any historical railway lines been identified within the study site boundary? No

Have any historical railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels Map.

9.4 Active Railways

These datasets are derived from Ordnance Survey mapping and OpenStreetMap and provide information on the possible locations of active railway lines in proximity to the study site.

Have any active railway lines been identified within the study site boundary? No

Have any active railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels Map.

9.5 Railway Projects

These datasets provide information on the location of large scale railway projects High Speed 2 and Crossrail 1 .

Is the study site within 5km of the route of the High Speed 2 rail project? No

Is the study site within 500m of the route of the Crossrail 1 rail project? No

Further information on proximity to these routes, the project construction status and associated works can be obtained through the purchase of a Groundsure HS2 and Crossrail 1 Report.

The route data has been digitised from publicly available maps by Groundsure. The route as provided relates to the Crossrail 1 project only, and does not include any details of the Crossrail 2 project, as final details of the route for Crossrail 2 are still under consultation.

Please note that this assessment takes account of both the original Phase 2b proposed route and the amended route proposed in 2016. As the Phase 2b route is still under consultation, Groundsure are providing information on both options until the final route is formally confirmed. Practitioners should take account of this uncertainty when advising clients.

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https://www.gov.uk/government/organisations/public-health-england
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Standard Terms and Conditions

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https://www.groundsure.com/terms-and-conditions-sept-2016/

APPENDIX 6

BGS GEOLOGICAL MAP AND BGS BOREHOLE LOGS

STANDARD. DATE 3.6.38 J.E.

Parallels Lines X F.M.T. 10/2/54 Ar

GENERALIZED ~~VERTICAL~~ SECTION OF THE CARBONIFEROUS ROCKS. Scale 1 IN TO 2000 FT.

EDITION OF 1928.

WHISTON R.D. KNOWSLEY P.H. U.D.By PRESCOT U.D. PRESCOT PH. LON. 2°48' W. WIDNES DIVISION PRESCOT UNION 2°47' Sanatorium CVII.NE. ECCLESTON PH. 2°46

UPPER COAL MEASURES

ARDWICK GROUP Total thickness Proved 680 ft.

HALTON WITH KOBY PH. Haydn Coly Owens

A.G. A.G. SST LAT 53° 25' N.R. NOB END ROCK. COAL FcM FIERY MINERAL FELLCROFT (BYRNES) OR PATENT COAL PASTURES (BASS) OR CANNEL COAL DISCOVERY MINE (LOWE) OR ST HELENS COAL FIRED (EARLY) YARD MINE (LOWE) NEW MINE (EARLY) EARTH BELT (LOWE) PENDLETON ROCK HIGHER FLORIDA OR ST HELENS COAL LOWER FLORIDA MINE OR ST HELENS COAL FOUR FOOT MINE CHEESLYNE MINE OR HIGHER PLATOON ROCK FIVE FOOT LOWER PLATOON ROCK MINE BOTTOM PLATOON ROCK MINE P.R. RAINHILL ROCK R.R. TOWLANDS MINE LOWER TOWLANDS MINE KNOWSLEY OR EARLY EASTWOOD MINE B.R.M. EASTWOOD MINE

MIDDLE COAL MEASURES

HALTON WITH KOBY PH.

Whiston Liverpool Prescot Rainhill Widnes Runcorn Whiston Colliery Whiston Quarry Whiston Lane Parren's Covert Higher Sides Holt Fair Rew Iron Foundry Rainhill Stoneyard Lane Farm Rainhill Hall Farm Rainhill Mount Sandfield Cottage Fox Clump Ecclestone Park Ecclestone Terrace Pumping Station Longton House Ratcliffe House Cedric House Broach Works Victoria Villas Recreation Ground Vicarage Church St. James's Church Lawton House Orchard Drive Old Quarry Sand Pit Laburnum Cottage Water Tower Rann Lea Dam Farm Lodge The Rough Sandy Lane Stoney Lane Farm Boulder Clay Sand & Gravel Peggly Red Sandstone Red Boulder Clay Yellow Weathering Stiff Red Marl Greenhouse Cottage Nurses' Home Smallpox Hospital Quarry Bowling Green Iron Foundry Railway Foundry Pickford House Derby Cottages Nayler's Terrace Ivy Farm Ivy Cottage Ruby Cottage Lower Lane Farm Sandfield Cottage Higher Sides Parren's Covert Lodge Dam Farm Rainhill Hall Farm Rainhill Mount Laburnum Cottage Water Tower Rann Lea Blundells Hill Blundells Hill Farm Fox Clump Ecclestone Park Ecclestone Terrace Pumping Station Longton House Ratcliffe House Cedric House Broach Works Victoria Villas Recreation Ground Vicarage Church Lawton House Orchard Drive Old Quarry Sand Pit Laburnum Cottage Water Tower Rann Lea Dam Farm Lodge The Rough Sandy Lane Stoney Lane Farm Boulder Clay Sand & Gravel Peggly Red Sandstone Red Boulder Clay Yellow Weathering Stiff Red Marl Greenhouse Cottage Nurses' Home Smallpox Hospital Quarry Bowling Green Iron Foundry Railway Foundry Pickford House Derby Cottages Nayler's Terrace Ivy Farm Ivy Cottage Ruby Cottage Lower Lane Farm Sandfield Cottage Higher Sides Parren's Covert Lodge Dam Farm Rainhill Hall Farm Rainhill Mount Laburnum Cottage Water Tower Rann Lea Blundells Hill Blundells Hill Farm Fox Clump Ecclestone Park

MIDDLE COAL MEASURES

LOWER COAL MEASURES WITH MIXED PH

UNLABELLED AREAS ARE SHALE OR MUDSTONES.

Surveyed in 1845-46. Revised in 1925. Re-levelled in 1925-26. ORIGINAL GEOLOGICAL SURVEY BY E. HULL, F.R.S. 1860
Reprint 100/30 100/31 100/32. CHARACTERISTICS AND SYMBOLS RESURVEYED IN 1935-8 BY R.C.B. JONES AND LAURENCE H. TONKS,
100/36. W.B. WRIGHT, DISTRICT GEOLOGISTS.
E.B. BAILEY, M.C., F.R.S. DIRECTOR.
ALTERATIONS IN 1949 BY F.M. TROTTER

County Boundary
Parliamentary Division Boundary
Union Boundary
Rural District Boundary
Parish Boundary
Antiquities, Site of
Arrow showing direction of flow of water
Contours: Instrumental, Sketched
Trigonometrical Station

For other information see Characteristic Sheet

Printed and Published by the Director General at the Ordnance Survey Office, Southampton.

The altitudes of bench marks and surface heights are given in Feet above the mean level of the sea at Newlyn, and are based on the revised primary levelling of 1912-21.

Altitudes indicated thus (B.M. 50·7) refer to bench marks on buildings, walls, &c. those marked thus (·) preceded or followed by the height, to surface levels.

The contours on this map are referred to the old Ordnance Survey Datum, i.e. assumed mean sea level at Liverpool, and are not based on the revised primary levelling of 1912-21. There may thus be discrepancies of some inches between the conto

Crown Copyright Reserved.

Scale Six Inches to One

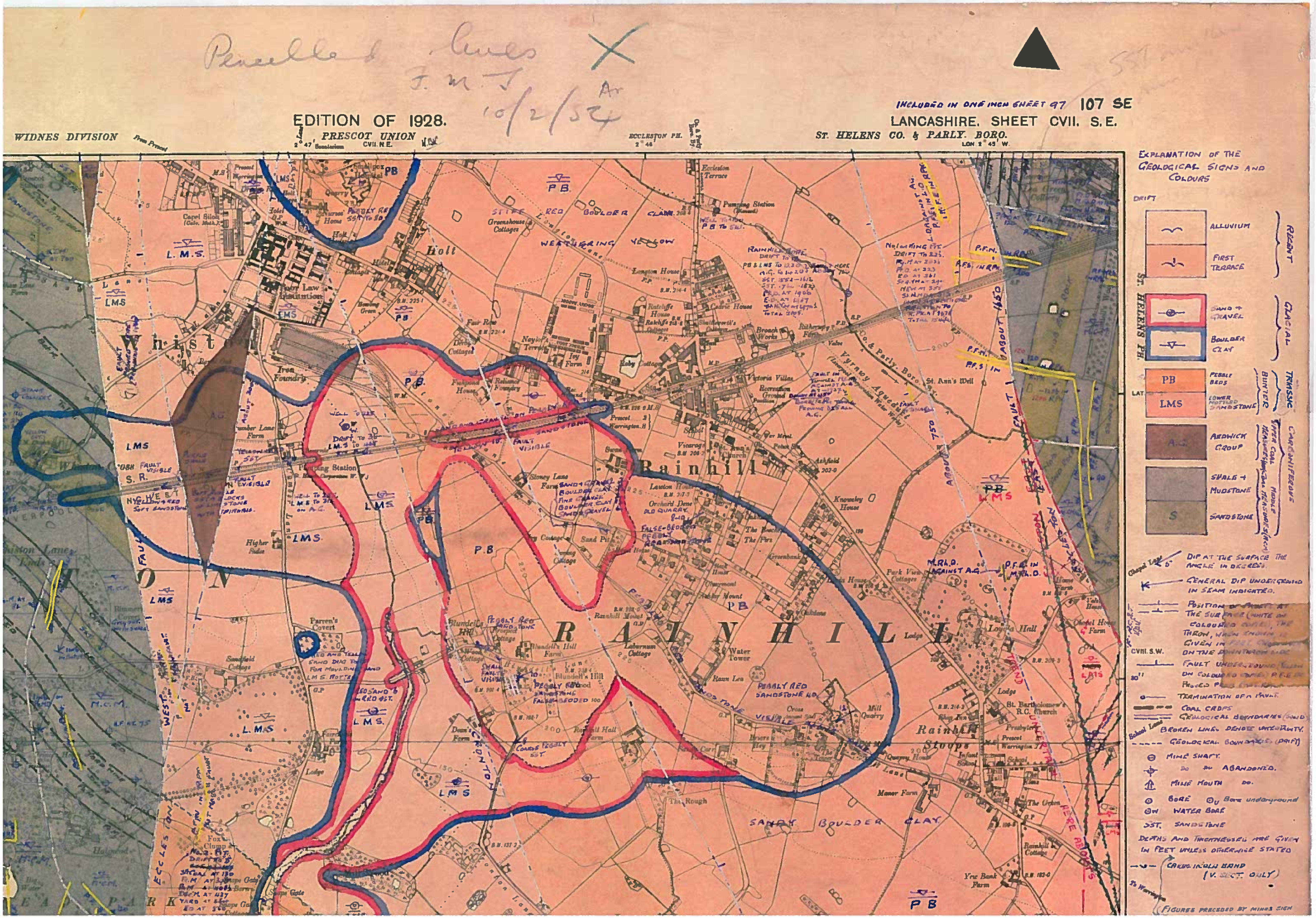
10 Chains 1 0 10 20 30

1000 Feet 500 0 1000

1 Furlong 0

N.B. The representation on

British Geological Survey
FM 106457
OLA 107 SE
FM106457


Pencilled lines
F. M. T.
10/2/54
INCLUDED IN ONE INCH SHEET 97
107 SE
EDITION OF 1928.
LANCASHIRE. SHEET CVII. S.E.
WIDNES DIVISION
PRESCOT UNION
ST. HELENS CO. & PARLY. BORO.
ECCLESTON PH.
ST. HELENS PH.
EXPLANATION OF THE GEOLOGICAL SIGNS AND COLOURS
DRIFT
ALLUVIUM
FIRST TERRACE
RECENT
SAND & GRAVEL
BOULDER CLAY
GLACIAL
PB
PEBBLE BEDS
LMS
LOWER MOTTLED SANDSTONE
BUNTER
TRIASSIC
A.G.
ARDWICK GROUP
SHALE & MUDSTONE
S
SANDSTONE
CARBONIFEROUS
DIP AT THE SURFACE THE ANGLE IN DEGREES.
GENERAL DIP UNDERGROUND IN SEAM INDICATED.
TERMINATION OF A FAULT.
COAL CROPS
BROKEN LINES DENOTE UNCERTAINTY.
MINE SHAFT.
DO DO ABANDONED.
MINE MOUTH DO.
BORE
WATER BORE
SST. SANDSTONE
DEPTHS AND THICKNESSES ARE GIVEN IN FEET UNLESS OTHERWISE STATED
(V. SECT. ONLY)
FIGURES PRECEDED BY MINUS SIGN
Whiston
RAINHILL
Rainhill
Rainhill Stoops
Holt
STIFF RED BOULDER CLAY
WEATHERING YELLOW
SANDY BOULDER CLAY
PEBBLY RED SANDSTONE
FAULT
ECCLESTON
CVII. S.W.

RAINHILL

Whiston

Rainhill Stoops

Cronton

Prescot

Widnes Munl. Boro.

Widnes Pr.

Eccleston

Parr

Sutton Lane Ends

Halsnead Park

Fox Clump

Cronton Colliery

Cronton Wood

Duke's Clough

Rough Head

Blundell's Hill

Parren's Covert

Sandfield Cottage

Higher Sides

Lower Sides

Yew Bank Farm

Oaks

Rainhill Hall

Rainhill Mount

Rann Lea

Knowsley House

Park View Cottages

Loyola Hall

St. Bartholomew's R.C. Church

Presbyterian Church

Infant School

Manor Farm

The Rough

The Green

Mill Quarry

Water Tower

Victoria Villas

Broach Works

Cedric House

Ratcliffe House

Ratcliffe Cottages

Fairfield House

Reliance Foundry

Iron Foundry

Fair Row

Bowling Green

Naylor Terrace

Ivy Farm

Derby Cottages

Institution

Vicarage

Ashfield

Lawton House

Orchard Dene

Sand Pit

Stoney Lane Farm

Lime Kiln Lane

Ecclestone Lane

Sutton Lane

Rainhill Station

Number Lane Farm

Fox Clump

Grove Gate

Sandy Lane

Cronton Lane

Deacon Lane

Rainhill Lane

Mill Lane

Manor Lane

Home Farm

Chapel House Farm

Lodge

Kirkstone Cottage

Ramshill Cottage

Laburnum Cottage

Sand Pit Cottage

Rainhill Mount

Blundell's Hill Farm

Deacon Farm

Higher Sides

Lower Sides

Great Foxshill

Little Foxshill

Penny Lane

Wood

Oak

Lodge

Cottage

Farm

Vyrnwy Aqueduct

Liv. & Parly. Boro.

St. Ann's Well

St. Ann's Church

Recreation Ground

Bowling Green

Pumping Station

Fault Visible

Fault Invisible

Drift to L.M.S.

Well to L.M.S.

Sand & Gravel

Boulder Clay

Pebble Beds

Lower Mottled Sandstone

Ardwick Group

Stable & Mudstone

Sandstone

Upper Coal Measures

Middle Coal Measures

Carboniferous

Triassic

Bunter

Glacial

Dip at the surface the angle in degrees

General dip underground in seam indicated.

Position of fault at the surface (white on coloured ground), the throw, when known, is given in feet. Dip and strike on the downthrow side.

Fault underground known on coloured ground. P.F.C. in Pebbled Beds.

Termination of a fault.

Coal crops

Geological boundaries (solid)

Broken line denotes uncertainty.

Geological boundaries (drift)

Mine shaft.

Do. abandoned.

Mine mouth do.

Bore Qu Bore underground

On Water bore

Sst. Sandstone

Depths and thicknesses are given in feet unless otherwise stated

Caked in Coln Brnd (v. sect. only)

To Warrington

Figures preceded by mines sign relate to ordnance datum.

Lat. 53° 24'

Lon 2° 45' W. Pex Hill

2° 47'

2° 46'

CXIV. N.E. WHISTON R. D.

TARBOCK PH.

CRONTON PH.

Scale — Six Inches to One Statute Mile or 880 Feet to One Inch. — nhm

10 Chains 0 10 20 30 40 50 60 70 80 Chains

1000 Feet 500 0 1000 2000 3000 4000 5000 5280 Feet

1 Furlong 0 ½ ¼ ¾ 1 Mile

By E. Hull, Published 1860

Revised in 1935–8 by R.C.B. Jones and Laurence H. Tonks, W.B. Wright, District Geologists, E.A. Bailey, M.C., F.R.S., Director.

Alterations in 1949 by F.M. Trotter

R.C.B. Jones 5-11-1938.

N.B. Wright 2-7-1938

Trias subdivided by R.C.B.J.

BH1 B30

CONTRACT. LANCASHIRE YORKSHIRE MOTORWAY M62

LOCATION. TARBOCK TO CROFT (Site 4)

SHEET No. 1

No. of sheets. 1

CLIENT. SJ 48 NE/41 4677.8919

MINISTRY OF TRANSPORT

PERCUSSION U D S.P.T. B

ROTARY Cored runs { O/H {

Casing. Size 6" to. Size to.

Ground level. 68.28

Commenced. 6/11/67

Completed. 6/11/67

Weather. FINE

STRATUM M.(Scale: ½ inch to 1 foot) 1 Thickness	Depth 2	Sample No. 3	S.P.T. Blow Count (N) LL/PL/PI 4	LEGEND 5	M.C. % Core Rec. % 6	Type of Test 7	GRADING % PASSING SIEVE 3" N.7	1½" 25	¾" 52	⅜" 100	#7/16" 200	TAQ. or U.C.T. Bulk Density p.c.f. Shear /o° p.s.f.	Dev. Stress p.s.i.	Lat. Pres. p.s.i.	U.C.T. Stren. p.s.f. Shear/L° p.s.f.	WATER REMARKS
Top soil																
1'6"	1'6"															
Stiff brown and grey mottled sandy stony clay	2'6"	M1			15.1											
	3'6"	U1	27/12/15 (CL)		12.8	UCT						130.9			1201	
					12.2							123.5			1561	
	5'0"	A1														
	6'0"	M2			16.9											
	8'6"	U2			13.0	UCT						142.9			5885	
8'0"	9'6"				13.9							141.2			5404	Dry
Very stiff brown sandy stony clay	10'0"	A2			13.7							140.2			4924	Dry
							SO_3W 19.9 pH 7.0									WS @ 13'6" SWL 11'0"
	12'0"	M3			14.9											W1 - 11'0"
	13'6"	U3	27/11/16 (CL)		9.5	UCT						146.9			15012	
					9.6							144.2			12370	
5'6"	15'0"	A3			9.3							142.9			12850	
			BOREHOLE COMPLETED													OCB @ 13'6" Cas @ 5'0" SWL 11'0" OWC.SWL 11'0"

REMARKS :

Sample	Depth	M.C. % D.W.	S.G.	C. B. R. Air Voids	Type	TOP 0.1	TOP 0.2	BOTTOM 0.1	BOTTOM 0.2	Value	COMPACTION B.S. 1377 No	Max. Dry Density	Optm. M.C.

BH B31

CONTRACT. LANCASHIRE YORKSHIRE MOTORWAY M62

LOCATION. TARBOCK TO CROFT (Site 4)

SHEET No. 1

No. of sheets. 1

CLIENT. SJ 48 NE/42 4688,8919

MINISTRY OF TRANSPORT

PERCUSSION U D S.P.T. B

ROTARY Cored runs { O/H {

Casing. Size to. Size to. Nil

Ground level. 63.88

Commenced. 7/11/67

Completed. 7/11/67

Weather. FINE

STRATUM (Scale: ½ inch to 1 foot)

1 Thickness	Depth 2	Sample No. 3	S.P.T. Blow Count (N) LL/PL/PI 4	5 LEGEND	M.C. % Core Rec. % 6	Type of Test 7	GRADING % PASSING SIEVE 3" 1½" ¾" ⅜" #200 8	TAQ. or U.C.T. Bulk Density p.c.f. Shear /o° p.s.f.	Dev. Stress p.s.i.	Lat. Pres. p.s.i. Shear/L° p.s.f.	U.C.T. Stren. p.s.f.	9	WATER REMARKS 10
Top soil 1'6"	1'6"												
Stiff brown and grey mottled sandy clay	2'0"	M1			17.5								
	3'6"	U1	29/13/16 (CL)		15.8	UCT		136.5			3243		
					15.7			136.5			3243		
	5'0"	A1			15.8			136.8			3243		
4'6"	6'0"												
Stiff/very stiff brown sandy stony clay	6'6"	M2			14.2								
	8'6"	U2			12.7	UCT		139.1			7326		
					12.1			140.2			6129		
	10'0"	A2			12.7			135.2			6845		
	12'0"	M3			12.7								
	13'6"	U3	23/10/13 (CL)		12.9	UCT		139.4			1562		
					10.3			143.1			4444		
9'0"	15'0"	A3			10.5			145.4			7086		
			BOREHOLE COMPLETED										Water table not encountered

REMARKS:

Sample	Depth	M.C. % D.W.	S.G.	C. B. R. Air Voids	Type	TOP 0.1	TOP 0.2	BOTTOM 0.1	BOTTOM 0.2	Value	COMPACTION B.S. 1377 No	Max. Dry Density	Optm M.C.

British Geological Survey

BM B 25

CONTRACT. LANCASHIRE YORKSHIRE MOTORWAY M62
LOCATION. TARBOCK TO CROFT (Site 5)

SHEET No. 1
No. of sheets. 1

CLIENT. SJ 48 NE/53
46.56.8941.
MINISTRY OF TRANSPORT

PERCUSSION U D S.P.T. B
ROTARY Cored runs O/H

Casing. Size 6" to. Size to.

Ground level. 58.25
Commenced. 27/2/68
Completed. 27/2/68

Weather. FAIR

STRATUM (Scale: ¼ inch to 1 foot) 1 Thickness	Depth 2	Sample No. 3	S.P.T. Blow Count (N) LL/PL/PI 4	5 LEGEND	M.C. % Core Rec. % 6	Type of Test 7	GRADING % PASSING SIEVE 3" / 1½" / ¾" / ⅜" / #16	TAQ. or U.C.T. Bulk Density p.c.f. Shear /o° p.s.f.	Dev. Stress p.s.i.	Lat. Pres. p.s.i.	U.C.T. Stren. p.s.f. Shear/L° p.s.f.	8 RESULTS OF ANY OTHER TESTS. 9	WATER REMARKS 10
Top soil 2'0"	2'0"												Damp
Firm to stiff brown sandy mottled clay	2'6"	M1			38.6								
	3'6"	U1	46/19/27 (CL)		26.1	UCT		121.3			2713		
					25.9			120.1			3169		
	5'0"	A1			27.2			120.7			3391		
4'0"	6'0"												Damp
Soft grey silty sandy clay, with layers of fine wet silt	6'6"	M2			38.6								Wet
	7'0"	P1	5 for 18" (total)		45.7			SO_3 W 9.6 pH 6.5					WS @ 7'0"
	7'6"	B1						- - - - 100					SWL 6'6"
								97 86 71 37 22					WL - 6'6"
3'6"	9'6"												Wet
Hard red/grey marly sandstone	10'6"	P2	75 for 7" (total)		6.1								Dry Water added
4'6"	13'6"	P3	75 for 4" (total)		5.7								
	14'0"		BOREHOLE COMPLETED										OCB @ 14'0" Cas @ 9'6" Water Nil OWC.SWL. 5'6"

REMARKS:

Sample	Depth	M.C. % D.W.	S.G.	C. B. R. Air Voids	Type	TOP 0.1	TOP 0.2	BOTTOM 0.1	BOTTOM 0.2	Value	COMPACTION B.S. 1377 No	Max. Dry Density	Optm M.C.

BH No 5729/5

CONTRACT. LANCASHIRE YORKSHIRE MOTORWAY M62
LOCATION. TARBOCK TO CROFT (Site 6)

SHEET No. 1
No. of sheets 1

CLIENT. SJ 48 NE/58
4671.8949
MINISTRY OF TRANSPORT

PERCUSSION U D
S.P.T.
B
ROTARY Cored runs
O/H

Casing.

Size	to.	Size	to.
6"	12'0"	H	26'0"

Ground level. 73.46
Commenced. 28/2/68
Completed. 22/3/68

Weather. FINE

STRATUM (Scale: ¼ inch to 1 foot) 1 Thickness	Depth 2	Sample No. 3	S.P.T. Blow Count (N) LL/PL/PI 4	5 LEGEND	M.C. % Core Rec. % 6	Type of Test 7	GRADING % PASSING SIEVE 3" / 1½" / ¾" / ⅜" / #7	TAQ. or U.C.T. Bulk Density p.c.f. Shear /o° p.s.f.	Dev. Stress p.s.i.	Lat. Pres. p.s.i.	U.C.T. Stren. p.s.f. Shear/L° p.s.f.	WATER REMARKS 10
							8 RESULTS OF ANY OTHER TESTS.					9
Top soil 1'0"	1'0"											Damp
Fine wet brown sand 1'0"	2'0"											Wet
Firm brown mottled sandy stony clay	2'6"	M1			16.3							
	3'0"	U1	34/18/16 (CL)		18.4	TAQ		131.0	8.7	20		BHS @ 3'0"
					19.3			130.0	16.1	40		
3'0"	4'6" 5'0"	A1			19.3			129.3	15.0	60		Damp
Firm red/brown sandy stony clay, (slightly silty)	5'6"	M2			19.4						930/0°	
	6'0"	U2			23.7	TAQ		124.9	13.5	20		
					25.0			122.8	15.8	40		
2'6"	7'0"	A2			23.4			124.9	17.3	60		Damp
Weathered light grey soft muddy shale, micaceous	8'6"	M3			18.2						720/3.0°	
	9'0"	P1	75 for 16" (total)		8.8							Water table not encountered
	11'0"											SHELL & AUGER COMPLETED 28/2/68
Light grey hard muddy siltsone	11'6"	P2	75 for 5" (total)		7.1							ROTARY DRILLING COMMENCED 22/3/68
					50							
9'6"	16'6"											
Soft band * 3"	16'9"											
Light grey shattered hard and soft bands of laminated siltstone					100							
	21'0"											
					100							
9'3"	26'0"											
BOREHOLE COMPLETED												

REMARKS:
* Soft band at 16'9"

Sample	Depth	M.C. % D.W.	S.G.	C. B. R. Air Voids	Type	TOP 0.1	TOP 0.2	BOTTOM 0.1	BOTTOM 0.2	Value	COMPACTION B.S. 1377 No	Max. Dry Density	Optm. M.C.

Geotechnical Engineering Limited

BOREHOLE LOG

SJ 48 NE 320
4674 8946

CLIENT DEPARTMENT OF TRANSPORT

BH **BN16R**

SITE M62 IMPROVEMENT, JUNCTION 6 TO 7

Sheet 1 of 2

Start Date 11/06/1993 End Date 13/06/1993

Scale 1 : 50

Ground Level (mOD) 23.85 Easting 7448 Northing 14448

Depth (m) 11.36

sample no.	type	depth (m) from	to	core TCR	SCR	RQD	FI	SPT type & N value	instrument	description	depth (m)	level (mOD)	legend
										TOPSOIL: dark brown sandy silt with some fine roots and some subrounded fine to medium gravel	0.20	23.65	
										MADEGROUND: soft to firm reddish brown very sandy, very silty clay with much angular fine to coarse gravel of sandstone and mudstone.			
1B		1.20	1.50										
2U		1.50	1.95							see U100 for exact depth	1.70	22.15	
3D		1.95	2.15							Medium dense reddish brown and light brown SAND with some angular fine to coarse gravel of sandstone			
4D		2.15	2.60					27			2.30	21.55	
5B		2.15	2.60							Medium dense reddish brown SAND with some angular fine to coarse gravel of sandstone			
6B		2.60	3.15										
											3.20	20.65	
7D		3.15	3.25					13		Firm reddish brown very silty CLAY with some light brown sand lenses			
8D		3.25	3.60										
9B		3.25	4.00										
											4.00	19.85	
10U		4.00	4.45							Very dense dark purple clayey SAND becoming moderately weak to weak dark purple silty SANDSTONE with depth.			
11D		4.45	4.65										
12B		4.70	5.00										
		5.00	6.33	99	38	18					5.00	18.85	
13D		5.00	5.19					50 for 40mm		Moderately weak purple red and dark purple mottled very thinly bedded fine to medium grained SANDSTONE, highly to completely weathered, with very closely to closely spaced rough, planar bedding planes dipping 20°, becomes moderately strong, moderately weathered with depth. 5.20-5.38m subvertical rough planar clay smeared joint 6.10-6.33m 2 parallel 60° rough, planar joints			
		5.00	7.38				77						
		6.33	7.83	103	67	53							
		7.38	11.36				173				7.45	16.40	
		7.83	9.33	93	93	86				Moderately strong purple, reddish brown, white and grey mottled fine grained micaceous SANDSTONE, slightly weathered, becomes dark purple with depth, with closely to medium spaced rough planar bedding planes dipping 20°. 8.85-9.00m 70° rough, planar joint 9.60-9.70m, 9.80-9.90m and 10.63-10.73m 50° rough, planar joint			
		9.33	10.83	100	90	86							

remarks:

additional borehole information is given on separate sheets

CONTRACT 2723N

FIGURE 1/111

C6F1L11

Geotechnical Engineering Limited

BOREHOLE LOG

SJ 48NE 320

CLIENT DEPARTMENT OF TRANSPORT

BH **BN16R**

SITE M62 IMPROVEMENT, JUNCTION 6 TO 7

Sheet 2 of 2

Start Date 11/06/1993 End Date 13/06/1993

Scale 1 : 50

Ground Level (mOD) 23.85 Easting 7448 Northing 14448

Depth (m) 11.36

sample no.	type	depth (m) from	to	core TCR	SCR	RQD	FI	SPT type & N value	instrument	description	depth (m)	level (mOD)	legend
		10.83	11.36	100	75	65				11.10-11.17m extremely closely spaced random orientated joints, mostly non intact 11.25-11.36m 45° rough, planar joint Borehole completed at 11.36m	11.36	12.49	

remarks:

additional borehole information is given on separate sheets

CONTRACT 2723N

FIGURE 1/112

C6F1L11

British Geological Survey

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Site	Number
M62 Package 1 [Fox's Bank Lane to Junction 6]	DS/M62/1/12

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler		23.54	AmeyMouchel	1327C
	Location	**Dates**	**Engineer**	**Sheet**
	346817.57 E 389338.71 N	14/07/2006	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30	B001			23.09	(0.45) 0.45	MADE GROUND: Brown gravelly fine to medium sand with some rootlets. Gravel is rounded to sub-rounded fine to coarse of mixed lithology.		
0.50	D002			23.04	0.50	Moderately strong grey SANDSTONE, moderately weathered.		
					(1.25)	Very weak grey SILTSTONE, moderately weathered.		
1.50-1.80	D003		14/07/2006:	21.79 21.74	1.75 1.80	Moderately strong buff SANDSTONE, moderately weathered. Complete at 1.80m		

Remarks
1. Location CAT scanned and inspection pit undertaken to 1.2m prior to drilling. 2. DS refused at 1.8m in weathered sandstone. 3. Hole terminated and backfilled with arisings upon completion in accordance with the Engineers instructions.

Scale (approx)	Logged By
1:50	AB

Figure No.

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British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Site	Number
M62 Package 1 [Fox's Bank Lane to Junction 6]	DS/M62/1/14

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler		25.03	AmeyMouchel	1327C
	Location	**Dates**	**Engineer**	**Sheet**
	346528.19 E 389391.64 N	22/10/2006	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.25	D10775				(0.60)	MADE GROUND: Dark grey brown very sandy gravelly organic clay with many fine rootlets. Gravel is sub-rounded to sub-angular fine and medium of sandstone [topsoil].		
0.50	D10775			24.43	0.60	MADE GROUND: Grey brown slightly sandy gravelly clay with occasional pockets of reddish brown fine sand. Gravel is sub-angular to angular fine to coarse of mudstone.		
0.75	D10775							
1.00	D10775							
1.20	D10775				(2.40)			
3.00	D10775		21/10/2006:	22.03	3.00	Complete at 3.00m		

Remarks
1. DS location CAT scanned prior and during excavation of inspection pit. 2. DS terminated at 3.0m upon the Engineer's approval within stiff clay. 3. Backfill details; 3.0 - 0.5m bentonite pellets, 0.5m - GL compacted arisings.

Scale (approx)	Logged By
1:50	APB

Figure No.

Produced by the GEOtechnical DAtabase SYstem (GEODASY) (C) all rights reserved

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Site	Number
M62 Package 1 [Fox's Bank Lane to Junction 6]	WS/M62/1/22

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler	101mm to 2.00m	23.18	AmeyMouchel	1327C
	Location	**Dates**	**Engineer**	**Sheet**
	346596.07 E 389434.46 N	21/10/2006	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				22.98	(0.20) 0.20	MADE GROUND: Grass over sandy topsoil with some roots [Driller's description].		
0.25	D29082							
0.50	D29082							
0.75	D29082			22.43	(0.55) 0.75	MADE GROUND: Firm brown/black sandy gravelly clay with occasional rootlets. Gravel is sub-rounded to sub-angular fine to coarse of sandstone and limestone.		
1.00	D29082							
1.20	D29082			21.98	(0.45) 1.20	MADE GROUND: Light brown slightly silty slightly gravelly fine and medium sand. Gravel is sub-angular fine to coarse of sandstone.		
1.20-2.20	L29082			21.48	(0.50) 1.70	MADE GROUND: Firm grey/brown sandy slightly gravelly clay. Gravel is sub-angular to angular fine to coarse of sandstone.		
						MADE GROUND: Reddish brown slightly clayey gravelly fine and medium sand. Gravel is sub-angular fine to coarse of sandstone.		
2.20	D29082			20.68	(0.80) 2.50	Stiff grey sandy slightly gravelly CLAY. Gravel is sub-angular fine and medium of mudstone.		
2.20-3.20	L29082							
3.20	D29083				(1.10)			
3.20-4.20	L29083			19.58	3.60	Stiff reddish brown sandy CLAY [Driller's description].		
				19.33	(0.25) 3.85	Grey slightly clayey slightly gravelly fine and medium SAND. Gravel is sub-rounded to sub-angular fine and medium of sandstone.		
4.20	D29083				(0.85)			
4.20-5.00	L29083			18.48	4.70	Dark brown slightly sandy slightly gravelly CLAY. Gravel is sub-rounded fine of mudstone and sandstone.		
5.00	D29083		21/10/2006:	18.18	(0.30) 5.00	Complete at 5.00m		

Remarks

Scale (approx)	Logged By
1:50	GL

Figure No.

Produced by the GEOtechnical DAtabase SYstem (GEODASY) (C) all rights reserved

BH B28

CONTRACT. LANCASHIRE YORKSHIRE MOTORWAY M62

LOCATION. TARBOCK TO CROFT (Site 4)

SHEET No. 1

No. of sheets. 1

CLIENT. SJ 48 NE/39
4662.8927
MINISTRY OF TRANSPORT

PERCUSSION U D S.P.T. B — Casing. Size 6" to. Size to.

ROTARY Cored runs O/H

Ground level. 68.33

Commenced. 28/2/68

Completed. 28/2/68

Weather. FINE

STRATUM (Scale: ½ inch to 1 foot)

1 Thickness	Depth 2	Sample No. 3	S.P.T. Blow Count (N) LL/PL/PI 4	5 LEGEND	M.C. % Core Rec. % 6	Type of Test 7	GRADING % PASSING SIEVE 3" 1½" ¾" ⅜" #200 — 8 RESULTS OF ANY OTHER TESTS	TAQ. or U.C.T. Bulk Density p.c.f. Shear /o° p.s.f.	Dev. Stress p.s.i.	Lat. Pres. p.s.i.	U.C.T. Stren. p.s.f. Shear/L° p.s.f.	9	WATER REMARKS 10
Top soil 1'0"	1'0"												Damp
Firm grey brown mottled sandy clay	2'0"	M1			41.7								Damp
	3'0"	U1	46/19/27 (CI)		32.9	UCT		119.5			1470		
					32.4			119.3			1470		
	4'6"	A1			33.8			119.7			1470		
	5'0"	M2			30.2								Wet
	5'6"	U2					- - - - 100						
6'0"	7'0"	A2					100 99 82 34 19						WS @ 7'0"
													SWL 5'0"
Soft grey/brown sandy clay	7'6"	P1	5 for 18" (total)		30.4		SO_3W 9.6 p.H 6.5						W1 - 5'0"
2'0"	9'0"												Wet
Weathered to hard purple/red sandstone	9'6"	P2	75 for 6" (total)		12.2								BHS @ 9'0"
	12'6"	P3	75 for 3½" (total)		9.2								
4'0"	13'0"												Dry
			BOREHOLE COMPLETED										OCB @ 13'0" Cas @ 9'0" Water Nil OWC.SWL 4'6"

REMARKS :

Sample	Depth	M.C. % D.W.	S.G.	C. B. R. Air Voids	Type	TOP 0.1	TOP 0.2	BOTTOM 0.1	BOTTOM 0.2	Value	COMPACTION B.S. 1377 No	Max. Dry Density	Optm M.C.

British Geological Survey

BH B29

CONTRACT. LANCASHIRE YORKSHIRE MOTORWAY M62

LOCATION. TARBOCK TO CROFT (Site 4)

CLIENT. SJ 48 NE/40
4671.8924
MINISTRY OF TRANSPORT

SHEET No. 1
No. of sheets. 1

Ground level. 69.60

Commenced. 6/11/67

Completed. 6/11/67

Weather. FINE

PERCUSSION U D S.P.T. B

ROTARY Cored runs O/H

Casing. Size 6" to. Size to.

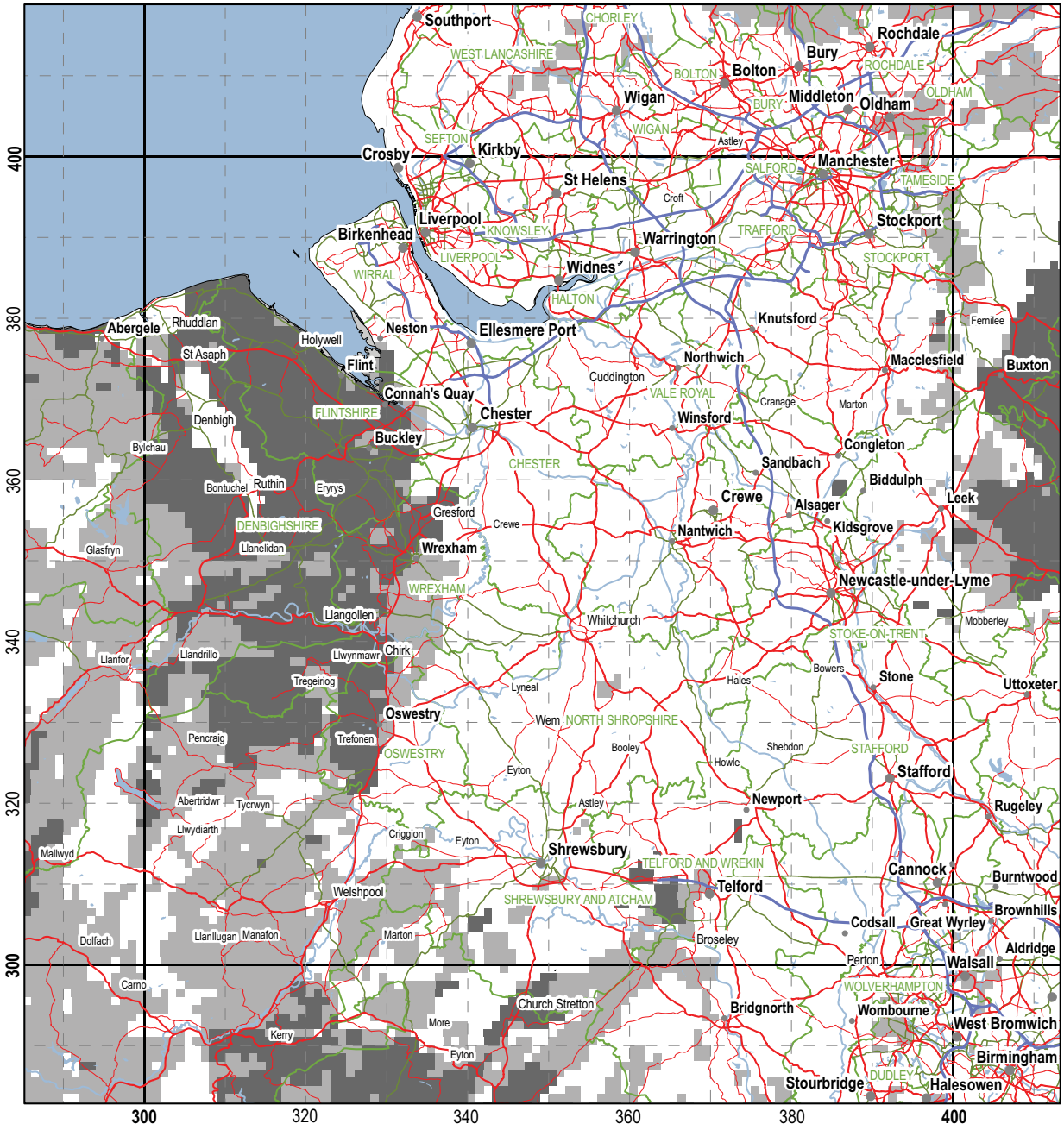
STRATUM (Scale: ½ inch to 1 foot)	Depth	Sample No.	S.P.T. Blow Count (N) LL/PL/PI	M.C. % Core Rec. %	Type of Test	GRADING % PASSING SIEVE 3"	1½"	¾"	⅜"	#7/16"	TAQ. or U.C.T. Bulk Density p.c.f. Shear /o° p.s.f.	Dev. Stress p.s.i.	Lat. Pres. p.s.i.	U.C.T. Stren. p.s.f. Shear/L° p.s.f.	WATER REMARKS
1 Thickness	2	3	4	6	7	8 RESULTS OF ANY OTHER TESTS								9	10
Top soil 1'0"	1'0"														
Stiff brown and grey mottled sandy stony clay, with pockets of sand	2'0"	M1		20.3											
	3'6"	U1		17.3	TAQ						108.4	8.1	20		
	5'0"	A1												576/0°	
	6'0"	M2		12.0											
	8'6"	U2		14.7	UCT						137.6			3212	
				14.3							136.8			3381	
	10'0"	A2		14.3							137.9			3635	Moist
9'6"	10'6"														
Very stiff brown sandy stony clay	11'0"	M3													
		U3		10.7	UCT						145.1			10328	
				10.4							145.6			7806	
	12'6"	A3		10.7							144.8			11409	
	15'0"	M4		11.3											
	16'0"														
6'0"	16'6"	U4		11.2	UCT						143.9			6365	Dry
Red clayey shaley marl				12.2							142.5			2282	
	17'6"	A4		11.8							142.1			2762	
	18'6"	U5	29/10/19 (CL)	9.9	TAQ						138.9	59.2	20		
				9.2							139.8	89.8	40		
	20'0"	A5		8.9							130.9	72.2	60		
														5314/0°	
						SO_3W 12.3 p.H 7.0									
	22'6"	M5		10.9											
	24'0"	U6		9.8	TAQ						121.2	32.6	20		
				9.1							119.2	41.2	40		Dry
8'6"	25'0"	A6		9.4							138.7	118.3	60		
			BOREHOLE COMPLETED											4608/0°	OCB @ 25'0" Cas @ 15'0" Water Nil OWC - BH Collapsed to 16'0" SWL 15'0" W1 - 15'0"

REMARKS:

Sample	Depth	M.C. % D.W.	S.G.	C. B. R. Air Voids	Type	TOP 0.1	TOP 0.2	BOTTOM 0.1	BOTTOM 0.2	Value	COMPACTION B.S. 1377 No	Max. Dry Density	Optm M.C.

APPENDIX 7

EXTRACTS OF RADON ATLAS FOR ENGLAND AND WALES



The shading indicates the maximum requirements for radon protective measures in any location within each 1-km grid square to satisfy the guidance in Building Regulations Approved Document C. The requirement for an existing building with a valid postal address can be obtained for a small charge from www.ukradon.org. The requirement for a site without a postal address is available through the British Geological Survey GeoReports service, http://shop.bgs.ac.uk/GeoReports/.

Level of protection required

- None
- Basic
- Full

Settlements

- Chester
- Oswestry
- Rhuddlan
- Bowers

Roads

- Motorways
- Primary Roads
- A Roads
- B Roads

National Grid

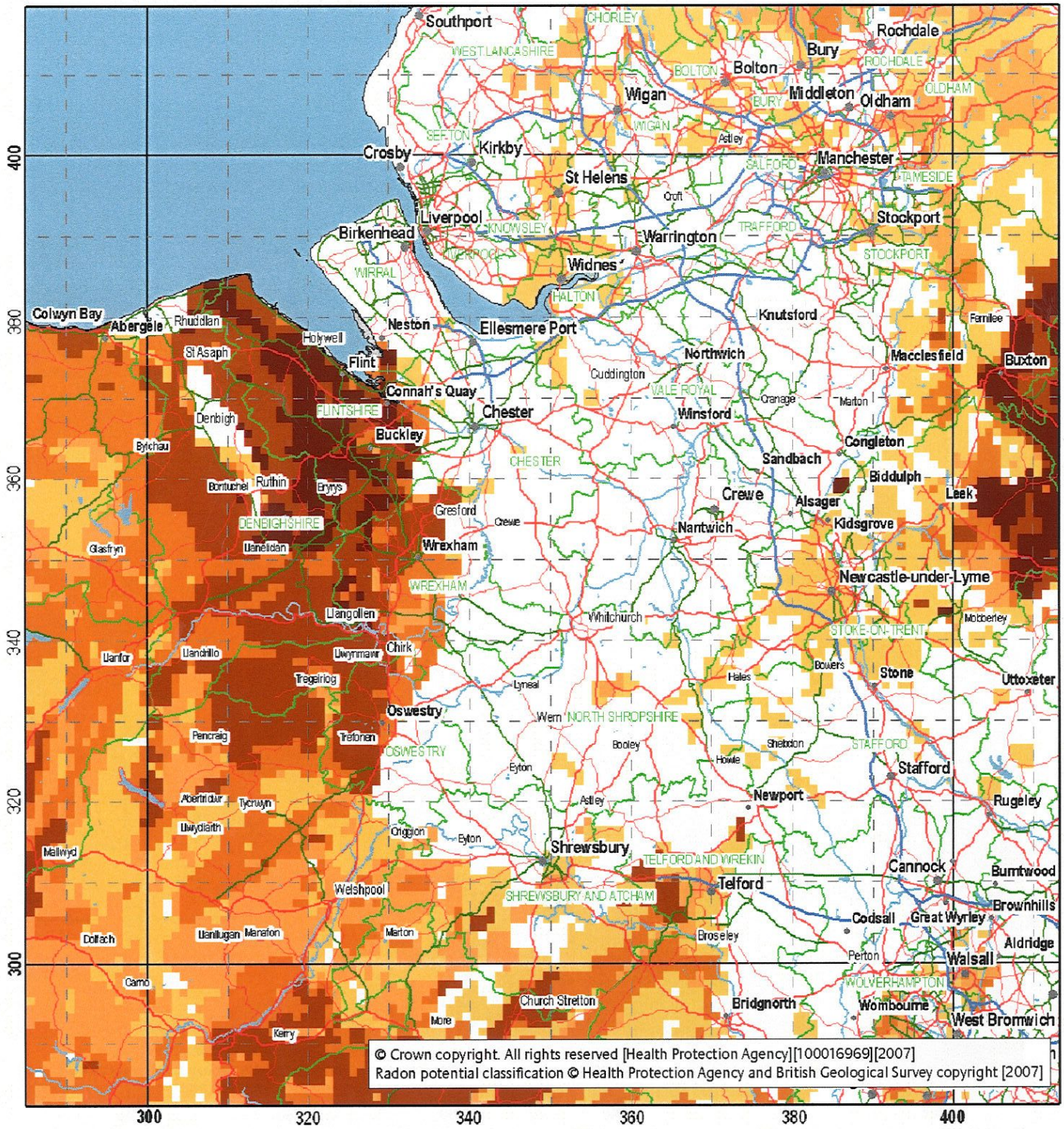
- 100-km
- 10-km

Other Features

- LOCAL ADMINISTRATIVE DISTRICT
- Water features

Map 13 Northern Welsh Marches and Liverpool, 100-km grid square SJ (axis numbers are the coordinates of the National Grid)

© Crown copyright. All rights reserved [Health Protection Agency][100016969][2007]
Radon potential classification © Health Protection Agency and British Geological Survey copyright [2007]



The colours show the maximum percentage band within each 1-km grid square of the national grid (see page 4). The best estimate for an individual property in a coloured square can be obtained for a small charge from www.ukradon.org. The white squares, the 0-1% band, contain no Affected Areas as defined by the HPA.

Percentage of homes at or above the Action Level

- 0 - 1
- 1 - 3
- 3 - 5
- 5 - 10
- 10 - 30
- Greater than 30

Settlements

- Chester
- Oswestry
- Rhuddlan
- Bowers

Roads

- Motorways
- Primary Roads
- A Roads
- B Roads

National Grid

- 100-km
- 10-km

Other Features

- LOCAL ADMINISTRATIVE DISTRICT
- Water features

MAP 13 Northern Welsh Marches and Liverpool, 100-km grid square SJ (axis numbers are the coordinates of the national grid)

APPENDIX 8

SITE FEATURES PLAN



Notes.

1 All dimensions and levels are in metres unless noted otherwise.

2 This drawing is to be read in conjunction with all relevant Architects and Service Engineers drawings.

Key

- Approximate Site Boundary
- Approximate Location of Historic Mineral Railway
- Approximate Location of Ravenhurst Pits
- Approximate Location of Sour Hey Pit
- Approximate Location of Historic Tank
- Approximate Location of Suspected Colliery Spoil Heap

Rev	Drawn	Date	Description

Drawing Status
INFORMATION

Contract
CRONTON ROAD, HUYTON

Drawing Title
SITE FEATURES PLAN

Integra
consulting
environmental

Suite 4, 14-32 Hewitt Street, Manchester, M15 4GB
email: environmental@integraconsulting.co.uk
web: www.integraconsulting.co.uk
tel: 0161 237 9310

Scales	Date
1:750@A1	AUGUST 2017
Drawn AJ	**Checked** AE
Contract No 2956	**Drawing No** SI–03 P1

APPENDIX 9

CONCEPTUAL SITE MODEL DIAGRAM

Notes.

1 This drawing is abstract and not to scale.

2 This drawing is to be read in conjunction with all relevant Architects and Service Engineers drawings.

Sources
1. On-Site Made Ground
2. Historic Mineral Railway
3. Historic Tank
4. Off-Site Colliery Spoil

Secondary Sources
5. Pooling Beneath Foundations
6. Pooling in Relative Low Points Above Glacial Till
7. Pooling Within Granular Lenses in Natural Cohesive Deposits

Ground Gas Sources
1. Made Ground - Infilled Ravenhurst Pits
2. Potential Organic Deposits
3. Underlying Coal Seam / Workings

Pathways To Human Health
1. Dermal Contact
2. Inhalation of Soil Dust and Vapours
3. Ingestion of Soil Directly

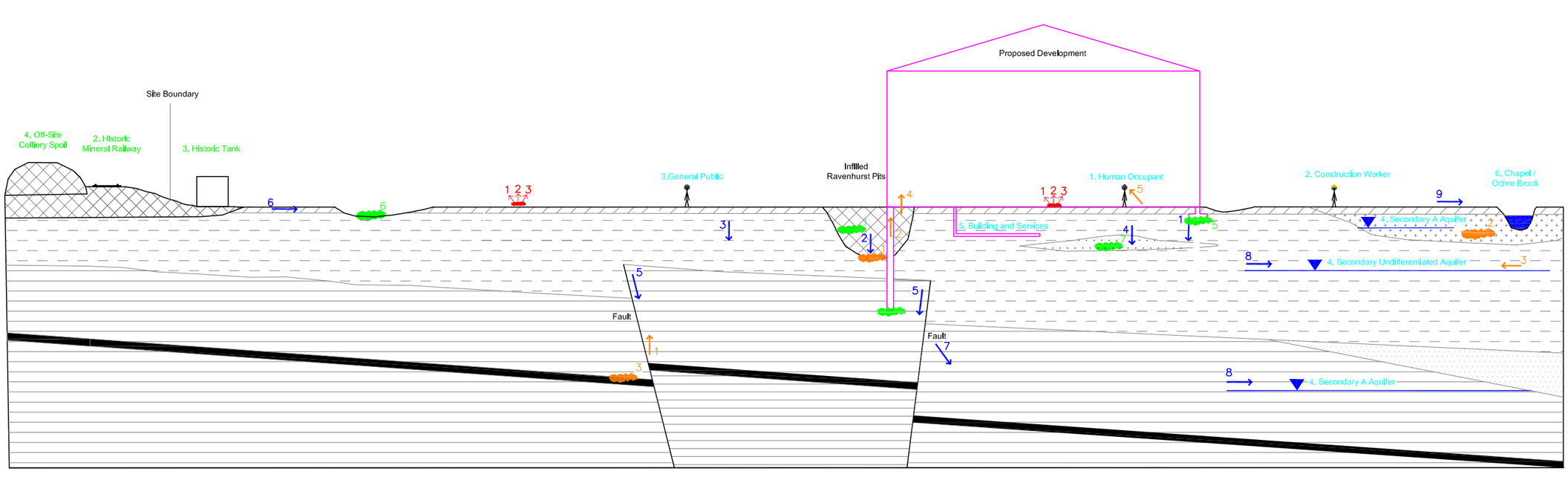
Pathways To Controlled Waters
1. Vertical Migration Along Future Foundations
2. Vertical Migration Through Granular Made Ground and Natural Deposits
3. Negligible Infiltration Through Low-Permeability Natural Deposits
4. Migration Through Granular Lenses Within Natural Cohesive Deposits
5. Migration along faults
6. Lateral Migration Along Low-Permeability Natural Deposits
7. Migration Through Porous Bedrock
8. Migration Along Groundwater Flow
9. Overland Flow

Ground Gas Pathways
1. Migration Through Fractures and Fissures in Bedrock
2. Preferential Migration Along Foundations, Service Ducts and Trenches
3. Dissolved Gases Within Groundwater
4. Ingress Through Wall Cavities / Floors and Subsequent Accumulation
5. Inhalation of Ground Gas and Vapours

Receptors
1. End Users
2. Construction Workers
3. General Public
4. Secondary Undifferentiated and Secondary A Aquifers
5. Buildings and Services
6. Surface Water Features - On-site brook / drain and off-site ponds and brook

Key:

- Made Ground
- Topsoil
- Alluvium
- Glacial Till
- Granular Lenses / Bands
- Etruria Formation
- Pennine Middle Coal Measures
- Coal Seam
- Water



Rev	Drawn	Date	Description

Drawing Status
INFORMATION

Contract
CRONTON ROAD, HUYTON

Drawing Title
CONCEPTUAL SITE MODEL FOR HUMAN HEALTH, GAS RISK AND CONTROLLED WATERS

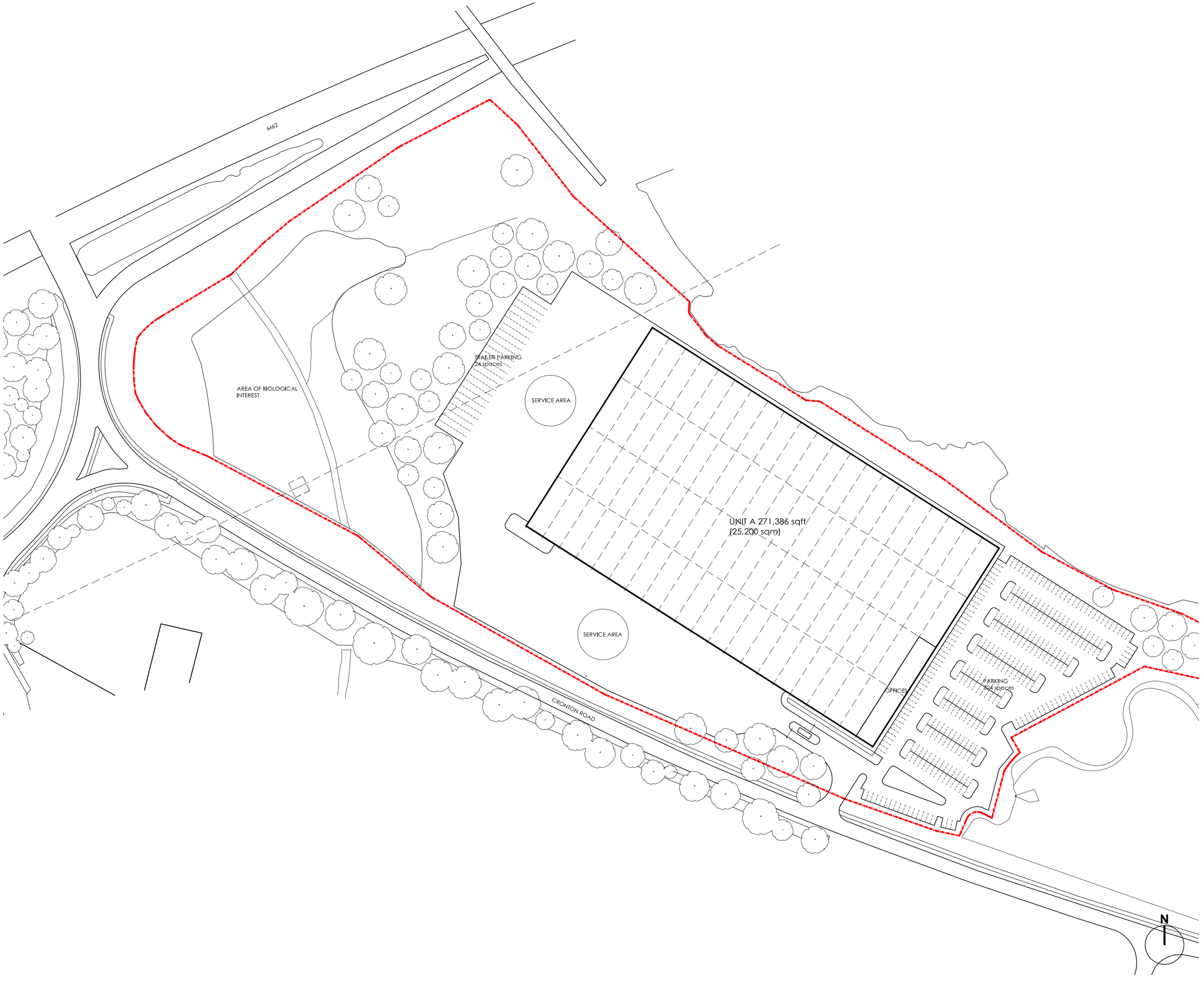
Integra
consulting environmental

Suite 4, 14-32 Hewitt Street, Manchester, M15 4GB
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tel: 0161 237 9310

Scales	N.T.S	Date	AUGUST 2017
Drawn	AJ	Checked	AE
Contract No	2956	Drawing No	SI–04 P1

APPENDIX 10

PROPOSED DEVELOPMENT PLAN



General Notes

All site dimensions shall be verified by the Contractor on site prior to commencing any works.

Do not scale from this drawing.

Only work to written dimensions.

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ACCOMMODATION SCHEDULE

UNIT A = 271,386sqft

TOTAL = 271,386sqft

SITE AREA = 22.14 acres

Revision

Scale	1:1250@A2
Status	SKETCH
Drawn by	NP
Date	05/08/15

Client
Maro Developments

Project
Cronton

Drawing Description
Proposed Site Plan - Option 3

Drawing No. PR366_SK03 Rev.

fletcher | rae
Architects | Master Planners | Designers

Hill Quays, 5 Jordan Street, Manchester, M15 4PY

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e ■ info@fletcher-rae.com

APPENDIX 11

INTEGRA CONSULTING ENVIRONMENTAL (MARCH 2016) LOGS AND PLAN

Notes.

1 All dimensions and levels are in metres unless noted otherwise.

2 This drawing is to be read in conjunction with all relevant Architects and Service Engineers drawings.

Key

- Approximate Site Boundary
- TP1 Approximate Location of Trial Pit
- Approximate Location of Historic Mineral Railway
- Integra Conjectured Location of Historic Ravenhurst Pits
- Approximate Location of Historic Sour Hey Pit
- Approximate Location of Water Feature
- Approximate Proposed 'Option 3' Building Envelope
- Line of Section

M62 Slip Road

Cronton Road

Chapel Brook

Fox's Brook

TP1 TP2 TP3 TP4 TP5 TP7 TP8

TPA TPB TPC TPD TPE TPF TPG TPH TPI TPJ TPK TPL TPM TPN TP6 TP6A TP6B

1 2

N

0 20m 40m 60m 80m 100m

Scale 1:750

SCALE 1:500 @ A1

0 10m 20m 30m 40m 50m

Scale 1:500

Rev	Drawn	Date	Description
A	JG	APR16	TPA to TPN added.

Drawing Status
PRELIMINARY

Contract
CRONTON ROAD, HUYTON

Drawing Title
SITE FEATURES PLAN

Integra
consulting
environmental

Suite 4, 14-32 Hewitt Street, Manchester, M15 4GB
email: environmental@integraconsulting.co.uk
web: www.integraconsulting.co.uk
tel: 0161 237 9310

Scales 1:750@A1	**Date** APRIL 2016
Drawn JG	**Checked** AE
Contract No 2956	**Drawing No** SI–01 P1

Integra Consulting 14-32 Hewitt Street Manchester M15 4GB	Trial Pit Log	Trialpit No **TP1** Sheet 1 of 2

Project Name: Cronton Road, Cronton	Project No. 2956	Co-ords: 346708.00 - 389464.00 Level: 23.80	Date 31/03/2016
Location: Cronton Road, Cronton		Dimensions (m): 3 × 1.5 Depth 5.10	Scale 1:25
Client: Maro Developments			Logged AE

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	23.50		MADE GROUND: TOPSOIL with frequent rootlets and rare half and whole bricks.
			HVP=125				MADE GROUND: Firm to stiff, dark brown, slightly sandy, gravelly CLAY with occasional whole bricks and angular cobbles of concrete. Gravel is angular of fine to coarse red brick, concrete, coal and mixed lithologies.
			HVP=125				
			HVP=150	2.75	21.05		Stiff to very stiff, friable in places, light brown, mottled light greyish blue and yellow, slightly sandy, slightly silty, gravelly CLAY with occasional rounded to subangular boulders of mixed lithologies and occasional gravel to cobble sized pockets of sand. *Becoming very stiff from 3.00m.*
				4.90	18.90		Greyish green SANDSTONE
							Continued on next sheet

1 2 3 4 5

Remarks: 23 tonne excavator with 600mm toothed bucket struggled to excavate bedrock from 4.90m bgl.

Stability: Stable

AGS

Integra Consulting
14-32 Hewitt Street
Manchester
M15 4GB

Trial Pit Log

Trialpit No
TP1
Sheet 2 of 2

Project Name: Cronton Road, Cronton	Project No. 2956	Co-ords: 346708.00 - 389464.00 Level: 23.80	Date 31/03/2016
Location: Cronton Road, Cronton		Dimensions (m): 3 × 1.5, Depth 5.10	Scale 1:25
Client: Maro Developments			Logged AE

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				5.10	18.70		End of pit at 5.10 m

6
7
8
9
10

Remarks: 23 tonne excavator with 600mm toothed bucket struggled to excavate bedrock from 4.90m bgl.

Stability: Stable

Integra Consulting
14-32 Hewitt Street
Manchester
M15 4GB

Trial Pit Log

Trialpit No
TP2
Sheet 1 of 2

Project Name: Cronton Road, Cronton	Project No. 2956	Co-ords: 346675.00 - 389375.00 Level: 21.70	Date 31/03/2016
Location: Cronton Road, Cronton		Dimensions (m): Depth 5.25, 3 × 1.5	Scale 1:25
Client: Maro Developments			Logged AE

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30	21.40		TOPSOIL with frequent rootlets.
			HVP=120				Firm to stiff, friable, light brownish grey, slightly sandy CLAY with rare rounded to subangular gravel and cobbles of mixed lithologies.
			HVP=150				*Gravel comprising suspected weathered grey sandstone from 1.85m.* *Becoming very friable from 1.90m.*
			HVP=150				*Becoming reddish brown and sandy with frequent rounded to subangular cobbles of sandstone from 3.60m.* *Very sandy from 4.30m to 4.60m.* *Damp at 4.60m.*

1 2 3 4 5

Continued on next sheet

Remarks:

Stability: Stable

AGS

Integra Consulting
14-32 Hewitt Street
Manchester
M15 4GB

Trial Pit Log

Trialpit No
TP2
Sheet 2 of 2

Project Name: Cronton Road, Cronton	Project No. 2956	Co-ords: 346675.00 - 389375.00 Level: 21.70	Date 31/03/2016
Location: Cronton Road, Cronton		Dimensions (m): Depth 5.25 — 3 × 1.5	Scale 1:25
Client: Maro Developments			Logged AE

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				5.15	16.55		Weathered pink SANDSTONE.
				5.25	16.45		End of pit at 5.25 m

6
7
8
9
10

Remarks:

Stability: Stable

Integra Consulting
14-32 Hewitt Street
Manchester
M15 4GB

Trial Pit Log

Trialpit No
TP3
Sheet 1 of 2

Project Name: Cronton Road, Cronton	Project No. 2956	Co-ords: 346772.00 - 389388.00 Level: 24.40	Date 31/03/2016
Location: Cronton Road, Cronton		Dimensions (m): Depth 5.70, 3 × 1.5	Scale 1:25
Client: Maro Developments			Logged AE

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.40	24.00		MADE GROUND: TOPSOIL with frequent half and whole bricks.
							MADE GROUND: Soft to firm, grey, organic, very sandy CLAY with occasional half and whole bricks and rare large concrete boulders (600mm in diameter).
			HVP=100	0.85	23.55		Stiff, friable, brown, mottled greyish green in places, sandy CLAY with occasional gravel of rounded to subangular, fine to coarse mixed lithologies.
							Land drain (50mm in diameter) at 1.10m.
			HVP=175				*Becoming very friable with angular gravel and cobbles of greyish green sandstone from 1.80m.*
							Becoming very stiff and very sandy in places from 4.00m.
							Becoming dark greyish brown from 4.20m.
							Becoming slightly sandy with frequent subrounded to angular gravel and cobbles of greyish green sandstone from 4.80m.
							Continued on next sheet

1 2 3 4 5

Remarks:

Stability: Stable

AGS

Integra Consulting
14-32 Hewitt Street
Manchester
M15 4GB

Trial Pit Log

Trialpit No
TP3
Sheet 2 of 2

Project Name: Cronton Road, Cronton	Project No. 2956	Co-ords: 346772.00 - 389388.00 Level: 24.40	Date 31/03/2016
Location: Cronton Road, Cronton		Dimensions (m): Depth 5.70 — 3 × 1.5	Scale 1:25
Client: Maro Developments			Logged AE

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				5.50	18.90		Suspected greenish grey SANDSTONE.
				5.70	18.70		End of pit at 5.70 m

6
7
8
9
10

Remarks:

Stability: Stable

Integra Consulting 14-32 Hewitt Street Manchester M15 4GB	# Trial Pit Log	Trialpit No **TP4** Sheet 1 of 1

Project Name: Cronton Road, Cronton	Project No. 2956	Co-ords: 346740.00 - 389266.00 Level: 21.20	Date 31/03/2016
Location: Cronton Road, Cronton		Dimensions (m): 3 × 1.5 Depth 4.50	Scale 1:25
Client: Maro Developments			Logged AE

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
							TOPSOIL with frequent rootlets.
				0.30	20.90		Firm, light brown, sandy CLAY.
				0.50	20.70		Stiff, dark orangish brown, slightly gravelly, sandy CLAY with occasional gravel to cobble sized pockets of grey sand. Gravel is rounded to subangular of fine mixed lithologies.
			HVP=100				*Damp at 0.60m.*
							Becoming friable and very gravelly from 1.20m.
			HVP=175				*Becoming very stiff from 1.70m.*
							Medium bed of damp, slightly gravelly, fine to coarse sand (250mm in thickness).
				3.00	18.20		Very stiff to hard, friable, dark brown, slightly sandy, very gravelly CLAY with angular boulders of greyish green sandstone. Gravel is rounded to subangular of fine mixed lithologies.
				4.50	16.70		End of pit at 4.50 m

Remarks:

Stability: Stable

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Trial Pit Log

Trialpit No
TP5
Sheet 1 of 1

Project Name: Cronton Road, Cronton	Project No. 2956	Co-ords: 346849.00 - 389297.00 Level: 23.80	Date 31/03/2016
Location: Cronton Road, Cronton		Dimensions (m): Depth 4.00, 3 × 1.5	Scale 1:25
Client: Maro Developments			Logged AE

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.25	23.55		TOPSOIL.
				0.40	23.40		Firm, light yellowish brown, sandy CLAY.
			HVP=120				Stiff, orangish brown, sandy CLAY with frequent angular gravel and cobbles of greyish green sandstone, coal and mixed lithologies and rare to occasional boulder sized lenses of sand.
							Becoming friable from 0.90m.
							Land drain (100mm in thickness) at 1.20m.
							Becoming very stiff, damp and very gravelly from 2.20m.
				3.20	20.60		Stiff to very stiff, orangish brown, slightly silty, slightly gravelly, sandy CLAY with frequent cobbles and rare to occasional boulder sized lenses of sand. Gravel and cobbles are angular of greyish green sandstone, coal and mixed lithologies.
				4.00	19.80		End of pit at 4.00 m

1 2 3 4 5

Remarks: 23 tonne excavator with 600mm toothed bucket struggling to excavate from 3.00m bgl.

Stability: Stable

AGS

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Project Name:	Cronton Road, Cronton	Project No. 2956	Co-ords: 346839.00 - 389211.00 Level: 20.60	Date 31/03/2016
Location:	Cronton Road, Cronton		Dimensions (m): 3 × 2.5 Depth 3.30	Scale 1:25
Client:	Maro Developments			Logged AE

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
							MADE GROUND: TOPSOIL.
				0.20	20.40		MADE GROUND: Loose to very loose, grey, clayey, angular GRAVEL, COBBLES and BOULDERS of mudstone and sandstone.
				3.00	17.60		Soft, dark grey, organic, peaty CLAY.
				3.10	17.50		Stiff, red, slightly sandy CLAY.
				3.30	17.30		End of pit at 3.30 m

Remarks:

Stability: Multiple collapses within made ground deposits.

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Trial Pit Log

Trialpit No
TP6A
Sheet 1 of 1

Project Name: Cronton Road, Cronton	Project No. 2956	Co-ords: 346846.00 - 389222.00 Level: 21.00	Date 31/03/2016
Location: Cronton Road, Cronton		Dimensions (m): 3 x 1.5 Depth 2.30	Scale 1:25
Client: Maro Developments			Logged AE

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Loose to very loose, grey, clayey, angular GRAVEL, COBBLES and BOULDERS of mudstone and sandstone.
				1.60	19.40		Firm, dark brown CLAY.
				2.30	18.70		End of pit at 2.30 m

Remarks:

Stability: Stable

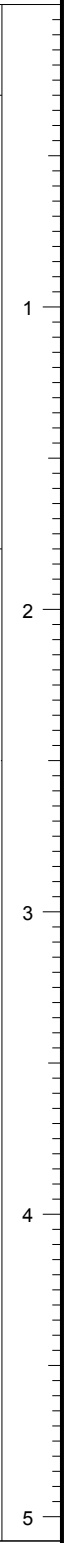
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Trial Pit Log

Trialpit No
TP6B
Sheet 1 of 1

Project Name: Cronton Road, Cronton	Project No. 2956	Co-ords: 346831.00 - 389191.00 Level: 20.10	Date 31/03/2016
Location: Cronton Road, Cronton		Dimensions (m): Depth 2.50 — 2.5 × 1.5	Scale 1:25
Client: Maro Developments			Logged AE

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30	19.80		MADE GROUND: TOPSOIL with frequent rootlets.
				1.80	18.30		MADE GROUND: Loose, grey, clayey, angular GRAVEL, COBBLES and BOULDERS of mudstone and sandstone.
				2.50	17.60		Firm, brown, sandy CLAY. End of pit at 2.50 m



Remarks: Depth to natural recorded to be 1.60m at the north of the pit and 2.00m in the south of the pit.

Stability: Stable

AGS

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Trial Pit Log

Trialpit No
TP7
Sheet 1 of 1

Project Name:	Cronton Road, Cronton	Project No. 2956	Co-ords: 346950.00 - 389256.00 Level: 23.40	Date 31/03/2016
Location:	Cronton Road, Cronton	Dimensions (m): Depth 4.90	3 × 1.5	Scale 1:25
Client:	Maro Developments			Logged AE

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20	23.20		TOPSOIL.
							Firm to stiff, light brownish orange, slightly gravelly, sandy CLAY. Gravel is rounded to subangular of fine mixed lithologies.
			HVP=100				*Becoming stiff from 1.20m.*
							Becoming friable, mottled greenish grey and sandy from 2.00m.
							Becoming dark brown from 2.60m.
				4.90	18.50		End of pit at 4.90 m

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Remarks:

Stability: Stable

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Trial Pit Log

Trialpit No
TP8
Sheet 1 of 1

Project Name: Cronton Road, Cronton	Project No. 2956	Co-ords: 346952.00 - 389180.00 Level: 20.40	Date 31/03/2016
Location: Cronton Road, Cronton		Dimensions (m): Depth 2.70 — 3 × 1.5	Scale 1:25
Client: Maro Developments			Logged AE

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30	20.10		TOPSOIL with frequent rootlets.
							Firm, friable, light brown, mottled greenish grey, sandy CLAY.
							With frequent rootlets to 1.30m.
							Becoming brown from 0.80m.
							Thin band of red sand (100mm in thickness) at 1.10m.
							Becoming stiff from 1.90m.
							Becoming very stiff and very friable from 2.30m.
							With rounded to subangular cobbles of greenish grey sandstone from 2.50m.
				2.70	17.70		End of pit at 2.70 m

Remarks:

Stability: Stable

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Trial Pit Log

Trialpit No
TPA
Sheet 1 of 1

Project Name: Cronton Road, Cronton	Project No. 2956	Co-ords: 346850.00 - 389179.00 Level: 19.70	Date 14/04/2016
Location: Cronton Road, Cronton		Dimensions (m): Depth 1.70 — 3 × 2	Scale 1:25
Client: Maro Developments			Logged JG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30	19.40		MADE GROUND: TOPSOIL with frequent rootlets.
							MADE GROUND: Loose to very loose, dark grey, angular GRAVEL, COBBLES and BOULDERS of mudstone and mixed lithologies.
				1.50	18.20		Firm to stiff, red, sandy CLAY.
				1.70	18.00		End of pit at 1.70 m

Remarks:

Stability: Multiple collapses within made ground deposits.

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Trial Pit Log

Trialpit No
TPB
Sheet 1 of 1

Project Name: Cronton Road, Cronton	Project No. 2956	Co-ords: 346866.00 - 389175.00 Level: 19.90	Date 14/04/2016
Location: Cronton Road, Cronton		Dimensions (m): 3 × 2, Depth 0.50	Scale 1:25
Client: Maro Developments			Logged JG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
▼				0.30	19.60		TOPSOIL with frequent rootlets.
				0.50	19.40		Stiff, friable, reddish brown, slightly sandy, slightly silty, gravelly CLAY with occasional rounded to subangular cobbles of mixed lithologies and occasional gravel to cobble sized pockets of sand.
							End of pit at 0.50 m

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Remarks:

Stability: Stable

AGS

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Trial Pit Log

Trialpit No
TPC
Sheet 1 of 1

Project Name: Cronton Road, Cronton	Project No. 2956	Co-ords: 346859.00 - 389176.00 Level: 19.80	Date 14/04/2016
Location: Cronton Road, Cronton		Dimensions (m): Depth 0.30 — 3 × 2	Scale 1:25
Client: Maro Developments			Logged JG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
▼				0.20	19.60		TOPSOIL with frequent rootlets.
				0.30	19.50		Stiff, friable, reddish brown, slightly sandy, slightly silty, gravelly CLAY with occasional rounded to subangular cobbles of mixed lithologies and occasional gravel to cobble sized pockets of sand.
							End of pit at 0.30 m

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Remarks:

Stability: Stable

AGS

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Trial Pit Log

Trialpit No
TPD
Sheet 1 of 1

Project Name: Cronton Road, Cronton	Project No. 2956	Co-ords: 346858.00 - 389210.00 Level: 20.90	Date 14/04/2016
Location: Cronton Road, Cronton		Dimensions (m): Depth 1.00 — 4 × 2	Scale 1:25
Client: Maro Developments			Logged JG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20	20.70		MADE GROUND: TOPSOIL with frequent rootlets.
				0.80	20.10		MADE GROUND: Loose to very loose, grey, angular GRAVEL, COBBLES and BOULDERS of mudstone and mixed lithologies.
				1.00	19.90		Firm to stiff, red, sandy CLAY.
							End of pit at 1.00 m

Remarks:

Stability: Multiple collapses within made ground deposits.

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Trial Pit Log

Trialpit No
TPE
Sheet 1 of 1

Project Name: Cronton Road, Cronton	Project No. 2956	Co-ords: 346866.00 - 389212.00 Level: 21.20	Date 14/04/2016
Location: Cronton Road, Cronton		Dimensions (m): Depth 1.30 — 6 × 2	Scale 1:25
Client: Maro Developments			Logged JG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20	21.00		MADE GROUND: TOPSOIL with frequent rootlets.
				0.30	20.90		MADE GROUND: Loose to very loose, grey, angular GRAVEL, COBBLES and BOULDERS of mudstone and mixed lithologies.
							Stiff, friable, reddish brown, slightly sandy, slightly silty, gravelly CLAY with occasional rounded to subangular cobbles of mixed lithologies and occasional gravel to cobble sized pockets of sand.
				1.30	19.90		End of pit at 1.30 m

Remarks:

Stability: Stable

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Trial Pit Log

Trialpit No
TPF
Sheet 1 of 1

Project Name: Cronton Road, Cronton	Project No. 2956	Co-ords: 346853.00 - 389260.00 Level: 22.60	Date 14/04/2016
Location: Cronton Road, Cronton		Dimensions (m): Depth 0.70, 2 × 3	Scale 1:25
Client: Maro Developments			Logged JG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30	22.30		TOPSOIL with frequent rootlets.
				0.70	21.90		Stiff, friable, reddish brown, slightly sandy, slightly silty, gravelly CLAY with occasional rounded to subangular cobbles of mixed lithologies and occasional gravel to cobble sized pockets of sand. *Suspected land drain - moderate inflow of water.* End of pit at 0.70 m

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Remarks:

Stability: Stable

AGS

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Trial Pit Log

Trialpit No
TPG
Sheet 1 of 1

Project Name: Cronton Road, Cronton	Project No. 2956	Co-ords: 346858.00 - 389235.00 Level: 21.60	Date 14/04/2016
Location: Cronton Road, Cronton		Dimensions (m): Depth 0.70 (2 × 3)	Scale 1:25
Client: Maro Developments			Logged JG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20	21.40		TOPSOIL with frequent rootlets.
				0.70	20.90		Stiff, friable, reddish brown, slightly sandy, slightly silty, gravelly CLAY with occasional rounded to subangular cobbles of mixed lithologies and occasional gravel to cobble sized pockets of sand.
							End of pit at 0.70 m

Remarks:

Stability: Stable

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Trial Pit Log

Trialpit No
TPH
Sheet 1 of 1

Project Name:	Cronton Road, Cronton	Project No. 2956	Co-ords: 346847.00 - 389233.00 Level: 21.30	Date 14/04/2016
Location:	Cronton Road, Cronton	Dimensions (m): Depth 1.50	3 × 2	Scale 1:25
Client:	Maro Developments			Logged JG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20	21.10		MADE GROUND: TOPSOIL with frequent rootlets.
							MADE GROUND: Very loose, dark grey, angular GRAVEL, COBBLES and BOULDERS of mudstone and mixed lithologies. *Fibrous pipe fragments (200mm in thickness) at 0.40m.*
				1.20	20.10		Stiff, friable, reddish brown, slightly sandy, slightly silty, gravelly CLAY with occasional rounded to subangular cobbles of mixed lithologies and occasional gravel to cobble sized pockets of sand.
				1.50	19.80		End of pit at 1.50 m

Remarks:

Stability: Multiple collapses within made ground deposits.

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Trial Pit Log

Trialpit No
TPI
Sheet 1 of 1

Project Name: Cronton Road, Cronton	Project No. 2956	Co-ords: 346825.00 - 389224.00 Level: 20.90	Date 14/04/2016
Location: Cronton Road, Cronton		Dimensions (m): 3 × 2, Depth 0.50	Scale 1:25
Client: Maro Developments			Logged JG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30	20.60		MADE GROUND: TOPSOIL with frequent rootlets.
				0.50	20.40		MADE GROUND: Loose to very loose, grey, angular GRAVEL, COBBLES and BOULDERS of mudstone and mixed lithologies.
							End of pit at 0.50 m

Remarks:

Stability: Stable

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Trial Pit Log

Trialpit No
TPJ
Sheet 1 of 1

Project Name:	Cronton Road, Cronton	Project No. 2956	Co-ords: 346822.00 - 389239.00 Level: 21.30	Date 14/04/2016
Location:	Cronton Road, Cronton	Dimensions (m): Depth 1.40	6 × 2	Scale 1:25
Client:	Maro Developments			Logged JG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20	21.10		MADE GROUND: TOPSOIL with frequent rootlets.
				0.50	20.80		MADE GROUND: Loose to very loose, dark grey, angular GRAVEL, COBBLES and BOULDERS of mudstone and mixed lithologies.
				1.40	19.90		Stiff, friable, reddish brown, slightly sandy, slightly silty, gravelly CLAY with occasional rounded to subangular cobbles of mixed lithologies and occasional gravel to cobble sized pockets of sand.
							End of pit at 1.40 m

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Remarks:

Stability: Multiple collapses within made ground deposits.

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Trial Pit Log

Trialpit No
TPK
Sheet 1 of 1

Project Name: Cronton Road, Cronton	Project No. 2956	Co-ords: 346821.00 - 389208.00 Level: 20.50	Date 14/04/2016
Location: Cronton Road, Cronton		Dimensions (m): Depth 1.00 — 6 × 2	Scale 1:25
Client: Maro Developments			Logged JG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20	20.30		MADE GROUND: TOPSOIL with frequent rootlets.
				0.50	20.00		MADE GROUND: Loose to very loose, grey, angular GRAVEL, COBBLES and BOULDERS of mudstone and mixed lithologies.
				1.00	19.50		Stiff, friable, reddish brown, slightly sandy, slightly silty, gravelly CLAY with occasional rounded to subangular cobbles of mixed lithologies and occasional gravel to cobble sized pockets of sand.
							End of pit at 1.00 m

1 2 3 4 5

Remarks:

Stability: Multiple collapses within made ground.

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Trial Pit Log

Trialpit No
TPL
Sheet 1 of 1

Project Name: Cronton Road, Cronton	Project No. 2956	Co-ords: 346824.00 - 389180.00 Level: 19.70	Date 14/04/2016
Location: Cronton Road, Cronton		Dimensions (m): 10 × 2, Depth 3.20	Scale 1:25
Client: Maro Developments			Logged JG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: TOPSOIL with frequent rootlets.
				0.30	19.40		MADE GROUND: Very loose, grey, angular GRAVEL, COBBLES and BOULDERS of mudstone and mixed lithologies.
				2.00	17.70		Stiff, friable, reddish brown, slightly sandy, slightly silty, gravelly CLAY with occasional rounded to subangular cobbles of mixed lithologies and occasional gravel to cobble sized pockets of sand.
				3.20	16.50		End of pit at 3.20 m

Remarks:

Stability: Multiple collapses within made ground deposits.

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Trial Pit Log

Trialpit No
TPM
Sheet 1 of 1

Project Name: Cronton Road, Cronton	Project No. 2956	Co-ords: 346835.00 - 389245.00 Level: 21.50	Date 14/04/2016
Location: Cronton Road, Cronton		Dimensions (m): Depth 2.30, 1.5 × 5	Scale 1:25
Client: Maro Developments			Logged JG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30	21.20		MADE GROUND: TOPSOIL with frequent rootlets.
							MADE GROUND: Loose to very loose, dark grey, angular GRAVEL, COBBLES and BOULDERS of mudstone and mixed lithologies.
							Suspected land drain - continuous fast inflow of water.
				2.00	19.50		Firm to stiff, brown, sandy CLAY.
				2.30	19.20		End of pit at 2.30 m

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Remarks:

Stability: Multiple collapses within made ground.

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Trial Pit Log

Trialpit No
TPN
Sheet 1 of 1

Project Name: Cronton Road, Cronton	Project No. 2956	Co-ords: 346826.00 - 389255.00 Level: 21.90	Date 14/04/2016
Location: Cronton Road, Cronton		Dimensions (m): Depth 1.60 — 4 × 2	Scale 1:25
Client: Maro Developments			Logged JG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30	21.60		MADE GROUND: TOPSOIL with frequent rootlets.
				1.20	20.70		MADE GROUND: Loose to very loose, dark grey, sandy, angular GRAVEL, COBBLES, BOULDERS of mudstone and mixed lithologies.
				1.60	20.30		Firm, reddish brown, slightly gravelly, sandy CLAY with occasional rounded to subangular cobbles of mixed lithologies and occasional gravel to cobble sized pockets of sand. End of pit at 1.60 m

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Remarks:

Stability: Multiple collapses within made ground deposits.

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APPENDIX 12

SOIL MECHANICS CRONTON COLLIERY SITE INVESTIGATION (2003) FACTUAL REPORT

Soil Mechanics

The UK's leading geotechnical specialists

Report No F3605

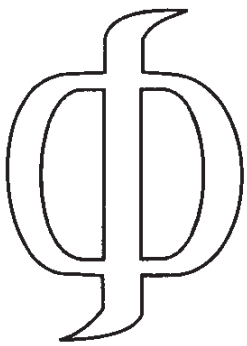
CRONTON COLLIERY, KNOWSLEY

FACTUAL REPORT ON GROUND INVESTIGATION

Carried out for : Maro Developments

Engineer : Parkman

Date : October 2003



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CRONTON COLLIERY, KNOWSLEY
FACTUAL REPORT ON GROUND INVESTIGATION

Report No: F3605
Date: October 2003

Client:

Maro Developments

Engineer:

Parkman
Parkman House
Lloyd Drive
Ellesmere Port
Cheshire
CH65 9HQ

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	3.1 General	
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ENCLOSURES

A EXPLORATORY HOLE RECORDS
B INSTRUMENTATION MONITORING
C IN SITU TESTING
D GEOTECHNICAL LABORATORY TEST RESULTS
E GEOENVIRONMENTAL LABORATORY TEST RESULTS
F DRAWINGS
G PHOTOGRAPHS

1 INTRODUCTION

During July 2003 Soil Mechanics (SM) were commissioned by Parkman (Pm), on behalf of Maro Developments (MD), to carry out a ground investigation at Cronton Colliery. The investigation was required to obtain geotechnical and geoenvironmental information for the proposed development of a business park.

The scope of the investigation, which was specified by Pm, comprised cable percussion and rotary drilled boreholes, trial pitting, in situ testing and laboratory testing. The investigation was carried out in accordance with the contract specification and relevant standards (see References). The fieldwork was carried out between 28th July and 20th August 2003.

This report presents the factual records of the fieldwork and laboratory testing.

2 THE SITE AND GEOLOGY

2.1 The Site

Cronton Colliery is situated in the Cronton area of Knowsley. The site is at National Grid reference SJ 472 893, see Site Location Plan in Enclosure F.

The site is approximately 70 hectares and is bounded by the A5080 to the south, the M62 to the north and Foxes Bank Lane to the east. The eastern part of the site was formerly a colliery, and has extensive colliery spoil heaps. The rest of the site is covered by farmland and wooded areas.

2.2 Published Geology

The published geological map covering the site, BGS Sheet 97 (1997), shows alluvium to the south east (associated with Foxes Bank Brook), and generally Glacial Till overlying Coal Measures to the west and Permo-Triassic Sandstone to the east.

3 FIELDWORK

3.1 General

The fieldwork was carried out in general accordance with BS 5930 (1999) and Part 9 of BS 1377 (1990).

The exploratory hole were selected by Pm as shown on the Site Plan in Enclosure F. The locations were set out using dGPS. The co-ordinates and reduced levels were surveyed by Pelorus Surveys to National Grid and Ordnance Datum.

3.2 Exploratory Holes

The exploratory holes are listed in the following table.

SUMMARY OF EXPLORATORY HOLES

Type	Quantity	Maximum Depth (m)	Remarks
Cable Percussion Boring	33	13.00	
Rotary Open Hole extended by Rotary Core Drilling	3	24.30	
Rotary Open Hole Drilling	2	30.40	
Trial Pits	49	4.50	machine dug

The exploratory hole records are presented in Enclosure A and should be read in conjunction with the Key included therein. The records provide descriptions, in accordance with BS 5930 (1999), of the materials encountered and details of the samples taken, together with observations made during boring, drilling and pitting. Photographs of the trial pits and recovered cores are presented in Enclosure G.

3.3 Instrumentation and Monitoring

The instruments installed in the exploratory holes are shown on the logs. Records of groundwater and gas monitoring carried out by SM after the fieldwork period are presented in Enclosure B.

3.4 In Situ Testing

In situ testing was carried in accordance with BS5930 (1999) and Part 9 of BS1377 (1990) unless otherwise stated. The testing is summarised below and the results are presented in Enclosure C.

SUMMARY OF IN SITU TESTING

Type	Quantity	Remarks
In situ vane tests	43	Results On Exploratory Hole logs
In situ penetrometer tests	83	Results On Exploratory Hole logs
Sand replacement	9	Within Trial Pits
Nuclear Density	105	Within Trial Pits
Packer	3	Within Rotary Boreholes

4 LABORATORY TESTING

On completion of the fieldwork all samples were transported to the Deeside laboratory of SM for temporary retention and testing. The laboratory testing was scheduled by Pm.

The geotechnical testing was carried out in accordance with BS 1377 (1990) and ISRM (1981) and ISRM (1985). The testing is summarised below and the results are presented in Enclosure D.

SUMMARY OF GEOTECHNICAL LABORATORY TESTING

Type	Remarks
Moisture Content Determination	102 Tests
Atterberg Limit Determination	15 Tests
Particle Size Distribution Analysis	40 Tests
pH Level and Sulphate Content of Soils	200 Tests
Unconsolidated Undrained Triaxial Compression Testing	6 Tests
One Dimensional Oedometer Consolidation Testing	2 Tests
Consolidated Triaxial Test with measurements of Porewater Pressure	2 Tests
Heavy Compaction Testing	7 Tests
CBR Testing	7 Tests

The geoenvironmental laboratory testing was carried out by TES Bretby at their Burton on Trent laboratory. The results are presented in Enclosure E.

Prepared By	**Melody Wareing BSc FGS**
Reviewed By	**James Northeast BSc**
Approved for Issue By	**John Knowles BSc MSc FGS**

REFERENCES

British Standards and Codes of Practice

BS 1377 : 1990 : Methods of test for soils for civil engineering purposes. British Standards Institution.

BS 5930 : 1999 : Code of practice for site investigations. British Standards Institution.

Geological Maps

BGS England and Wales Sheet 97 : 1997 : Runcorn. 1:63 360 geological map (solid) and (drift). British Geological Survey

Publications and Reports

ISRM : 1981 : Rock Characterisation, Testing and Monitoring - ISRM Suggested Methods (Ed E T Brown). Commission on Testing Methods, International Society for Rock Mechanics, Pergamon Press.

ISRM : 1985 : Suggested method for determining point load strength. Commission on Testing Methods, International Society for Rock Mechanics, International Journal of Rock Mechanics, Mining Sciences and Geomechanics Abstracts, Vol 22.

ENCLOSURE A
EXPLORATORY HOLE RECORDS

	Key
Key to Exploratory Hole Records	
Borehole Logs	101 to 131, 102A, 111A, P1/11, P2/10, P2/11, P2/13, P2/14
Trial Pit Logs	TP1/1 to TP1/7, TP2/1 to TP2/11, TP3/1 to TP3/11, TP4/1 to TP4/3, TP31 toTP47

Key to Exploratory Hole Records

Soil Mechanics

SAMPLES

Undisturbed

U	Driven tube sample
TW	Pushed thin wall tube sample } nominally 100 mm diameter and full recovery unless otherwise stated
P	Pushed piston sample
L	Liner sample (from Windowless or similar sampler), full recovery unless otherwise stated
CBR	CBR mould sample
BLK	Block sample
CS	Core sample (from rotary core) taken for laboratory testing

Disturbed

D	Small sample
B	Bulk sample

Other

W	Water sample
G	Gas sample
	Environmental chemistry samples (in more than one container where appropriate)
ES	Soil sample
EW	Water sample

Comments

Sample reference numbers are assigned to every sample taken. A sample reference of 'NR' indicates that attempt was made to take a tube sample, however, there was no recovery.

Monitoring samples taken after completion of hole construction are not shown on the exploratory hole logs.

TESTS

SPT S or SPT C — Standard Penetration Test, open shoe (S) or solid cone (C)

The Standard Penetration Test is defined in BS 1377 : Part 9 (1990). The incremental blow counts are given in the Field Records column; each increment is 75 mm unless stated otherwise and any penetration under self weight in mm (SW) is noted. Where the full 300 mm test drive is achieved the total number of blows for the test drive is presented as N = ** in the Test column. Where the test drive blows reach 50 (either in total or for a single increment) the total blow count beyond the seating drive is given (without the N = prefix).

IV	In situ vane test, peak (p) and remoulded (r)
HV	Hand vane test, peak (p) and remoulded (r)
PP	Pocket penetrometer test, strength value
KFH, KRH, KPI	Variable head permeability tests (KFH = falling head test, KRH = rising head test, KPI = packer test), permeability value

Test results provided in Field Records column

DRILLING RECORDS

The mechanical indices (TCR/SCR/RQD & If) are defined in BS 5930 (1999)

TCR	Total Core Recovery, %
SCR	Solid Core Recovery, %
RQD	Rock Quality Designation, %
If	Fracture spacing, mm. Minimum, typical and maximum spacings are presented. The term non-intact (NI) is used where the core is fragmented.

Flush returns, estimated percentage with colour where relevant, are given in the Records column

CRF	Core recovered (length in m) in the following run
AZCL	Assessed zone of core loss
N/A	Not applicable

GROUNDWATER

▼	Groundwater strike
▽	Groundwater level after standing period

Notes:	Project: Cronton Colliery Project No: F3805 Carried out for: Maro Developments	Key Sheet 1 of 2

Key to Exploratory Hole Records

Soil Mechanics

INSTALLATION

Standpipe/ piezometer

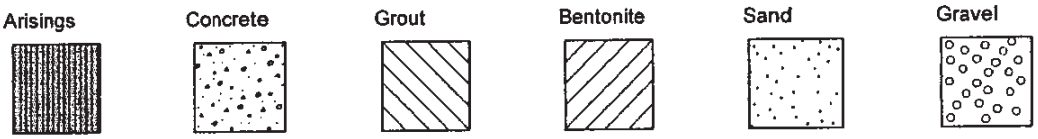
Details of standpipe/piezometer installations are given on the Record. Legend column shows installed instrument depths including slotted pipe section or tip depth, response zone filter material type and layers of backfill.

The types of instrument installed is indicated by a code in the Legend column at the depth of the response zone:

SP	Standpipe
SPIE	Standpipe piezometer
PPIE	Pneumatic piezometer
EPIE	Electronic piezometer

INSTALLATION LEGENDS

A legend describing the installation is shown in the rightmost column. Legends additional to BS5930 are used to describe the backfill materials as indicated below.



NOTES

1 Strata legends are in accordance with BS 5930 (1999).

2 Water level observations of discernible entries during the advancing of the exploratory hole are given at the foot of the log and in the Legend column. The term "none observed" is used where no discrete entries are identified although this does not necessarily indicate that the hole has not been advanced below groundwater level. Under certain conditions groundwater cannot be observed, for instance, drilling with water flush or overwater, or boring at a rate much faster than water can make its way into the borehole (ref BS5930 : 1999, Clause 47.2.7). In addition, where appropriate, water levels in the hole at the time of recovering individual samples or carrying out in situ tests and at shift changes are given in the Records column.

3 Evidence of the occurrence of very coarse particles (cobbles and boulders) is presented on the logs, however, because of their size in relation to the exploratory hole these records may not be fully representative of their size and frequency in the ground mass.

4 The borehole logs present the results of Standard Penetration Tests recorded in the field without correction or interpretation. However, in certain ground conditions (eg high hydraulic head or where very coarse particles are present) some judgement may be necessary in considering whether the results are representative of in situ mass conditions.

5 The declination of bedding and joints is given with respect to the normal to the core axis. Thus in a vertical borehole this will be the dip.

6 The assessment of SCR, RQD and Fracture Spacing excludes artificial fractures

REFERENCES

BS 1377 : 1990 : British Standard Methods of test for soils for civil engineering purposes. British Standards Institution
BS 5930 : 1999 : Code of Practice for site investigations. British Standards Institution

Borehole Log

Soil Mechanics

Drilled by IC Logged by JSN Checked by FW	Start 29/07/2003 End 29/07/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-13.00m	Depth from 0.00m to 13.00m Diameter 150mm Casing Depth 12.30m	Ground Level +43.98 mOD Coordinates E 247808.35 National Grid N 389233.21

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.20	ES 1			
0.50	D 2			
0.50-1.00	B 3			
1.00	ES 4			
1.20-1.65	SPT C	N=20 (2,3,5,5,6,4)		
1.20-1.70	B 5			
2.00	ES 6			
2.20-2.28	SPT C	50/0mm (2,23,50)		
2.20-2.70	B 7			
2.50	D 8			
3.00	ES 9			
3.20-3.65	SPT C	N=28 (3,5,6,7,7,8)		
3.20-3.70	B 10			
4.00	ES 11			
4.20-4.65	SPT S	N=24 (2,4,5,6,6,7)		
4.20-4.70	D 12			
5.00	D 13			
5.00	ES 14			
5.00-5.50	U 15	25 blows 430 mm rec		
5.50	D 16			
6.00	D 17			
6.00	ES 18			
6.50-6.95	SPT C	N=21 (2,3,4,5,5,7)		
6.50-7.00	B 19			
7.00	D 20			
7.00	ES 21			
8.00-8.45	SPT C	N=12 (1,2,2,3,4,3)		
8.00	ES 22			
8.00	D 23			
8.00-8.50	B 24			
9.00	ES 25			
9.00	D 26			
9.50-9.95	SPT C	N=13 (1,1,3,3,3,4)		
9.50-10.00	B 27			

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
MADE GROUND: Stiff dark grey slightly sandy gravelly CLAY with some coal and coal dust	(5.00)		
MADE GROUND: Firm dark grey slightly sandy slightly gravelly CLAY 5.50 m Below 5.50m becoming very gravelly	5.00 +38.98 (1.00)		
MADE GROUND: Medium dense dark brown and grey clayey sandy GRAVEL. Gravel is angular to subangular fine to coarse including brick, coal and some coal dust 6.50 m black slightly sandy slightly gravelly clay	6.00 +37.98 (3.50)		
MADE GROUND: Medium dense to dense black to grey mottled orange slightly sandy Stratum continued next sheet	9.50 +34.48		

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

Depth Related Remarks

From to (m)

Chiselling

Depths (m)	Time	Tools used
0.00 -13.00	30 mins	Shell Various depth

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MESG HBIII (298), 07/11/2003 08:15:57

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

101

Sheet 1 of 2

Borehole Log

Soil Mechanics

Drilled by IC	Start 29/07/2003	Equipment, Methods and Remarks	Depth from 0.00m to 13.00m	Diameter 150mm	Casing Depth 12.30m	Ground Level +43.98 mOD
Logged by JSN	End 29/07/2003					Coordinates E 247808.35
Checked by FW						National Grid N 389233.21

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
10.00	ES 28			
10.00	D 29			
11.00-11.45	SPT C	N=39 (2,4,11,10,7,11)		
11.00	ES 30			
11.00	D 31			
11.00-11.50	B 32			
12.00	ES 33			
12.00	D 34			
12.30	D 35			
12.40	ES 36			
12.50-13.00	U 37	340 mm rec		
13.00	D 38			
13.00	ES 39			

Strata

Description	Depth,*Level* (Thickness)	Legend	Backfill/ Instruments
clayey GRAVEL. Gravel is angular fine and medium of predominantly mudstone and coal	(2.50)		
Orange brown slightly clayey sandy angular to subangular fine to coarse GRAVEL. Possible made ground	12.00 *+31.98*		
Stiff orange grey slightly sandy gravelly CLAY. Gravel is subangular to rounded fine to medium of predominantly mudstone and sandstone	12.20 *+31.78* (0.80)		
EXPLORATORY HOLE ENDS AT 13.00 m	13.00 *+30.98*		

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	12.20	Remained at 12.20 m after 20 minutes.	12.30

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50 (c) ME&G HBR (298), 07/11/2003 09:14:02

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

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Sheet 2 of 2

Borehole Log

Soil Mechanics

Drilled by	IC
Logged by	JSN
Checked by	FW

Start	31/07/2003
End	31/07/2003

Equipment, Methods and Remarks
Dando 150
Inspection pit dug to 0.50m
Cable percussion 0.50-1.70m
Borehole moved on instruction of client

Depth from	to	Diameter	Casing Depth
0.00m	1.70m	150mm	

Ground Level	+30.25 mOD
Coordinates	E 347681.17
National Grid	N 389084.39

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.20	ES 1			
0.50	D 2			
0.50-1.00	B 3			
1.00-1.08	SPT C	50/65mm (25.50)		
1.00	ES 4			
1.70	SPT C	50/0mm (25.50)		
1.70	ES 5			
1.70	D 6			

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
MADE GROUND: Brown slightly clayey slightly sandy angular to subangular fine to coarse GRAVEL of predominantly sandstone with rare burnt shale	(0.80)		
	0.80 +29.45		
MADE GROUND: Dense red brown sandy angular to subangular GRAVEL of burnt shale	(0.90)		
EXPLORATORY HOLE ENDS AT 1.70 m	1.70 +28.55		

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)

Chiselling

Depths (m)	Time	Tools used
0.80 -1.70	75 mins	Shell

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

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AGS

Project	Cronton Colliery
Project No.	F3605
Carried out for	Maro Developments

Borehole

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Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by IC Logged by JSN Checked by FW	Start 31/07/2003 End 01/08/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-7.50m	Depth from 0.00m to 7.50m Diameter 150mm Casing Depth 6.70m	Ground Level +30.25 mOD Coordinates E 347678.00 National Grid N 389081.24

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.20	ES 1			
0.50	D 2			
0.50-1.00	B 3			
1.00	ES 4			
1.20-1.65	SPT S	N=16 (2,3,4,4,4,4)		
1.20-1.70	D 5			
1.70-1.93	SPT S	53/75mm (5,8,53)		
1.70	ES 6			
1.70	D 7			
1.70-2.00	D 8			
2.50-2.95	SPT C	N=27 (4,5,5,6,8,8)		
2.50	B 9			
3.00	D 10			
3.50-3.73	SPT C	54/75mm (11,16,17,37)		
3.50	D 11			
3.50-4.00	B 12			
4.00	ES 13			
4.50-4.95	SPT C	N=23 (2,5,5,6,6,6)		
4.50	D 14			
4.90	D 15			
5.00	ES 16			
5.10-5.60	U 17	60 blows 430 mm rec		
5.60	D 18			
5.60	ES 19			
6.00	D 20			
6.50	ES 21			
6.50-7.00	U 22	110 blows 405 mm rec		
7.00-7.43	SPT S	50/275mm (8,8,8,12,14,16)		
7.00	D 23			
7.00	ES 24			

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
MADE GROUND: Brown slightly clayey slightly sandy angular to subangular fine to coarse GRAVEL of predominantly sandstone and burnt shale	(0.80)		
	0.80 +29.45		
MADE GROUND: Medium dense red brown sandy angular to subangular GRAVEL of burnt shale	(0.90)		
	1.70 +28.55		
MADE GROUND: Medium dense to very dense orange brown sandy fine to medium subangular to subrounded GRAVEL of burnt shale	(2.80)		
	4.50 +25.75		
MADE GROUND: Medium dense orange grey slightly sandy angular GRAVEL of mudstone	(0.40)		
	4.90 +25.35		
Firm grey brown sandy CLAY , becoming stiff below 7.00m	(2.60)		
7.00-7.43 m Very stiff			
EXPLORATORY HOLE ENDS AT 7.50 m	7.50 +22.75		

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	6.60	Remained at 6.60 m after 20 minutes.	6.70

Depth Related Remarks

From to (m)

Chiselling

Depths (m)	Time	Tools used
3.50 -3.50	75 mins	Shell

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEBG HBR (298), 07/11/2003 09:16:18

ACS

Project: Cronton Colliery

Project No.: F3605

Carried out for: Maro Developments

Borehole

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Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by IC Logged by JSN Checked by FW	Start 31/07/2003 End 31/07/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-7.10m	Depth from 0.00m	to 7.10m	Diameter 150mm	Casing Depth 6.10m

Ground Level +30.09 mOD
Coordinates E 347577.44
National Grid N 389084.40

Samples and Tests					Strata			
Depth	Type & No	Records	Date Casing	Time Water	Description	Depth,Level/ (Thickness)	Legend	Backfill/ Instruments
0.30	ES 1				MADE GROUND: Firm to stiff black slightly sandy gravelly CLAY with some coal and coal dust. Gravel is subangular fine to medium of predominantly mudstone			
0.50	D 2							
0.50-1.00	B 3							
1.00	ES 4							
1.20-1.65	U 5	40 blows 315 mm rec						
1.65	D 6					(3.50)		
2.00-2.45	SPT S	N=17 (3,4,4,4,4,5)						
2.00	ES 7							
2.00-2.50	D 8							
3.00-3.45	SPT S	N=15 (1,3,3,4,4,4)						
3.00-3.50	D 10							
3.00	ES 9							
						3.50 +26.59		
4.00-4.45	SPT C	N=26 (1,3,5,6,7,8)			MADE GROUND: Medium dense grey brown clayey sandy subangular to angular fine to medium GRAVEL of predominantly mudstone with some coal dust and gravel			
4.00	ES 11							
4.00	D 12							
4.00-4.50	B 13							
4.50	W 28							
4.50	W 29					(2.30)		
5.00-5.45	SPT S	N=10 (1,2,3,3,2,2)						
5.00	ES 14							
5.00	D 15							
5.00-5.50	D 16							
5.50	D 17							
5.70	ES 18							
5.70	D 19							
						5.80 +24.29		
5.80-6.30	U 20	100 blows 270 mm rec			Orange brown slightly gravelly fine to coarse SAND. Gravel is subrounded to subangular fine to medium of various lithologies	(0.30)		
6.00	ES 22					6.10 +23.99		
6.00	D 23							
6.30	D 21							
6.30	ES 24							
6.60-7.10	U 25	140 blows 430 mm rec			Stiff orange grey slightly sandy slightly gravelly CLAY. Gravel is subrounded to angular of various lithologies	(1.00)		
7.10	D 26							
7.10	ES 27				EXPLORATORY HOLE ENDS AT 7.10 m	7.10 +22.99		

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	4.30	Remained at 4.30 m after 20 minutes.	6.10

Depth Related Remarks
From to (m)

Chiselling
Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MESG HBW (2nd), 07/11/2003 09:16:28

Project Cronton Colliery
Project No. F3605
Carried out for Maro Developments

Borehole
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Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by IC Logged by JSN Checked by FW	Start 30/07/2003 End 30/07/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-4.00m	Depth from to Diameter Casing Depth	Ground Level +34.00 mOD Coordinates E 347614.48 National Grid N 389296.95

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.20	ES 1			
0.50	D 2			
0.50-1.00	B 3			
1.00	ES 4			
1.20	D 5			
1.20-1.70	U 6	60 blows 405 mm rec		
1.40	ES 8			
1.70	D 7			
1.90	ES 10			
1.90-2.40	U 11	95 blows 380 mm rec		
1.90	D 9			
2.30	ES 14			
2.40-2.73	SPT S	50/180mm (4,6,10,19,21)		
2.40	D 12			
2.40-2.90	D 13			
3.00	D 15			
3.00	ES 16			
3.50-3.67	SPT S	50/90mm (28,34,16)		
3.50-3.80	D 17			
4.00	SPT C	50/0mm (25,50)		
4.00	D 18			
4.00	ES 19			

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
MADE GROUND: Black slightly clayey gravelly coal SAND. Gravel is angular fine to medium of coal and mudstone	(1.20)		
Orange brown very sandy CLAY	1.20 +32.80 (0.60)		
Stiff orange grey slightly gravelly sandy CLAY. Gravel is angular fine and medium of coal and sandstone	1.80 +32.20 2.00 +32.00		
Very weak orange rarely orange grey SANDSTONE recovered as sand and gravel. Below 3.00m becoming weak	(2.00)		
EXPLORATORY HOLE ENDS AT 4.00 m	4.00 +30.00		

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)	
2.30	4.00	Water added to assist boring

Chiselling

Depths (m)	Time	Tools used
3.60 -4.00	60 mins	Shell

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEGG HBB (298), 07/11/2003 08:16:36

AGS

Project: Cronton Colliery

Project No.: F3605

Carried out for: Maro Developments

Borehole

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Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by	IC
Logged by	JSN
Checked by	FW

Start	28/07/2003
End	29/07/2003

Equipment, Methods and Remarks
Dando 150
Inspection pit dug to 1.20m
Cable percussion 1.20-9.00m

Depth from	to	Diameter	Casing Depth
0.00m	9.00m	150mm	6.00m

Ground Level	+47.12 mOD
Coordinates	E 347599.31
National Grid	N 389445.68

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.20	ES 1			
0.50	D 2			
0.50-1.00	B 3			
1.00	ES 4			
1.20-1.70	U 5	45 blows 405 mm rec		
1.70	D 6			
2.00	ES 7			
2.20-2.65	SPT S	N=4 (1,1,1,1,1,1)		
2.20-2.70	D 8			
3.00	ES 9			
3.20-3.65	SPT S	N=4 (1,1,1,1,1)		
3.20-3.70	B 10			
3.20	D 11			
4.00	ES 12			
4.00	D 13			
4.20-4.65	SPT S	N=9 (1,1,2,3,3,1)		
4.20-4.70	D 14			
4.20-4.70	B 15			
5.00	ES 16			
5.20-5.65	SPT C	N=12 (2,4,5,3,2,2)		
5.20	D 17			
5.20-5.70	B 18			
6.00	ES 19			
6.00	D 20			
6.50-6.95	SPT S	N=34 (3,4,6,7,9,12)		
6.50-7.00	D 21			
7.00	ES 22			
7.50	D 23			
8.00-8.45	SPT C	N=33 (3,5,6,7,9,11)		
8.00	ES 24			
8.00-8.50	B 25			
8.40	D 26			
8.50	ES 27			
8.50-9.00	U 28	100 blows 380 mm rec		
9.00	ES 29			

Strata

Description	Depth, Level (Thickness)
MADE GROUND: Dark grey clayey sandy angular to subangular fine to coarse GRAVEL of mudstone and coal with some coal dust. 0.50 m black slightly sandy slightly gravelly clay	(1.70)
MADE GROUND: Soft to firm dark grey sandy gravelly CLAY with some coal dust and fragments. Gravel is subangular to angular of mudstone and coal	1.70 +45.42 (2.30)
MADE GROUND: Soft brown grey slightly sandy gravelly CLAY with some coal dust. Gravel is angular fine and medium of mudstone	4.00 +43.12 4.20 +42.92
MADE GROUND: Firm dark grey and black sandy gravelly CLAY with some coal dust and fragments. Gravel is angular fine and medium of mudstone	(1.80)
MADE GROUND: Soft brown and grey slightly sandy gravelly CLAY with some coal dust. Gravel is angular fine to medium of mudstone	6.00 +41.12 (0.50) 6.50 +40.62
MADE GROUND: Stiff dark grey and black slightly sandy gravelly CLAY with some coal dust. Gravel is angular fine and medium of predominantly coal	(1.80)
Stiff orange brown slightly sandy slightly gravelly CLAY. Gravel is subangular to angular of sandstone and mudstone	8.30 +38.82 (0.70)
EXPLORATORY HOLE ENDS AT 9.00 m	9.00 +38.12

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	3.40	Remained at 3.40 m after 20 minutes.	4.00
2	8.30	Remained at 8.30 m after 20 minutes.	-

Depth Related Remarks
From to (m)

Chiselling
Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEBO HBM (2000), 07/11/2003 08:15:44

Project	Cronton Colliery
Project No.	F3605
Carried out for	Maro Developments

Borehole
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Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by IC	Start 30/07/2003	Equipment, Methods and Remarks	Depth from	to	Diameter	Casing Depth	Ground Level	+34.60 mOD
Logged by JSN	End 30/07/2003	Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-3.30m	0.00m	3.30m	150mm	2.00m	Coordinates	E 347521.77
Checked by FW							National Grid	N 389350.94

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.10	ES 1			
0.30	D 2			
0.30	ES 3			
0.50-1.00	B 4			
1.00	ES 5			
1.20-1.65	SPT S	N=21 (2,3,5,5,5,6)		
1.20-1.70	D 6			
2.00-2.30	SPT S	49/150mm - Abandoned		
2.00-2.40	D 10			
2.00-2.40	B 7			
2.00	D 8			
2.00	ES 9			
2.80-2.92	SPT S	50/40mm (30,50)		
2.80-3.00	D 11			
3.00-3.30	B 12			
3.00	D 13			
3.00	ES 14			
3.30-3.31	SPT C	50/5mm (25,50)		
3.30	D 15			

Strata

Description	Depth, Level (Thickness)
MADE GROUND: Soft clay and colliery waste (drillers description)	0.25 +34.35
Very weak red brown SANDSTONE recovered as sand and gravel. Driller notes clay bands	(3.05)
EXPLORATORY HOLE ENDS AT 3.30 m	3.30 +31.30

Legend

Backfill/ Instruments

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	1.90	Remained at 1.90 m after 20 minutes.	2.00

Depth Related Remarks

From to (m)

Chiselling

Depths (m)	Time	Tools used
2.90 -3.30	60 mins	Shell

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEGG HBN (286), 07/11/2003 08:16:53

AGS

Project: Cronton Colliery

Project No.: F3605

Carried out for: Maro Developments

Borehole

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Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by IC Logged by JSN Checked by FW	Start 04/08/2003 End 04/08/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-9.80m	Depth from / to / Diameter / Casing Depth 0.00m / 9.80m / 150mm / 9.00m	Ground Level +29.91 mOD Coordinates E 347477.18 National Grid N 389101.15	

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.20	ES 1			
0.50	D 2			
0.50-1.00	B 3			
1.00	ES 4			
1.20-1.65	SPT S	N=8 (1,1,2,2,2,2)		
1.20-1.70	D 5			
2.00	ES 6			
2.20-2.65	SPT S	N=9 (1,2,2,3,2,2)		
2.20-2.70	D 7			
2.20-2.70	B 8			
3.00	ES 9			
3.20-3.65	SPT S	N=50 (2,5,8,11,14,19)		
3.20-3.70	D 10			
4.00	ES 11			
4.20-4.65	SPT S	N=12 (2,3,3,4,3,2)		
4.20-4.70	D 12			
5.00	ES 13			
5.50	D 14			
6.00-6.45	SPT S	N=7 (1,1,2,2,2)		
6.00	ES 15			
6.00-6.50	D 16			
7.00	D 17			
7.00	ES 18			
7.50-7.95	SPT S	N=6 (1,1,1,2,2)		
7.50-8.00	D 19			
8.00	ES 20			
8.20-8.65	SPT S	N=4 (1,1,1 1,1,1)		
8.20	D 21			
8.20-8.70	D 22			
8.20-8.70	B 23			
8.80-9.25	SPT S	N=20 (5,6,7,4,4,5)		
8.80	D 24			
8.80-9.30	D 26			
8.90	ES 25			
9.10	D 27			
9.20	ES 28			
9.30-9.75	SPT S	N=20 (3,4,5,5,4,6)		
9.30-9.80	D 29			
9.80	D 30			
9.80	ES 31			

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
MADE GROUND: Firm to stiff dark grey sandy gravelly CLAY with some coal dust. Gravel is angular to subangular fine to coarse of mudstone and coal	(4.70)		
3.20-3.65 m Very stiff			
MADE GROUND: Soft black sandy gravelly CLAY with much coal dust. Gravel is angular to subangular fine to medium of mudstone and coal.	4.70 +25.21 (3.40)		
Loose orange silty SAND	8.10 +21.81 (0.70)		
Medium dense orange brown slightly silty gravelly SAND. Gravel is subrounded to subangular fine to coarse of sandstone	8.80 +21.11 9.00 +20.91		
Very weak dark grey MUDSTONE recovered as clay and gravel	(0.80)		
EXPLORATORY HOLE ENDS AT 9.80 m	9.80 +20.11		

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	5.80	Remained at 5.80 m after 20 minutes.	9.00

Depth Related Remarks
From to (m)

Chiselling
Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEAS HBR (298), 07/11/2003 09:17:01

Project Cronton Colliery
Project No. F3605
Carried out for Maro Developments

Borehole
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Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by	IC
Logged by	JSN
Checked by	FW

Start	01/08/2003
End	04/08/2003

Equipment, Methods and Remarks
Dando 150
Inspection pit dug to 1.20m
Cable percussion 1.20-7.00m

Depth from	to	Diameter	Casing Depth
0.00m	7.00m	150mm	5.50m

Ground Level	+30.25 mOD
Coordinates	E 347497.05
National Grid	N 388990.53

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.20	ES 1			
0.50	D 2			
0.50-1.00	B 3			
1.00	ES 4			
1.20-1.65	SPT S	N=10 (1,2,2,2,3,3)		
1.20-1.70	D 5			
2.00	ES 6			
2.10-2.55	SPT S	N=2 (1,1,1,)		
2.10	D 7			
2.10	ES 8			
2.10-2.60	D 9			
2.80	D 10			
2.80	ES 11			
3.00-3.45	SPT S	N=7 (1,2,1,2,2,2)		
3.00	D 12			
3.00	ES 13			
3.00-3.50	D 14			
4.00-4.45	SPT S	N=8 (1,1,1,2,4)		
4.00	ES 15			
4.00-4.50	D 16			
5.00-5.45	SPT C	N=14 (1,1,3,4,5,2)		
5.00	D 17			
5.00	ES 18			
5.00-5.50	D 19			
5.90	D 20			
6.00	ES 21			
6.00-6.50	U 22	85 blows 430 mm rec		
6.50-6.95	SPT C	N=13 (2,2,3,3,3,4)		
6.50	D 23			
6.50-7.00	D 24			
7.00	ES 25			

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
MADE GROUND: Medium dense dark grey clayey sandy angular to subangular fine to coarse GRAVEL of mudstone and coal with some coal dust	(2.10)		
MADE GROUND: Very soft black SILT with much coal dust	2.10 +28.15 (0.60)		
MADE GROUND: Stoney clay fill (drillers description)	2.70 +27.55 (0.30)		
3.00-3.45 m Soft.			
MADE GROUND: Firm dark grey sandy gravelly CLAY with some coal dust and fragments. Gravel is subangular to angular to mudstone and coal	3.00 +27.25 (2.80)		
Firm to stiff orange brown slightly sandy slightly gravelly CLAY. Gravel is subangular to angular of sandstone and mudstone	5.80 +24.45 (1.20)		
EXPLORATORY HOLE ENDS AT 7.00 m	7.00 +23.25		

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks
From to (m)

Chiselling
Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEAD HBill (2000), 07/11/2003 08:17:10

Project	Cronton Colliery
Project No.	F3605
Carried out for	Maro Developments

Borehole
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Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by AH Logged by JSN Checked by FW	Start 28/07/2003 End 28/07/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-7.00m	Depth from 0.00m	to 7.00m	Diameter 150mm	Casing Depth 6.00m	Ground Level +34.04 mOD Coordinates E 347422.56 National Grid N 389205.45

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.20-1.20	B 2			
0.30	ES 1			
1.30	ES 3			
1.50-1.95	SPT S	N=24 (3,2,5,8,8,7)		
1.50-1.95	D 4			
2.30	ES 5			
2.50-2.95	SPT S	N=29 (4,6,7,8,9,7)		
2.50-2.95	D 6			
3.30	ES 7			
3.50-3.95	SPT S	N=25 (3,5,5,7,8,7)		
3.50-3.95	D 8			
4.30	ES 9			
4.50-4.95	SPT S	N=25 (3,4,4,8,8,9)		
4.50-4.95	D 10			
5.30	ES 11			
6.00-6.45	U 12	47 blows 400 mm rec		
6.30	ES 14			
6.55	D 13			

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
MADE GROUND: Medium dense dark grey and black slightly sandy very clayey angular GRAVEL of slag and coal with some coal dust	(5.20)		
MADE GROUND: Firm brown very clay bound colliery fill (drillers description)	5.20 +28.84		
MADE GROUND: Compact clay colliery fill with mudstone and coal (drillers description)	5.40 +28.64 (0.60)		
Stiff orange grey slightly sandy slightly gravelly CLAY. Gravel is subrounded to angular of various lithologies	6.00 +28.04 (1.00)		
EXPLORATORY HOLE ENDS AT 7.00 m	7.00 +27.04		

Depth | Type & No | Records | Date Casing | Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
None observed (see Key Sheet)			

Depth Related Remarks

From to (m)

Chiselling

Depths (m)	Time	Tools used
2.60 -2.90	30 mins	Shell
4.10 -4.45	45 mins	Shell
5.70 -5.90	30 mins	Shell

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEGG H&S (2SB), 07/11/2003 09:17:18

Project: Cronton Colliery

Project No.: F3605

Carried out for: Maro Developments

Borehole

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Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by SH Logged by JSN Checked by FW	Start 04/08/2003 End 04/08/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-3.35m	Depth from / to / Diameter / Casing Depth 0.00m / 3.35m / 150mm / 2.50m	Ground Level +40.20 mOD Coordinates E 347359.36 National Grid N 389510.22

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.30 0.30-0.70	ES 1 B 2			
1.00 1.00-1.50	ES 3 B 4			
1.50-1.95	U 5	100 blows		
1.95-2.00 2.00-2.50	D 6 B 7			
2.50-2.84 2.50-2.95 2.50-2.90	SPT S D 8 B 9	48/190mm - Abandoned		
2.90-3.13 2.90-3.35	SPT S D 10	50/140mm (21,4,24,26)		

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
Grass over stubble field of TOPSOIL (drillers description)	0.10 +40.10		
	(0.60)		
Firm brown sandy CLAY (drillers description)	0.70 +39.50		
Very stiff orange and grey very gravelly CLAY. Gravel is angular fine to coarse of mudstone (weathered mudstone)	(1.10)		
Very weak orange and grey MUDSTONE recovered as gravel	1.80 +38.40		
	(1.55)		
EXPLORATORY HOLE ENDS AT 3.35 m	3.35 +36.85		

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks

From / to (m)

Chiselling

Depths (m)	Time	Tools used
1.50 -2.90	60 mins	Shell

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) AGS HBR (296), 07/11/2003 09:17:25

Project: Cronton Colliery

Project No.: F3605

Carried out for: Marc Developments

Borehole

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Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by PG Logged by PG/JS Checked by FW	Start 13/08/2003 End 14/08/2003	Equipment, Methods and Remarks T51 Inspection pit from ground level to 1.20m	Depth from / to / Diameter / Casing Depth 0.00m / 2.60m / 92mm / 2.60m 2.60m / 13.70m / 92mm		Ground Level	+40.20 mOD
					Coordinates	E 347359.38
					National Grid	N 389510.22

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
			13/08/2003	0800
		Flush: 2.10-3.00 Air mist, 100 %	13/08/2003	1800
			14/08/2003	0800 dry
2.60-4.70	76 70 0	NI 10 30		
4.70-7.70	100 92 18	8 35 160		
7.70-10.70	100 97 30	NI 80 160		

Strata

Description		Depth, Level (Thickness)	Legend	Backfill/ Instruments
Sandy brown CLAY. (Drillers description)		0.20 +40.00		
Brown SAND. (drillers description)		(0.40)		
Boulder CLAY. (drillers description)		0.60 +39.60		
		(1.00)		
Weathered MUDSTONE. (drillers description)		1.60 +38.60		
		(1.50)		
	2.30-3.10 m AZCL			
Very weak blue grey very fine grained MUDSTONE. Discontinuities are extremely closely spaced randomly orientated branching iron stained undulating rough moderately open to tight some weakening along fracture planes.		3.10 +37.10		
		(2.10)		
	4.50-4.55 m NI 4.65-5.00 m NI			
Weak blue grey MUDSTONE with thinly to thickly laminated light orange grey moderately strong sandstone laminations. Discontinuities are subhorizontal closely spaced planar smooth tight to moderately open.		5.20 +35.00		
		(2.20)		
Moderately weak blue grey MUDSTONE with thinly to thickly laminated light orange grey moderately strong sandstone laminations. discontinuities are subhorizontal closely spaced planar smooth tight to moderately open.	7.40-7.42 m NI	7.40 +32.80		
	8.30-8.51 m Subvertical planar rough moderately open discontinuity. 8.60-8.70 m NI	(2.40)		
	9.20-9.30 m Subvertical planar rough moderately open discontinuity.			
Stratum continued next sheet		9.80 +30.40		

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

110R

Sheet 1 of 2

Borehole Log

Soil Mechanics

Drilled by PG Logged by PG/JS Checked by FW	Start 13/08/2003 End 14/08/2003	Equipment, Methods and Remarks	Depth from / to / Diameter / Casing Depth 0.00m / 2.60m / 92mm / 2.60m 2.60m / 13.70m / 92mm	Ground Level +40.20 mOD Coordinates E 347359.36 National Grid N 389510.22	

Samples and Tests

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water
		NI 170 400			
10.70-13.70	100 96 71				
				14/08/2003 2.60	1800 2.60

Strata

Description	Depth,Level/(Thickness)	Legend	Backfill/Instrument
Moderately weak blue MUDSTONE. Discontinuities are subhorizontal closely to medium spaced planar smooth tight to moderately open.			
10.85-10.90 m NI C			
	(3.90)		
12.17-12.23 m NI C			
13.15-13.45 m Subvertical planar rough moderately open discontinuity.			
EXPLORATORY HOLE ENDS AT 13.70 m	13.70 +26.50		SP

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	11.00	Rose to 2.60 m after 20 minutes.	-

Depth Related Remarks
From to (m)

Chiselling
Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50 (c) MEAS HBM (298), 07/11/2003 09:17:40 AGS

Project Cronton Colliery
Project No. F3605
Carried out for Maro Developments

Borehole
110R
Sheet 2 of 2

Borehole Log

Soil Mechanics

Drilled by AH Logged by JSN Checked by FW	Start 29/07/2003 End 29/07/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-5.75m Move to BH111A	Depth from / to 0.00m / 5.75m	Diameter / Casing Depth 150mm / 4.50m	Ground Level +34.11 mOD Coordinates E 347297.80 National Grid N 389210.89

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.20-1.20 0.30	B 2 ES 1			
1.30	ES 3			
1.50-1.95 1.50-1.95	SPT S D 4	N=12 (1,3,2,4,3,3)	1.50	dry
2.30	ES 5			
2.50-2.95 2.50-2.95	SPT S D 6	N=14 (2,3,3,3,5,3)	2.50	dry
3.30	ES 7			
3.50-3.95 3.50-3.95	SPT S D 8	N=11 (1,2,2,3,2,4)	3.00	dry
4.30	ES 9			
4.50-4.95 4.50-4.95	SPT S D 10	N=15 (4,3,4,4,2,5)	4.50	dry
5.30	ES 11			

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
MADE GROUND: Firm dark grey sandy gravelly CLAY with some coal dust and fragments. Gravel is subangular to angular of sandstone, mudstone and coal	(5.65)		
MADE GROUND: Concrete.	5.65 +28.46		
EXPLORATORY HOLE ENDS AT 5.75 m	5.75 +28.36		

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

Chiselling

Depths (m)	Time	Tools used
5.65 -5.70	60 mins	Shell
5.70 -5.75	60 mins	Shell

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEBO HBM (29th), 07/11/2003 09:17:53

Project	Cronton Colliery
Project No.	F3605
Carried out for	Maro Developments

Borehole

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Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by AH Logged by JSN Checked by FW	Start 30/07/2003 End 30/07/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-8.00m	Depth from 0.00m to 8.00m	Diameter 150mm	Casing Depth 7.50m

Ground Level +34.07 mOD
Coordinates E 347307.74
National Grid N 389215.50

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
6.00-6.45	SPT S	N=15 (4,5,3,4,4,4)	6.00	dry
6.00-6.45	D 1			
6.00-7.00	B 2			
6.30	ES 3			
7.30	ES 4			
7.50-7.95	U 5	72 blows	7.50	dry
8.00	D 6			

Strata

Description	Depth, Level/ (Thickness)	Legend	Backfill/ Instrument
MADE GROUND: Compact grey colliery fill (drillers description)	(5.50)		
MADE GROUND: Concrete	5.50 +28.57 (0.40)		
MADE GROUND: Medium dense black slightly sandy clayey subangular to angular fine to coarse GRAVEL of slag, coal and concrete	5.90 +28.17 (0.80)		
Stiff orange brown slightly sandy slightly gravelly CLAY. Gravel is subangular to angular fine to medium of sandstone	6.70 +27.37 (1.30)		
EXPLORATORY HOLE ENDS AT 8.00 m	8.00 +26.07		

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks
From to (m)

Chiselling

Depths (m)	Time	Tools used
5.50 -5.70	60 mins	Shell
5.75 -5.90	30 mins	Shell

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project Cronton Colliery
Project No. F3605
Carried out for Maro Developments

Borehole
111A
Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by AR Logged by JSN Checked by FW	Start 04/08/2003 End 04/08/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-4.84m	Depth from 0.00m	to 4.84m	Diameter 150mm	Casing Depth 4.50m	Ground Level +24.24 mOD Coordinates E 347279.46 National Grid N 389141.82

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.30	ES 1			
0.30-1.20	B 2			
1.30	ES 3			
1.50-1.95	SPT S	N=1 (1,1)	1.50	dry
1.50-1.95	D 4			
2.30	ES 5			
2.50-2.95	SPT S	N=1 (1,1)	2.50	dry
2.50-2.95	D 6			
3.30	ES 7			
3.50-3.95	U 8	47 blows 400 mm rec		
4.05	D 9			
4.50-4.80	SPT S	77/150mm (8,10,27,50)	4.50	4.42
4.50-4.80	D 10			
4.82-4.84	SPT S	50/10mm (25,50)		
4.82-4.84	D 11			

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level/ (Thickness)
Soft brown clay bound TOPSOIL (drillers description)	0.20 +24.04
MADE GROUND: Very soft dark grey black SILT with some coal dust(possible tailings)	(3.25)
Stiff orange brown very gravelly CLAY. Gravel is subangular to angular fine to coarse of sandstone	3.45 +20.79
	(1.05)
Very weak grey MUDSTONE recovered as gravel	4.50 +19.74
	(0.34)
EXPLORATORY HOLE ENDS AT 4.84 m	4.84 +19.40

Legend: SP

Backfill/ Instruments

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	4.50	Rose to 4.42 m after 20 minutes.	-

Depth Related Remarks
From to (m)

Chiselling

Depths (m)	Time	Tools used
4.50 -4.75	30 mins	Shell
4.75 -4.82	60 mins	Shell

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MESG HBIII (2W8), 07/11/2003 08:18:07

Project: Cronton Colliery
Project No.: F3605
Carried out for: Maro Developments

Borehole
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Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by SH Logged by JSN Checked by FW	Start 30/07/2003 End 30/07/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-4.25m	Depth from 0.00m to 4.25m	Diameter 150mm	Casing Depth 3.80m

Ground Level +24.01 mOD
Coordinates E 347259.72
National Grid N 389168.96

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.30	ES 1			
1.00	ES 2			
1.50-1.95	U 3	200 blows		
1.95-2.00	D 4			
2.00	ES 5			
2.00-2.50	B 6			
2.50-2.95	SPT S	N=50 (4,6,10,10,18,12)	2.50	dry
2.50-2.95	D 7			
3.00	ES 8			
3.00-3.50	B 9			
3.50-3.76	SPT S	50/120mm (10,15,28,22)	3.50	dry
3.50-3.95	D 10			
3.50-3.60	B 11			
3.80-3.90	SPT S	50/50mm (25,50)	3.80	dry
3.80-4.25	D 12			

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
MADE GROUND: Grass over hardcore (drillers description)	0.10 +23.91		
Tarmac (drillers description)	0.30 +23.71		
Concrete (drillers description)	0.40 +23.61		
MADE GROUND: Colliery fill (drillers description)	(1.15)		
Stiff orange grey mottled orange slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of mudstone	1.55 +22.46		
	(1.15)		
Dark grey very weak MUDSTONE recovered as gravel	2.70 +21.31		
	(1.55)	SP	
EXPLORATORY HOLE ENDS AT 4.25 m	4.25 +19.76		

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

Chiselling

Depths (m)	Time	Tools used
0.10 -0.30	30 mins	Chisel
0.30 -0.40	30 mins	Chisel
3.50 -3.80	60 mins	Chisel

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MESG HBIII (2nd). 07/11/2003 08:18:16

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

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Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by SH Logged by JSN Checked by FW	Start 04/08/2003 End 04/08/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-2.95m	Depth from 0.00m to 2.95m Diameter 150mm Casing Depth 2.50m	Ground Level +35.80 mOD Coordinates E 347263.24 National Grid N 389435.23	

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.30 0.40-1.00	ES 1 B 2			
1.00 1.00-1.50	ES 3 B 4			
1.50-1.94 1.50-1.95	SPT S D 5	55/285mm (8,12,14,14,16,11)	1.50	dry
2.00-2.50	B 6			
2.50-2.68 2.50-2.95	SPT S D 7	50/120mm (25,28,22)	2.50	dry

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
Grass stubble field over TOPSOIL (drillers description)	0.10 +35.70		
	(0.30)		
Firm brown sandy CLAY (drillers description)	0.40 +35.40		
Very weak orange grey MUDSTONE recovered as clay and gravel	(2.55)		
EXPLORATORY HOLE ENDS AT 2.95 m	2.95 +32.85		

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

Chiselling

Depths (m)	Time	Tools used
2.30 -2.50	60 mins	Chisel

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

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AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

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Borehole Log

Soil Mechanics

Drilled by SH Logged by JSN Checked by FW	Start 05/08/2003 End 05/08/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-3.45m	Depth from 0.00m to 3.45m	Diameter 150mm	Casing Depth 3.00m

Ground Level +35.90 mOD
Coordinates E 347241.58
National Grid N 389516.73

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.25-1.45 0.30	B 2 ES 1			
1.50-1.95 1.50-1.95	SPT S D 3	N=54 (6,8,10,10,14,20)	1.50	dry
2.50-2.74 2.50-2.95 2.50-3.00	SPT S D 4 B 5	50/135mm (20,5,26,24)	2.50	dry
3.00-3.22 3.00-3.45	SPT S D 6	50/115mm (24,1,30,20)	3.00	dry

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
Grass stubble field over TOPSOIL (drillers description)	0.25 +35.65		
Firm brown mottled CLAY (drillers description)	(1.20)		
Stiff orange brown gravelly CLAY. Gravel is angular to subangular fine and medium of mudstone	1.45 +34.45 (0.95)		
Very weak grey MUDSTONE recovered as grave	2.40 +33.50 (1.05)		
EXPLORATORY HOLE ENDS AT 3.45 m	3.45 +32.45		

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

Chiselling

Depths (m)	Time	Tools used
2.65 -3.00	60 mins	Shell

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEXC Hdill (286), 07/11/2003 09:18:30

AGS

Project Cronton Colliery
Project No. F3605
Carried out for Maro Developments

Borehole

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Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by AH Logged by JSN Checked by FW	Start 30/07/2003 End 30/07/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-4.05m	Depth from 0.00m to 4.05m Diameter 150mm Casing Depth 3.00m	Ground Level +33.96 mOD Coordinates E 347189.61 National Grid N 389423.41	

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.10-1.20	B 2			
0.30	ES 1			
1.30	ES 3			
1.50-1.95	SPT S	N=6 (1,2,2,1,1,2)	1.50	dry
1.50-1.95	D 4			
1.50-2.00	B 5			
2.30	ES 6			
2.50-2.95	SPT S	N=25 (4,4,3,6,7,9)	2.50	dry
2.50-2.95	D 7			
2.50-3.00	B 8			
3.30	ES 9			
3.50-3.95	SPT S	N=58 (4,15,13,16,15,12)	3.00	dry
3.50-3.95	D 10			
4.03-4.05	SPT S	50/10mm (25.50)	3.00	dry
4.03-4.05	D 11			

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
MADE GROUND: Firm black slightly gravelly sandy CLAY with some coal dust and fragments. Gravel is subangular to angular fine and medium of brick and coal	(2.10)		
1.50-1.95 m Soft			
Medium dense orange brown clayey gravelly SAND. Gravel is subrounded to angular of sandstone	2.10 +31.86		SP
	(1.60)		
Weak orange SANDSTONE recovered as sand and gravel	3.70 +30.26		
	(0.35)		
EXPLORATORY HOLE ENDS AT 4.05 m	4.05 +29.91		

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

Chiselling

Depths (m)	Time	Tools used
3.70 -4.00	45 mins	Shell
4.00 -4.03	60 mins	Chisel

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

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Borehole Log

Soil Mechanics

Drilled by AH Logged by JSN Checked by FW	Start 29/07/2003 End 30/07/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-9.50m	Depth from 0.00m to 9.50m	Diameter 150mm	Casing Depth 7.50m

Ground Level +34.16 mOD
Coordinates E 347181.42
National Grid N 389293.89

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.20-1.20	B 2			
0.30	ES 1			
1.30	ES 3			
1.50-1.95	SPT S	N=12 (2,1,3,4,2,3)		dry
1.50-1.95	D 4			
2.30	ES 5			
2.50-2.95	SPT S	N=14 (2,3,3,3,5,3)	2.50	dry
2.50-2.95	D 6			
3.30	ES 7			
3.50-3.95	SPT S	N=12 (2,4,3,3,3,3)	3.00	dry
3.50-3.95	D 8			
4.30	ES 9			
4.50-4.95	SPT S	N=13 (1,3,4,2,3,4)	4.50	dry
4.50-4.95	D 10			
5.30	ES 11			
5.50-6.00	B 12			
6.00-6.45	U 13	62 blows		
6.55	D 14			
6.60	ES 15			
7.30	ES 16			
7.50-7.95	SPT C	N=15 (4,4,3,3,3,3)	7.50	dry
7.50-8.00	B 17			
8.30	ES 18			
9.00-9.50	B 19			
9.00-9.45	U nr	66 blows No recovery		

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
MADE GROUND: Medium dense grey brown slightly sandy clayey subangular to angular fine to coarse GRAVEL of sandstone	(3.50)		
MADE GROUND: Firm orange brown slightly sandy gravelly CLAY. Gravel is subangular to angular fine to coarse of mudstone	3.50 +30.66 (1.80)		
MADE GROUND: Firm dark grey sandy CLAY with some coal dust	5.30 +28.86 (1.50)		
MADE GROUND: Concrete (drillers description)	6.80 +27.36 6.95 +27.21		
MADE GROUND: Medium dense black slightly clayey sandy subangular to angular fine to coarse GRAVEL of brick, coal, slag and mudstone	(1.25)		
Stiff orange brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of sandstone and mudstone	8.20 +25.96 (1.30)		SP
EXPLORATORY HOLE ENDS AT 9.50 m	9.50 +24.66		

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)

Chiselling

Depths (m)	Time	Tools used
6.75 -6.80	30 mins	Chisel
6.80 -6.90	60 mins	Chisel

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project Cronton Colliery
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Carried out for Maro Developments

Borehole
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Borehole Log

Soil Mechanics

Drilled by SH Logged by JSN Checked by FW	Start 05/08/2003 End 05/08/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-2.75m	Depth from 0.00m to 2.75m Diameter 150mm Casing Depth 2.30m	Ground Level +32.03 mOD Coordinates E 347114.66 National Grid N 389458.24

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.10-0.50	B 2			
0.30	ES 1			
0.50-1.50	B 3			
1.50-1.95	SPT S	N=54 (6,6,8,12,18,18)	1.50	dry
1.50-1.95	D 4			
1.50-2.30	B 5			
2.30-2.41	SPT S	50/50mm (25,50)	2.30	dry
2.30-2.75	D 6			

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
Grass stubble field over TOPSOIL (drillers description)	0.10 +31.93		
	(0.40)		
Firm brown CLAY (drillers description)	0.50 +31.53		
Weathered SANDSTONE (drillers description)	(1.00)		
Very weak orange SANDSTONE recovered as sand and gravel	1.50 +30.53		
	(1.25)		
EXPLORATORY HOLE ENDS AT 2.75 m	2.75 +29.28		

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

Chiselling

Depths (m)	Time	Tools used
2.00 -2.30	60 mins	Shell

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEXC HBR (2B), 07/11/2003 09:18:54

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

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Borehole Log

Soil Mechanics

Drilled by AH Logged by JSN Checked by FW	Start 05/08/2003 End 05/08/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1 20-2.74m	Depth from 0.00m to 2.74m Diameter 150mm Casing Depth 1.50m	Ground Level +34.42 mOD Coordinates E 347084.58 National Grid N 389544.47

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.50-1.20	B 1			
1.50-1.95	U 2	52 blows 400 mm rec		
2.05	D 3			
2.50-2.60	U nr	67 blows		
2.70-2.72	SPT S	50/10mm (25,50)	1.50	dry
2.70-2.72	D 4			
2.73-2.75	SPT S	50/10mm (25,50)	1.50	dry
2.73-2.74	D 5			

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
Firm brown TOPSOIL (drillers description)	(0.50)		
Firm red brown slightly sandy gravelly CLAY. Gravel is subangular to angular of predominantly sandstone	0.50 +33.92 (1.05)		
Stiff orange brown slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded of sandstone	1.55 +32.87 (1.05)		
Very weak orange SANDSTONE recovered as sand and gravel EXPLORATORY HOLE ENDS AT 2.74 m	2.60 +31.82 2.74 +31.68		

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

Chiselling

Depths (m)	Time	Tools used
2.70 -2.73	60 mins	Shell

Notes. For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEBO HBM (2B). 07/11/2003 08:19:01

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

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Sheet 1 of 1

Borehole Log

Soil Mechanics

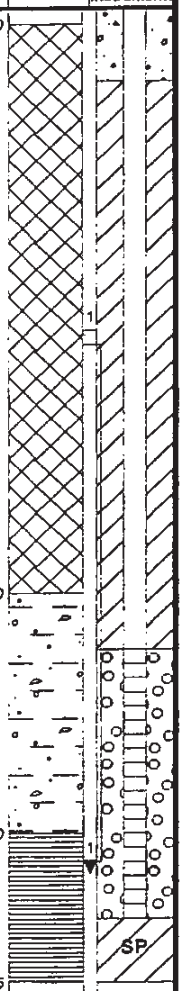
Drilled by SH Logged by JSN Checked by FW	Start 30/07/2003 End 30/07/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-6.85m	Depth from 0.00m to 6.85m Diameter 150mm Casing Depth 6.40m	Ground Level +24.90 mOD Coordinates E 347085.65 National Grid N 389236.19	

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.30	ES 1			
1.00	ES 2			
1.00-1.50	B 3			
1.50-1.95	U 4			
1.95-2.00	D 5			
2.00	ES 6			
2.00-2.50	B 7			
2.50-2.60	SPT S	50/55mm (25,50)	2.50	dry
2.50-2.95	B 8			
3.00	ES 9			
3.50-3.95	U 10	250 blows 350 mm rec		
3.95-4.00	D 11			
4.00	ES 12			
4.10-4.50	B 13			
4.50-4.95	SPT S	N=25 (5,4,5,8,8,8)	4.50	dry
4.50-4.95	D 14			
5.00	ES 15			
6.00-6.32	SPT S	55/170mm (8,12,24,22,9)	6.60	2.35
6.00	ES 16			
6.00	W 17			
6.00-6.45	D 18			
6.00-6.40	B 19			
6.40-6.53	SPT S	50/60mm (25,50)	6.40	dry
6.40-6.85	D 20			

Strata

Description	Depth, Level (Thickness)
Grass over colliery fill (drillers description)	0.10 +24.80
MADE GROUND: Dense orange and grey very clayey angular fine to coarse GRAVEL of burnt shale and mudstone	(4.00)
Stiff orange brown slightly sandy slightly gravelly CLAY. Gravel is subangular to angular fine and medium of predominantly mudstone with rare coal	4.10 +20.80
	(1.70)
Very weak grey MUDSTONE recovered as gravel and silt	5.80 +19.10
	(1.05)
EXPLORATORY HOLE ENDS AT 6.85 m	6.85 +18.05



Legend | Backfill/ Instruments

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	6.00	Rose to 2.35 m after 20 minutes.	6.00

Depth Related Remarks
From to (m)

Chiselling

Depths (m)	Time	Tools used
1.20 -1.30	30 mins	Shell
2.50 -2.80	60 mins	Shell
6.00 -6.40	60 mins	Shell

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEAS HSSI (2000), 07/11/2003 09:19:08

AGS

Project Cronton Colliery
Project No. F3605
Carried out for Maro Developments

Borehole
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Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by AH Logged by JSN Checked by FW	Start 05/08/2003 End 05/08/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1 20-3.70m	Depth from 0.00m	to 3.70m	Diameter 150mm	Casing Depth 1.50m

Ground Level +24.58 mOD
Coordinates E 347015.74
National Grid N 389327.85

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.50-1.20	B 1			
1.50-1.95	U 2	61 blows		
2.05	D 3			
2.50-2.95	SPT S	N=15 (3,5,3,4,4,4)	1.50	dry
2.50-2.95	D 4			
3.50-3.65	U nr	150 blows		
3.65-3.67	SPT S	50/10mm (25,50)	1.50	dry
3.65-3.67	D 5			
3.68-3.70	SPT S	50/10mm (25,50)	1.50	dry
3.68-3.70	D 6			

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level (Thickness)
TOPSOIL(drillers description)	(0.35) 0.35 +24.23
Firm brown slightly sandy slightly gravelly CLAY. Gravel is subangular to angular fine and medium including sandstone, mudstone and coal	(3.25)
2.50 m stiff	
Weathered Grey MUDSTONE	3.60 +20.98
EXPLORATORY HOLE ENDS AT 3.70 m	3.70 +20.88

Legend: 1

Backfill/ Instruments: 1

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	3.70	Rose to 3.50 m after 20 minutes.	-

Depth Related Remarks
From to (m)

Chiselling

Depths (m)	Time	Tools used
3.65 -3.68	60 mins	Shell

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEXO HBM (298). 07/11/2003 08:19:17

AGS

Project Cronton Colliery
Project No. F3605
Carried out for Maro Developments

Borehole
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Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by PG Logged by JSN Checked by FW	Start 12/08/2003 End 13/08/2003	Equipment, Methods and Remarks T51	Depth from to Diameter Casing Depth 0.00m 15.60m 92mm	Ground Level +24.58 mOD Coordinates E 347015.74 National Grid N 389327.85	

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
			12/08/2003	0800
4.00-5.50	85 78 53			
	NI 100 250			
5.50-8.00	98 98 48	20 170 220		
	90 200 300			
		If NI/NI/NI		
8.00-11.00	NI 100 94 89	300 1020		
		Flush: 0.00-19.60 Air Mist, 100 %		

Strata

Description		Depth,Level (Thickness)	Legend	Backfill/ Instruments
Strong light orange grey SANDSTONE with some carbonaceous sandstone laminations.	4.00-4.27 m AZCL			
Discontinuities are subhorizontal closely to medium spaced planar rough and open.	4.33-4.61 m Subvertical rough open discontinuities. L 4.61-4.71 m NI			
	5.48-5.55 m NI C	(2.37)		
Strong light orange grey SANDSTONE with some fine to coarse gravel size mudstone lithorelics.		6.37 +18.21		
Discontinuities are subhorizontal medium to closely spaced, rarely very closely spaced, planar rough moderately open to open.		(0.73)		
Strong light orange grey SANDSTONE.		7.10 +17.48		
Discontinuities are subhorizontal medium to closely spaced planar rough moderately open.		(0.90)		
Orange light grey very sandy subangular to subrounded fine to coarse GRAVEL of sandstone.		8.00 +16.58 8.10 +16.48		
Strong light orange grey SANDSTONE.				
Discontinuities are subhorizontal widely to medium spaced planar rough moderately open to open.		(2.57)		
Stratum continued next sheet				

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	3.70	Rose to 3.50 m after 20 minutes.	-
2	8.20	-	-

Depth Related Remarks
From to (m)

Chiselling
Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEAG HBSI (2000, 07/11/2003 08:19:25

AGS

Project	Cronton Colliery
Project No.	F3605
Carried out for	Maro Developments

Borehole
121R
Sheet 1 of 2

Borehole Log

Soil Mechanics

Drilled by PG Logged by JSN Checked by FW	Start 12/08/2003 End 13/08/2003	Equipment, Methods and Remarks	Depth from / to / Diameter / Casing Depth 0.00m / 15.60m / 92mm	Ground Level +24.58 mOD Coordinates E 347015.74 National Grid N 389327.85

Samples and Tests

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water
			If NI/NI/NI		
		120			
		140			
		260			
			If NI/NI/NI		
			If 40/40/40		
			If NI/NI/NI		
			If NI/20/45		
		20			
11.00-13.60	100	200			
	95	300			
	48				
		NI			
		60			
		80			
		70			
		110			
		160			
	150				
13.60-15.60	144				
	26				
		NI			
		40			
		130			
	100				
16.60-19.60	87				
	3				
				12/08/2003	1800
				13/08/2003	4.30
				15.60	1.80
				13/08/2003	0800
				15.60	1.80

Strata

Description		Depth, *Level* (Thickness)	Legend	Backfill/ Instruments
Strong light orange grey SANDSTONE. Discontinuities are subhorizontal widely to medium spaced planar rough moderately open to open.				
Weak black vitreous COAL interlaminated with SANDSTONE recovered non intact.		10.67 *+13.91* 10.73 *+13.85*		
Strong light orange grey SANDSTONE. Discontinuities are subhorizontal closely to medium spaced planar, rough and open.		(0.60)		
Weak black vitreous COAL interlaminated with SANDSTONE recovered as non intact.		11.33 *+13.25* 11.49 *+13.09* 11.53 *+13.05* 11.62 *+12.96* 11.75 *+12.83*		
Strong light orange grey SANDSTONE.		(0.98)		SP
Weak black COAL interlaminated with SANDSTONE recovered non intact.				
Moderately weak blue grey MUDSTONE. Discontinuities are subhorizontal very to extremely closely spaced, smooth and open.	12.73-12.78 m NI 12.85-13.00 m Subvertical undulating smooth open discontinuities. 13.20-13.34 m	12.73 *+11.85*		
Strong light orange grey SANDSTONE with some mudstone foliations. Discontinuities are subhorizontal closely to medium spaced planar rough and open.	Subvertical undulating smooth open discontinuities. 13.90-14.00 m NI 14.09-14.13 m NI 14.20-14.25 m NI	(0.61) 13.34 *+11.24* (0.43) 13.77 *+10.81*		
Moderately weak blue grey MUDSTONE. Discontinuities are subhorizontal very closely to closely spaced, planar, smooth moderately open.	14.50-14.70 m Subvertical planar smooth moderately open discontinuity. 14.82-14.85 m NI			
Strong light orange grey SANDSTONE. Discontinuities are subhorizontal very closely to closely spaced, planar, rough and moderately open.				
Moderately weak blue grey MUDSTONE. Discontinuities are subhorizontal very closely to closely spaced, planar, smooth, tight to moderately open.		(5.83)		
	16.70-16.82 m NI 16.95-17.00 m NI 17.08-17.12 m NI			
	18.60-18.64 m NI 18.68-18.85 m Subvertical undulating smooth moderately open discontinuity. 18.88-18.92 m Subvertical planar smooth moderately open discontinuity. 19.59-19.60 m NI			
EXPLORATORY HOLE ENDS AT 19.60 m		19.60 *+4.98*		

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

Depth Related Remarks

From	to (m)

Chiselling

Depths (m)	Time	Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project: Cronton Colliery

Project No.: F3605

Carried out for: Maro Developments

Borehole

121R

Sheet 2 of 2

Borehole Log

Soil Mechanics

Drilled by AH Logged by JSN Checked by FW	Start 01/08/2003 End 01/08/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-6.30m	Depth from 0.00m	to 6.30m	Diameter 150mm	Casing Depth 6.00m

Ground Level +23.98 mOD
Coordinates E 347189.91
National Grid N 389162.24

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.30	ES 1			
0.30-1.20	B 2			
1.30	ES 3			
1.50-1.95	SPT S	N=6 (1,1,2,1,1,2)	1.50	dry
1.50-1.95	D 4			
2.30	ES 5			
2.50-2.95	SPT S	N=7 (2,2,1,1,3,2)	2.50	dry
2.50-2.95	D 6			
3.30	ES 7			
3.50-3.95	SPT S	N=7 (1,2,2,2,2,1)	3.00	dry
3.50-3.95	D 8			
4.30	ES 9			
4.50-4.95	U 10	42 blows		
4.55	D 11			
5.00-6.00	B 13			
5.30	ES 12			
6.00-6.05	U	150 blows No penetration		
6.15-6.17	SPT S	50/10mm (25,50)	6.00	dry
6.15-6.18	D 14			
6.27-6.29	SPT S	50/10mm (25,50)	6.00	6.17
6.27-6.30	D 15			

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
MADE GROUND: Stiff dark grey to black slightly gravelly sandy CLAY with some coal dust and rare coal fragments. Gravel is angular fine and medium of brick and slag	(4.40)		
Stiff grey mottled orange slightly sandy gravelly CLAY. Gravel is angular to subangular fine to coarse of predominantly mudstone	4.40 +19.58		
	(1.65)		
Very weak MUDSTONE recovered as gravel	6.05 +17.93		
EXPLORATORY HOLE ENDS AT 6.30 m	6.30 +17.68		

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	6.15	Rose to 6.10 m after 20 minutes. slow	-

Depth Related Remarks
From to (m)

Chiselling

Depths (m)	Time	Tools used
6.05 -6.15	30 mins	Shell
6.15 -6.27	60 mins	Shell

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project Cronton Colliery
Project No. F3605
Carried out for Maro Developments

Borehole
122
Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by SH Logged by JSN Checked by FW	Start 05/08/2003 End 05/08/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-4.25m	Depth from 0.00m to 4.25m	Diameter 150mm	Casing Depth 3.80m

Ground Level +27.18 mOD
Coordinates E 346918.22
National Grid N 389490.16

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.10-0.70	B 2			
0 30	ES 1			
0.70-1.50	B 3			
1.50-1.95	SPT S	N=26 (5,6,6,8,6,6)	1.50	dry
1.50-1 95	D 4			
2.50-2.95	SPT S	N=31 (6,7,7,8,8,8)	2.50	dry
2.50-2.95	D 5			
3.50-3.73	SPT S	50/115mm (18,7,25,25)	3.50	dry
3 50-3.95	D 6			
3.50-3.80	B 7			
3.80-3.91	SPT S	50/60mm (25,50)	3.80	dry
3.80-4.25	B 8			

Strata

Description	Depth,Level (Thickness)	Legend	Backfill/ Instrument
Stubble field over TOPSOIL (drillers description)	0.10 +27.08		
	(0.60)		
Firm brown sandy CLAY (drillers description)	0.70 +26.48		
Stiff orange brown slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine and medium of predominantly mudstone			
	(2.25)		
2.50 m stiff			
Very weak dark grey MUDSTONE recovered as gravel	2.95 +24.23		
	(1.30)		
EXPLORATORY HOLE ENDS AT 4.25 m	4.25 +22.93		

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

Chiselling

Depths (m)	Time	Tools used
3.50 -3.80	60 mins	Shell

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEAC HBM (2nd), 07/11/2003 09:20:00

Project Cronton Colliery
Project No. F3605
Carried out for Maro Developments

Borehole

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Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by AH Logged by JSN Checked by FW	Start 31/07/2003 End 31/07/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-9.20m	Depth from 0.00m	to 9.20m	Diameter 150mm	Casing Depth 4.50m

Ground Level +22.50 mOD
Coordinates E 346910.78
National Grid N 389233.08

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.30	ES 1			
0.30-1.20	B 2			
1.30	ES 3			
1.50-1.95	U 4	54 blows		
2.05	D 5			
2.30	ES 6			
2.50-2.95	U 7	81 blows		
3.05	D 8			
3.30	ES 9			
3.50-3.95	SPT S	N=16 (3,3,4,3,4,5)	3.00	dry
3.50-3.95	D 10			
4.50-4.95	U 11	64 blows		
5.05	D 12			
6.00-6.45	SPT S	N=17 (4,3,3,5,4,5)	4.50	dry
6.00-6.45	D 13			
7.50-7.95	U 14	57 blows		
8.05	D 15			
9.00-9.11	SPT S	50/30mm (25,50)	4.50	dry
9.00-9.12	D 16			
9.18-9.20	SPT S	50/10mm (25,50)	4.50	dry
9.18-9.20	D 17			

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
Firm brown clay bound TOPSOIL (drillers description)	(0.30) 0.30 +22.20		
Firm orange brown slightly gravelly very sandy CLAY. Gravel is subangular to angular fine and medium of sandstone	(1.75)		
Stiff orange brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine and medium of various lithologies 2.50 m very stiff	2.05 +20.45		
	(6.95)		
Weak grey MUDSTONE recovered as gravel	9.00 +13.50		
EXPLORATORY HOLE ENDS AT 9.20 m	9.20 +13.30	SP	

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

Chiselling

Depths (m)	Time	Tools used
9.05 - 9.18	60 mins	Shell

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEAC HBR (2SB), 07/11/2003 09:20:08

Project Cronton Colliery
Project No. F3605
Carried out for Maro Developments

Borehole

124

Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by PG Logged by JSN Checked by FW	Start 15/08/2003 End 16/08/2003	Equipment, Methods and Remarks	Depth from / to / Diameter / Casing Depth 0.00m / 9.00m / 92mm / 9.00m 9.00m / 20.20m / 92mm	Ground Level +22.59 mOD Coordinates E 346913.45 National Grid N 389230.99	

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
			15/08/2003	0800
	NI			
	60			
	160			

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
Weak blue grey MUDSTONE. Discontinuities are randomly orientated very closely to closely spaced undulating rough branching moderately 9.20-9.60 m AZCL 9.60-9.73 m NI	(1.00)		
Stratum continued next sheet	9.95-10.04 m NI		

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEGG HBM (296), 07/11/2003 09:20:18

Project: Cronton Colliery

Project No.: F3605

Carried out for: Maro Developments

Borehole

124R

Sheet 1 of 3

Borehole Log

Soil Mechanics

Drilled by PG Logged by JSN Checked by FW	Start 15/08/2003 End 16/08/2003	Equipment, Methods and Remarks	Depth from / to / Diameter / Casing Depth 0.00m / 9.00m / 92mm / 9.00m 9.00m / 20.20m / 92mm		Ground Level +22.59 mOD Coordinates E 346913.45 National Grid N 389230.99	

Samples and Tests

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water
			Flush: 0.00-20.20 Air Mist, 100 %		
			If NI/40/70		
9.20-12.20	87 80 20	10 40 120			
			If NI/40/70		
		NI 50 70			
12.20-14.20	100 95 45	15 230 400			
			If NI/NI/NI		
		10 70 120			
		20 200 280			
14.20-17.20	100 69 48	NI NI NI			
		NI 120 220		15/08/2003 9.00 16/08/2003 9.00	1800 14.10 0800 8.00
17.20-20.20	100 98 76	10 150 260			

Strata

Description	Depth,Level/(Thickness)
open.	
Moderately weak red brown MUDSTONE. Discontinuities are randomly orientated very closely spaced undulating rough branching moderately open.	10.20 +12.39 10.44 +12.15 (0.60)
Moderately weak blue grey MUDSTONE. Discontinuities are randomly orientated very closely to closely spaced undulating rough branching tight to moderately open.	11.04 +11.55 (0.30) 11.34 +11.25 (0.46)
Moderately weak red brown MUDSTONE. Discontinuities are randomly orientated very closely spaced undulating rough branching moderately open. 11.73-11.80 m NI	11.80 +10.79
Weak blue grey MUDSTONE. Discontinuities are randomly orientated very closely spaced undulating rough branching tight to moderately open. 12.34-12.50 m Subvertical planar smooth moderately open discontinuity.	(1.94)
Strong green grey SANDSTONE. Discontinuities are subhorizontal planar smooth medium to widely spaced rarely extremely closely spaced tight tight to moderately open. 13.36-13.60 m Subvertical planar smooth moderately open discontinuity.	13.74 +8.85 13.84 +8.75
Very weak dark grey carbonaceous MUDSTONE recovered largely non intact.	(0.36) 14.20 +8.39
Moderately weak blue grey MUDSTONE. Discontinuities are subhorizontal very closely to closely spaced planar rough tight.	
Strong light orange grey SANDSTONE. Discontinuities are subhorizontal medium to closely spaced planar smooth open.	(1.37)
Very weak grey brown MUDSTONE highly branched fractured recovered largely non intact.	15.57 +7.02 (0.59)
Moderately weak blue grey MUDSTONE. Discontinuities are subhorizontal closely to very closely spaced planar rough moderately open. 17.00-18.25 m NI	16.16 +6.43 (1.92)
Moderately weak blue grey MUDSTONE. Discontinuities are subhorizontal planar smooth closely to medium spaced moderately open. 18.55-18.96 m Subvertical planar rough moderately open discontinuity.	18.08 +4.51 (1.97)
Stratum continued next sheet	

Legend / Backfill/Instruments

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m):

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project: Cronton Colliery

Project No.: F3605

Carried out for: Maro Developments

Borehole

124R

Sheet 2 of 3

Borehole Log

Soil Mechanics

Drilled by PG Logged by JSN Checked by FW	Start 15/08/2003 End 16/08/2003	Equipment, Methods and Remarks	Depth from / to / Diameter / Casing Depth 0.00m / 9.00m / 92mm / 9.00m 9.00m / 20.20m / 92mm		Ground Level +22.59 mOD Coordinates E 346913.45 National Grid N 389230.99		

Samples and Tests

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water
			If 75/75/75	16/08/2003 9.00	1800 20.20

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
Moderately weak blue grey MUDSTONE. Discontinuities are subhorizontal planar smooth closely to medium spaced moderately open.	20.05 +2.54		
Strong light orange grey SANDSTONE. Discontinuity is vertical undulating rough annealed with quartz 2mm thick.	20.20 +2.39		SP
EXPLORATORY HOLE ENDS AT 20.20 m			

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
None observed (see Key Sheet)			

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEBG HBW (2nd), 07/11/2003 09:20:32

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

124R

Sheet 3 of 3

Borehole Log

Soil Mechanics

Drilled by IC Logged by JSN Checked by FW	Start 06/08/2003 End 06/08/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-5.50m	Depth from 0.00m to 5.50m	Diameter 150mm	Casing Depth

Ground Level +24.78 mOD
Coordinates E 346873.43
National Grid N 389390.58

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.20	ES 1			
0.50	D 2			
0.50-1.00	B 3			
1.00	D 4			
1.20-1.70	U 5	60 blows 360 mm rec		
1.70	D 6			
2.00	ES 7			
2.20-2.65	SPT C	N=20 (3,3,4,5,5,6)		
2.20-2.70	B 8			
2.50	D 9			
3.00	ES 10			
3.20-3.70	U 11	70 blows 225 mm rec		
4.00	D 12			
4.00	ES 13			
4.20-4.65	SPT C	N=35 (1,3,4,7,12,12)		
4.20-4.70	B 14			
5.00	D 15			
5.00	ES 16			
5.10-5.11	SPT C	50/0mm (25,50)		
5.10	ES 17			
5.10-5.50	B 18			
5.50	SPT C	50/0mm (25,50)		
5.50	D 19			
5.50	ES 20			

Strata

Description	Depth, Level (Thickness)
TOPSOIL (drillers description)	0.10 +24.68
	(0.40)
Stiff orange and orange brown slightly gravelly very sandy CLAY. Gravel is subrounded fine to coarse of sandstone	0.50 +24.28
Stiff orange brown slightly sandy slightly gravelly CLAY. Gravel is subrounded to angular fine and medium of sandstone and mudstone	(2.00)
Stiff red brown slightly gravelly sandy CLAY. Gravel is subrounded to subangular fine to coarse of mudstone	2.50 +22.28
3.20 m very stiff	(2.60)
Grey MUDSTONE recovered as gravel	5.10 +19.68
	(0.40)
EXPLORATORY HOLE ENDS AT 5.50 m	5.50 +19.28

Legend

Backfill/ Instruments

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

Chiselling

Depths (m)	Time	Tools used
5.10 -5.50	60 mins	Shell

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project Cronton Colliery
Project No. F3605
Carried out for Maro Developments

Borehole

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Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by SH Logged by JSN Checked by JSN	Start 31/07/2003 End 31/07/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-6.45m	Depth from 0.00m to 6.45m	Diameter 150mm	Casing Depth 6.00m

Ground Level +19.77 mOD
Coordinates E 346804.32
National Grid N 389181.01

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.30	ES 1			
1.00	ES 2			
1.00-1.50	B 3			
1.50-1.95	U 4	150 blows		
1.95-2.00	D 5			
2.00-2.50	B 6			
2.50-2.95	SPT S	N=22 (4,5,5,6,5,6)	2.50	dry
2.50-2.95	D 7			
3.50-3.70	B 10			
3.50-3.95	U 8	150 blows		
3.70-4.50	B 11			
3.95-4.00	D 9			
4.50-4.95	SPT S	N=23 (6,6,5,6,6,6)	4.50	dry
4.50-4.95	D 12			
5.80-6.14	SPT S	55/190mm (10,10,11,28,16)	4.50	dry
5.80-6.25	D 13			
5.80-6.00	B 14			
6.00-6.23	SPT S	50/110mm (15,10,26,24)	6.00	dry
6.00-6.45	D 15			

Strata

Description	Depth,Level/ (Thickness)
Grass over TOPSOIL (drillers description)	0.10 +19.67
Firm orange brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of sandstone.	
2.50 m stiff	
	(5.70)
3.50 m firm,sandy	
4.50 m stiff	
Very weak red grey SANDSTONE recovered as sand and gravel	5.80 +13.97
	(0.65)
EXPLORATORY HOLE ENDS AT 6.45 m	6.45 +13.32

Legend / Backfill/ Instruments: SP

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks
From to (m)

Chiselling

Depths (m)	Time	Tools used
1.20 -1.40	60 mins	Shell
5.80 -6.00	60 mins	Shell

Notes For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEBG HBN (298), 07/11/2003 09:20:53

Project Cronton Colliery
Project No. F3605
Carried out for Maro Developments

Borehole 126
Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by AH Logged by AOB Checked by JSN	Start 31/07/2003 End 31/07/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-9.30m	Depth from 0.00m to 9.30m	Diameter 150mm	Casing Depth 4.50m

Ground Level +23.13 mOD
Coordinates E 346787.60
National Grid N 389304.44

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.30	ES 1			
0.30-1.20	B 2			
1.50-1.95	U 3			
2.05	D 4			
2.50-2.95	SPT S	N=15 (2,4,3,3,5,4)	2.50	dry
2.50-2.95	D 5			
3.50-3.95	U 6	50 blows		
4.05	D 7			
4.50-4.95	SPT S	N=15 (3,4,4,4,3,4)	4.50	dry
4.50-4.95	D 8			
6.00-6.45	U 9	58 blows		
6.55	D 10			
7.50-7.95	SPT S	N=15 (3,5,4,2,4,5)	4.50	dry
7.50-7.95	D 11			
9.00-9.15	U nr	110 blows		
9.15-9.18	SPT S	50/20mm (25,50)	4.50	dry
9.15-9.18	D 12			
9.27-9.30	SPT S	50/20mm (25,50)	4.50	dry
9.27-9.30	D 13			

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
Firm brown clay bound TOPSOIL (drillers description)	0.25 +22.88		
Firm orange brown slightly gravelly sandy CLAY. Gravel is subangular to angular fine and medium of predominantly sandstone. Driller notes sand lenses	(3.85)		
Stiff orange grey slightly sandy slightly gravelly CLAY. Gravel is subangular to angular fine and medium of predominantly sandstone	4.10 +19.03		
Weak to moderately weak grey SANDSTONE recovered as sand and gravel	(5.05)		
EXPLORATORY HOLE ENDS AT 9.30 m	9.15 +13.98 9.30 +13.83		

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks
From to (m)

Chiselling

Depths (m)	Time	Tools used
9.18 -9.27	60 mins	Chisel

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column

Scale 1:50

a) MEAS HBH (298), 07/11/2003 09:21:03

Project Cronton Colliery
Project No. F3605
Carried out for Maro Developments

Borehole
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Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by AH	Start 05/08/2003	Equipment, Methods and Remarks	Depth from	to	Diameter	Casing Depth	Ground Level	+25.98 mOD
Logged by AOB	End 05/08/2003	Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-3.00m	0.00m	3.00m	150mm	1.50m	Coordinates	E 346868.41 N 389501.08
Checked by JSN							National Grid	

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.50-1.20	B 1			
1.50-1.95	U 2	47 blows		
2.05	D 3			
2.50-2.95	U 4	115 blows 350 mm rec		
2.95-2.97	SPT S	50/10mm (25,50)	1.50	dry
2.95-2.97	D 5			
2.98-3.00	SPT S	50/10mm (25,50)	1.50	dry
2.98-3.00	D 6			

Strata

Description	Depth,Level (Thickness)	Legend	Backfill/ Instruments
TOPSOIL (drillers description)	(0.40)		
Firm orange brown slightly gravelly very sandy CLAY. Gravel is subangular to subrounded of sandstone	0.40 +25.58		
	(2.45)		
Weak grey SANDSTONE recovered as sand and gravel	2.85 +23.13		
EXPLORATORY HOLE ENDS AT 3.00 m	3.00 +22.98		

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

Chiselling

Depths (m)	Time	Tools used
2.85 -2.95	30 mins	Shell
2.95 -2.98	60 mins	Shell

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project: Cronton Colliery

Project No.: F3605

Carried out for: Maro Developments

Borehole

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Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by	SH
Logged by	JSN
Checked by	FW

Start	01/08/2003
End	01/08/2003

Equipment, Methods and Remarks
Dando 150
Inspection pit dug to 1.20m
Cable percussion 1.20-8.85m

Depth from	to	Diameter	Casing Depth
0.00m	8.85m	150mm	8.40m

Ground Level	+23.73 mOD
Coordinates	E 345693.58
National Grid	N 389396.30

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.30	ES 1			
1.00	ES 2			
1.00-1.40	B 3			
1.50-1.95	U 4	250 blows 300 mm rec	1.50	dry
1.95-2.00	D 5			
2.00	ES 6			
2.00-3.00	B 7			
2.50-2.95	SPT C	N=34 (12,8,15,4,5,10)	2.50	dry
3.00	ES 8			
3.50-3.95	U 9	250 blows 400 mm rec	3.50	dry
3.95-4.00	D 10			
4.00	ES 11			
4.00-4.50	B 12			
4.50-4.95	SPT S	N=27 (6,6,5,6,6,6)	4.50	dry
4.50-4.95	D 13			
6.00-6.45	U 14	250 blows		
6.45-6.50	D 15			
7.50-7.92	SPT S	59/265mm (8,8,12,12,21,14)	7.50	dry
7.50-7.95	D 16			
7.50-8.40	B 17			
8.40-8.64	SPT S	53/135mm (16,9,25,28)	8.40	dry
8.40-8.85	D 18			

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level (Thickness)
Grass over TOPSOIL (drillers description)	0.10 +23.63
MADE GROUND: Brick concrete rubble clay fill (drillers description)	(3.40)
Stiff to very stiff orange brown slightly sandy slightly gravelly CLAY. Gravel is subrounded to subangular fine and medium of mudstone	3.50 +20.23
Very weak orange and grey MUDSTONE recovered as gravel	(3.95)
EXPLORATORY HOLE ENDS AT 8.85 m	7.45 +16.28
	(1.40)
	8.85 +14.88

Legend: SP

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth seated (m)

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)

Chiselling

Depths (m)	Time	Tools used
1.20 -1.40	60 mins	Shell
2.00 -2.40	60 mins	Shell
8.10 -8.40	60 mins	Shell

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MESG Hilton (2000), 07/11/2003 09:21:18

AGS

Project	Cronton Colliery
Project No.	F3605
Carried out for	Maro Developments

Borehole

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Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by SH Logged by JSN Checked by FW	Start 31/07/2003 End 31/07/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-6.50m	Depth from 0.00m to 6.50m	Diameter 150mm	Casing Depth 6.05m

Ground Level +19.64 mOD
Coordinates E 346663.68
National Grid N 389300.25

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.30	ES 1			
0.30-1.00	B 2			
1.00	ES 3			
1.00-1.50	B 4			
1.50-1.95	U 5	70 blows		
1.95-2.00	D 6			
2.00-2.50	B 7			
2.50-2.95	SPT S	N=21 (5,5,6,6,4,5)	2.50	dry
2.50-2.95	D 8			
3.50-3.95	U 9	250 blows		
3.70-4.50	B 11			
3.95-4.00	D 10			
4.50-4.95	SPT S	N=35 (8,10,9,9,8,9)	4.50	dry
4.50-4.95	D 12			
5.50-6.00	B 13			
6.00-6.40	SPT S	55/250mm (10,10,10,18,20,7)	6.00	dry
6.00-6.45	D 14			
6.00-6.05	D 15			
6.05-6.19	SPT S	50/70mm (25,50)	6.00	dry
6.05-6.50	D 16			

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level (Thickness)
Grass over TOPSOIL (drillers description)	0.20 +19.44
MADE GROUND: Firm dark grey slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone	(0.80)
Firm to stiff orange grey slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone	1.00 +18.64
4.50-4.95 m Very stiff	(4.50)
Very weak red grey SANDSTONE recovered as sand and gravel	5.50 +14.14
EXPLORATORY HOLE ENDS AT 6.50 m	(1.00) 6.50 +13.14

Legend: SP

Backfill/ Instruments

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

Chiselling

Depths (m)	Time	Tools used
3.10 -3.35	60 mins	Shell
5.80 -6.05	60 mins	Shell

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEBO HBM (298), 07/11/2003 08:21:26

Project Cronton Colliery
Project No. F3505
Carried out for Maro Developments

Borehole

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Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by IC Logged by JSN Checked by FW	Start 05/05/2003 End 05/05/2003	Equipment, Methods and Remarks Dando 150 Inspection pit dug to 1.20m Cable percussion 1.20-5.40m	Depth from 0.00m to 5.40m Diameter 150mm Casing Depth	Ground Level +25.18 mOD Coordinates E 346921.57 National Grid N 389392.20

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
0.20	ES 1			
0.50	D 2			
0.50-1.00	B 3			
1.00	ES 4			
1.20-1.70	U 5	55 blows 380 mm rec		
1.70	D 6			
2.00	ES 7			
2.20-2.70	U 8	70 blows 430 mm rec		
2.70	D 9			
3.00	ES 10			
3.20-3.65	SPT C	N=22 (2,4,4,5,6,7)		
3.20-3.70	B 11			
3.70	D 12			
3.90-4.28	SPT S	50/226mm (6,8,9,10,27,4)		
3.90	D 13			
3.90-4.40	D 14			
4.10	ES 15			
4.90-5.00	SPT S	50/20mm (28,50)		
4.90-5.10	D 16			
5.00	D 17			
5.00	ES 18			
5.40	D 19			
5.40	ES 20			

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
Stiff orange brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of predominantly sandstone	(3.90)		
Weak grey MUDSTONE recovered as gravel	3.90 +21.26 (1.50)		
EXPLORATORY HOLE ENDS AT 5.40 m	5.40 +19.76		SP

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)	
3.90	5.40	Water added to assist boring

Chiselling

Depths (m)	Time	Tools used
2.90 -3.10	30 mins	Shell
5.00 -5.40	75 mins	Shell

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

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Sheet 1 of 1

Borehole Log

Soil Mechanics

Drilled by	PG
Logged by	JSN
Checked by	FW

Start 04/08/2003
End 04/08/2003

Equipment, Methods and Remarks
T51
Rotary Open Hole 0.00-8.85m
Rotary Cored 8.85-19.90m

Depth from	to	Diameter	Casing Depth
0.00m	8.85m	92mm	
8.85m	19.20m	92mm	

Ground Level +34.02 mOD
Coordinates E 347215.75
National Grid N 389357.71

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
			04/08/2003	0800
		Flush: 0.00-15.40 Air mist, 100 %		
8.85-10.80	65 50 23			

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
MADE GROUND:Colliery Waste (drillers description)	(3.40)		
Sandy brown boulder CLAY (drillers description)	3.40 +30.62 (0.50)		
SANDSTONE (drillers description)	3.90 +30.12 (4.95)		
Moderately weak light orange grey SANDSTONE with rare carbonaceous sandstone thin laminations. 8.85-9.44 m AZCL	8.85 +25.17		
Discontinuities are subhorizontal closely to very closely spaced, planar, rough and moderately open to open. 9.76-9.79 m C			
Stratum continued next sheet			

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	7.80	slow	-

Depth Related Remarks
From to (m)

Chiselling
Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MESG HBR (298), 07/11/2003 15:18:03 AGS

Project Cronton Colliery
Project No. F3606
Carried out for Maro Developments

Borehole
P1/10
Sheet 1 of 2

Borehole Log

Soil Mechanics

Drilled by	PG
Logged by	JSN
Checked by	FW

Start 04/08/2003
End 04/08/2003

Equipment, Methods and Remarks

Depth from	to	Diameter	Casing Depth
0.00m	8.85m	92mm	
8.85m	19.20m	92mm	

Ground Level +34.02 mOD
Coordinates E 347215.75
National Grid N 389357.71

Samples and Tests

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water
		NI			
		80			
		180			
	92				
10.80-12.40	78				
	36				
			If NI/10/15		
		NI			
		80			
		120			
	100				
12.40-15.40	83				
	27				
			If 50/50/50		
			If NI/NI/NI		
			If 15/35/50		
			If 10/50/60		
			If 30/30/30		
		10			
		80			
		160			
	72				
15.40-18.40	72		Flush: 15.40-18.40 Air Mist, 50 %		
	28		If 40/55/70		
		15			
		70			
		100			
		10			
		90			
		140			
		40			
		70			
		120			
			If 50/50/50		
		NI			
	81	120			
18.40-19.90	70	150	Flush: 18.40-19.90 Air Mist, 25 %		
	62				
				04/08/2003 6.00	1800 16.80

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water

Strata

Description		Depth, Level (Thickness)	Legend	Backfill/ Instruments
Moderately weak light orange grey SANDSTONE with rare carbonaceous sandstone thin laminations.				
Discontinuities are subhorizontal closely to very closely spaced, planar, rough and moderately open to open.	10.44-11.18 m NI	(3.13)		
	11.73-11.75 m NI			
Weak black dull COAL.		11.98 +22.04		
Discontinuities are subvertical extremely closely spaced planar rough branching moderately open to tight.	12.40-12.72 m NI	12.08 +21.94		
Moderately weak dark grey carbonaceous SILTSTONE with some iron rich thin to thick laminations. Between 14.74 and 14.94 largely recovered non-intact.				
Discontinuities are closely to very closely spaced, planar, rough and moderately open.	14.35-14.60 m Subvertical undulating rough open discontinuities.			
	14.69-14.74 m Thin bed of moderately strong copper grey ironstone.	(5.72)		
	14.94-15.05 m Thin bed of moderately strong copper grey ironstone.			
	15.21-15.27 m Thin bed of moderately strong copper grey ironstone.			
	15.40-15.23 m AZCL			
	17.03-17.17 m Thin bed of moderately strong copper grey ironstone.			
	17.30-17.50 m Subvertical undulating smooth moderately open discontinuities.	17.80 +16.22		
Possible MINE WORKINGS. (Driller notes flush returns of 25%)	17.62-17.80 m Thin bed of moderately strong copper grey ironstone	(0.60)		
Moderately weak blue grey MUDSTONE with some fine gravel sized iron nodules.	with rare siltstone laminations.	18.40 +15.62		
Discontinuities are closely spaced undulating rough and open.	18.60-18.76 m NI	(1.33)		
EXPLORATORY HOLE ENDS AT 19.90 m	19.73-19.90 m AZCL	19.73 +14.29		

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
2	18.00	-	-

Depth Related Remarks

From	to (m)	
17.80	18.40	Loss of flush - possible workings noted by driller

Chiselling

Depths (m)	Time	Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MESO HSB (286), 07/11/2003 15:18:09 AGS

Project: Cronton Colliery
Project No.: F3605
Carried out for: Maro Developments

Borehole

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Sheet 2 of 2

Borehole Log

Soil Mechanics

Drilled by PS Logged by JSN Checked by FW	Start 01/08/2003 End 01/08/2003	Equipment, Methods and Remarks T51 Rotary Open Hole to 30.40m	Depth from to Diameter Casing Depth	Ground Level +33.98 mOD Coordinates E 347183.43 National Grid N 389330.00

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
		Flush: 0.00-5.13 air, 20 %		

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
Colliery Waste (drillers description)	(5.13)		
Red brown sandy CLAY (drillers description)	5.13 +28.85		
	(2.89)		1
Weathered SANDSTONE (drillers description)	8.02 +25.96		
	(0.38)		
Hard SANDSTONE (drillers description)	8.40 +25.58		3
Stratum continued next sheet	(2.42)		

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	6.76	Damp	-
3	8.45	-	-

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEBO HAW (298). 07/11/2003 08:21:41

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

P1/11

Sheet 1 of 4

Borehole Log

Soil Mechanics

Drilled by PS	Start 01/08/2003	Equipment, Methods and Remarks	Depth from	to	Diameter	Casing Depth	Ground Level	+33.98 mOD
Logged by JSN	End 01/08/2003						Coordinates	E 347183.43
Checked by FW							National Grid	N 389330.00

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
		Flush: 5.13-26.77 air, 100 %		

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
Hard SANDSTONE (drillers description)			
Hard MUDSTONE (drillers description)	10.82 +23.16		
	(7.27)		
Soft / weak SANDSTONE (drillers description)	18.09 +15.89		2
	(2.71)		
Stratum continued next sheet			

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
2	18.09	Damp/strike	-

Depth Related Remarks
From to (m)

Chiselling
Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project: Cronton Colliery
Project No.: F3605
Carried out for: Maro Developments

Borehole
P1/11
Sheet 2 of 4

Borehole Log

Soil Mechanics

Drilled by PS	Start 01/08/2003	Equipment, Methods and Remarks	Depth from to Diameter Casing Depth	Ground Level +33.98 mOD
Logged by JSN	End 01/08/2003			Coordinates E 347183.43
Checked by FW				National Grid N 389330.00

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
Soft / weak SANDSTONE (drillers description)			
	20.80 +13.18		
Hard grey MUDSTONE (drillers description)			
	(3.47)		
	24.27 +9.71		
Weak dark grey/ clay bedded MUDSTONE (drillers description)			
	(2.50)		
	26.77 +7.21		
Light grey MUDSTONE (drillers description)			
	(3.63)		
Stratum continued next sheet			

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEBO HBM (298), 07/11/2003 08:21:49

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

P1/11

Sheet 3 of 4

Borehole Log

Soil Mechanics

Drilled by PS Logged by JSN Checked by FW	Start 01/08/2003 End 01/08/2003	Equipment, Methods and Remarks	Depth from to Diameter Casing Depth	Ground Level +33.98 mOD Coordinates E 347183.43 National Grid N 389330.00

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level (Thickness)	Legend	Backfill Instruments
Light grey MUDSTONE (drillers description)			
EXPLORATORY HOLE ENDS AT 30.40 m	30.40 +3.58		

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

P1/11

Sheet 4 of 4

Borehole Log

Soil Mechanics

Drilled by PG Logged by JSN Checked by FW	Start 05/08/2003 End 06/08/2003	Equipment, Methods and Remarks T51 Rotary Open Hole to 10.00m Rotary Core to 24.00m	Depth from to Diameter Casing Depth	Ground Level +34.05 mOD Coordinates E 347159.01 National Grid N 389305.87

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
MADE GROUND:Colliery waste,clay,soft grey black mudstone fill(drillers description)	(6.20)		
	6.20 +27.88		
MADE GROUND:Brick,clay compact fill(drillers description)	(2.90)		
	9.10 +24.98		1
Sandy CLAY(drillers description)	9.30 +24.78		
	(0.70)		
Stratum continued next sheet			

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	9.20	-	-

Depth Related Remarks
From to (m)

Chiselling
Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

so MESG HBR (288), 07/11/2003 08:22:32

AGS

Project Cronton Colliery
Project No. F3605
Carried out for Maro Developments

Borehole
P1/13
Sheet 1 of 3

Borehole Log

Soil Mechanics

Drilled by PG Logged by JSN Checked by FW	Start 05/08/2003 End 06/08/2003	Equipment, Methods and Remarks	Depth from to Diameter Casing Depth	Ground Level +34.08 mOD Coordinates E 347159.01 National Grid N 389305.87

Samples and Tests

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water
		NI 20 41			
10.00-12.40	100 96 5	9 70 90			
12.40-15.00	100 95 42	NI 80 250			
15.00-18.00	100 97 49	60 200 270			
		NI 130 260			
18.00-21.00	100 100 57	20 90 150 30 100 230			

Strata

Description		Depth,Level/ (Thickness)	Legend	Backfill/ Instruments
		10.00 +24.08		
Moderately weak orange heavily iron stained SANDSTONE. Discontinuities are subhorizontal extremely closely to closely spaced planar rough open.	10.00-10.10 m NI	(0.45)		
		10.45 +23.63		
Strong light orange grey SANDSTONE with some carbonaceous sandstone thin laminations. Discontinuities are subhorizontal very closely to closely spaced planar rough moderately open to open iron stained.	11.34-11.45 m Subvertical undulating rough open discontinuity.	(1.45)		
	11.63-11.95 m	11.90 +22.18		
Strong light orange grey SANDSTONE with rare carbonaceous sandstone thin laminations. Discontinuities are subhorizontal medium to closely spaced rarely closely spaced planar rough moderately open to open.	Subvertical undulating rough open discontinuity. 12.13-12.38 m Subvertical undulating rough open discontinuity.			
	14.00-14.20 m Subvertical undulating rough open discontinuity.	(4.16)		
	14.35-14.45 m NI			
	14.79-14.82 m NI			
	15.05-15.10 m NI			
		16.06 +18.02		
Strong light orange grey SANDSTONE with some ironstone nodules fine to medium gravel sized with rare carbonaceous mudstone thin laminations. Discontinuities are subhorizontal medium to closely spaced stepped rough moderately open.	16.55-16.56 m Vitreous COAL band. 16.62-16.67 m NI 16.68-16.80 m	(0.41)		
		16.47 +17.61		
Strong light orange grey SANDSTONE with rare carbonaceous sandstone thin laminations. Discontinuities are subhorizontal medium to closely spaced planar rough moderately open.	Subvertical planar rough moderately open discontinuity. 16.80-17.60 m Subvertical planar rough moderately open discontinuity.	(2.13)		
		18.60 +15.48		
Strong light orange grey SANDSTONE with many ironstone nodules fine to medium gravel sized with rare carbonaceous mudstone thin laminations. Discontinuities are closely spaced rarely very closely spaced undulating rough moderatly open.	18.89-18.90 m Vitreous COAL band. 19.05-19.11 m Subvertical undulating rough open discontinuity.	(0.53)		
		19.13 +14.95		
Strong light orange grey SANDSTONE.		(0.80)		
Stratum continued next sheet		19.93 +14.15		

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water
			If 50/70/90		

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

P1/13

Sheet 2 of 3

Borehole Log

Soil Mechanics

Drilled by PG Logged by JSN Checked by FW	Start 05/08/2003 End 06/08/2003	Equipment, Methods and Remarks	Depth from to Diameter Casing Depth	Ground Level +34.08 mOD Coordinates E 347159.01 National Grid N 389305.87

Samples and Tests

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water
			If 30/30/30 If 70/70/70		
		10			
		40			
		60			
		NI			
		200			
		400			
			If NI/50/140		
21.00-24.00	100 95 71	30 300 600			

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
19.13m - 19.93m : Discontinuities are subvertical branching medium to closely spaced planar rough moderatly open. 19.93m - 20.06m : Strong light orange grey SANDSTONE with some ironstone nodules fine to medium gravel sized and some carbonaceous thin mudstone laminations. discontinuites are subhorizontal closely spaced planar rough moderately open. 21.05-21.10 m NI 21.36-21.40 m NI	20.06 +14.02 20.09 +13.99 20.16 +13.92 (0.31) 20.47 +13.61 (0.63) 21.10 +12.98 (0.30) 21.40 +12.68		
Moderately weak blue grey MUDSTONE.			
Strong light orange grey SANDSTONE with many mudstone lithorelics fine to medium gravel sized.			
Moderately strong blue grey and light orange grey SANDSTONE and MUDSTONE thin and thick laminations. Discontinuities are subhorizontal closely to very closely spaced planar rough moderately open to tight.	(2.60)		
Strong light orange grey SANDSTONE. Discontinuities are subvertical medium spaced planar rough moderately open.			
Moderately weak blue grey MUDSTONE. Discontinuities are subhorizontal closely spaced planar smooth tight.	24.00 +10.08		
Strong light orange grey SANDSTONE. Discontinuities are subhorizontal medium spaced rarely closely spaced undulating rough moderately open. EXPLORATORY HOLE ENDS AT 24.00 m			

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

P1/13

Sheet 3 of 3

Borehole Log

Soil Mechanics

Drilled by PS Logged by JSN Checked by FW	Start 30/07/2003 End 31/07/2003	Equipment, Methods and Remarks T51 Rotary Open Hole to 7.22m Rotary Cored 7.22-20.00m	Depth from / to / Diameter / Casing Depth	Ground Level +33.98 mOD Coordinates E 347301.99 National Grid N 389288.49

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
7.22-9.20	93 88 33	Flush: 7.22-9.20 air mist, 100 %	30/07/2003	
	NI 100 430			

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water

Strata

Description	Depth, Level/ (Thickness)	Legend	Backfill/ Instruments
MADE GROUND:Colliery waste (drillers description)	(4.34)		
Brown MUDSTONE (drillers description)	4.34 +29.64 (2.88)		
MUDSTONE (drillers description). 7.22-7.35 m AZCL 7.35-7.40 m NI Strong light orange grey SANDSTONE. Discontinuities are subhorizontal very closely to closely spaced rarely medium spaced planar rough moderately open to open with iron staining along fracture planes and some weakening. 7.81-7.83 m NI 8.52-8.54 m NI 8.59-8.65 m NI	7.22 +26.76 7.35 +26.63		
Stratum continued next sheet	(5.04)		

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
2	7.00	-	-

Depth Related Remarks
From / to (m)

Chiselling
Depths (m) / Time / Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEAS HBB (2000, 07/11/2003 10:30:27

Project: Cronton Colliery
Project No.: F3605
Carried out for: Maro Developments

Borehole
P2/10
Sheet 1 of 2

Borehole Log

Soil Mechanics

Drilled by PS Logged by JSN Checked by FW	Start 30/07/2003 End 31/07/2003	Equipment, Methods and Remarks	Depth from to Diameter Casing Depth	Ground Level +33.98 mOD Coordinates E 347301.99 National Grid N 389288.49	

Samples and Tests

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water
9.20-12.24	100 100 73		Flush: 9.20-12.24 air mist, 100 %		
		70 160 250			
12.24-13.89	55 89 89 65	90 120	Flush: 12.24-13.89 air mist, 100 %, brown lf 15/40/70		
		NI 110 250			
			lf NI/NI/NI		
13.89-17.22	50 43 21				
		NI NI 70			
			Flush: 13.89-20.00 air mist, 100 %		
17.22-20.00	84 65 29	NI 100 140			
		NI 80 180			
				31/07/2003 7.00	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
Strong light orange grey SANDSTONE. Discontinuities are subhorizontal very closely to closely spaced rarely medium spaced planar rough moderately open to open with iron staining along fracture planes and some weakening. 10.89-11.24 m Assumed core slip, recovered in 3rd core run.			
	12.39 +21.59		
Strong light orange grey SANDSTONE with rare calcareous sandstone thin laminations. Discontinuities are subhorizontal medium to closely spaced planar rough moderately open.	(0.39)		
	12.78 +21.20		
	(0.36)		
	13.14 +20.84		
	13.25 +20.73		
Strong light orange grey SANDSTONE. Discontinuities are subhorizontal closely to very closely spaced planar rough moderately open. 13.71-13.89 m AZCL			
Moderately weak orange and grey sandstone and mudstone CONGLOMERATE fine to medium gravel sized lithorelics. Discontinuities are subhorizontal very closely spaced undulating rough open. 14.08-14.15 m NI 14.50-14.53 m NI	(1.64)		
Strong light orange grey SANDSTONE. Discontinuities are subhorizontal closely spaced rarely medium spaced planar rough moderately open to open.	14.89 +19.09		
	15.03 +18.95		
	(0.44)		
Coal and mudstone fine to coarse angular GRAVEL. 15.38-15.42 m NI	15.47 +18.51		
Moderately weak grey brown MUDSTONE. with some thin and thick coal laminations.			
Possible MINE WORKINGS (AZCL)	(1.75)		
	17.22 +16.76		
Moderately weak blue grey MUDSTONE with some iron nodules fine to coarse gravel sized. Discontinuities are subhorizontal very closely to closely spaced planar smooth moderately open to tight. 17.22-17.52 m NI 17.71-17.80 m NI	(2.33)		
19.40-19.55 m NI	19.55 +14.43		
Possible MINE WORKINGS (AZCL) (Driller notes steel at base of hole)	(0.45)		
EXPLORATORY HOLE ENDS AT 20.00 m			

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	12.24	-	-

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project Cronton Colliery

Project No. F3605

Carried out for Marc Developments

Borehole

P2/10

Sheet 2 of 2

Borehole Log

Soil Mechanics

Drilled by PS Logged by JSN Checked by FW	Start 30/07/2003 End 30/07/2003	Equipment, Methods and Remarks T51 Rotary Open Hole	Depth from to Diameter Casing Depth	Ground Level +33.96 mOD Coordinates E 347273.34 National Grid N 389280.49

Samples and Tests					Strata			
Depth	Type & No	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
					MADE GROUND:Colliery Waste - damp (drillers description)	(3.99)		
					Sandy brown MUDSTONE (drillers description)	3.99 +29.97 (3.10)		
					Grey MUDSTONE (drillers description)	7.09 +26.87		
					Stratum continued next sheet			
Depth	Type & No	Records	Date Casing	Time Water				

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	9.80	Standing water	-

Depth Related Remarks

From	to (m)	
0.00	3.99	damp

Chiselling

Depths (m)	Time	Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) ASSIG HBSP (2000), 07/11/2003 09:24:15

AGS

Project: Cronton Colliery

Project No.: F3605

Carried out for: Maro Developments

Borehole

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Sheet 1 of 2

Borehole Log

Soil Mechanics

Drilled by PS	Start 30/07/2003	Equipment, Methods and Remarks	Depth from	to	Diameter	Casing Depth	Ground Level +33.96 mOD
Logged by JSN	End 30/07/2003						Coordinates E 347273.34
Checked by FW							National Grid N 389280.49

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
Grey MUDSTONE (drillers description)	(7.89)		
Grey SANDSTONE - coal fragments (drillers description)	14.98 +18.98 (2.12)		
COAL (drillers description)	17.10 +16.86 (0.39)		
MUDSTONE (drillers description)	17.49 +16.47 (0.96)		
EXPLORATORY HOLE ENDS AT 18.45 m	18.45 +15.51		

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MESG HBRI (299). 07/11/2003 09:24:18

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

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Sheet 2 of 2

Borehole Log

Soil Mechanics

Drilled by PG Logged by JSN Checked by FW	Start 14/08/2003 End 15/08/2003	Equipment, Methods and Remarks T51 Rotary Open Hole to 11 40m Rotary Core to 20.00m	Depth from to Diameter Casing Depth 0.00m 11.40m 92mm 11.40m 20.00m 92mm	Ground Level +24.49 mOD Coordinates E 347179.72 National Grid N 389166.74

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
			14/08/2003	0800

Strata

Description	Depth,Level (Thickness)	Legend	Backfill/ Instruments
MADE GROUND:Colliery waste,mudstone,clay,bricks(drillers description)	(4.96)		
Grey brown MUDSTONE(drillers description)	4.96 +19.53		
	(6.74)		
Stratum continued next sheet			

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	4.50	-	-

Depth Related Remarks
From to (m)

Chiselling
Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEBG HBIII (286), 07/11/2003 08:24:28

AGS

Project Cronton Colliery
Project No. F3605
Carried out for Maro Developments

Borehole
P2/12
Sheet 1 of 2

Borehole Log

Soil Mechanics

Drilled by PG Logged by JSN Checked by FW	Start 14/08/2003 End 15/08/2003	Equipment, Methods and Remarks	Depth from / to / Diameter / Casing Depth 0.00m 11.40m 92mm 11.40m 20.00m 92mm	Ground Level +24.49 mOD Coordinates E 347179.72 National Grid N 389166.74	

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
		Flush: 0.00-20.00 Air Mist, 100 %		
		If NI/10/30		
	8 50 130			
		If NI/70/100		
11.40-14.00	90 79 16	If 110/110/110 If 60/60/60 If 12/55/60		
	NI 80 140			
14.00-15.50	100 93 9			
	NI 55 130			
15.50-17.85	100 91 18			
	NI 60 80			
17.85-20.00	100 98 0			
		If 75/75/75		
	NI 20 60		14/08/2003	1700
		If 50/50/50		

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water

Strata

Description		Depth, Level (Thickness)	Legend	Backfill/ Instruments
Grey brown MUDSTONE(drillers description)				
	11.40-11.70 m AZCL			
	11.70-11.85 m NI	11.70 +12.79		
Moderately weak blue grey very fine grained MUDSTONE. Discontinuities are subhorizontal extremely to very closely spaced undulating smooth tight to very tight.	11.85-11.97 m Vertical planar smooth tight discontinuity. 11.97-12.11 m NI	(0.27) 11.97 +12.52		
Strong light orange grey SANDSTONE. Discontinuities are subhorizontal extremely to closely spaced planar smooth tight.	12.27-12.35 m Vertical planar smooth tight discontinuity.	(0.45) 12.42 +12.07		
Moderately weak blue grey very MUDSTONE. Discontinuities are subvertical closely to very closely spaced planar smooth moderately open.	13.04-13.15 m Subvertical planar smooth tight discontinuity.	(0.26) 12.68 +11.81 12.79 +11.70 12.84 +11.65 13.02 +11.47 13.09 +11.40		
Strong light grey SANDSTONE.				
Moderately weak blue grey MUDSTONE.	13.85-14.00 m Subvertical planar smooth tight discontinuity.			
Strong light orange grey SANDSTONE. Discontinuities are subvertical extremely closely to closely spaced undulating rough moderately open.	14.20-14.30 m NI 14.66-14.69 m NI			
Moderately weak blue grey MUDSTONE. Discontinuities are closely to very closely spaced subhorizontal planar smooth tight		(3.86)		
Moderately weak blue grey MUDSTONE with thinly to thickly laminated moderately strong light orange grey SANDSTONE laminations. Discontinuities are subhorizontal closely spaced rarely extremely spaced planar smooth tight to moderately open.	15.40-15.45 m NI 16.65-16.71 m NI			
Moderately weak blue grey MUDSTONE. Discontinuities are subhorizontal closely to very closely spaced planar smooth tight.		16.95 +7.54 (2.20)		
Strong light oange grey SANDSTONE.		19.15 +5.34		
Moderately weak blue grey MUDSTONE. Discontinuities are subhorizontal planar smooth tight to moderately open.		19.35 +5.14 (0.55)		
Stratum continued next sheet		19.90 +4.59		

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
2	15.20	-	-

Depth Related Remarks
From to (m)

Chiselling
Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50 (c) MEGG HBM (296), 07/11/2003 08:24:32 AGS

Project Cronton Colliery
Project No. F3605
Carried out for Maro Developments

Borehole
P2/12
Sheet 2 of 2

Borehole Log

Soil Mechanics

Drilled by PG Logged by JSN Checked by FW	Start 14/08/2003 End 15/08/2003	Equipment, Methods and Remarks	Depth from / to / Diameter / Casing Depth 0.00m 11.40m 92mm 11.40m 20.00m 92mm	Ground Level +24.49 mOD Coordinates E 347179.72 National Grid N 389166.74	

Samples and Tests

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water
				15/08/2003	0800

Strata

Description	Depth, Level/ (Thickness)	Legend	Backfill/ Instruments
Strong light orange grey SANDSTONE. EXPLORATORY HOLE ENDS AT 20.00 m	20.00 +4.49		SP

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

Depth Related Remarks

From	to (m)

Chiselling

Depths (m)	Time	Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEBG HBS (288), 07/11/2003 09:24:44

Project: Cronton Colliery

Project No.: F3605

Carried out for: Maro Developments

Borehole

P2/12

Sheet 3 of 2

Borehole Log

Soil Mechanics

Drilled by PS Logged by JSN Checked by FW	Start 31/07/2003 End 01/08/2003	Equipment, Methods and Remarks T51 Rotary Open Hole to 8.17m Rotary Cored 8.17 to 20.10m Borehole collapsed back to 17.00m prior to backfill with grout	Depth from to Diameter Casing Depth	Ground Level +33.90 mOD Coordinates E 347268.85 National Grid N 389235.60

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
		Flush: 0.00-8.17 air mist, 100 %		
8.17-11.22	59 NI 36 NI 9 NI	Flush: 8.17-11.20 air mist, 60 %		

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
MADE GROUND:Grey mudstone - Colliery Waste (drillers description)	(6.20)		
MADE GROUND:Coal Waste (drillers description)	6.20 +27.70		
Weak sandy brown CLAY (drillers description)	6.40 +27.50 (1.77)		
AZCL (Driller notes flush returns of 60%) 8.17-9.46 m AZCL	8.17 +25.73 (1.29)		
Moderately weak orange SANDSTONE with heavy iron staining, recovered largely	9.46 +24.44 (0.48)		
Stratum continued next sheet	9.94 +23.96		

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MESG HBSI (298), 10/11/2003 14:54:43

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

P2/13

Sheet 1 of 3

Borehole Log

Soil Mechanics

Drilled by PS Logged by JSN Checked by FW	Start 31/07/2003 End 01/08/2003	Equipment, Methods and Remarks	Depth from to	Diameter Casing Depth	Ground Level +33.90 mOD Coordinates E 347268.85 National Grid N 389235.60

Samples and Tests

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water
		NI 60 140			
			If 8/40/60		
		NI NI NI			
			If 20/70/110 If 35/40/50		
		10 75			
11.22-14.22	83 79 31	170	Flush: 11.22-14.22 air mist, 100 %		
		10 110 210			
			If 90/90/90		
14.22-17.12	95 95 73				
		NI 200 420			
			Flush: 14.22-20.10 air mist, 100 %		
			If NI/50/70		
		NI NI NI			
17.12-20.10	45 28 11				

Strata

Description	Depth,Level (Thickness)	Legend	Backfill/ Instruments
9.46m - 9.94m : non intact. 10.09-10.14 m C Non Intact			
9.94m - 11.00m : Moderately strong light orange grey SANDSTONE with some carbonaceous sandstone thinly to thickly laminations . Discontinuities are subhorizontal very closely to closely spaced undulating open to moderately open. 10.86-10.71 m C Non Intact; 10.95-11.00 m C Non Intact; 11.22-11.72 m AZCL	(1.06)		
	11.00 +22.90		
Moderately strong light orange grey SANDSTONE with some carbonaceous sandstone thin laminations with rare fine gravel sized ironstone nodules. Discontinuities are very closely to closely spaced rarely extremely closely spaced planar rough moderately open to open.	(0.62)		
	11.84 +22.06		
	11.98 +21.92		
Grey sand and gravel of SANDSTONE and MUDSTONE. Gravel is subrounded to rounded fine and medium	12.10 +21.80 (0.90)		
	13.00 +20.90		
Strong light orange grey SANDSTONE with rare carbonaceous sandstone thin laminations. Discontinuities are subhorizontal very closely to closely spaced planar rough moderately open.	(1.57)		
Strong light orange grey SANDSTONE with rare carbonaceous sandstone thin laminations and many fine and medium gravel sized ironstone nodules. Discontinuities are very closely spaced undulating rough moderately open to open. 14.22-14.37 m AZCL			
	14.57 +19.33		
Strong light orange grey SANDSTONE. Discontinuities are subhorizontal closely to very closely spaced rarely extremely closely spaced planar rough moderately open	14.67 +19.23		
Strong light orange grey SANDSTONE with rare carbonaceous sandstone thin laminations. Discontinuities are subhorizontal closely to very closely spaced rarely widely spaced planar rough moderately open to open	(3.05)		
Strong light orange grey SANDSTONE with rare carbonaceous sandstone thin laminations and some fine gravel sized ironstone nodules. Discontinuity is horizontal closely spaced undulating rough open			
Strong light orange grey SANDSTONE. Discontinuities are subhorizontal closely to widely spaced rarely very closely spaced planar rough open 17.67-17.72 m C Non Intact; 17.91-17.94 m Non Intact	17.72 +16.18		
	(0.35)		
Strong light orange grey SANDSTONE with rare carbonaceous sandstone thin laminations. Discontinuities are subhorizontal closely spaced undulating rough moderately open to open	18.07 +15.83 (0.39)		
	18.46 +15.44		
Light orange grey angular to subangular fine to medium SAND and GRAVEL of very weak sandstone. (POSSIBLE MINE WORKINGS)			
	(1.64)		
AZCL (POSSIBLE MINE WORKINGS)			
Stratum continued next sheet			

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	12.55	-	-
2	12.60	End of day	-

Depth Related Remarks
From to (m)

Chiselling
Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MESG HBR (299), 10/11/2003 14:54:48

Project	Cronton Colliery
Project No.	F3605
Carried out for	Maro Developments

Borehole
P2/13
Sheet 2 of 3

Borehole Log

Soil Mechanics

Drilled by PS Logged by JSN Checked by FW	Start 31/07/2003 End 01/08/2003	Equipment, Methods and Remarks	Depth from to Diameter Casing Depth	Ground Level +33.90 mOD Coordinates E 347268.85 National Grid N 389235.60

Samples and Tests

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
AZCL (POSSIBLE MINE WORKINGS)	20.10 +13.80		
EXPLORATORY HOLE ENDS AT 20.10 m			

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEAS Ltd [2003]. 10/11/2003 14:55:00

AGS

Project	Cronton Colliery
Project No.	F3605
Carried out for	Maro Developments

Borehole

P2/13

Sheet 3 of 3

Borehole Log

Soil Mechanics

Drilled by PS Logged by JSN Checked by FW	Start 29/07/2003 End 30/07/2003	Equipment, Methods and Remarks T51 Rotary Open Hole	Depth from to Diameter Casing Depth	Ground Level +25.82 mOD Coordinates E 347226.13 National Grid N 389186.53

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
MADE GROUND:Colliery Waste (drillers description)	(2.74)		
Grey MUDSTONE (drillers description)	2.74 +23.08		
	(11.87)		
Stratum continued next sheet			

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
2	1.00	-	-
1	6.00	-	-

Depth Related Remarks
From to (m)

Chiselling
Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEGG HBIII (298), 07/11/2003 09:23:53

AGS

Project Cronton Colliery
Project No. F3605
Carried out for Maro Developments

Borehole
P2/14
Sheet 1 of 3

Borehole Log

Soil Mechanics

Drilled by PS	Start 29/07/2003	Equipment, Methods and Remarks	Depth from to Diameter Casing Depth	Ground Level +25.82 mOD
Logged by JSN	End 30/07/2003			Coordinates E 347226.13
Checked by FW				National Grid N 389186.53

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level (Thickness)
Grey MUDSTONE (drillers description)	
	14.61 +11.21
Hard band (drillers description)	(0.39)
	15.00 +10.82
Possible MINE WORKINGS :Cobbles, sand and gravel, coal pieces and bricks (drillers description)	(4.80)
	19.80 +6.02
Stratum continued next sheet	

Legend

Backfill/ Instruments

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEBG HBR (296), 07/11/2003 09:23:59

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

P2/14

Sheet 2 of 3

Borehole Log

Soil Mechanics

Drilled by PS Logged by JSN Checked by FW	Start 29/07/2003 End 30/07/2003	Equipment, Methods and Remarks	Depth from to Diameter Casing Depth	Ground Level +25.82 mOD Coordinates E 347226.13 National Grid N 389186.53

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level/ (Thickness)	Legend	Backfill/ Instruments
Grey SANDSTONE (drillers description)	(4.50)		
EXPLORATORY HOLE ENDS AT 24.30 m	24.30 +1.52		

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

P2/14

Sheet 3 of 3

Borehole Log

Soil Mechanics

Drilled by PG Logged by JSN Checked by FW	Start 07/08/2003 End 07/08/2003	Equipment, Methods and Remarks T51	Depth from / to / Diameter / Casing Depth 0.00m / 15.00m / 92mm / 2.50m	Ground Level +33.03 mOD Coordinates E 347094.82 National Grid N 389498.12

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
			07/08/2003	0800
		Flush: 0.00-15.00 Air Mist, 100 %		

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
MADE GROUND: Brown sandy CLAY. (drillers description.)	(1.40)		
Weathered SANDSTONE (Driller's description.)	1.40 +31.63 (1.10)		
Brown SANDSTONE (Drillers description.)	2.50 +30.53 (3.30)		
Hard grey SANDSTONE (Drillers description.)	5.80 +27.23 (7.60)		
Stratum continued next sheet			

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

P4/01

Sheet 1 of 2

Borehole Log

Soil Mechanics

Drilled by PG	Start 07/08/2003	Equipment, Methods and Remarks	Depth from	to	Diameter	Casing Depth	Ground Level	+33.03 mOD
Logged by JSN	End 07/08/2003		0.00m	15.00m	92mm	2.50m	Coordinates	E 347094.82
Checked by FW							National Grid	N 389498.12

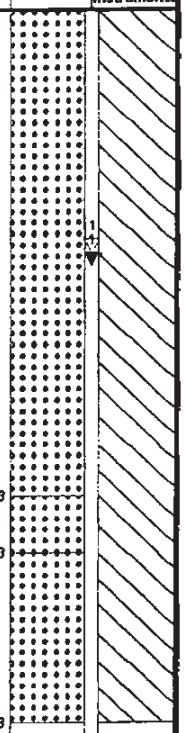
Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
			07/08/2003	1800

Strata

Description	Depth, Level (Thickness)
Hard grey SANDSTONE (Drillers description.)	
Dark grey brown SANDSTONE. (Drillers description.)	13.40 +19.63
	(0.40)
Grey SANDSTONE(Drillers description.)	13.80 +19.23
	(1.20)
EXPLORATORY HOLE ENDS AT 15.00 m	15.00 +18.03

Legend / Backfill/ Instrument



Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth seated (m)
1	11.70	Remained at 11.70 m after 20 minutes.	-

Depth Related Remarks
From to (m)

Chiselling
Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEBC HBSR (2000), 07/11/2003 08:25:02

Project: Cronton Colliery
Project No.: F3605
Carried out for: Maro Developments

Borehole
P4/01
Sheet 2 of 2

Borehole Log

Soil Mechanics

Drilled by PG Logged by JSN Checked by FW	Start 06/08/2003 End 06/08/2003	Equipment, Methods and Remarks T51 Rotary Open Hole to 3.00m Rotary Core to 20.00m	Depth from / to / Diameter / Casing Depth 0.00m / 3.00m / 92mm 3.00m / 20.00m / 92mm	Ground Level +28.30 mOD Coordinates E 347054.92 National Grid N 389425.60

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
			06/08/2003	0800
		NI 30 100		
		If 40/40/40		
3.00-6.00	100 35 88 95 20 120			
		10 40 110		
		If 80/80/80		
		15 70 170		
		If 90/90/90		
		If NI/40/100		
		If 100/100/100 If 60/80/80		
		NI 70 130		
		If 140/140/140 If 90/90/90		
6.00-9.00	100 10 93 130 64 230			
		NI 190 300		

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
Sandy brown boulder CLAY(drillers description)	(2.70)		
Weathered grey brown SANDSTONE(drillers description)	2.70 +25.60 (0.30)		
Moderately strong light orange grey SANDSTONE. Discontinuities are subhorizontal closely to very closely spaced undulating rough moderately open moderately weak and heavily iron stained along fracture planes. 3.00-3.10 m Clay infilling. 3.00-3.35 m NI	3.00 +25.30 (1.27)		
Moderately strong light orange grey SANDSTONE with some carbonaceous sandstone thin laminations and some fine gravel sized ironstone nodules. Discontinuities are subhorizontal very closely spaced undulating rough moderately open. 4.70-4.90 m Discontinuities are randomly orientated branching very closely spaced planar rough moderately open.	4.27 +24.03 4.34 +23.96 (0.36) 4.70 +23.60 (0.64)		
Strong light orange grey SANDSTONE. Discontinuities are subhorizontal very closely spaced planar rough moderately open to tight.	5.34 +22.96 5.42 +22.88 (0.52)		
Strong light orange grey SANDSTONE with some carbonaceous sandstone thin laminations. Discontinuities are subhorizontal very closely to closely spaced planar smooth tight. 6.29-6.34 m NI	5.94 +22.36 6.06 +22.24 (0.28) 6.34 +21.96 6.44 +21.86 6.50 +21.80		
Moderately strong dark grey carbonaceous SANDSTONE with a medium gravel sized ironstone nodule. Discontinuities are subhorizontal closely spaced planar smooth tight. 6.81-6.97 m NI 7.04-7.12 m Many ironstone nodules.	(0.62) 7.12 +21.18 7.26 +21.04 7.35 +20.95 (0.33)		
Strong light orange grey SANDSTONE with some carbonaceous sandstone thin laminations. Discontinuities are subhorizontal closely spaced rarely very closely spaced planar smooth moderately open to tight.	7.68 +20.62		
Strong light orange grey SANDSTONE. Discontinuities are subhorizontal closely spaced planar smooth moderately open.			
Strong light orange grey SANDSTONE with some carbonaceous sandstone thin laminations. Discontinuities are very closely to closely spaced. 9.18-9.22 m NI	(2.77)		
Strong light orange grey SANDSTONE.			
Stratum continued next sheet			

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEBG HBR (2000). 07/11/2003 08:25:19

AGS

Project: Cronton Colliery

Project No.: F3605

Carried out for: Maro Developments

Borehole

P4/06

Sheet 1 of 2

Borehole Log

Soil Mechanics

Drilled by PG	Start 06/08/2003	Equipment, Methods and Remarks	Depth from	to	Diameter	Casing Depth	Ground Level	+28.30 mOD
Logged by JSN	End 06/08/2003		0.00m	3.00m	92mm		Coordinates	E 347054.92
Checked by FW			3.00m	20.00m	92mm		National Grid	N 389425.60

Samples and Tests

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water
			Flush: 0.00-20.00 Air mist, 100 %		
9.00-12.00	100 99 76		If 50/50/50		
			If 250/250/250		
		60 400 850			
12.00-15.00	100 100 93				
		310 400 630			
		20 140			
15.00-17.00	100 100 90	240			
		60 700 1030			
17.00-20.00	100 100 96				
				06/08/2003 2.70	1800 9.80

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
6.34m - 6.44m : Discontinuities are closely spaced planar smooth tight.			
6.44m - 6.50m : Moderately strong medium grey SANDSTONE with some carbonaceous thin laminations. Discontinuities are subhorizontal closely closely spaced planar smooth moderately open.	10.45 +17.85 10.50 +17.80 (0.28) 10.78 +17.52		
6.50m - 7.12m : Moderately strong light orange grey SANDSTONE with some carbonaceous thin laminations and some fine gravel sized ironstone nodules. Discontinuities are subhorizontal closely spaced planar rough moderately open.			
7.12m - 7.26m : Moderately strong light orange grey SANDSTONE with many mudstone lithorelics fine to medium gravel sized. Discontinuities are subhorizontal closely spaced planar rough moderately open.	(3.56)		
7.26m - 7.35m : Moderately weak blue grey MUDSTONE with many sandstone thin laminations.			
7.35m - 7.68m : Moderately strong orange grey SANDSTONE with rare carbonaceous sandstone thin laminations and some fine gravel sized mudstone and ironstone lithorelics. Discontinuities are subhorizontal closely spaced rarely medium spaced planar rough moderately open.	14.34 +13.96 (1.24)		
7.68m - 10.45m : Strong light orange grey SANDSTONE with rare carbonaceous sandstone thin laminations. Discontinuities are closely to medium spaced planar rough moderately open.	15.58 +12.72 (0.34)		
Moderately strong IRONSTONE. Discontinuity is subhorizontal planar rough moderately open.	15.92 +12.38		
Strong light orange grey SANDSTONE with some fine gravel sized ironstone nodules. Discontinuities are subhorizontal planar rough moderately open.			
Strong light orange grey SANDSTONE with rare carbonaceous sandstone thin laminations. Discontinuities are subhorizontal widely to closely spaced planar rough moderately open.			
Strong light orange grey SANDSTONE. Discontinuities are subhorizontal medium rarely widely spaced planar rough moderately open.	(4.08)		
Strong light orange grey SANDSTONE with some carbonaceous sandstone flow banding and fine gravel sized ironstone nodules. Discontinuities are subvertical closely spaced undulating rough moderately open.			
Strong light orange grey SANDSTONE. Discontinuities are widely to medium spaced rarely closely spaced planar			
Stratum continued next sheet			

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	13.00	Rose to 2.70 m after 20 minutes.	-

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project: Cronton Colliery

Project No.: F3605

Carried out for: Maro Developments

Borehole

P4/06

Sheet 2 of 2

Borehole Log

Soil Mechanics

Drilled by PG Logged by JSN Checked by FW	Start 07/08/2003 End 08/08/2003	Equipment, Methods and Remarks T51 Rotary Open Hole to 3.00m Rotary Core to 21.00m	Depth from / to / Diameter / Casing Depth 0.00m / 3.00m / 92mm / 3.00m 3.00m / 21.00m / 92mm			Ground Level +34.72 mOD Coordinates E 347074.45 National Grid N 389565.97	

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
			07/08/2003	0800
3.00-6.00	93 87 14	If 10/40/60		
	NI 70 140			
6.00-9.00	100 94 37	If 250/250/250		
	NI 70 200			
	NI 80 150	If 60/60/60 If 140/140/140		

Depth	Type & No	If	Records/Samples	Date Casing	Time Water

Strata

Description	Depth, *Level* (Thickness)	Legend	Backfill/ Instruments
Brown sandy CLAY(drillers description)	(2.70)		
Grey brown SANDSTONE(drillers description) 3.00-3.20 m AZCL	2.70 +32.02 (0.50)		
Moderately weak orange and light orange grey SANDSTONE with some heavy iron staining. Discontinuities are subhorizontal closely to very closely spaced undulating rough moderately open to open with extensive iron staining. 3.20-3.30 m NI 3.45-3.55 m NI	3.20 +31.52 (1.04)		
Moderately strong light orange grey SANDSTONE with many fine to coarse gravel sizedweak blue grey mudstone lithorelics. Discontinuities are subhorizontal very closely spaced planar rough moderately open with some iron staining.	4.24 +30.48 4.44 +30.28		
Strong light orange grey SANDSTONE with many dark grey carbonaceous sandsstone thin laminations. Discontinuities are subhorizontal medium to closely spaced planar smooth tight following laminations. 6.08-6.13 m NI 7.53-7.56 m NI	(3.21)		
Strong light orange grey SANDSTONE.	7.65 +27.07		
Strong light orange grey SANDSTONE with many dark grey carbonaceous sandstone laminations. Discontinuities are subhorizontal medium to closely spaced planar smooth tight following laminations 7.90-8.00 m NI 8.30-8.33 m NI	7.90 +26.82 (1.10)		
Strong light orange grey SANDSTONE with some fine to coarse gravel sized weak blue grey mudstone lithorelics. Discontinuities are subhorizontal closely spaced undulating rough open. 9.23-9.32 m NI	9.00 +25.72 (0.37) 9.37 +25.35 9.49 +25.23 9.63 +25.09		

Stratum continued next sheet

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MESG HBM (2M), 07/11/2003 08:25:54

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

P4/09

Sheet 1 of 3

Borehole Log

Soil Mechanics

Drilled by PG Logged by JSN Checked by FW	Start 07/08/2003 End 08/08/2003	Equipment, Methods and Remarks	Depth from / to / Diameter / Casing Depth 0.00m / 3.00m / 92mm / 3.00m 3.00m / 21.00m / 92mm	Ground Level +34.72 mOD Coordinates E 347074.45 National Grid N 389565.97	

Samples and Tests

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water
		180 110 NI			
9.00-12.00	100 94 62		Flush: 0.00-21.00 Air Mist. 100 %		
		170 220 300			
		NI 90 150			
			If 30/60/90		
			If NI/15/70		
			If 20/60/120		
		4 50 180			
			If NI/NI/NI If 130/130/130		
12.00-15.00	100 95 36				
		250 100 10			
				07/08/2003 3.00	1800
				08/08/2003 3.00	0800 6.30
		NI NI NI			
15.00-18.00	100 96 23				
		NI 100 370			
18.00-21.00	94 88 46				

Strata

Description		Depth, Level (Thickness)	Legend	Backfill/ Instruments
		(0.85)		
9.37m - 9.49m : Strong light orange grey SANDSTONE with many dark grey carbonaceous sandstone thin laminations. Discontinuities are subhorizontal very closely spaced planar smooth tight.	10.32-10.35 m NI	10.48 +24.24		
		(0.72)		
9.49m - 9.63m : Strong light arange grey SANDSTONE.	11.20-11.23 m NI	11.20 +23.52		
9.63m - 10.48m : Strong light orange grey SANDSTONE with many dark grey carbonaceous sandstone thin laminations. Discontinuities are subhorizontal closely spaced planar smooth tight following laminations.	11.93-11.98 m NI 12.10-12.17 m NI	(0.62) 11.82 +22.90 11.96 +22.76		
Strong light orange grey SANDSTONE. Discontinuities are subhorizontal medium to closely spaced planar rough moderately open.		12.20 +22.52 12.40 +22.32 (0.44)		
Strong light orange grey SANDSTONE with many dark grey carbonaceous sandstone thin laminations. Discontinuities are subhorizontal closely spaced planar smooth moderately open.		12.84 +21.88 12.92 +21.80 13.10 +21.62		
Vert weak black dull COAL with rare thin sandsone laminations. Discontinuities are subhorizontal closely to very closely spaced planar smooth moderately open.		(1.78)		
Moderately strong light orange grey SANDSTONE with many black thin to thick coal laminations. Discontinuities are subhorizontal very closely spaced planar smooth moderately open.		14.88 +19.84		
Moderately weak light orange grey and blue grey SANDSTONE and MUDSTONE thin laminations. Discontinuities are subhorizontal very closely to closely spaced planar smooth tight.	15.74-15.78 m NI	(0.82) 15.70 +19.02		
Moderately strong light arange grey SANDSTONE with may black thin to thick coal laminations. Discontinuities are subhorizontal extremely closely to closely spaced planar smoooth tight following laminations.				
Very weak black vitreous COAL recovered non intact.				
Moderately strong light orange grey SANDSTONE with some black dull thin to thick coal laminations. Discontinuities are subhorizontal closely spaced planar smooth tight to moderately open.	17.43-17.70 m Subvertical stepped branching smooth moderately open discontinuity.			
Moderately weak blue grey MUDSTONE. Discontinuities are subhorizontal closely to medium spaced rarely extremely closely spaced planar smooth light to moderately open.	17.53-17.58 m NI 17.63-17.68 m NI 18.18-18.30 m NI 18.40-18.59 m Subvertical stepped branching smooth moderately open discontinuity.	(5.30)		
Very weak grey highly fractured MUDSTONE recovered largely non intact..				
Moderately weak blue grey MUDSTONE. Discontinuities are subhorizontal medium to closely spaced rarely extremely closely spaced planar smooth tight.	18.60-19.33 m Subvertical stepped branching smooth moderately open to open discontinuity.			
Stratum continued next sheet				

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MESG HBHI (2ed), 07/11/2003 09:26:03

Project: Cronton Colliery

Project No.: F3605

Carried out for: Maro Developments

Borehole

P4/09

Borehole Log

Soil Mechanics

Drilled by PG Logged by JSN Checked by FW	Start 07/08/2003 End 08/08/2003	Equipment, Methods and Remarks	Depth from / to / Diameter / Casing Depth 0.00m / 3.00m / 92mm / 3.00m 3.00m / 21.00m / 92mm	Ground Level +34.72 mOD Coordinates E 347074.45 National Grid N 389565.97	

Samples and Tests

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water
				08/08/2003 3.00	1800

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
Moderately weak blue grey MUDSTONE. Discontinuities are subhorizontal medium to closely spaced rarely extremely closely spaced planar smooth tight.			
20.83-21.00 m AZCL			
EXPLORATORY HOLE ENDS AT 21.00 m	21.00 +13.72		

Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEGG HBSI (2M8), 07/11/2003 09:29:16

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

P4/09

Sheet 3 of 3

Borehole Log

Soil Mechanics

Drilled by PG	Start 11/08/2003	Equipment, Methods and Remarks	Depth from	to	Diameter	Casing Depth	Ground Level	+32.83 mOD
Logged by JSN	End 11/08/2003	T51 Rotary Open Hole	0.00m	20.00m	92mm		Coordinates	E 347134.76
Checked by FW							National Grid	N 389458.38

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
			11/08/2003	0800

Strata

Description	Depth, Level (Thickness)
Sandy brown CLAY(drillers description)	(1.90)
Grey brown SANDSTONE(drillers description)	1.90 +30.93 (6.30)
MUDSTONE(drillers description)	8.20 +24.63
Stratum continued next sheet	

Legend

Backfill/ Instruments

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEGG HBM (2000), 07/11/2003 09:28:37

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

P4/10

Sheet 1 of 2

Borehole Log

Soil Mechanics

Drilled by PG	Start 11/08/2003	Equipment, Methods and Remarks	Depth from 0.00m to 20.00m	Diameter 92mm	Casing Depth	Ground Level +32.83 mOD
Logged by JSN	End 11/08/2003					Coordinates E 347134.76
Checked by FW						National Grid N 389458.38

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
		Flush: 0.00-20.00 Air Mist, 100 %		
			11/08/2003	1800

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level/ (Thickness)	Legend	Backfill/ Instruments
MUDSTONE(drillers description)	(4.60)		1
COAL(drillers description)	12.80 +20.03 (0.60)		
MUDSTONE(drillers description)	13.40 +19.43 (6.60)		
EXPLORATORY HOLE ENDS AT 20.00 m			

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	10.60	-	-

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MESG HBR (2000), 07/11/2003 09:26:40

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

P4/10

Sheet 2 of 2

Borehole Log

Soil Mechanics

Drilled by PG Logged by DJLS Checked by FW	Start 08/08/2003 End 08/08/2003	Equipment, Methods and Remarks T51 Rotary open hole to 15.00m	Depth from to Diameter Casing Depth 0.00m 15.00m 125mm	Ground Level +30.95 mOD Coordinates E 347003.12 National Grid N 389535.66

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
		Flush: 0.00-15.00 mist, 100 %		

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
Sandy brown boulder CLAY(drillers description)	(1.20)		
Brown SANDSTONE(drillers description)	1.20 +29.75 (2.20)		
Grey brown MUDSTONE(drillers description)	3.40 +27.55 (3.80)		
SANDSTONE(drillers description)	7.20 +23.75 (1.20)		
Grey MUDSTONE(drillers description)	8.40 +22.55 (1.20)		
Hard grey MUDSTONE(drillers	9.60 +21.35		
Stratum continued next sheet			

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

P5/01

Sheet 1 of 2

Borehole Log

Soil Mechanics

Drilled by PG Logged by DJLS Checked by FW	Start 08/08/2003 End 08/08/2003	Equipment, Methods and Remarks	Depth from to Diameter Casing Depth 0.00m 15.00m 125mm	Ground Level +30.95 mOD Coordinates E 347003.12 National Grid N 389535.66

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
			08/08/2003	

Strata

Description	Depth, Level/ (Thickness)	Legend	Backfill/ Instruments
description)			
	(5.40)		1
EXPLORATORY HOLE ENDS AT 15.00 m	15.00 +15.95		

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	10.80	-	-

Depth Related Remarks
From to (m)

Chiselling
Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50 (c) MEBO Hill (Z98, 07/11/2003 09:27:00 AGS

Project Cronton Colliery
Project No. F3605
Carried out for Maro Developments

Borehole
P5/01
Sheet 2 of 2

Borehole Log

Soil Mechanics

Drilled by PG Logged by JSN Checked by FW	Start 08/08/2003 End 11/08/2003	Equipment, Methods and Remarks T51 Rotary Open Hole to 30.00m	Depth from 0.00m to 30.00m Diameter 125mm Casing Depth	Ground Level +26.24 mOD Coordinates E 346934.11 National Grid N 389442.16

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
Orange brown boulder CLAY(drillers description)	(3.60)		
Grey brown MUDSTONE(drillers description)	3.60 +22.64		
	(7.20)		
Stratum continued next sheet			

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	3.50	-	-

Depth Related Remarks
From to (m)

Chiselling
Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project Cronton Colliery
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Borehole
P5\06
Sheet 1 of 3

Borehole Log

Soil Mechanics

Drilled by PG Logged by JSN Checked by FW	Start 08/08/2003 End 11/08/2003	Equipment, Methods and Remarks	Depth from 0.00m to 30.00m Diameter 125mm Casing Depth	Ground Level +26.24 mOD Coordinates E 346934.1 National Grid N 389442.16

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
			08/08/2003	
Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth,Level/ (Thickness)
Grey brown MUDSTONE(drillers description)	
	10.80 +15.44
Hard grey SANDSTONE(drillers description)	
	(3.20)
	14.00 +12.24
MUDSTONE(drillers description)	
	(4.00)
	18.00 +8.24
Hard grey MUDSTONE(drillers description)	
Stratum continued next sheet	

Legend | Backfill/ Instruments

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) MEBG HSW (298), 07/11/2003 09:56:41

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

P5\06

Sheet 2 of 3

Borehole Log

Soil Mechanics

Drilled by	PG	Start	08/08/2003	Equipment, Methods and Remarks	Depth from	to	Diameter	Casing Depth	Ground Level	+26.24 mOD
Logged by	JSN	End	11/08/2003		0.00m	30.00m	125mm		Coordinates	E 346934.11
Checked by	FW								National Grid	N 389442.16

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
			11/08/2003	
Depth	Type & No	Records	Date Casing	Time Water

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
Hard grey MUDSTONE(drillers description)	(12.00)		
EXPLORATORY HOLE ENDS AT 30.00 m			

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

Depth Related Remarks

From to (m)

Chiselling

Depths (m) Time Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50 (c) MEXO HBM (284), 07/11/2003 09:56:44 AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Borehole

P5\06

Sheet 3 of 3

Trial Pit Log

Soil Mechanics

Logged by CAG Checked by JSN	Start 14/08/2003 End 14/08/2003	Equipment, Methods and Remarks 0.00 to 1.20m: Machine Dug . 1.5t Takeuchi TB16 Worms: None Roots: None NDG Tests carried out at 0.00, 0.40, 0.90 m.	Dimensions and Orientation Width 0.70 m Length 1.90 m A B C D → 90 (Deg)	Ground Level +42.49 mOD Coordinates E 347478.31 National Grid N 389480.68

Samples and Tests

Depth	Type & No.	Date Records
0.10-0.20	ES 1	
0.50-0.60	ES 2	
0.50-0.60	B 3	
1.00-1.20	ES 4	

Strata

Description		Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 MADE GROUND: Mudstone gravel with occasional tufts of grass onto grey sandy very clayey GRAVEL with occasional cobbles and boulders. Gravel is angular fine to coarse mudstone with occasional brick, coal and sandstone, occasional pieces of plastic bag and wood. Cobbles and boulders (0.25x0.15x0.12m) are angular mudstone. Some firm clay pockets. (COLLIERY WASTE)	0.00-0.30 m Grey and yellow brown 0.50-1.20 m Clay pockets are very stiff 0.90-1.00 m Occasional brick cobbles	(1.20)		
EXPLORATORY HOLE ENDS AT 1.20 m		1.20 +41.29		

Depth	Type & No.	Records Date

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)	
0.15		Pocket Penetrometer: 2.25, 1.75, 1.5 kg/cm2
0.50		Pocket Penetrometer: Refusal x3
1.20		Pocket Penetrometer: 3.6, 3.75, 3.0 kg/cm2

Stability Sides upright and stable

Shoring None

Weather Hot dry cloudy

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1.25

(c) MEAS HSBI (2360, 07/11/2003 08:58:05

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP1/01

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAG Checked by JSN	Start 14/08/2003 End 14/08/2003	Equipment, Methods and Remarks 0.00 to 1.20m: Machine dug . 1.5t Takeuchi TB16 Worms: 0.0 to 0.6m: 8no. Roots: 0.0 to 0.6m NDG and Sand replacements 0.1-0.2, 0.5-0.6, 1.0-1.2m.	Dimensions and Orientation Width 0.70 m Length 2.10 m 45 (Deg)	Ground Level +44.62 mOD Coordinates E 347495.43 National Grid N 389432.57

Samples and Tests

Depth	Type & No.	Date Records
0.10-0.20	ES 1	
0.50-0.60	ES 2	
0.50-0.60	B 3	
1.00-1.20	ES 4	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 MADE GROUND: Grass onto brown grey slightly clayey 2 gravelly fine to coarse SAND. Gravel is angular and subangular fine to coarse mudstone, red tiles and occasional sandstone. Occasional roots and rootlets. (TOPSOIL)	0.10 +44.52		
MADE GROUND: Grey slightly clayey very sandy, becoming sandy with depth, GRAVEL with occasional cobbles. Gravel is angular and subangular mudstone, occasional brick, sandstone, carbonaceous mudstone, coal and siltstone. Cobbles are subangular mudstone. Occasional rootlets. (COLLIERY WASTE) 0.50-1.20 m Very stiff clay pockets 0.60 m Occasional brick cobbles	(1.10)		
EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +43.42		

Depth	Type & No.	Records Date

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)	
0.15		Pocket Penetrometer: Refusal x2, 4.0 kg/cm2
0.50		Pocket Penetrometer: Refusal, 1.75, 4.5 kg/cm2
1.20		Pocket Penetrometer: Refusal x2, 3.75 kg/cm2

Stability Sides upright and stable

Shoring None

Weather Hot dry cloudy

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MEXC HSH (296), 07/11/2003 09:58:12

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP1/02

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAG Checked by JSN	Start 14/08/2003 End 14/08/2003	**Equipment, Methods and Remarks** 0.00 to 1.20m: Machine dug : 1.5t Takeuchi TB16 Worms: 0.0 to 0.2 : Brnc. Roots: 0.0 to 0.6 NDG Tests carried out at 0.00, 0.40, 0.90m.	**Dimensions and Orientation** Width 0.70 m Length 2.00 m A B C D → 0 (Deg)	**Ground Level** +42.14 mOD **Coordinates** E 347635.49 **National Grid** N 389497.84

Samples and Tests

Depth	Type & No.	Date Records
0.10-0.20	ES 1	
0.50-0.60	ES 2	
0.50-0.60	B 3	
1.00-1.20	ES 3	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 MADE GROUND: Grass onto soft grey very sandy gravelly CLAY with occasional cobbles and boulders. Gravel is angular and subangular fine to coarse mudstone, 2 occasional ceramic, coal, quartz and glass. Cobbles and boulders (approx. 0.25x0.20x0.15m) are angular mudstone. Occasional rootlets. (TOPSOIL)	0.20 +41.94 (0.40)		
MADE GROUND: Stiff grey brown sandy very gravelly CLAY. Gravel is angular and subangular fine to 3 coarse mudstone, brick and sandstone with occasional pieces of plastic and wire. Occasional rootlets (COLLIERY WASTE)	0.60 +41.54 (0.59)		1
MADE GROUND: Grey with occasional yellow brown pockets, slightly clayey very sandy, becoming sandy with depth, GRAVEL with occasional cobbles. Gravel is angular and subangular fine to coarse mudstone with occasional brick, coal and glass. Cobbles are 4 angular mudstone. Occasional pieces of wood. Occasional stiff clay pockets. (COLLIERY WASTE)	1.19 +40.95 1.20 +40.94		
MADE GROUND: Grey with orange brown staining slightly sandy GRAVEL with some cobbles. Gravel is angular mudstone with occasional coal. Cobbles are angular mudstone Occasional pieces of iron (nails). (COLLIERY WASTE)			
EXPLORATORY HOLE ENDS AT 1.20 m			

Depth	Type & No.	Records Date

Groundwater Entries

No.	Struck (m)	Post Strike Behaviour
1	0.60	Damp to 1.2

Depth Related Remarks

From	to (m)	
0	15	Pocket penetrometer: 2.5, 1.75, 2.0 kg/cm2
0	50	Pocket penetrometer: 4.0, 2.5, 2.75 kg/cm2
1.20		Pocket penetrometer: Test not applicable - slipping on gravel

Stability Slight spalling 1.19 to 1.20m

Shoring None

Weather hot dry sunny

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1.25

to MEAS HBR (296), 07/11/2003 09:58:20

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP1/03

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAG Checked by JSN	Start 14/08/2003 End 14/08/2003	**Equipment, Methods and Remarks** 0.00 to 1.20m: Machine dug : 1.5t Takeuchi TB16 Worms: 0.0 to 0.4m: 10 no. Roots: 0.0 to 0.4m NDG Tests carried out at 0.00, 0.40, 0.90m	**Dimensions and Orientation** Width 0.70 m Length 1.90 m A B C D ➡ 0 (Deg)	**Ground Level** +46.87 mOD **Coordinates** E 347662.25 **National Grid** N 389447.99

Samples and Tests

Depth	Type & No.	Date Records
0.10-0.20	ES 1	
0.50-0.60	ES 2	
0.50-0.60	B 3	
1.00-1.20	ES 4	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 MADE GROUND: Grass and clover onto grey slightly clayey very gravelly fine to coarse SAND. Gravel is angular and subangular fine to coarse mudstone with 2 occasional burnt shale. Occasional rootlets. (TOPSOIL)	0.20 +46.67		
3 MADE GROUND: Red brown and occasionally grey sandy GRAVEL with occasional cobbles. Gravel is angular and subangular fine to coarse burnt shale with occasional mudstone. Cobbles are burnt shale. (COLLIERY WASTE) 0.55-1.20 m Slightly clayey and very sandy	0.40 +46.47		
MADE GROUND: Grey very clayey sandy GRAVEL with occasional cobbles. Gravel is angular and subangular fine to coarse mudstone, brick and occasional coal. Occasional pieces of wood. Cobbles are angular brick. (COLLIERY WASTE)	(0.80)		
EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +45.67		

Depth	Type & No.	Records Date

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

0 15 Pocket Penetrometer: 2.0, 3.0, 2.0 kg/cm2
0.50 Pocket Penetrometer: Refusal x3.
1.20 Pocket Penetrometer: Refusal x3.

Stability Sides upright and stable

Shoring None

Weather hot sunny breezy

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MESG HSRI (298), 07/11/2003 08:58:27

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP1/04

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAG	Start 14/08/2003	Equipment, Methods and Remarks	Dimensions and Orientation	Ground Level +48.07 mOD
Checked by JSN	End 14/08/2003	0.00 to 1.20m: Machine dug : 1.5t Takeuchi TB16 Worms: 0.0 to 0.2m : 9no plus one grub Roots: 0.0 to 0.5m. NDG and sand replacements 0.1-0.2, 0.5-0.6, 1.0-1.2m.	Width 0.70 m Length 1.80 m 135 (Deg)	Coordinates E 347619.98 National Grid N 389379.74

Samples and Tests

Depth	Type & No.	Date Records
0.10-0.20	ES 1	
0.50-0.60	ES 2	
0.50-0.60	B 3	
1.00-1.20	ES 4	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 MADE GROUND: Grey clayey sandy GRAVEL. Gravel is angular and subangular fine to coarse mudstone with occasional brick. (dried out very quickly)	0.20 +47.87		
2 MADE GROUND: Brown grey and red brown slightly clayey very sandy GRAVEL with occasional cobbles. Gravel is angular and subangular fine to coarse burnt shale, mudstone, coal,sandstone and brick. Cobbles are brick. Occasional rootlets (COLLIERY WASTE)	(0.45)		
3 MADE GROUND: Very stiff brown and grey sandy very gravelly CLAY. Gravel is angular and subangular fine to coarse mudstone, brick and sandstone with occasional burnt shale, ash and coal. Cobbles and boulders (0.36x0.15x0.19m) are angular sandstone. Some pockets of gravel. (COLLIERY WASTE)	0.65 +47.42		
Grading into strata 4 at approximately 0.85m depth	0.85 +47.22		
4 MADE GROUND: Grey occasionally brown clayey very sandy GRAVEL with occasional cobbles. Gravel is angular fine to coarse mudstone, occasional sandstone, coal and red shale. Cobbles are angular mudstone. (COLLIERY WASTE)	(0.35)		
EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +46.87		

Depth	Type & No.	Records Date

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

0.15 Pocket penetrometer: Refusal. 2.0, 1.5 kg/cm2
0.50 Pocket penetrometer: Refusal x3
1.20 Pocket penetrometer: Refusal x3□□

Stability Sides upright and stable

Shoring None

Weather Hot dry sunny

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MESO HBIII (298), 07/11/2003 09:56:35

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP1/05

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAG Checked by JSN	Start 15/08/2003 End 15/08/2003	Equipment, Methods and Remarks 0.00 to 1.20m: Machine dug : 1.5t Takeuchi TB16 Worms: None. 1 frog. Roots: 0.00 to 0.40m NDG Tests carried out at 0.00, 0.40, 0.90m.	Dimensions and Orientation Width 0.70 m Length 2.00 m A B C D 0 (Deg)	Ground Level +39.18 mOD Coordinates E 347801.28 National Grid N 389139.22

Samples and Tests

Depth	Type & No.	Date Records
0.10-0.20	ES 1	
0.50-0.60	ES 2	
0.50-0.60	B 3	
1.00-1.20	ES 4	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 MADE GROUND: Grass onto brown slightly clayey gravelly fine to coarse SAND. Gravel is angular and subangular fine to coarse brick, sandstone, shale and mudstone with occasional pieces of plastic, cables and wire. Cobbles and boulders (0.02x0.30x0.25m, 0.25x0.30x0.05) are angular sandstone and rounded quartz (0.35x0.25x0.15) (TOPSOIL)	(0.40)		
0.35-0.40 m Grey clay pockets	0.40 +38.78		
2 MADE GROUND: Firm with occasional soft pockets, brown sandy gravelly CLAY. Gravel is angular and subangular fine to coarse brick, sandstone and occasional shale, ash and coal. Occasional pieces of wood and metal (lid, drinks can). (COLLIERY WASTE)	(0.40)		
0.70-0.80 m Occasional boulders (0.40x0.35x0.00), occasional grey pockets	0.80 +38.38		
3 MADE GROUND: Firm grey slightly sandy slightly gravelly CLAY. Gravel is angular and subangular fine to coarse mudstone, carbonaceous mudstone, brick, sandstone, coal and occasional pieces of metal. (COLLIERY WASTE)	(0.40)		
EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +37.98		

Depth	Type & No.	Records Date

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)	
0.15		Pocket penetrometer: 2.0, 0.0, 0.0 kg/cm2
0.50		Pocket penetrometer: 2.75, 3.0, Refusal kg/cm2
1.20		Pocket penetrometer: 2.0, 2.0, 2.0 kg/cm2

Stability Sides upright and stable

Shoring None

Weather Hot dry cloudy

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MEAS HBIII (288), 07/11/2003 09:58:42

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP1/06

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by	Start	Equipment, Methods and Remarks	Dimensions and Orientation	Ground Level	+36.81 mOD
CAG	15/08/2003	0.00 to 1.20m: Machine dug - 1.5t Takeuchi TB16	Width 0.70 m	Coordinates	E 347762.91
Checked by JSN	End 15/08/2003	Worms: 0.00 to 0.35m: 1no	Length 2.90 m	National Grid	N 389080.32
		Roots: 0.00 to 0.50m	A B C D → 90 (Deg)		
		NDG Tests carried out at 0.00, 0.40, 0.90m.			

Samples and Tests

Depth	Type & No.	Date Records
0.10-0.20	ES 1	
0.50-0.60	ES 2	
0.50-0.60	B 3	
1.00-1.20	ES 4	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 MADE GROUND: Grass onto brown very gravelly fine to coarse SAND. Gravel is angular and subangular fine to coarse sandstone and quartz, brick and mudstone. Cobbles are angular sandstone and brick. Occasional pieces of plastic bag and ceramic pipe. Occasional	(0.35)		
2 rootlets (TOPSOIL)	0.35 +36.46		
3 MADE GROUND: Grey brown clayey very gravelly fine to coarse SAND. Gravel is angular and subangular fine to coarse brick and mudstone. (COLLIERY WASTE) — 0.50 m Obstruction : Boulder of concrete (>0.7x?) - pit moved backwards and continued.	0.40 +36.41		
MADE GROUND: Very stiff grey brown sandy becoming very sandy, gravelly CLAY with occasional cobbles. Gravel is angular and subangular fine to coarse mudstone with occasional sandstone, shale and coal. Cobbles are angular brick and mudstone. (COLLIERY WASTE) — 1.00 m predominantly burnt shale	(0.80)		
EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +35.61		

Depth	Type & No.	Records Date

Groundwater Entries

No.	Struck	Post Strike (m)	Behaviour
None observed (see Key Sheet)			

Depth Related Remarks

From	to (m)	
0.15		Pocket penetrometer: 4.5, refusal x2 kg/cm2
0.50		Pocket penetrometer: Refusal x3
1.20		Pocket penetrometer: 1.5, 2.5 , refusal kg/cm2

Stability Slight spalling 0.00 to 0.35m

Shoring None

Weather Hot dry sunny

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MEAG HBIR (2008), 07/11/2003 08:58:48

AGS

Project: Cronton Colliery

Project No.: F3605

Carried out for: Maro Developments

Trial Pit

TP1/07

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by AR	Start 07/08/2003	Equipment, Methods and Remarks	Dimensions and Orientation	Ground Level +29.99 mOD
Checked by JSN	End 07/08/2003	JCB 3CX Machine excavated	Width 1.00 m Length 2.50 m	Coordinates E 347598.18 National Grid N 389180.80

Samples and Tests			Strata			
Depth	Type & No.	Date Records	Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
0.10-0.20	ES 1		1 MADE GROUND: Black subangular to angular fine and medium GRAVEL of mudstone, some brick, some wood and rare glass			
0.50-0.60	B 2			(1.20)		
0.50-0.60	ES 3					
1.00-1.20	ES 4					
			EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +28.79		
Depth	Type & No.	Records Date				

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)	
0.10	0.20	3.5kg/cm2, 4.0kg/cm2, 3.5kg/cm2 pocket penetrometer reading
0.50	0.60	4.0kg/cm2, 4.0kg/cm2, 4.0kg/cm2 pocket penetrometer reading
1.00	1.20	4.5kg/cm2, 4.5kg/cm2, 4.0kg/cm2 pocket penetrometer reading

Stability

Shoring None

Weather

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MEBG HB8I (2M8), 07/11/2003 08:58:24

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP2/01

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by AR Checked by JSN	Start 04/08/2003 End 04/08/2003	Equipment, Methods and Remarks JCB 3CX	Dimensions and Orientation Width 2.50 m Length 1.00 m	Ground Level +30.32 mOD Coordinates E 347678.01 National Grid N 389156.48

Samples and Tests			Strata			
Depth	Type & No.	Date Records	Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
0.10-0.20	ES 001		MADE GROUND: Firm grey and black sandy gravelly CLAY. Gravel is angular to subangular fine to coarse including brick, shale, coal, and occasional timber. (Colliery Waste)			
0.50-0.60	ES 002					
0.50-0.60	B 003			(1.20)		
1.00-1.20	ES 004					
			EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +29.12		

Depth	Type & No.	Records Date

Groundwater Entries			Depth Related Remarks	Stability Stable
No.	Struck (m)	Post Strike Behaviour	From to (m)	Shoring None
None observed (see Key Sheet)				Weather Sunny, dry

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25 (c) MESG HBIII (298), 07/11/2003 10:00:06

Project	Cronton Colliery
Project No.	F3605
Carried out for	Maro Developments

Trial Pit

TP2/02

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by GD	Start 04/08/2003	Equipment, Methods and Remarks	Dimensions and Orientation	Ground Level +30.18 mOD
Checked by JSN	End 04/08/2003	JCB 3CX Sand Replacement test carried out at 0.10-0.20m, 0.50-0.60m and 1.00m-1.20m.	Width 1.00 m Length 2.50 m	Coordinates E 347579.27 National Grid N 389100.50

Samples and Tests			Strata			
Depth	Type & No.	Date Records	Description	Depth, *Level* (Thickness)	Legend	Backfill/ Instrument
0.10-0.20	ES 1		1 MADE GROUND; Firm dark grey and black sandy gravelly CLAY. Gravel is angular to subangular fine to coarse including brick, shale, coal and occasional timber (Colliery Waste).			
0.50-0.60	ES 2		0.45-1.00 m Slight diesel odour noted	(1.20)		
0.50-0.60	B 3					
1.00-1.20	ES 4					
			EXPLORATORY HOLE ENDS AT 1.20 m	1.20 *+28.98*		

Depth	Type & No.	Records Date

Groundwater Entries
No. Struck Post Strike Behaviour (m)
None observed (see Key Sheet)

Depth Related Remarks
From to (m)

Stability Stable

Shoring None

Weather Sunny, dry

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MEAG HBW (2003), 07/11/2003 09:58:37

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP2/03

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by AR Checked by JSN	Start 07/08/2003 End 07/08/2003	Equipment, Methods and Remarks JCB 3CX Machine excavated	Dimensions and Orientation Width 1.00 m Length 2.60 m	Ground Level +30.30 mOD Coordinates E 347657.22 National Grid N 389084.84

Samples and Tests			Strata			
Depth	Type & No.	Date Records	Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
0.10-0.20	ES		1 MADE GROUND: Black subangular to angular fine and medium GRAVEL with some brick and wood.At 0.50m:slightly sandy slightly gravelly clay At 1.00m:red brown burnt shale	(1.20)		
0.50-0.60	B					
0.50-0.60	ES					
1.00-1.20	ES					
			EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +29.10		
Depth	Type & No.	Records Date				

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)	
0.10	0.20	3.5kg/cm2, 3.5kg/cm2, 4.5kg/cm2 pocket penetrometer reading
0.50	0.60	3.5kg/cm2, 4.0kg/cm2, 4.5kg/cm2 pocket penetrometer reading
1.00	1.20	4.0kg/cm2, 4.5kg/cm2, 4.5kg/cm2 pocket penetrometer reading

Stability

Shoring None

Weather

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MEBO HBR (298), 07/11/2003 08:59:17

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP2/04

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by	Start	Equipment, Methods and Remarks	Dimensions and Orientation	Ground Level	+30.07 mOD
AR	06/08/2003	JCB 3CX	Width 1.00 m	Coordinates	E 347501.89
Checked by JSN	End 06/08/2003	Machine excavated	Length 2.50 m	National Grid	N 389080.14

Samples and Tests			Strata			
Depth	Type & No.	Date Records	Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
0.10-0.20	ES 1		1 MADE GROUND:Black TOPSOIL with pockets of clay, some angular gravels of carbonaceous mudstone, some coal			
0.50-0.60	ES 2					
0.50-0.60	B 3			(1.20)		
1.00-1.20	ES 3					
			EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +28.87		
Depth	Type & No.	Records Date				

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)	
0.10	0.20	3.5kg/cm2, 3.0kg/cm2, 4.0kg/cm2, 4.0kg/cm2 pocket penetrometer readings
0.50	0.60	4.5+kg/cm2, 4.0kg/cm2, 3.8kg/cm2, 1.5kg/cm2 pocket penetrometer readings
1.00	1.20	3.2kg/cm2, 4.0kg/cm2, 2.5kg/cm2, 2.5kg/cm2 pocket penetrometer readings

Stability

Shoring None

Weather

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MEGG HBN (288), 07/11/2003 09:59:04

AGS

Project	Cronton Colliery
Project No.	F3605
Carried out for	Maro Developments

Trial Pit

TP2/05

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by AR Checked by JSN	Start 07/08/2003 End 07/08/2003	Equipment, Methods and Remarks JCB 3CX Machine excavated	Dimensions and Orientation Width 1.00 m Length 2.40 m	Ground Level +30.07 mOD Coordinates E 347597.50 National Grid N 389023.45

Samples and Tests			Strata			
Depth	Type & No.	Date Records	Description	Depth, *Level* (Thickness)	Legend	Backfill/ Instrument
0.10-0.20	ES 1		1 MADE GROUND:Black subangular to angular fine and medium GRAVEL of coal and mudstone with clay pockets. Wood and geotextile noted			
0.50-0.60	ES 2					
0.50-0.60	B 3			(1.20)		
1.00-1.20	ES 4					
			EXPLORATORY HOLE ENDS AT 1.20 m	1.20 *+28.87*		
Depth	Type & No.	Records Date				

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)	
0.10	0.20	3.5kg/cm2, 3.0kg/cm2, 3.5kg/cm2 penetrometer readings
0.50	0.60	3.5kg/cm2, 4.0kg/cm2, 3.5kg/cm2 penetrometer readings
1.00	1.20	4.0kg/cm2, 4.5kg/cm2, 4.0kg/cm2 penetrometer readings

Stability

Shoring None

Weather

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MEBQ H&M (288), 07/11/2003 09:59:59

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP2/06

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by AR Checked by JSN	Start 07/08/2003 End 07/08/2003	Equipment, Methods and Remarks JCB 3CX Machine excavated	Dimensions and Orientation Width 1.00 m Length 2.80 m	Ground Level +30.26 mOD Coordinates E 347668.29 National Grid N 388930.92

Samples and Tests			Strata			
Depth	Type & No.	Date Records	Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
0.10-0.20	ES		1 MADE GROUND:Very gravelly TOPSOIL with a poor root structure. Gravel is fine subangular	0.10 +30.16		
			2 MADE GROUND:Firm red brown sandy CLAY with occasional subangular to angular fine and medium gravels	(0.30)		
0.50-0.60	B		3 MADE GROUND:Black subangular to angular fine to medium GRAVEL of mudstone	0.40 +29.86		
0.50-0.60	ES			(0.80)		
1.00-1.20	ES		EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +29.06		
Depth	Type & No.	Records Date				

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)	
0.10	0.20	4.5+kg/cm2 pocket penetrometer reading
0.50	0.60	4.5+kg/cm2 pocket penetrometer reading
1.00	1.20	4.5+kg/cm2 pocket penetrometer reading

Stability

Shoring None

Weather

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP2/07

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by AR Checked by JSN	Start 07/08/2003 End 07/08/2003	Equipment, Methods and Remarks JCB 3CX Machine excavated	Dimensions and Orientation Width 1.00 m Length 2.50 m	Ground Level +31.40 mOD Coordinates E 347501.13 National Grid N 388974.08

Samples and Tests

Depth	Type & No.	Date Records
0.10-0.20	ES 1	
0.50-0.60	ES 2	
0.50-0.60	B 3	
1.00-1.20	ES 4	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 MADE GROUND:Brown very gravelly TOPSOIL with grass roots down to 0.20m. No earthworms, some insects. Gravel is angular fine to coarse of mudstone	0.20 +31.20		
2 MADE GROUND:Black subangular to angular fine to coarse GRAVEL of coal and mudstone with clay pockets	(1.00)		
EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +30.20		

Depth	Type & No.	Records Date

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)	
0.10	0.20	3.5kg/cm2, 3.3kg/cm2, 3.8kg/cm2 penetrometer readings
0.50	0.60	4.6kg/cm2, 4.6kg/cm2, 4.3kg/cm2 penetrometer readings
1.00	1.20	3.9kg/cm2, 4.0kg/cm2, 4.0kg/cm2 penetrometer readings

Stability

Shoring None

Weather

Notes. For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MEAD Hdm (2006, 07/11/2003 09:39:52

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP2/08

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by AR Checked by JSN	Start 07/08/2003 End 07/08/2003	Equipment, Methods and Remarks JCB 3CX Machine excavated	Dimensions and Orientation Width 1.00 m Length 2.70 m	Ground Level +30.06 mOD Coordinates E 347418.92 National Grid N 388996.98

Samples and Tests			Strata			
Depth	Type & No.	Date Records	Description	Depth, *Level* (Thickness)	Legend	Backfill/ Instrument
0.10-0.20	ES 1		1 MADE GROUND: Black very highly gravelly CLAY. Gravel is angular fine to coarse of mudstone, brick, some fragments of coal. No earthworms or insects			
0.50-0.60	ES 2					
0.50-0.60	B 3			(1.20)		
1.00-1.20	ES 4					
			EXPLORATORY HOLE ENDS AT 1.20 m	1.20 *+28.86*		

Depth	Type & No.	Records Date

Groundwater Entries

No. Struck	Post Strike (m)	Behaviour
None observed (see Key Sheet)		

Depth Related Remarks

From	to (m)	
0.10	0.20	4.0kg/cm2, 4.0kg/cm2, 4.0kg/cm2 penetrometer readings
0.50	0.60	4.5kg/cm2, 4.5kg/cm2, 4.0kg/cm2 penetrometer readings
1.00	1.20	4.5kg/cm2, 4.5kg/cm2, 4.5kg/cm2 penetrometer readings

Stability

Shoring None

Weather

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

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AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP2/09

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by AR Checked by JSN	Start 07/08/2003 End 07/08/2003	Equipment, Methods and Remarks JCB 3CX Machine excavated	Dimensions and Orientation Width 1.00 m Length 2.80 m	Ground Level +29.42 mOD Coordinates E 347406.55 National Grid N 389068.90

Samples and Tests			Strata			
Depth	Type & No.	Date Records	Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
0.10-0.20	ES 1		1 MADE GROUND: Black slightly sandy slightly gravelly CLAY. Gravel is angular fine to coarse of mudstone, brick, concrete, some coal			
0.50-0.60	ES 2					
0.50-0.60	B 3			(1.20)		
1.00-1.20	ES 4					
			EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +28.22		

Depth	Type & No.	Records Date

Groundwater Entries

No. Struck	Post Strike (m)	Behaviour
None observed (see Key Sheet)		

Depth Related Remarks

From	to (m)	
0.10	0.20	4.5kg/cm2, 4.0kg/cm2, 4.5kg/cm2 penetrometer readings
0.50	0.60	4.5kg/cm2, 4.5kg/cm2, 4.5kg/cm2 penetrometer readings
1.00	1.20	4.5kg/cm2, 4.5kg/cm2, 4.5kg/cm2 penetrometer readings

Stability

Shoring None

Weather

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

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AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP2/10

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by AR	Start 07/08/2003	Equipment, Methods and Remarks	Dimensions and Orientation	Ground Level +27.59 mOD
Checked by JSN	End 07/08/2003	JCB 3CX Machine excavated	Width 1.00 m Length 2.50 m	Coordinates E 347353.37 National Grid N 389006.34

Samples and Tests			Strata			
Depth	Type & No.	Date Records	Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
0.10-0.20	ES 1		1 Grey brown sandy TOPSOIL occasional coal deposit, dense rooting from grass to 0.20m. Some iron staining, no earthworms evident, some insect 2 populations	0.20 +27.39		
0.50-0.60	ES 2		MADE GROUND:Black very highly gravelly CLAY. Gravel is angular fine to coarse of mudstone, brick and some fragments of coal			
0.50-0.60	B 3		0.60 m Geotextile - 10mm thick, grey coarse weaved with an orange rubberized covering on both sides. Staples on end, spaced every 25mm, each staple 45mm long. Each matt approximately 900mm wide	(1.00)		
1.00-1.20	ES 4		EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +26.39		
Depth	Type & No.	Records Date				

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)	
0.10	0.20	4.0kg/cm2, 4.5kg/cm2, 4.5kg/cm2 penetrometer readings
0.50	0.60	4.0kg/cm2, 4.5kg/cm2, 4.5kg/cm2 penetrometer readings
1.00	1.20	3.5kg/cm2, 3.5kg/cm2, 4.0kg/cm2 penetrometer readings

Stability

Shoring None

Weather

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MEAD HBM (2000), 07/11/2003 08:58:38

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP2/11

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by AR Checked by JSN	Start 08/08/2003 End 08/08/2003	Equipment, Methods and Remarks JCB 3CX Machine excavated	Dimensions and Orientation Width 1.00 m Length 2.60 m	Ground Level +34.02 mOD Coordinates E 347193.40 National Grid N 389398.13

Samples and Tests			Strata			
Depth	Type & No.	Date Records	Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
0.10-0.20	ES 1		1 TOPSOIL with mudstone and brick gravel, no earthworms	0.10 +33.92		
			2 MADE GROUND: Black slightly sandy slightly gravelly CLAY including mudstone and brick , concrete, tile and wood	(0.50)		
0.50-0.60	ES 2					
0.50-0.60	B 3			0.60 +33.42		
			3 MADE GROUND:Black subangular to angular fine and medium of mudstone and coal	(0.60)		
1.00-1.20	ES 4					
			EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +32.82		

Depth	Type & No.	Records Date

Groundwater Entries

No. Struck	Post Strike (m)	Behaviour
None observed (see Key Sheet)		

Depth Related Remarks

From	to (m)	
0.10	0.20	4.5kg/cm2 penetrometer reading
0.50	0.60	4.5kg/cm2 penetrometer reading
1.00	1.20	4.5kg/cm2 penetrometer reading

Stability

Shoring None

Weather

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MEGG HSM (288), 07/11/2003 10:01:10

AGS

Project	Cronton Colliery
Project No.	F3605
Carried out for	Maro Developments

Trial Pit

TP3/01

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by AR Checked by JSN	Start 08/08/2003 End 08/08/2003	Equipment, Methods and Remarks JCB 3CX Machine excavated	Dimensions and Orientation Width 1.00 m Length 2.50 m	Ground Level +34.01 mOD Coordinates E 347244.43 National Grid N 389330.62

Samples and Tests			Strata			
Depth	Type & No.	Date Records	Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
0.10-0.20	ES 1		1 Brown very sandy very gravelly TOPSOIL with no earthworms. Gravel is angular to subangular fine and medium.	0.10 +33.91		
			MADE GROUND: Subangular to angular fine and medium GRAVEL with occasional clay pockets and some steel and wood	(0.30)		
0.50-0.60 0.50-0.60	ES 2 B 3		3 MADE GROUND:grey and black slightly sandy slightly gravelly CLAY.Gravel including coal and mudstone	0.40 +33.61		
1.00-1.20	ES 4			(0.80)		
			EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +32.81		
Depth	Type & No.	Records Date				

Groundwater Entries

No. Struck	Post Strike Behaviour (m)
None observed (see Key Sheet)	

Depth Related Remarks

From	to (m)	
0.10	0.20	4.5kg/cm2 penetrometer reading
0.50	0.60	4.5kg/cm2 penetrometer reading
1.00	1.20	4.5kg/cm2 penetrometer reading

Stability

Shoring None

Weather

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MEGG HEIR (2MB, 07/11/2003 10:00:58

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP3/02

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by AR	Start 08/08/2003	Equipment, Methods and Remarks	Dimensions and Orientation	Ground Level	+33.93 mOD
Checked by JSN	End 08/08/2003	JCB 3CX Machine excavated	Width 1.00 m Length 2.50 m	Coordinates	E 347178.63
				National Grid	N 389320.50

Samples and Tests			Strata			
Depth	Type & No.	Date Records	Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
0.10-0.30	ES 1		1 MADE GROUND: Black subangular to angular fine and medium GRAVEL of mudstone, coal, brick, wire and cable, concrete. No topsoil of note, perhaps 3cm thick, poor root development, no earthworms At 0.50m:black grey slightly sandy gravelly clay	(1.20)		
0.50-0.60	ES 2					
0.50-0.60	B 3					
1.00-1.20	ES 4					
			EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +32.73		

Depth	Type & No.	Records Date

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)	
0.10	0.30	4.5kg/cm2 penetrometer reading
0.50	0.60	4.0kg/cm2 penetrometer reading
1.00	1.20	4.5kg/cm2 penetrometer reading

Stability

Shoring None

Weather

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MESG HBM (2003, 07/11/2003 10:01:03

AGS

Project	Cronton Colliery
Project No.	F3605
Carried out for	Maro Developments

Trial Pit

TP3/03

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAG	Start 08/08/2003	Equipment, Methods and Remarks	Dimensions and Orientation	Ground Level +27.61 mOD
Checked by JSN	End 08/08/2003	JCB Max root depth 0.65m	Width 0.90 m Length 3.20 m A B C D → 76 (Deg)	Coordinates E 347154.63 National Grid N 389226.00

Samples and Tests

Depth	Type & No.	Date Records
0.10-0.20	ES 1	
0.10-0.20	D 2	
0.50-0.60	ES 3	
0.50-0.60	D 4	
0.50-0.60	B 7	
1.00-1.20	ES 5	
1.00-1.20	D 6	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 MADE GROUND: Grass, nettles and reeds overlying light brown gravelly SAND with numerous millimeter scale rootlets. Sand is fine to coarse of quartz. Gravels are subangular fine to coarse of sandstone and mudstone. 0.25 m One worm noted.	(0.50)		
	0.50 +27.11		
2 MADE GROUND: Soft sandy very gravelly CLAY. Gravels are subangular fine to coarse of mudstone, fine yellow sandstone and red brick. Numerous millimeter sized rootlets noted. Occasional to few small scale gravelly sand lenses. Gravels within sand are subangular to subrounded fine to coarse of mudstone, fine grey sandstone and brick. Occasional cobbles of finely laminated mudstone. 1.00-1.20 m Metal coil noted (approximately 0.01m diameter).	(0.50)		
	1.00 +26.61		
3 MADE GROUND: Dark brown gravelly SAND. Gravels are subangular fine to coarse of mostly brick, ceramics, fine grey sandstone, fine yellow sandstone, and finely laminated mudstone. Occasional to few yellow gravelly clay inclusions. Gravels are subangular to subrounded fine to coarse of mudstone, brick, sandstone and occasional coal.	1.20 +26.41		
EXPLORATORY HOLE ENDS AT 1.20 m			

Depth	Type & No.	Records Date

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

0.10 Hand penetrometer - 1.0kg/cm2, 1.0kg/cm2, 1.0kg/cm2
0.60 Hand penetrometer - 2.5kg/cm2, 3.5kg/cm2, 2.5kg/cm2.
1.20 Hand penetrometer - 1.5kg/cm2, 2.0kg/cm2, 1.5kg/cm2

Stability Stable

Shoring None

Weather Warm and sunny

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

MESG HBSI (2000, 07/11/2003 10:00:13 AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP3/04

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by AR	Start 08/08/2003	Equipment, Methods and Remarks	Dimensions and Orientation	Ground Level +33.94 mOD
Checked by JSN	End 08/08/2003	JCB 3CX Machine excavated	Width 1.00 m Length 2.50 m	Coordinates E 347252.52 National Grid N 389258.67

Samples and Tests			Strata			
Depth	Type & No.	Date Records	Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
0.10-0.20	ES 1		1 MADE GROUND: Black subangular to angular fine and medium GRAVEL of mudstone, and some coal and brick	(1.20)		
0.50-0.60	ES 2					
0.50-0.60	B 3					
1.00-1.20	ES 4					
			EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +32.74		

Depth	Type & No.	Records Date

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)	
0.10	0.20	4.0kg/cm2 penetrometer reading
0.50	0.60	4.5kg/cm2 penetrometer reading
1.00	1.20	4.0kg/cm2 penetrometer reading

Stability

Shoring None

Weather

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MEAS HBM (288), 07/11/2003 10:01:17

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP3/05

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAR	Start 08/08/2003	Equipment, Methods and Remarks	Dimensions and Orientation	Ground Level +33.94 mOD
Checked by JSN	End 08/08/2003	JCB Maximum depth of rootlets - 0.5m. No worms noted.	Width 0.60 m Length 3.70 m A B C D ➡ 68 (Deg)	Coordinates E 347327.11 National Grid N 389304.06

Samples and Tests

Depth	Type & No.	Date Records
0.10-0.20	ES 1	
0.10-0.20	D 2	
0.50-0.60	ES 3	
0.50-0.60	D 4	
0.50-0.60	B 7	
1.00-1.20	ES 5	
1.00-1.20	D 6	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 MADE GROUND:Sparce grass overlying grey brown sandy GRAVEL of mudstone with numerous millimetre sized rootlets.	0.20 +33.74		
2 MADE GROUND:Grey sandy angular to subangular GRAVELS and COBBLES of mudstone. Sand is fine to coarse of mudstone.	(1.00)		
EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +32.74		

Depth	Type & No.	Records Date

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

Stability Stable

Shoring None

Weather Warm and sunny

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP3/06

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAR Checked by JSN	Start 08/08/2003 End 08/08/2003	Equipment, Methods and Remarks JCB	Dimensions and Orientation Width 0.70 m Length 3.40 m	Ground Level +33.90 mOD Coordinates E 347305.21 National Grid N 389199.54

Samples and Tests

Depth	Type & No.	Date Records
0.10-0.20	ES 1	
0.10-0.20	D 2	
0.50-0.60	ES 3	
0.50-0.60	D 4	
0.50-0.60	B 7	
1.00-1.20	ES 5	
1.00-1.20	D 6	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 MADE GROUND: Sparce grass overlying dark brown clayey sandy GRAVEL. Sand is fine to coarse. Gravels are angular to subrounded of mudstone, red brick, coal and occasional fine sandstone. Few to numerous cobbles of mudstone and firm grey sandstone. Occasional cobble sized gravelly CLAY inclusions. Gravels within clay fraction are subangular to subrounded fine to coarse of yellow sandstone, brick, coal and mudstone.	(1.20)		
EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +32.70		

Depth	Type & No.	Records Date

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)	
0.10		Hand penetrometer - 3.5kg/cm2, 3.0kg/cm2, 2.5kg/cm2.
0.50		Hand penetrometer - 4.5kg/cm2, 4.5kg/cm2, 4.5kg/cm2.
1.20		Hand penetrometer - 4.5kg/cm2, 4.5kg/cm2, 4.5kg/cm2.

Stability Stable

Shoring None

Weather Warm and sunny

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MEStG HBB (280), 07/11/2003 10:00:38

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP3/07

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by AR Checked by JSN	Start 08/08/2003 End 08/08/2003	Equipment, Methods and Remarks JCB 3CX Machine excavated	Dimensions and Orientation Width 1.00 m Length 2.50 m	Ground Level +33.94 mOD Coordinates E 347438.02 National Grid N 389234.37

Samples and Tests

Depth	Type & No.	Date Records
0.10-0.20	ES 1	
0.50-0.60	ES 2	
0.50-0.60	B 3	
1.00-1.20	ES 4	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 MADE GROUND: Black subangular to angular fine and medium GRAVEL of mudstone and coal, with some wood and brick fragments	(0.60)		
2 Black subangular to angular fine and medium GRAVEL of coal and some wood	0.60 +33.34 (0.60)		
EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +32.74		

Depth	Type & No.	Records Date

Groundwater Entries

No. Struck	Post Strike (m)	Behaviour

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)	
0.10	0.20	4.5kg/cm2 penetrometer reading
0.50	0.60	4.5kg/cm2 penetrometer reading
1.00	1.20	4.5kg/cm2 penetrometer reading

Stability

Shoring None

Weather

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MEBO HBMI (2000), 07/11/2003 10:01:23

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP3/08

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by AR	Start 07/08/2003	Equipment, Methods and Remarks	Dimensions and Orientation	Ground Level	+33.76 mOD
Checked by JSN	End 07/08/2003	JCB 3CX Machine excavated	Width 1.00 m Length 2.50 m	Coordinates National Grid	E 347553.15 N 389248.79

Samples and Tests			Strata			
Depth	Type & No.	Date Records	Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
0.10-0.20	ES 1		1 Black very gravelly TOPSOIL with no earthworms and poor root abundance. Gravel is angular fine and medium of mudstone	0.20 +33.56		
			2 MADE GROUND:Black angular fine and medium GRAVEL of mudstone and coal	(0.40)		
0.50-0.60	ES 2			0.60 +33.16		
0.50-0.60	B 3		3 MADE GROUND:Black angular fine and medium GRAVEL of coal and some grey mudstone	(0.60)		
1.00-1.20	ES 4					
			EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +32.56		

Depth	Type & No.	Records Date

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)	
0.10	0.20	4.5kg/cm2 penetrometer reading
0.50	0.60	4.5kg/cm2 penetrometer reading
1.00	1.20	4.5kg/cm2 penetrometer reading

Stability

Shoring None

Weather

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MEBO HBM (2000, 07/11/2003 10:00:49

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP3/09

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAR Checked by JSN	Start 08/08/2003 End 08/08/2003	Equipment, Methods and Remarks JCB Maximum root depth 0.7m No worms noted nut few beetles.	Dimensions and Orientation Width 1.00 m Length 3.90 m A B C D → 32 (Deg)	Ground Level +34.00 mOD Coordinates E 347505.10 National Grid N 389304.55

Samples and Tests

Depth	Type & No.	Date Records
0.00-0.20	ES 1	
0.00-0.20	D 2	
0.50-0.60	ES 3	
0.50-0.60	D 4	
0.50-0.60	B 7	
1.00-1.20	ES 5	
1.00-1.20	D 6	

Depth	Type & No.	Records Date

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 MADE GROUND: Grass overlying sandy GRAVEL with occasional to numerous gravelly CLAY inclusions. Gravels are subangular to subrounded fine to coarse of mudstone and brick and occasional coal. Numerous millimetre scale rootlets.	(0.80)		
0.40-0.80 m Occasional subrounded cobbles of mudstone (approximately 0.2m-0.3m diameter)			
2 MADE GROUND: Firm dark grey gravelly CLAY. Gravels are subangular to subrounded fine to coarse of mudstone and brick.	0.80 +33.20 (0.40)		
EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +32.80		

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

0.60 Hand penetrometer - 4.5kg/cm2, 4.0kg/cm2, 4.0kg/cm2.

1.20 Hand penetrometer - 3.5kg/cm2, 4.0kg/cm2, 2.5kg/cm2.

Stability Stable

Shoring None

Weather Warm and sunny

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MEAS HSIII (2961), 07/11/2003 10:00:20

Project	Cronton Colliery
Project No.	F3605
Carried out for	Maro Developments

Trial Pit

TP3/10

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAR	Start 08/08/2003	Equipment, Methods and Remarks	Dimensions and Orientation	Ground Level +33.96 mOD
Checked by JSN	End 08/08/2003	JCB	Width 0.80 m Length 3.70 m 94 (Deg)	Coordinates E 347627.33 National Grid N 389228.61

Samples and Tests			Strata			
Depth	Type & No.	Date Records	Description	Depth, *Level* (Thickness)	Legend	Backfill/ Instrument
0.10-0.20	ES 1		1 MADE GROUND: Sparce grass overlying brown to dark brown sandy slightly clayey GRAVEL. Sand is fine to coarse of coal. Gravels are subangular to subrounded fine to coarse of mudstone, coal and brick. Occasional wood fragments (approximately 0.2m long). Occasional fragments of brick and mudstone (0.4m diameter).	(1.10)		
0.10-0.20	D 2					
0.50-0.60	ES 3					
0.50-0.60	D 4					
0.50-0.60	B 7					
1.00-1.20	ES 5					
1.00-1.20	D 6					
				1.10 +32.86		
			MADE GROUND:Dark grey sandy slightly clayey subangular fine to coarse GRAVEL of mudstone,red siltstone,red fine sandstone.Occasional boulders of sandstone	1.20 +32.76		
			EXPLORATORY HOLE ENDS AT 1.20 m			
Depth	Type & No.	Records Date				

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

0.50 Hand penetrometer - 3.5kg/cm2, 4.0kg/cm2, 3.5kg/cm2.
1.20 Hand penetrometer - 3.0kg/cm2, 2.5kg/cm2, 4.0kg/cm2.

Stability Stable

Shoring None

Weather Warm and sunny

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

ags MEBG 4B3 (2B8, 07/11/2003 16:09:27

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP3/11

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by AR Checked by JSN	Start 06/08/2003 End 06/08/2003	Equipment, Methods and Remarks JCB 3CX Machine excavated	Dimensions and Orientation Width 1.00 m Length 4.00 m	Ground Level +22.22 mOD Coordinates E 346708.15 National Grid N 389336.41

Samples and Tests

Depth	Type & No.	Date Records
0.20-3.80	B 1	
1.00 1.00	D 2 ES 3	
2.00	D 4	
2.50	D 5	
3.00	D 6	
3.50	D 7	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 Dark brown TOPSOIL with occasional worms and common ants			
2 Stiff red brown sandy CLAY with occasional fine subangular gravels and rare subrounded boulders	0.20 +22.02		
	(3.60)		
EXPLORATORY HOLE ENDS AT 3.80 m	3.80 +18.42		

Depth	Type & No.	Records Date

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)	
1.00		Hand vane - 70kPa, 80kPa, 83kPa
2.00		Hand vane - 40kPa, 60kPa, 54kPa
2.50		Hand vane - 62kPa, 58kPa, 54kPa
3.00		Hand vane - 50kPa, 46kPa, 48kPa
3.50		Hand vane - 52kPa, 56kPa, 62kPa

Stability

Shoring

Weather

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MESO HBB (286), 07/11/2003 10:01:52

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

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Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by AR Checked by JSN	Start 06/08/2003 End 06/08/2003	Equipment, Methods and Remarks JCB 3CX Machine excavated	Dimensions and Orientation Width 1.00 m Length 4.00 m	Ground Level +20.68 mOD Coordinates E 346728.03 National Grid N 389238.65

Samples and Tests			Strata			
Depth	Type & No.	Date Records	Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
			1 Dark brown TOPSOIL	(0.40)		
0.40-1.00	B 4			0.40 +20.28		
0.50	D		2 Firm red brown sandy CLAY with occasional fine and medium angular gravels	(0.60)		
1.00	D			1.00 +19.68		
1.00	ES		3 Soft to firm red brown sandy CLAY with occasional fine and medium angular gravels	(1.00)		
1.50	D					
2.00-2.70	B			2.00 +18.68		
2.00-2.70	D		4 Firm red brown sandy CLAY with fine angular to subangular gravels	(0.70)		
2.70-3.20	B			2.70 +17.98		
2.70-3.20	D		5 Soft to firm red brown sandy CLAY with occasional pockets of brown sand and occasional fine and medium subrounded gravels	(0.50)		
3.20-3.50	B			3.20 +17.48		
3.20-3.50	D		6 Brown fine SAND with rare strong grey mudstone	(0.30)		
			EXPLORATORY HOLE ENDS AT 3.50 m	3.50 +17.18		
Depth	Type & No.	Records Date				

Groundwater Entries

No. Struck	Post Strike Behaviour (m)
None observed (see Key Sheet)	

Depth Related Remarks

From	to (m)	
0.50		Hand vane - 46kPa, 48kPa, 66kPa
1.00		Hand vane - 35kPa, 46kPa, 39kPa
2.00		Hand vane - 65kPa, 67kPa, 56kPa
2.70		Hand vane - 42kPa, 36kPa, 38kPa

Stability

Shoring

Weather

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25 (c) MESG HSSI (298), 07/11/2003 10:01:58 AGS

Project	Cronton Colliery
Project No.	F3605
Carried out for	Maro Developments

Trial Pit

TP32

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by AR Checked by JSN	Start 06/08/2003 End 06/08/2003	Equipment, Methods and Remarks JCB 3CX Machine excavated	Dimensions and Orientation Width 1.00 m Length 4.10 m	Ground Level +24.55 mOD Coordinates E 346773.16 National Grid N 389394.75

Samples and Tests			Strata			
Depth	Type & No.	Date Records	Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
			1 Dark brown TOPSOIL with angular to subrounded gravels			
0.20-1.00	B 3		2 MADE GROUND: Dark brown soil with brick, concrete, wood, coal and wire	0.20 +24.35		
0.50	ES 1					
0.50	D 2			(0.80)		
1.00	D 4		3 Stiff red brown sandy CLAY with fine subangular gravels	1.00 +23.55		
1.00-2.30	B 5					
1.50	D 6			(1.30)		
2.00	D 7					
2.30-4.00	B 9		4 Firm red brown CLAY with lenses of red sand	2.30 +22.25		
2.50	D 8					
3.00	D 10			(1.70)		
4.00	D 11		EXPLORATORY HOLE ENDS AT 4.00 m	4.00 +20.55		
Depth	Type & No.	Records Date				

Groundwater Entries			Depth Related Remarks		Stability
No. Struck	Post Strike (m)	Behaviour	From to (m)		
None observed (see Key Sheet)			1.00	Hand vane - 58kPa, 60kPa, 62kPa	Shoring
			1.50	Hand vane - 48kPa, 48kPa, 49kPa	
			2.00	Hand vane - 52kPa, 43kPa, 50kPa	Weather
			2.50	Hand vane - 52kPa, 60kPa, 58kPa	
			3.00	Hand vane - 45kPa, 41kPa, 38kPa	

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25 (c) MEBG HBM (298), 07/11/2003 10:02:07 AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP33

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by AR Checked by JSN	Start 06/08/2003 End 06/08/2003	Equipment, Methods and Remarks JCB 3CX Machine excavated	Dimensions and Orientation Width 1.00 m Length 4.00 m	Ground Level +21.48 mOD Coordinates E 346824.68 National Grid N 389246.24

Samples and Tests			Strata			
Depth	Type & No.	Date Records	Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
			1 Dark brown fibrous TOPSOIL	0.20 +21.28		
0.50 0.50 0.50-1.70	D 1 ES 2 B 4		2 Grey angular fine to coarse GRAVEL of mudstone with some angular boulders. Iron staining evident on faces of gravel	(1.50)		
1.50	D 3					
1.70-4.00	B 8		3 Soft brown sandy CLAY	1.70 +19.78		
2.50	D 5			(2.30)		
3.00	D 6					
4.00	D 7		EXPLORATORY HOLE ENDS AT 4.00 m	4.00 +17.48		
Depth	Type & No.	Records Date				

Groundwater Entries

No. Struck | Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)	
2.00		Hand vane - 30kPa, 35kPa, 34kPa
3.00		Hand vane - 40kPa, 35kPa, 38kPa
4.00		Hand vane - 50kPa, 60kPa, 54kPa

Stability

Shoring

Weather

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MEBO HBW (298), 07/11/2003 10:02:15

AGS

Project: Cronton Colliery

Project No.: F3605

Carried out for: Maro Developments

Trial Pit

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Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAR	Start 06/08/2003	Equipment, Methods and Remarks	Dimensions and Orientation	Ground Level +24.37 mOD
Checked by JSN	End 06/08/2003	JCB	Width 0.70 m Length 3.90 m A B C D → 20 (Deg)	Coordinates E 346861.43 National Grid N 389462.92

Samples and Tests			Strata				
Depth	Type & No.	Date Records	Description		Depth, Level (Thickness)	Legend	Backfill/ Instrument
			1 Grass overlying light brown gravelly SAND. Gravels are subangular fine to coarse of fine sandstone and mudstone. Occasional to few grave to cobble sized stiff grey gravelly inclusions.	0.00-0.40 m Numerous millimeter to centimeter sized rootlets noted	(0.80)		
0.50 0.50	ES 1 B 2				0.80 +23.57		
			2 Stiff to very stiff brown sandy gravelly CLAY. Gravels are subangular to subrounded fine to coarse of finely laminated mudstone, sandstone, siltstone and occasional coal. Numerous millimetre sized rootlets within clay fabric. Occasional subangular 0.2m cobbles of fractured sandstone and subrounded finely laminated mudstone.		(1.40)		
1.00 1.00	D 3 B 4						
2.00	D 5			1.90-2.20 m Clay is occasionally mottling blue. Gravels are subangular fine of mudstone, sandstone and quartzite. Clay is recovering as medium to coarse gravels and cobbles.			
2.20	B 6		3 Possible MUDSTONE. JCB has very little recovery. EXPLORATORY HOLE ENDS AT 2.20 m		2.20 +22.17		
Depth	Type & No.	Records Date					

Groundwater Entries

No.	Struck	Post Strike (m)	Behaviour
None observed (see Key Sheet)			

Depth Related Remarks

From	to (m)	
1.00		Hand vane - no recovery

Stability Stable

Shoring None

Weather Warm and sunny

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25 (c) MESG HERI (288), 07/11/2003 10:02:22 AGS

Project	Cronton Colliery
Project No.	F3605
Carried out for	Maro Developments

Trial Pit

TP35

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAR	Start 05/08/2003	Equipment, Methods and Remarks	Dimensions and Orientation	Ground Level +29.90 mOD
Checked by JSN	End 05/08/2003	JCB	Width 1.00 m Length 4.00 m	Coordinates E 346960.68 National Grid N 389533.73

Samples and Tests

Depth	Type & No.	Date Records
0.90	ES 1	
0.90	D 2	
0.90	B 3	
2.00	ES 4	
2.00	D 5	
2.00	B 6	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 Straw overlying brown TOPSOIL. 0.20-0.50 m Fine to medium grained sand lens on face D only.	(0.50)		
	0.50 +29.40		
2 Light brown to orange brown soft very sandy gravelly CLAY. Gravels are subangular to subrounded fine to coarse of fine grey or red sandstone, finely laminated mudstone and quartz. 1.50-2.39 m Clay is becoming very gravelly. Gravels are mainly fine to coarse of sandstone. 1.70-2.39 m Occasional subrounded cobbles of finely laminated mudstone.	(1.89)		
	2.39 +27.51		
3 Yellow grey moderately weak to moderately strong fine to medium SANDSTONE recovered as angular coarse gravels and cobbles.	2.40 +27.50		
EXPLORATORY HOLE ENDS AT 2.40 m			

Depth	Type & No.	Records Date

Groundwater Entries

No. Struck	Post Strike (m)	Behaviour
None observed (see Key Sheet)		

Depth Related Remarks

From	to (m)	
0.70		Hand vane - 20kPa,25kPa, 27.5 kPa

Stability Stable

Shoring None

Weather Warm and sunny

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MEXC HSH (2B8, 07/11/2003 10:02:39

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP36

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAR Checked by JSN	Start 05/08/2003 End 05/08/2003	Equipment, Methods and Remarks JCB	Dimensions and Orientation Width 1.10 m Length 4.10 m A B C D → 326 (Deg)	Ground Level +26.70 mOD Coordinates E 346984.40 National Grid N 389435.61

Samples and Tests

Depth	Type & No.	Date Records
0.25	B 1	
1.00	ES 2	
1.00	D 3	
1.00	B 4	
2.00	ES 5	
2.00	D 6	
2.00	B 7	
3.00	B 10	
3.00	ES 8	
3.00	D 9	

Depth	Type & No.	Records Date

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 Straw overlying brown TOPSOIL.	(0.50)		
	0.50 +26.20		
2 Orange brown occasionally mottling grey sandy gravelly CLAY. Gravels are subrounded fine to coarse of fine grey sandstone, finely mudstone, fractured coal and dark grey siltstone. Occasional subrounded cobbles of finely laminated mudstone and cobble sized medium grained sand inclusions.	(2.50)		
	3.00 +23.70		
3 Soft to firm brown grey mottling grey blue sandy very gravelly CLAY. Gravels are subangular to subrounded of finely laminated mudstone, siltstone and grey sandstone.	(0.30)		
	3.30 +23.40		
4 Blue grey fine to coarse SANDSTONE.			
EXPLORATORY HOLE ENDS AT 3.30 m			

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

0.70 Hand vane - 20kPa, 25kPa, 25kPa

Stability Stable

Shoring None

Weather Warm and sunny

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MEBO HBIII (298). 07/11/2003 10:02:37

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Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP37

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAR Checked by JSN	Start 06/08/2003 End 06/08/2003	Equipment, Methods and Remarks JCB	Dimensions and Orientation Width 1.00 m Length 4.30 m 138 (Deg)	Ground Level +24.65 mOC Coordinates E 346936.49 National Grid N 389330.34

Samples and Tests

Depth	Type & No.	Date Records
0.50	ES 1	
0.50	D 2	
0.50	B 3	
0.70	B 4	
1.00	D 5	
2.00	D 6	
2.30	B 7	
3.00	D 8	
3.50	D 9	
4.00	D 10	
4.50	D 11	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 Grass and moss overlying dark brown TOPSOIL with numerous millimeter sized rootlets.	0.10 +24.55		
2 Orange gravelly fine to medium grained SAND. Gravels are subangular to subrounded fine to coarse of sandstone, mudstone and quartz. Occasional to frequent soft sandy clay inclusions.	0.30 +24.35		
3 Firm red brown mottling grey blue very sandy gravelly CLAY with numerous millimeter sized rootlets. Gravels are subangular fine to coarse of mudstone, sandstone, quartz and coal.	(0.45)		
4 Firm brown mottling grey sandy gravelly CLAY. Gravels are subangular to subrounded fine to coarse of sandstone,finely laminated mudstone and coal. Occasional to few brown yellow cobble sized sand lenses.	0.75 +23.90		
	(1.45)		
5 Soft to firm gravelly to very gravelly CLAY. Gravels are subangular to platy medium to coarse of finely laminated mudstone and occasional siltstone and fractured coal. Occasional yellow brown sand lenses. Clay recovered as gravels and cobbles.	2.20 +22.45		
	(2.30)		
3.90-4.50 m Occasional boulders (0.3m diameter) of angular coal, mudstone and finely bedded grey sandstone noted.			
EXPLORATORY HOLE ENDS AT 4.50 m	4.50 +20.15		

Depth	Type & No.	Records Date

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)	
0.60		Hand vane - 63kPa, 70kPa, 65kPa
0.90		Hand vane on excavated clay - 45kPa, 50kPa

Stability Stable

Shoring None

Weather Warm and sunny

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP38

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by AR Checked by JSN	Start 05/08/2003 End 05/08/2003	Equipment, Methods and Remarks JCB 3CX Machine excavated	Dimensions and Orientation Width 1.00 m Length 3.00 m	Ground Level +20.30 mOD Coordinates E 346971.73 National Grid N 389187.35

Samples and Tests

Depth	Type & No.	Date Records
0.50	B 1	
0.50	D 2	
0.50	ES 3	
1.00	B 4	
1.00	D 5	
1.00	ES 6	
2.00	B 7	
2.00	D 8	
2.00	ES 9	
2.50	B 10	
2.50	D 11	
2.50	ES 12	
3.00	B 13	
3.00	D 14	
3.00	ES 15	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 Dark brown sandy TOPSOIL, fibrous with some subrounded fine and medium gravels	0.20 +20.10		
2 Firm red brown very sandy CLAY with rare medium subrounded gravels	(0.70)		
3 Soft to firm red brown very sandy CLAY with rare medium subrounded gravels and some fine subrounded gravels	0.90 +19.40		
	(2.10)		
EXPLORATORY HOLE ENDS AT 3.00 m	3.00 +17.30		

Depth	Type & No.	Records Date

Groundwater Entries

No. Struck	Post Strike (m)	Behaviour
None observed (see Key Sheet)		

Depth Related Remarks

From	to (m)	
0.50		Hand vane - 76kPa, 84kPa, 90kPa
1.00		Hand vane - 45kPa, 40kPa, 33kPa
2.00		Hand vane - 40kPa, 45kPa, 33kPa
2.50		Hand vane - 72kPa, 70kPa, 74kPa
3.00		Hand vane - 80kPa, 40kPa, 61kPa

Stability

Shoring

Weather

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

Project	Cronton Colliery
Project No.	F3605
Carried out for	Maro Developments

Trial Pit

TP39

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAR Checked by JSN	Start 08/08/2003 End 08/08/2003	Equipment, Methods and Remarks JCB Millimeter sized rootlets to 0.4m No worms noted.	Dimensions and Orientation Width 0.80 m Length 4.10 m A B C D → 122 (Deg)	Ground Level +24.63 mOD Coordinates E 346892.83 National Grid N 389328.55

Samples and Tests

Depth	Type & No.	Date Records
0.10-0.20	ES 1	
0.10-0.20	D 2	
0.50-0.60	ES 3	
0.50-0.60	D 4	
1.00-1.20	ES 5	
1.00-1.20	D 6	

Strata

Description	Depth, *Level* (Thickness)	Legend	Backfill/ Instrument
1 Grass overlying dark brown sandy gravelly TOPSOIL. Gravels are subrounded fine to medium of yellow sandstone, fine grey sandstone and mudstone. Numerous millimetre scale rootlets to base.	(0.35)		
	0.35 *+24.28*		
2 Soft to firm yellow orange occasionally mottling grey sandy slightly gravelly CLAY. Sand is fine to coarse of quartz. Gravels are subrounded fine of mudstone coal, fine grey sandstone, fine yellow sandstone. Rootlets noted in first 5 cm.	(0.85)		
EXPLORATORY HOLE ENDS AT 1.20 m	1.20 *+23.43*		

Depth	Type & No.	Records Date

Groundwater Entries

No. Struck	Post Strike Behaviour (m)
None observed (see Key Sheet)	

Depth Related Remarks

From	to (m)	
0.20		Hand penetrometer - 2.0kg/cm2, 1.7kg/cm2, 2.25kg/cm2
0.55		Hand penetrometer - 2.5kg/cm2, 3.0kg/cm2, 3.25kg/cm2
1.20		Hand penetrometer - 2.5kg/cm2, 3.0kg/cm2, 3.25kg/cm2

Stability Stable

Shoring None

Weather Warm and sunny

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25 (c) MEBG HOME (286), 07/11/2003 10:01:37 AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP4/01

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAR Checked by JSN	Start 08/08/2003 End 08/08/2003	Equipment, Methods and Remarks JCB No worms nor rootlets noted.	Dimensions and Orientation Width 0.75 m Length 3.80 m 70 (Deg)	Ground Level +24.24 mOD Coordinates E 347036.92 National Grid N 389239.75

Samples and Tests

Depth	Type & No.	Date Records
0.10-0.20	ES 1	
0.10-0.20	D 2	
0.50-0.60	ES 3	
0.50-0.60	D 4	
1.00-1.20	ES 5	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 MADE GROUND: Firm sandy gravelly CLAY. Sand is fine to medium of coal dust. Gravels are subangular to subrounded fine to coarse of coal, brick, fine yellow sandstone, finely laminated mudstone, occasional ceramics and glass. Occasional half brick fragments.	(0.60)		
2 MADE GROUND: Grey to dark grey clayey SAND and GRAVEL. Sand is fine to coarse of mudstone and quartz. Gravels are subangular to subrounded fine to coarse of mudstone.	0.60 +23.64		
3 MADE GROUND: Orange sandy GRAVEL. Sand is fine to coarse of brick and coal. Gravels are angular to subangular fine to coarse of brick, grey sandstone, and occasional finely laminated mudstone. Occasional gravelly clay inclusions. Gravels within clay matrix are subangular fine to coarse of coal.	0.78 +23.46 (0.42)		
EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +23.04		

Depth	Type & No.	Records Date

Groundwater Entries

No.	Struck	Post Strike	Behaviour (m)
None observed (see Key Sheet)			

Depth Related Remarks

From	to (m)	
0.15		Hand penetrometer - 4.5kg/cm2, 4.5kg/cm2, 4.5kg/cm2
0.55		Hand penetrometer - 4.5kg/cm2, 4.5kg/cm2, 4.5kg/cm2

Stability Stable

Shoring None

Weather Warm and sunny

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP4/02

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAR	Start 08/08/2003	Equipment, Methods and Remarks	Dimensions and Orientation	Ground Level +23.35 mOD
Checked by JSN	End 08/08/2003	JCB Maximum depth of rootlets 0.52m No worms noted.	Width 0.90 m Length 3.00 m A B C D 88 (Deg)	Coordinates E 347138.48 National Grid N 389166.35

Samples and Tests

Depth	Type & No.	Date Records
0.10-0.20	ES 1	
0.10-0.20	D 2	
0.50-0.60	ES 3	
0.50-0.60	D 4	
1.00-1.20	ES 5	
1.00-1.20	D 6	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 MADE GROUND: Grass overlying black gravelly SAND. Gravels are subangular to subrounded fine to coarse of mainly coal with occasional mudstone and sandstone. 0.6m diameter subrounded fine grey sandstone boulder noted. Few to numerous very sandy clay inclusions. Sand is fine to medium of coal. Numerous millimetre scale rootlets.	(0.48)		
2 MADE GROUND: Black fine to medium SAND of coal with occasional gravelly clay inclusions. Gravels are subangular fine to medium of coal. 0.48-0.70 m Face C - small inclusion of fine to medium red gravelly sand. Gravels are subangular fine to coarse of mudstone. 0.50-1.20 m Occasional cobbles (approx. 0.4m diameter) of brick and yellow sandstone.	0.48 +22.87 (0.72)		
EXPLORATORY HOLE ENDS AT 1.20 m	1.20 +22.15		

Depth	Type & No.	Records Date

Groundwater Entries

No.	Struck	Post Strike (m)	Behaviour
None observed (see Key Sheet)			

Depth Related Remarks

From	to (m)	
0.50		Hand penetrometer - 1.5kg/cm2, 1.25kg/cm2, 1.5kg/cm2.
1.20		Hand penetrometer - 1.5kg/cm2, 2.0kg/cm2, 2.0kg/cm2.

Stability Stable

Shoring None

Weather Warm and sunny

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25 (c) MESG HBIII (288), 07/11/2003 10:01:45 AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP4/03

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by AR Checked by JSN	Start 05/08/2003 End 05/08/2003	Equipment, Methods and Remarks JCB 3CX Machine excavated	Dimensions and Orientation Width 1.00 m Length 3.00 m	Ground Level +22.76 mOD Coordinates E 346992.23 National Grid N 389236.34

Samples and Tests			Strata			
Depth	Type & No.	Date Records	Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
			1 Firm brown sandy TOPSOIL with rare medium subangular gravels	(0.30)		
				0.30 +22.46		
			2 Firm red brown sandy CLAY with some mottling of grey sandy lenses and rare fine subangular gravels			
0.50	B 1					
0.50	D 2					
0.56	ES 3					
				(1.20)		
1.00	B 4					
1.00	D 5					
1.00	ES 6					
				1.50 +21.26		
1.50	B 7		3 Firm dark red brown sandy CLAY with some fine subangular gravels and occasional red brown sandy lenses			
1.50	D 8					
1.50	ES 9					
2.00	B 10					
2.00	D 11					
2.50	D 12					
				(2.50)		
3.00	D 13					
3.50	D 14					
4.00	D 15		EXPLORATORY HOLE ENDS AT 4.00 m	4.00 +18.76		
Depth	Type & No.	Records Date				

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From	to (m)	
0.50		Hand vane - 40kPa, 43kPa, 45kPa
1.00		Hand vane - 45kPa, 50kPa, 48kPa.
1.50		Hand vane - 40kPa, 43kPa, 55kPa.
2.00		Hand vane - 45kPa, 50kPa, 48kPa.
2.50		Hand vane - 61kPa, 58kPa, 56kPa.

Stability

Shoring

Weather

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MEAS HSM (2000, 07/11/2003 10:02:59

AGS

Project	Cronton Colliery
Project No.	F3605
Carried out for	Maro Developments

Trial Pit

TP40

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAR Checked by JSN	Start 06/08/2003 End 06/08/2003	Equipment, Methods and Remarks JCB	Dimensions and Orientation Width 0.85 m Length 4.20 m 346 (Deg)	Ground Level +27.32 mOD Coordinates E 347074.26 National Grid N 389389.64

Samples and Tests

Depth	Type & No.	Date Records
0.25	D 1	
0.60	ES 2	
1.00	D 3	
1.00	B 4	
1.50	D 5	
1.50	B 6	
2.00	D 7	
2.00	B 8	
3.00	D 9	
3.50	B 10	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 Straw overlying dark brown slightly sandy TOPSOIL.	(0.48)		
2 Orange red brown clayey gravelly SAND with soft to firm red gravelly clay inclusions. Gravels are subrounded fine to coarse of fine grey sandstone, mudstone, and occasional fine yellow sandstone. Gravels within the clay matrix are subangular fine to coarse of sandstone and mudstone.	0.48 +26.84 (0.82)		
3 Soft to firm red brown very gravelly CLAY. Gravels are subangular to subrounded fine to coarse of coal, finely laminated mudstone, micaceous medium grained grey sandstone and occasional siltstone. Gravel sized yellow to green clay/silt and fine grey sand inclusions noted.	1.30 +26.02 (0.60)		
4 Blue green to brown clayey SAND and GRAVEL of subangular to platy fine to coarse mudstone.	1.90 +25.42 (1.10)		
5 Firm blue grey very gravelly CLAY. Gravels are subangular to platy fine to coarse of mudstone (Possible weathered bedrock).	3.00 +24.32		
6 Weak grey thinly laminated MUDSTONE recovered as angular to platy gravels and cobbles.	3.20 +24.12 (0.50)		
EXPLORATORY HOLE ENDS AT 3.70 m	3.70 +23.62		

Depth	Type & No.	Records Date

Groundwater Entries

No. Struck Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From to (m)

0.90 Hand vane - 48kPa, 25kPa, 30kPa

1.50 Hand vane on excavated clay - 30kPa and 35kPa.

Stability Stable

Shoring None

Weather Dry and sunny

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

Project Cronton Colliery

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Carried out for Maro Developments

Trial Pit

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Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAR Checked by JSN	Start 07/08/2003 End 07/08/2003	Equipment, Methods and Remarks JCB	Dimensions and Orientation Width 0.90 m Length 4.10 m 294 (Deg)	Ground Level +21.39 mOD Coordinates E 347080.27 National Grid N 389176.27

Samples and Tests			Strata			
Depth	Type & No.	Date Records	Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
			1 Grass overlying dark brown TOPSOIL.	0.10 +21.29		
0.40 0.40 0.40	ES 1 D 2 B 3		2 MADE GROUND: Dark brown to black gravelly SAND with numerous soft gravelly clay inclusions. Sand is fine to medium of ash and coal. Gravels are angular to subrounded fine to coarse of red brick, yellow sandstone and coal. Occasional creosoted wood fragments (approximately 0.4m length). Gravels within 3 clay fraction are subangular to subrounded fine of brick, mudstone and siltstone.	(0.40)		
			MADE GROUND: Very soft black sandy slightly gravelly CLAY. Sand is fine of ash and coal. Gravel is subangular fine of coal and occasional yellow sandstone. Occasional gravel sized wood fragments noted. Occasional to few cobble to boulder sized fine to medium sand inclusions noted. Sand is of ash and coal.	0.50 +20.89		
1.00 1.00 1.00	ES 4 D 5 B 6			(1.20)		
			4 Orange brown sandy GRAVEL. Sand is fine to medium of ash. Gravels are subangular fine to coarse of clinker.	1.70 +19.69		
2.20 2.20	ES 7 D 8			(1.25)		
			5 MADE GROUND: Black very silty fine to coarse SAND of ash and coal.	2.95 +18.44		
3.00 3.00 3.00	D 10 B 11 ES 9	includes vile		(1.45)		
4.00 4.00	ES 12 D 13	includes vile		4.40 +16.99		
4.50 4.50 4.50	ES 14 D 15 B 16	includes vile	6 Soft grey blue occasionally brown sandy gravelly CLAY. Sand is fine to coarse of quartz. Gravels are subrounded fine to coarse of sandstone and mudstone.	4.50 +16.89		
			EXPLORATORY HOLE ENDS AT 4.50 m			
Depth	Type & No.	Records Date				

Groundwater Entries
No. Struck Post Strike Behaviour (m)
None observed (see Key Sheet)

Depth Related Remarks
From to (m)
0.90 Hand vane - 35kPa, 45kPa, 35kPa.
1.90 Hand vane on excavated clay - 9.5kPa, 12kPa, 10kPa

Stability Stable
Shoring None
Weather Warm and sunny

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.
Scale 1:25 (c) ME3G HBIB (2000). 07/11/2003 10:02:15

Project Cronton Colliery
Project No. F3605
Carried out for Maro Developments

Trial Pit
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Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAR Checked by JSN	Start 05/08/2003 End 05/08/2003	Equipment, Methods and Remarks JCB	Dimensions and Orientation Width 1.10 m Length 4.20 m A B C D → 0 (Deg)	Ground Level +35.48 mOD Coordinates E 347147.11 National Grid N 389534.46

Samples and Tests

Depth	Type & No.	Date Records
0.50	ES 1	
1.00	D 2	
1.00	B 3	
1.30	ES 4	
1.30	B 5	
1.70	ES 6	
1.70	D 7	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 Straw overlying light brown TOPSOIL.	(0.45)		
2 Dark brown to orange brown clayey very gravelly SAND. Sand is fine to coarse of quartz. Gravels are subrounded fine to coarse of fine grey and yellow sandstone and mudstone. 0.80-1.00 m Old clay land drain noted. No obvious contamination or water noted.	0.45 +35.03 (0.85)		
3 Black coal recovered as silt and sand.	1.30 +34.18 (0.40)		
4 Blue grey occasionally yellow slightly gravelly CLAY with silt partitions. Gravels are subrounded fine to medium siltstone and mudstone. Clay is recovering as 5 gravel sized fragments.	1.70 +33.78 1.90 +33.58		
Grey and black thinly laminated carbonaceous MUDSTONE.	(1.00)		
EXPLORATORY HOLE ENDS AT 2.90 m	2.90 +32.58		

Depth	Type & No.	Records Date

Groundwater Entries
No. Struck Post Strike Behaviour (m)
None observed (see Key Sheet)

Depth Related Remarks
From to (m)

Stability Stable
Shoring None
Weather Warm and sunny

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25 (c) MESG HBIN (288), 07/11/2003 10:03:23 AGS

Project Cronton Colliery
Project No. F3605
Carried out for Maro Developments

Trial Pit
TP43
Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAR Checked by JSN	Start 06/08/2003 End 06/08/2003	Equipment, Methods and Remarks JCB	Dimensions and Orientation Width 0.90 m Length 4.10 m A B C D → 10 (Deg)	Ground Level +37.63 mOD Coordinates E 347299.86 National Grid N 389480.26

Samples and Tests			Strata			
Depth	Type & No.	Date Records	Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
			1 Straw overlying dark brown slightly sandy TOPSOIL.	(0.40)		
0.30	B 1			0.40 +37.23		
0.50	ES 2		2 Yellow orange brown very clayey SAND. Sand is subrounded fine to medium of quartz. Numerous soft sandy clay inclusions.			
0.50	D 3					
0.50	B 4		3 Firm blue grey sandy CLAY with occasional millimetre sized rootlets. Recovered as gravel and cobble sized fractions.	0.60 +37.03		
1.00	D 5					
1.00	B 6			(1.30)		
1.90	D 7					
1.90	B 8		4 Grey finely laminated carbonaceous MUDSTONE recovered as subangular to platy fine to coarse gravels and cobbles.	1.90 +35.73		
				(0.80)		
			EXPLORATORY HOLE ENDS AT 2.70 m	2.70 +34.93		
Depth	Type & No.	Records Date				

Groundwater Entries

No. Struck | Post Strike Behaviour (m)

None observed (see Key Sheet)

Depth Related Remarks

From | to (m)

0.90 Hand vane - 20kPa, 30kPa, 40kPa

Stability Stable

Shoring None

Weather Warm and sunny

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25 (c) MESG H3BN (298), 07/11/2003 10:03:31 AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP44

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAR Checked by JSN	Start 06/08/2003 End 06/08/2003	Equipment, Methods and Remarks JCB	Dimensions and Orientation Width 0.90 m Length 4.10 m A B C D → 18 (Deg)	Ground Level +38.61 mOD Coordinates E 347380.55 National Grid N 389438.36

Samples and Tests

Depth	Type & No.	Date Records
0.25	D 1	
0.50	ES 2	
1.00	D 3	
1.80	D 4	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 Straw overlying dark brown slightly sandy TOPSOIL.	(0.40)		
2 Orange brown slightly gravelly SAND with numerous to frequent gravels sized sandy clay inclusions. Sand is fine to coarse of quartz.. Gravels are subrounded fine to coarse of finely laminated mudstone.	0.40 +38.21		
3 Soft to firm blue mottling orange sandy to very sandy CLAY recovering as sands, gravels and cobbles. 1.00-1.90 m Clay becoming very sandy. 1.60-1.90 m Clay becoming very gravelly. Gravels are platy fine to coarse of finely laminated mudstone.	0.65 +37.96 (1.25)		
4 Grey finely laminated carbonaceous MUDSTONE recovered as subangular to platy fine to coarse gravels and cobbles.	1.90 +36.71 (0.80)		
EXPLORATORY HOLE ENDS AT 2.70 m	2.70 +35.91		

Depth	Type & No.	Records Date

Groundwater Entries

No. Struck	Post Strike Behaviour (m)
None observed (see Key Sheet)	

Depth Related Remarks

From	to (m)	
0.90		Hand vane - 20kPa, 45kPa, 40kPa.

Stability Stable

Shoring None

Weather Warm and sunny

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25 (c) MESG HBR (2985, 07/11/2003 10:03:38 AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP45

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAR	Start 07/08/2003	Equipment, Methods and Remarks	Dimensions and Orientation	Ground Level +37.63 mOD
Checked by JSN	End 07/08/2003	JCB Trial pit elongated whilst looking for underground concrete and then backfilled to standard dimensions before continuing.	Width 0.70 m Length 3.80 m A B C D → 196 (Deg)	Coordinates E 347449.90 National Grid N 389376.77

Samples and Tests

Depth	Type & No.	Date Records
0.60	D 1	
0.60	B 2	
1.00	ES 3	
1.10	ES 4	
1.10	D 5	
1.10	B 6	
2.30	ES 7	
2.30	D 8	
2.30	B 9	
3.00	D 10	
3.40	D 11	
3.40	B 12	

Strata

Description	Depth, Level (Thickness)	Legend	Backfill/ Instrument
1 Grass overlying dark brown TOPSOIL with numerous millimeter scale rootlets.	0.10 +37.53		
2 MADE GROUND: Brown SAND and GRAVEL with few to numerous firm gravelly clay inclusions. Sand is fine to coarse of quartz. Gravels are angular to subangular fine to coarse of mudstone, fine grey sandstone, brick and occasional clinker. Occasional half bricks noted.	(1.40)		
0.90-1.60 m Old brick wall noted 1.00-1.30 m Sandy gravel lens noted. Gravels are angular to subangular fine to coarse of red brick.			
3 MADE GROUND: Dark brown and cream ashy/silty SAND and GRAVEL. Sands are fine to coarse of ash. Gravels are angular to subangular fine to coarse of clinker,	1.50 +36.13		
4 mudstone, medium grained yellow sandstone, coal and red brick. Numerous half and quarter brick fragments.	1.70 +35.93		
Soft becoming firm to stiff grey mottled yellow sandy gravelly CLAY. Gravels are subangular fine to coarse of coal, finely laminated mudstone. Occasional to few gravel sized grey fine to medium sand lenses.	(1.50)		
3.00-3.20 m Clay recovering as gravels and cobbles.			
5 Weak grey brown MUDSTONE recovered as angular fine to coarse gravel and cobbles. Gravels within clay fraction are now mainly angular to platy finely laminated mudstone.	3.20 +34.43		
EXPLORATORY HOLE ENDS AT 3.40 m	3.40 +34.23		

Depth	Type & No.	Records Date

Groundwater Entries

No.	Struck (m)	Post Strike Behaviour
1	1.45	Slight trickle

Depth Related Remarks

From	to (m)	
3.00		Hand vane - 82kPa, 118kPa, 90kPa

Stability Stable

Shoring None

Weather Warm and sunny

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

(c) MESG Hilli (2000), 07/1 1/2003 10:03:45

AGS

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP46

Sheet 1 of 1

Trial Pit Log

Soil Mechanics

Logged by CAR Checked by JSN	Start 07/08/2003 End 07/08/2003	Equipment, Methods and Remarks JCB 3CX	Dimensions and Orientation Width 0.90 m Length 3.10 m 304 (Deg)	Ground Level +37.48 mOD Coordinates E 347457.07 National Grid N 389382.24

Samples and Tests

Depth	Type & No.	Date Records
0.60	ES 1	
0.60	D 2	
0.60	B 3	
1.00	ES 4	
1.00	D 5	
1.20	B 6	
1.30	ES 7	
1.30	D 8	
1.30	B 9	
2.00	ES 10	
2.00	D 11	
2.00	B 12	
3.00	D 13	
4.00	D 14	
~~4.20~~	~~W 15~~	
4.20	W 16	

Strata

Description	Depth, *Level* (Thickness)	Legend	Backfill/ Instrument
1 Grass and nettles overlying brown very gravelly SAND. Gravels are subangular fine to coarse of fine to medium yellow sandstone, mudstone and fine grey sandstone. Occasional to numerous gravels sized firm brown sandy clay inclusions.	(0.60)		
2 MADE GROUND: Dark brown gravelly SAND with firm gravelly clay inclusions. SAnd is fine to coarse. Gravels are subangular fine to coarse of clinker, brick and medium grained grey sandstone, finely laminated mudstone. Occasional quarter and half brick fragments.	0.60 *+36.88* (0.45)		
3 MADE GROUND: Dark brown to black SAND and GRAVEL. Sands are fine to coarse of ash and coal. Gravels are subangular to platy fine to coarse of clinker, finely laminated mudstone, coal and brick.	1.05 *+36.43*		
4	1.30 *+36.18*		
5 MADE GROUND: Dark brown to black sandy GRAVEL. Sand is dine to coarse of ash. Gravels are subangula- to subrounded fine to coarse of clinker, mudstone and sandstone. Occasional creosoted wood fragments. 1.60-1.70 m Old steel cable noted (possible high voltage). Only a residual reading noted with CAT scan. Cables previously broken before excavation.	1.40 *+36.08*		
Yellow to orange silty fine to medium SAND.	(0.60)		1
6 Red silty fine to medium SAND.	2.00 *+35.48*		
	(2.20)		
EXPLORATORY HOLE ENDS AT 4.20 m	4.20 *+33.28*		

Depth	Type & No.	Records Date

Groundwater Entries

No.	Struck (m)	Post Strike	Behaviour
1	2.00		Steady but slow flow

Depth Related Remarks
From to (m)

Stability Stable

Shoring None

Weather Warm and sunny

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:25

Project Cronton Colliery

Project No. F3605

Carried out for Maro Developments

Trial Pit

TP47

Sheet 1 of 1

ENCLOSURE B
INSTRUMENTATION MONITORING

Groundwater Monitoring	B1
Gas Monitoring	B2

Mowlem Environmental Sciences Group

Gas Monitoring Record

Project No: F3605
Date: 18/08/2003
Operator: JSN
Equipment Used: GI Infra red Gas Analyser

Project: Cronton Colliery
State of Ground: Dry
Wind: light
Wind Direction:
Cloud Cover: Slight
Precipitation: None

Sheet No: 1

Borehole/ Instrument	Barometric Pressure (mbars)	Air temp (°C)	Depth of Installation (m BGL)	Time of Reading hh:mm:ss	Depth to Groundwater (m BGL)	Reading Depth (mBGL)	Differential Pressure (Pa)	FlowRate (l/hr)	CH_4 (% vol)	CH4 (% LEL)	O_2 (% vol)	CO_2 (% vol)	CO (% vol)	H_2S (ppm)	Ammonia (ppm)	Remarks
Detection Limits																
BH131	1015				4.20			0.0	0.0		17.8	1.9		0		
BH120	1015				3.08			0.0	0.0		19.8	1.0		0		
BH2	1015				3.95			0.0	2.0		0.0	16.6		0		
P2/12	1015				0.15			0.0	0.0		19.8	0.7		0		
BH122	1015				3.07			0.0	1.2		6.2	5.9		0		
BH113	1015				1.72			0.0	0.6		15.8	4.4		0		
BH112	1015				0.53			0.0	0.0		20.7	0.0		0		
BH20	1015				2.22			1.4	3.9		0.0	2.7		0		

Form Name GMR, 07/03

Mowlem Environmental Sciences Group

Gas Monitoring Record

Project No: F3605
Date: 19/08/2003
Operator: JSN
Equipment Used: GI Infra red Gas Analyser

Project: Cronton Colliery
State of Ground: Dry
Wind: light
Wind Direction:
Cloud Cover: Slight
Precipitation: None

Sheet No: 1

Borehole/ Instrument	Barometric Pressure (mbars)	Air temp (°C)	Depth of Installation (m BGL)	Time of Reading hh:mm:ss	Depth to Groundwater (m BGL)	Reading Depth (mBGL)	Differential Pressure (Pa)	FlowRate (l/hr)	CH_4 (% vol)	CH4 (% LEL)	O_2 (% vol)	CO_2 (% vol)	CO (% vol)	H_2S (ppm)	Ammonia (ppm)	Remarks
Detection Limits																
BH15	1021				4.00			0.0	2.8		0.6	16.0		0		
BH16	1021				4.87			-10.0	0.3		16.3	3.0		0		
BH7	1021				4.94			0.0	1.4		0.5	4.7		0		
BH6	1021				4.70			0.0	0.4		15.4	4.9		0		
BH5	1021				4.90			0.0	2.0		5.9	15.0		1		
BH3	1021				7.40			0.0	1.6		0.1	12.4		0		
BH1	1021				5.25			0.0	2.5		0.0	2.3		0		
BH8a	1021				5.52			0.0	1.3		7.7	1.6		0		
BH9a	1021				1.73			0.0	0.0		19.3	0.2		0		
BH14	1021				9.80			0.0	0.1		20.2	1.8		0		

Form Name GMR, 07/03

Mowlem Environmental Sciences Group

Gas Monitoring Record

Project No: F3605
Date: 21/08/2003
Operator: JSN
Equipment Used: GI Infra red Gas Analyser

Project: Cronton Colliery
State of Ground: Dry
Wind: light
Wind Direction: NE
Cloud Cover: Slight
Precipitation: None

Sheet No: 1

Borehole/ Instrument	Barometric Pressure (mbars)	Air temp (°C)	Depth of Installation (m BGL)	Time of Reading hh:mm:ss	Depth to Groundwater (m BGL)	Reading Depth (mBGL)	Differential Pressure (Pa)	FlowRate (l/hr)	CH_4 (% vol)	CH4 (% LEL)	O_2 (% vol)	CO_2 (% vol)	CO (% vol)	H_2S (ppm)	Ammonia (ppm)	Remarks
Detection Limits																
BH117	1013				8.70			0.0	0.0		6.4	3.3		0		
BH116	1013				dry			0.0	0.0		12.7	5.8		0		
BH110R	1013				12.62			0.0	5.8		9.5	2.8		0		
BH121R	1013				1.45			0.0	0.0		20.3	0.0		0		
BH124	1013				4.32			0.0	0.0		19.5	1.1		0		
BH124R	1013				2.93			0.0	0.0		20.2	0.0		0		
BH126	1013				1.47			0.0	0.0		19.8	0.7		0		
BH130	1013				1.97			0.0	0.0		19.6	0.3		0		
BH129	1013				3.45			0.0	0.0		16.9	0.1		0		

Form Name GMR. 07/03

Mowlem Environmental Sciences Group

Gas Monitoring Record

Project No: F3605
Date: 08/09/2003
Operator: JSN
Equipment Used: GI Infra red Gas Analyser

Project: Cronton Colliery
State of Ground: Damp
Wind: Calm
Wind Direction:
Cloud Cover: Cloudy
Precipitation: Slight

Sheet No: 1

Detection Limits

Borehole/ Instrument	Barometric Pressure (mbars)	Air temp (°C)	Depth of Installation (m BGL)	Time of Reading hh:mm:ss	Depth to Groundwater (m BGL)	Reading Depth (mBGL)	Differential Pressure (Pa)	FlowRate (l/hr)	CH_4 (% vol)	CH4 (% LEL)	O_2 (% vol)	CO_2 (% vol)	CO (% vol)	H_2S (ppm)	Ammonia (ppm)	Remarks
BH131	1009		4.85	10.35.00	4.37			0.0	0.0	0	18.6	2.8		0		
BH124	1009		8.95	11.15.00	4.40			0.0	0.0	0	19.3	2.3		0		
BH124R	1009		9.60	11.40.00	3.00			0.0	0.0	0	20.6	0.0		0		
BH126	1009		3.54	12.05.00	2.51			0.0	0.0	0	20.3	0.5		0		
BH130	1009		5.98	12.30.00	2.21			0.0	0.0	0	20.6	0.0		0		
BH129	1009		3.50	13.00.00	3.25			0.0	0.0	0	17.6	0.1		0		
BH121	1009		11.00	13.20.00	1.63			0.0	0.0	0	20.5	0.0		0		
BH120	1009		6.00	13.45.00	3.25			0.0	0.0	0	18.8	1.8		0		
BH2	1009		5.20	14.10.00	3.94			0.0	0.0	0	0.1	19.0		0		
BH122	1009		4.50	14.35.00	3.02			0.0	0.0	0	6.0	7.6		0		
P2/12	1009		6.85	15.00.00	0.90			0.0	0.0	0	20.3	0.3		0		
BH113	1009		3.82	15.25.00	2.11			0.0	0.0	0	16.3	5.1		0		
BH112	1009		3.27	15.50.00	0.80			0.0	0.0	0	20.7	0.0		0		

Form Name GMR, 07/03

Mowlem Environmental Sciences Group

Gas Monitoring Record

Project No: F3605
Date: 09/09/2003
Operator: JSN
Equipment Used: GI Infra red Gas Analyser

Project: Cronton Colliery
State of Ground: Wet
Wind: Light
Wind Direction:
Cloud Cover: Cloudy
Precipitation: Slight

Sheet No: 1

Borehole/ Instrument	Barometric Pressure (mbars)	Air temp (°C)	Depth of Installation (m BGL)	Time of Reading hh:mm:ss	Depth to Groundwater (m BGL)	Reading Depth (mBGL)	Differential Pressure (Pa)	FlowRate (l/hr)	CH_4 (% vol)	CH4 (% LEL)	O_2 (% vol)	CO_2 (% vol)	CO (% vol)	H_2S (ppm)	Ammonia (ppm)	Remarks
Detection Limits																
BH15	1015		7.20	09.00.00	5.80			0.0	0.0	0	19.3	2.9		0		
BH16	1015		6.75	09.45.00	6.50			3.2	0.0	0	10.7	6.5		0		
BH20	1015		7.42	10.30.00	2.47			0.0	32.5	<<<	0.1	28.0		<<<		<<< = off the scale
BH116	1015		2.20	11.15.00	dry			0.0	0.0	0	18.7	2.7		0		
BH1	1015		6.93	11.30.00	6.73			0.0	0.1	3	0.1	24.0		0		
BH117	1015		8.70	12.00.00	8.68			0.0	0.0	0	5.9	4.1		0		
BH3	1015		7.83	12.45.00	7.34			0.0	0.0	0	20.6	0.0		0		
BH7	1015		5.81	13.05.00	5.10			0.0	0.0	0	3.6	4.4		0		
BH6	1015		6.50	13.30.00	5.12			0.0	0.0	0	17.6	4.0		0		
BH5	1015		2.95	13.45.00	2.94			0.0	0.0	0	12.9	10.0		0		
BH8	1015		5.67	14.00.00	5.51			0.0	1.6	33	0.1	2.8		0		
BH9	1015		4.10	14.15.00	2.05			0.0	0.0	0	0.0	3.8		0		
BH110R	1015		13.17	14.45.00	11.75			-2.5	0.9	18	18.4	1.4		0		
BH14	1015		12.00	15.10.00	9.80			0.0	0.0	0	20.1	2.0		0		

Form Name GMR. 07/03

Mowlem Environmental Sciences Grou[illegible]

Gas Monitorin[illegible] Record

Project No: F3605
Date: 22/09/2003
Operator: JSN
Equipment Used: GI Infra red Gas Analyser

Project: Cronton Colliery
State of Ground: Wet
Wind: Moderate
Wind Direction:
Cloud Cover: Cloudy
Precipitation: Moderate

Sheet No: 1

Borehole/ Instrument	Barometric Pressure (mbars)	Air temp (°C)	Depth of Installation (m BGL)	Time of Reading hh:mm:ss	Depth to Groundwater (m BGL)	Reading Depth (mBGL)	Differential Pressure (Pa)	FlowRate (l/hr)	CH_4 (% vol)	CH4 (% LEL)	O_2 (% vol)	CO_2 (% vol)	CO (% vol)	H_2S (ppm)	Ammonia (ppm)	Remarks
Detection Limits																
BH131	1001		4.85		4.45			0.0	0.0	0	18.7	3.0		0		
BH124	1001		8.95		4.54			0.0	0.0	0	18.3	2.6		0		
BH124R	1001		9.60		3.03			0.0	0.0	0	20.7	0.0		0		
BH126	1001		3.54		2.63			0.0	0.0	0	20.4	0.2		0		
BH130	1002		5.98		2.38			0.0	0.0	0	20.7	0.0		0		
BH129	1002		3.50		3.42			0.0	0.0	0	17.0	0.2		0		
BH121	1002		11.00		1.72			0.0	0.0	0	20.5	0.0		0		
BH120	1002		6.00		3.79			0.0	0.0	0	18.4	1.4		0		
BH2	1002		5.20		4.93			0.0	0.0	0	0.0	17.0		0		
BH122	1002		4.50		3.12			0.0	0.0	0	5.7	6.8		0		
P2/12	1002		6.85		1.09			0.0	0.0	0	18.5	2.0		0		
BH113	1002		3.82		2.28			0.0	0.0	0	16.3	4.2		0		
BH112	1002		3.27		0.84			0.0	0.0	0	20.5	0.1		0		
BH15	1003		7.20		5.96			0.0	0.0	24	0.9	16.0		0		
BH16	1003		6.75		6.50			0.0	3.0	0	11.0	6.4		0		
BH20	1003		7.42		2.58			0.0	0.0	>>>	0.2	29.0		52		>>> = off the scale
BH116	1002		2.20		dry			0.0	0.0	0	10.8	3.9		0		
BH1	1002		6.93		5.90			0.0	0.0	0	0.1	20.0		0		
BH117	1002		8.70		8.70			0.0	0.0	0	11.9	3.3		0		
BH3	1002		7.83		6.57			0.0	0.0	0	2.5	10.0		0		

Form Name GMR, 07/03

Mowlem Environmental Sciences Grou,

Gas Monitorin, Record

Project No	F3605	Project	Cronton Colliery	Sheet No	1
Date	23/09/2003	State of Ground	Wet		
		Wind	Light		
Operator	JSN	Wind Direction	South		
		Cloud Cover	None		
Equipment Used	GI Infra red Gas Analyser	Precipitation	None		

Borehole/ Instrument	Barometric Pressure (mbars)	Air temp (°C)	Depth of Installation (m BGL)	Time of Reading hh:mm:ss	Depth to Groundwater (m BGL)	Reading Depth (mBGL)	Differential Pressure (Pa)	FlowRate (l/hr)	CH_4 (% vol)	CH4 (% LEL)	O_2 (% vol)	CO_2 (% vol)	CO (% vol)	H_2S (ppm)	Ammonia (ppm)	Remarks
Detection Limits																
BH7	1020		5.81		5.32			0.0	0.0	0	7.0	3.2		0		
BH6	1020		6.50		5.36			0.0	0.0	0	18.6	2.7		0		
BH5	1020		2.95		2.90			0.0	0.0	0	10.0	9.9		0		
BH8	1021		5.67		5.60			0.0	1.6	32	0.1	2.8		0		
BH9	1020		4.10		2.26			0.0	0.0	0	0.0	3.6		0		
BH110R	1020		13.17		11.85			0.0	1.3	26	17.3	1.8		0		
BH14	1020		12.00		9.91			0.0	0.0	0	20.1	1.0		0		

Form Name GMR, 07/03

Mowlem Environmental Sciences Group

Gas Monitoring Record

Project No: F3605
Date: 20/10/2003
Operator: TB
Equipment Used: GI Infra red Gas Analyser

Project: Cronton Colliery
State of Ground: Dry
Wind: Light
Wind Direction: North East
Cloud Cover: Slight
Precipitation: None

Sheet No: 1

Borehole/ Instrument	Barometric Pressure (mbars)	Air temp (°C)	Depth of Installation (m BGL)	Time of Reading hh:mm:ss	Depth to Groundwater (m BGL)	Reading Depth (mBGL)	Differential Pressure (Pa)	FlowRate (l/hr)	CH_4 (% vol)	CH4 (% LEL)	O_2 (% vol)	CO_2 (% vol)	CO (% vol)	H_2S (ppm)	Ammonia (ppm)	Remarks
Detection Limits																
BH2	1013	10			3.93			0.0	0.0		0.1	11.0	0.0	0		
P2/12	1013	10			1.17			0.0	0.0		16.7	2.3	0.0	0		
BH3	1013	10			6.73			0.0	0.0		20.2	0.0	0.0	0		
BH5	1013	10			2.50			0.0	0.0		5.3	11.0	0.0	0		
BH6	1013	10			2.14			0.0	0.0		20.1	0.2	0.0	0		
BH7	1013	10			5.35			0.0	0.0		19.7	0.2	0.0	0		
BH8A	1013	10			DRY			0.0	0.2		8.2	1.8	9.7	0		
BH9A	1013	10			2.18			0.0	0.0		5.1	1.9	0.0	0		
BH14	1013	10			9.93			0.0	0.0		14.5	6.1	0.0	0		
BH15	1013	10			5.93			0.0	0.5		0.0	13.0	10.0	0		
BH16	1013	10			DRY			0.0	0.0		6.0	5.5	0.0	0		
BH110	1013	10			11.84			0.0	2.8		13.7	2.0	6.0	0		
BH112	1013	10			0.75			0.0	0.0		20.2	0.2	0.0	0		
BH113	1013	10			1.30			0.0	0.0		14.9	3.8	0.0	0		
BH116	1013	10			DRY			0.0	0.0		20.3	0.6	0.0	0		
BH117	1013	10			DRY			0.0	0.0		8.3	3.8	0.0	0		
BH120	1013	10			3.96			0.0	0.0		16.4	2.5	0.0	0		
BH20	1013	10			2.52			0.0	15.6		8.0	12.0	>>>>>	6		
BH121	1013	10			1.50			0.0	0.0		14.8	2.7	0.0	0		
BH122	1013	10			3.05			0.0	0.0		4.7	6.2	0.0	0		
BH124R	1013	10			2.95			0.0	0.0		20.4	0.0	0.0	0		
BH124	1013	10			4.48			0.0	0.0		19.0	1.5	0.0	0		
BH126	1013	10			2.62			0.0	0.0		19.7	0.4	0.0	0		
BH129	1013	10			DRY			0.0	0.0		13.1	0.4	0.0	0		
BH130	1013	10			2.07			0.0	0.0		20.3	0.1	0.0	0		
BH131	1013	10			4.46			0.0	0.0		20.4	0.1	0.0	0		

Mowlem Environmental Sciences Grou

Gas Monitorin Record

Project No: F3605

Date: 20/10/2003

Operator: TB

Equipment Used: GI Infra red Gas Analyser

Project: Cronton Colliery

State of Ground: Dry

Wind: Light

Wind Direction: North East

Cloud Cover: Slight

Precipitation: None

Sheet No: 2

Detection Limits

Borehole/ Instrument	Barometric Pressure (mbars)	Air temp (°C)	Depth of Installation (m BGL)	Time of Reading hh:mm:ss	Depth to Groundwater (m BGL)	Reading Depth (mBGL)	Differential Pressure (Pa)	FlowRate (l/hr)	CH_4 (% vol)	CH4 (% LEL)	O_2 (% vol)	CO_2 (% vol)	CO (% vol)	H_2S (ppm)	Ammonia (ppm)	Remarks
BH1	1013	10			5.90			0.0	0.0	20	0.1	2.0	0.0	0		

Form Name GMR, 07/03

ENCLOSURE C
IN SITU TESTING

Packer Tests

Sand Replacement Tests

Nuclear Density Tests

Packer Permeability Test

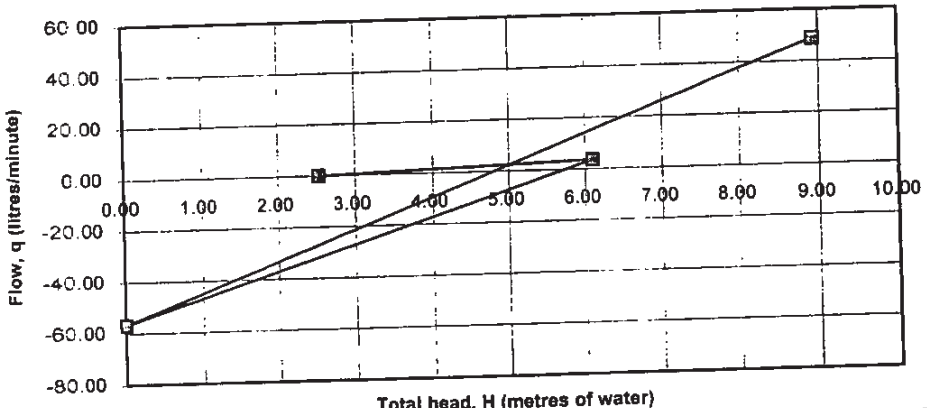
Borehole No.	BH121R	Test No.	1		
Test section from	9.60 m	to	12.20 m		
Length of test section (L)			2.60 m		
Diameter of test section (D)			120 mm		
Depth to water level before test			1.70 m	Date of test	13 Aug 2003
Depth to water level after test			1.35 m	Time of start	11:04
Gauge height above ground level (Hg)			0.83 m	Time of finish	13:15
Depth of borehole at time of test			19.60 m		
Depth of casing at time of test			4.00 m	Rock type	SANDSTONE with COAL bands
Groundwater level for analysis (Hw)			1.70 m		
Centre of test section			10.90 m		

Pressure gauge type	Analog	Drill rod type	HWY
Range	0 - 4 bar	Water source	Bowser
Number	VI3256	Pump type	CMO PS 55L
Flowmeter type	Kent	Test type	Single packer
Size	25mm	Packer type	Bimbar
Number	02A225807	Packer pressures (psi)	90

Stage	Gauge pressure (psi)	TIME (minutes) AND WATER QUANTITIES (litres)						Average flow, q (l/min)
1	10.15	Time	0	5	10	15	20	48.700
		Flowmeter reading	162.00	497.00	706.00	911.00	1136.00	
		Water take		335.0	209.0	205.0	225.0	
2	20.31	Time	0	5	10	15	20	-56.800
		Flowmeter reading	1136.0	1555.0	17888.0			
		Water take		419.0	16333.0	-17888.0	0.0	
3	5.08	Time	0	5	10	15	20	3.550
		Flowmeter reading	1826.0	1844.0	1863.0	1881.0	1897.0	
		Water take		18.0	19.0	18.0	16.0	
4		Time	0	5	10	15	20	0.000
		Flowmeter reading						
		Water take		0.0	0.0	0.0	0.0	
5		Time	0	5	10	15	20	0.000
		Flowmeter reading						
		Water take		0.0	0.0	0.0	0.0	

Stage	Average flow q (l/min)	Gauge pressure Gp (metres head of water)	Friction head loss FHL (metres head of water)	Total head H=Gp+Hw +Hg-FHL (metres head of water)	Stage* coefficient of permeability k (m/s)	Stage* Lugeon value Lu (lugeon units)
1	48.70	7.15	0.75	8.93	2.1E-05	210
2	-56.80	14.30	#NUM!	#NUM!	#NUM!	#NUM!
3	3.55	3.58	0.01	6.10	2.2E-06	22
4	0.00	0.00	0.00	2.53		
5	0.00	0.00	0.00	2.53		

* Computed in accordance with BS 5930, Section 21.5



Notes. 2nd increase in pressure used 500 gallon bowser after 10 minutes, instructed to do one stage at 5.0764 PSI.

Project: Cronton Colliery
Project No.: F3605
Carried out for: Maro Developments

Test

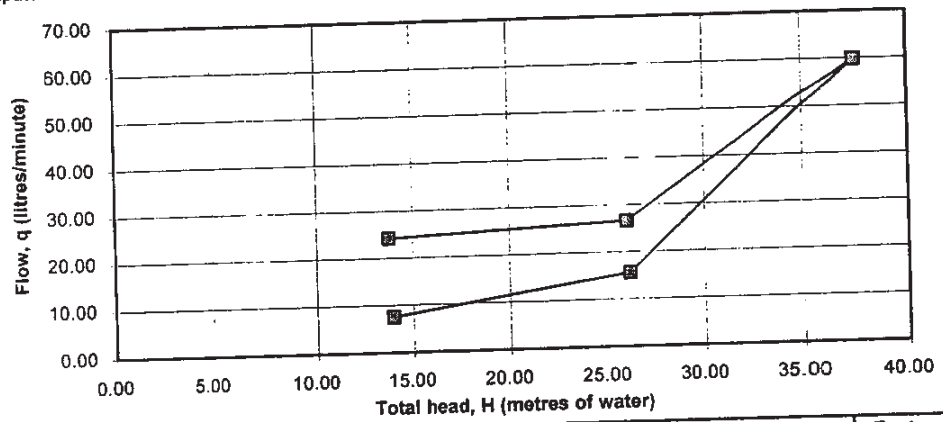
Packer Permeability Test

Borehole No.	P2/12	Test No.	1		
Test section from	18.00 m	to	20.00 m		
Length of test section (L)			2.00 m		
Diameter of test section (D)			120 mm		
Depth to water level before test			1.05 m	Date of test	15 Aug 2003
Depth to water level after test			0.47 m	Time of start	9:00
Gauge height above ground level (Hg)			0.68 m	Time of finish	10:50
Depth of borehole at time of test			20.00 m		
Depth of casing at time of test			4.30 m	Rock type	MUDSTONE
Groundwater level for analysis (Hw)			1.05 m		
Centre of test section			19.00 m		
Pressure gauge type	Analog			Drill rod type	HWY
Range	0 - 4 bar			Water source	Bowser
Number	V13256			Pump type	CMO PS 55L
Flowmeter type	Kent			Test type	Single packer
Size	25mm			Packer type	Bimbar
Number	02A225807			Packer pressures (psi)	90

Stage	Gauge pressure (psi)	TIME (minutes) AND WATER QUANTITIES (litres)						Average flow, q (l/min)
1	17.40	Time	0	5	10	15	20	24.200
		Flowmeter reading	2059.00	2176.00	2297.00	2420.00	2543.00	
		Water take		117.0	121.0	123.0	123.0	
2	34.81	Time	0	5	10	15	20	26.600
		Flowmeter reading	2602.0	2734.0	2861.0	2996.0	3134.0	
		Water take		132.0	127.0	135.0	138.0	
3	52.21	Time	0	5	10	15	20	59.800
		Flowmeter reading	3180.0	3502.0	3818.0	4108.0	4376.0	
		Water take		322.0	316.0	290.0	268.0	
4	34.8	Time	0	5	10	15	20	15.550
		Flowmeter reading	4396.0	4507.5	4583.0	4647.0	4707.0	
		Water take		111.5	75.5	64.0	60.0	
5	17.40	Time	0	5	10	15	20	7.550
		Flowmeter reading	4719.0	4785.0	4797.0	4835.0	4870.0	
		Water take		66.0	12.0	38.0	35.0	

Stage	Average flow q (l/min)	Gauge pressure Gp (metres head of water)	Friction head loss FHL (metres head of water)	Total head H=Gp+Hw +Hg-FHL (metres head of water)	Stage* coefficient of permeability k (m/s)	Stage* Lugeon value Lu (lugeon units)
1	24.20	12.26	0.20	13.78	8.2E-06	88
2	26.60	24.52	0.24	26.00	4.8E-06	51
3	59.80	36.77	1.10	37.41	7.4E-06	80
4	15.55	24.52	0.09	26.16	2.8E-06	30
5	7.55	12.26	0.02	13.96	2.5E-06	27

* Computed in accordance with BS 5930, Section 21.5



Notes

Project: Cronton Colliery
Project No.: F3605
Carried out for: Maro Developments

Test

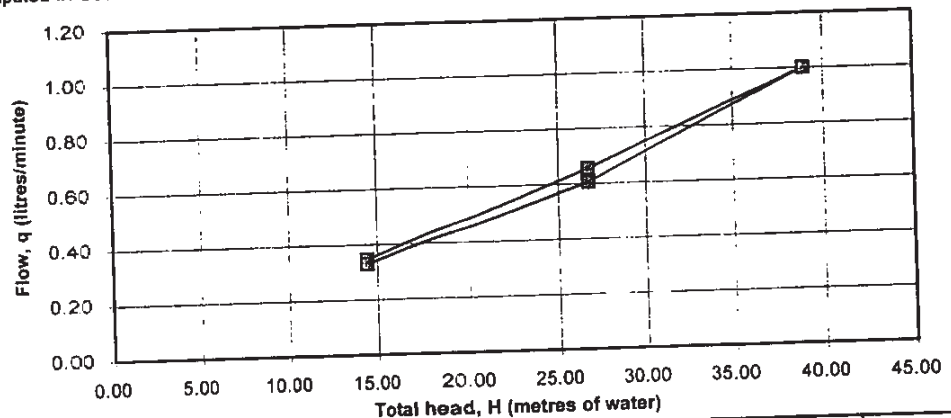
Packer Permeability Test

Borehole No.	BH121R	Test No.	2		
Test section from	17.60 m	to	19.60 m		
Length of test section (L)			2.00 m		
Diameter of test section (D)			120 mm		
Depth to water level before test			1.35 m	Date of test	13 Aug 2003
Depth to water level after test			1.40 m	Time of start	13:30
Gauge height above ground level (Hg)			0.83 m	Time of finish	15:30
Depth of borehole at time of test			19.60 m		
Depth of casing at time of test			4.00 m	Rock type	MUDSTONE
Groundwater level for analysis (Hw)			1.35 m		
Centre of test section			18.60 m		
Pressure gauge type	Analog		Drill rod type	HWY	
Range	0 - 4 bar		Water source	Bowser	
Number	VI3256		Pump type	CMO PS 55L	
Flowmeter type	Kent		Test type	Single packer	
Size	25mm		Packer type	Bimbar	
Number	02A225807		Packer pressures (psi)	90	

Stage	Gauge pressure (psi)	TIME (minutes) AND WATER QUANTITIES (litres)						Average flow, q (l/min)
1	17.40	Time	0	5	10	15	20	0.345
		Flowmeter reading	1905.50	1908.80	1910.00	1911.20	1912.40	
		Water take		3.3	1.2	1.2	1.2	
2	34.81	Time	0	5	10	15	20	0.655
		Flowmeter reading	1913.8	1917.2	1920.6	1923.6	1926.9	
		Water take		3.4	3.4	3.0	3.3	
3	52.21	Time	0	5	10	15	20	1.000
		Flowmeter reading	1930.4	1936.4	1941.4	1946.5	1950.4	
		Water take		6.0	5.0	5.1	3.9	
4	34.8	Time	0	5	10	15	20	0.605
		Flowmeter reading	1951.4	1995.0	1958.0	1960.8	1963.5	
		Water take		43.6	-37.0	2.8	2.7	
5	17.40	Time	0	5	10	15	20	0.330
		Flowmeter reading	1963.6	1965.3	1967.0	1968.7	1970.2	
		Water take		1.7	1.7	1.7	1.5	

Stage	Average flow q (l/min)	Gauge pressure Gp (metres head of water)	Friction head loss FHL (metres head of water)	Total head H=Gp+Hw +Hg-FHL (metres head of water)	Stage* coefficient of permeability k (m/s)	Stage* Lugeon value Lu (lugeon units)
1	0.35	12.26	0.00	14.44	1.1E-07	1
2	0.66	24.52	0.00	26.70	1.1E-07	1
3	1.00	36.77	0.00	38.95	1.2E-07	1
4	0.60	24.52	0.00	26.70	1.1E-07	1
5	0.33	12.26	0.00	14.44	1.1E-07	1

* Computed in accordance with BS 5930, Section 21.5



Notes	Project	Cronton Colliery	Test
	Project No.	F3605	
	Carried out for	Maro Developments	

Soil Mechanics

Sand Replacement Insitu Density Method

BS 1377: 1990 Part 9

Job No: F3605
Contract : Cronton Colliery
Site Reference : See Test No

SRD TEST SAND CALIBRATION	
Total mass of sand, m1	3600
sand left after calibration	1275
sand in hat	1897
wt of water in hat	1229

Lab No :	1425
Mass of sand in cone, m2	428
Density of sand, Ps	1.5435313

Note M1 should be same for calibration as with the test test procedure

Test No	TP3/02	TP3/09	TP3/02	TP3/02@1.2m	TP3/9@1m	TP2/3@0.1
tray weight	2104.1	2387.1	2398.5	2046.3	2047.5	652.4
tray+wet soil weight	3744.6	4603.1	3810.6	3642.3	4193.8	2146.5
tray+dry soil weight	3541.4	4510.5	3665.4	3561.6	4058.1	1991.3
Mass of sand left in cylinder	1664	1662.4	1707.1	1204.1	1293.1	1822.2
Mass of soil taken from hole	1640.5	2216	1412.1	1596	2146.3	1494.1
Oven Dried Moisture Content %	14.14	4.36	11.46	5.33	6.75	11.59
Calculated Mass of SAND from hole	1508	1509.6	1464.9	1967.9	1878.9	1349.8
Measured In-situ Bulk Density, Mg/m3	1.679	2.266	1.488	1.252	1.763	1.709
Measured In-situ Dry Density, Mg/m3	1.471	2.171	1.335	1.189	1.652	1.531
Assumed Max dry Density, Mg/m3	1.700	1.982	1.700	1.700	1.700	1.700
% Relative Compaction	86.54	109.54	78.52	69.91	97.16	90.06
Strata Description	1	2	1	1	1	1

Description 1:	Sandy Topsoil
Description 2:	Madeground : Clay & Mudstone

Approved

Name : Mark Nuttall

Soil Mechanics

Sand Replacement Insitu Density Method

BS 1377: 1990 Part 9

Job No: F3605
Contract : Cronton Colliery
Site Reference : See Test No

SRD TEST SAND CALIBRATION	
Total mass of sand, m1	3600
sand left after calibration	1275
sand in hat	1897
wt of water in hat	1229

Lab No : 1425
Mass of sand in cone, m2 428
Density of sand, Ps 1.5435313
Note M1 should be same for calibration as with the test test procedure

Test No	TP3/2@0.5	TP2/3@1.0	TP2/3@0.5			
tray weight	2128.8	654.9	2111.6			
tray+wet soil weight	3624.2	2823	3896.6			
tray+dry soil weight	3483.1	2589	3715.6			
Mass of sand left in cylinder	1768.1	1481.4	1849.4			
Mass of soil taken from hole	1495.1	2168.5	1785.2			
Oven Dried Moisture Content %	10.42	12.10	11.28			
Calculated Mass of SAND from hole	1403.9	1690.6	1322.6			
Measured In-situ Bulk Density, Mg/m3	1.644	1.980	2.083			
Measured In-situ Dry Density, Mg/m3	1.489	1.766	1.872			
Assumed Max dry Density, Mg/m3	1.700	1.982	1.982			
% Relative Compaction	87.57	89.11	94.46			
Strata Description	1	2	2			

Description 1 : Sandy Topsoil
Description 2 : Madeground : Clay & Mudstone

Approved

Name : Mark Nuttall

Soil Mechanics

SRD & Nuclear Insitu Density Test Calibration

BS 1377: 1990 Part 9

Job No: F3605
Contract : Cronton Colliery
Site Reference : Insitu Density Testing

SRD TEST SAND CALIBRATION

Total mass of sand, m1	3600
sand left after calibration	1368
sand in hat	1789
wt of water in hat	1226

Mass of sand in cone, m2: 443
Density of sand, Ps: 1.459217
Note M1 should be same for calibration as with the test test procedure

Test No	tp02@0.5	tp05@0.5	tp02@0.1	tp02@1.0	tp05@1.0	tp05@0.1
.ray weight	866	857	854	871	857	860
tray+wet soil weight	2028	2281	1863	2260	2454	1972
tray+dry soil weight	1927	2137	1717	2146	2348	1758
Mass of sand left in cylinder	2236	2043	2312	2115	1994	1812
Mass of soil taken from hole	1162	1424	1009	1389	1597	1112
Oven Dried Moisture Content %	9.52	11.25	16.92	8.94	7.11	23.83
Calculated Mass of SAND from hole	921	1114	845	1042	1163	1345
Measured In-situ Bulk Density, Mg/m3	1.841	1.865	1.742	1.945	2.004	1.206
Measured In-situ Dry Density, Mg/m3	1.681	1.677	1.490	1.786	1.871	0.974
Max Dry Density, Mg/m3	2.040	1.700	1.700	1.982	1.982	1.020
% Relative Compaction	82.40	98.63	87.66	90.09	94.39	95.52
Strata Description	4	2	2	1	1	3
NDM CALIBRATION						
Ndm Gauge Wet Density Reading 1	1.827	1.781	1.523	1.716	1.864	1.182
Ndm Gauge Moisture Reading 1	26.75	16.15	22.3	20.1	15.5	30
Ndm Gauge Wet Density Reading 2	1.827	1.781	1.523	1.716	1.864	1.182
Ndm Gauge Moisture Reading 2	26.75	16.15	22.3	20.1	15.5	30
Dbias Offset Used	0	0	0	0	0	0
Mbias Offset Used	0	0	0	0	0	0
Ave Gauge Wet Density Reading	1.827	1.781	1.523	1.716	1.864	1.182
Ave Gauge Moisture Reading	26.75	16.15	22.3	20.1	15.5	30
Estimated Dbias Offset, D	0.014	0.084	0.219	0.229	0.140	0.024
Estimated Mbias Offset, K	-135.942	-42.187	-44.009	-92.913	-72.647	-47.456

Average Dbias, d = See below
Average Mbias, K = See below

Strata 1 Description : Grey gravel sized moderately weathered Mudstone with shale fragments
Strata 2 Description : Brown sand sized Topsoil with medium sized rootlets
Strata 3 Description : Light grey sand sized paper mulch with gravel fragments
Strata 4 Description : Light grey sand sized paper mulch with much gravel/mudstone fragments

Offsets	Strata 1	Strata 2	Strata 3	Strata 4
Dbias	0.1845	0.1515	0.024	0.014
Mbias	-82.78	-43.098	-47.456	-135.942

Not UKAS Accredited

Approved

Name : Mark Nuttall

SOIL MECHANICS

INSITU NUCLEAR DENSITY TEST RESULTS SUMMARY

BS 1377: Part 9: 1990 Clause 2.5

Site : CRONTON COLLIERY **Job No :** F3605

Test Position	Depth of Test	Wet Density Reading	Moisture Reading	MBIAS Factor	DBIAS Factor	Strata Type	Max MG/M3 Dry Density	Moisture Content %	Wet Density MG/M3	Dry Density MG/M3	% Compaction
TP3/11	0.00m - 0.30m	1.897	10.6	-43.098	0.152	2	1.70	5.83	2.049	1.936	113.89
	0.40m - 0.70m	1.842	14.3	-43.098	0.152	2	1.70	9.37	1.994	1.823	107.24
	0.90m - 1.20m	2.081	14.5	-100.5	0.128	1	1.98	2.99	2.209	2.145	108.21
TP3/10	0.00m - 0.30m	1.761	19.7	-43.098	0.152	2	1.70	14.54	1.913	1.670	98.24
	0.40m - 0.70m	2.014	14.5	-100.5	0.128	1	1.98	2.99	2.142	2.080	104.93
	0.90m - 1.20m	1.946	15.5	-100.5	0.128	1	1.98	3.89	2.074	1.996	100.72
TP3/08	0.00m - 0.30m	1.938	26	-43.098	0.152	2	1.70	20.57	2.090	1.733	101.97
	0.40m - 0.70m	1.922	21.8	-100.5	0.128	1	1.98	9.56	2.050	1.871	94.41
	0.90m - 1.20m	1.618	39.4	-47.457	0.024	3	1.02	32.78	1.642	1.237	121.83
TP3/07	0.00m - 0.30m	2.001	17	-43.098	0.152	2	1.70	11.96	2.153	1.923	113.12
	0.40m - 0.70m	1.901	13.6	-43.098	0.152	2	1.70	8.70	2.053	1.889	111.09
	0.90m - 1.20m	2.01	10.3	-43.098	0.152	2	1.70	5.55	2.162	2.048	120.49
TP3/06	0.00m - 0.30m	2.038	13.1	-43.098	0.152	2	1.70	8.23	2.190	2.024	119.03
	0.40m - 0.70m	1.616	9.7	-43.098	0.152	2	1.70	4.97	1.768	1.684	99.07
	0.90m - 1.20m	1.43	7	-43.098	0.152	2	1.70	2.39	1.582	1.545	90.89
TP3/03	0.00m - 0.30m	2.052	13	-43.098	0.152	2	1.70	8.13	2.204	2.038	119.90
	0.40m - 0.70m	1.957	14.8	-43.098	0.152	2	1.70	9.85	2.109	1.920	112.93
	0.90m - 1.20m	1.962	13.1	-100.5	0.128	1	1.98	1.73	2.090	2.054	103.65
TP3/01	0.00m - 0.30m	1.96	22	-43.098	0.152	2	1.70	16.74	2.112	1.809	106.42
	0.40m - 0.70m	2.04	15.4	-43.098	0.152	2	1.70	10.43	2.192	1.985	116.77
	0.90m - 1.20m	2.011	17.9	-100.5	0.128	1	1.98	6.05	2.139	2.017	101.76
TP4/02	0.00m - 0.30m	1.633	27	-47.457	0.024	3	1.02	20.97	1.657	1.370	134.95
	0.40m - 0.70m	2.145	16.6	-100.5	0.128	1	1.98	4.88	2.273	2.167	109.34
	0.90m - 1.20m	1.895	17.2	-100.5	0.128	1	1.98	5.42	2.023	1.919	96.82
TP4/01	0.00m - 0.30m	2.046	15.8	-43.098	0.152	2	1.70	10.81	2.198	1.984	116.68
	0.40m - 0.70m	2.111	16.4	-100.5	0.128	1	1.98	4.70	2.239	2.138	107.89
	0.90m - 1.20m	1.942	18.3	-100.5	0.128	1	1.98	6.41	2.070	1.945	98.15
TP4/03	0.00m - 0.30m	1.544	41.5	-47.457	0.024	3	1.02	34.78	1.568	1.163	114.61
	0.40m - 0.70m	1.441	38.4	-47.457	0.024	3	1.02	31.83	1.465	1.111	109.48
	0.90m - 1.20m	1.859	29.1	-47.457	0.024	3	1.02	22.97	1.883	1.531	150.86
TP3/04	0.00m - 0.30m	1.932	18.6	-43.098	0.152	2	1.70	13.49	2.084	1.836	108.02

SOIL MECHANICS

INSITU NUCLEAR DENSITY TEST RESULTS SUMMARY

BS 1377: Part 9: 1990 Clause 2.5

Site : CRONTON COLLIERY **Job No :** F3605

TEST POSITION	DEPTH OF TEST	WET DENSITY READING	MOISTURE READING	BIAS FACTOR	BIAS FACTOR	STRATA TYPE	MAX. MG/M3 DRY DENSITY	MOISTURE CONTENT %	WET DENSITY MG/M3	DRY DENSITY MG/M3	% COMPACTION
	0.40m - 0.70m	2.027	18.5	-43.098	0.152	2	1.70	13.39	2.179	1.922	113.04
	0.90m - 1.20m	1.796	20.6	-100.5	0.128	1	1.98	8.48	1.924	1.774	89.49
TP3/05	0.00m - 0.30m	2.148	14.1	-43.098	0.152	2	1.70	9.18	2.300	2.107	123.92
	0.40m - 0.70m	1.883	14.8	-43.098	0.152	2	1.70	9.85	2.035	1.852	108.97
	0.90m - 1.20m	2.008	20.3	-100.5	0.128	1	1.98	8.21	2.136	1.974	99.59
TP2/09	0.00m - 0.30m	2.002	20.6	-43.098	0.152	2	1.70	15.40	2.154	1.867	109.79
	0.40m - 0.70m	1.933	15.8	-100.5	0.128	1	1.98	4.16	2.061	1.979	99.83
	0.90m - 1.20m	2.025	13.7	-100.5	0.128	1	1.98	2.27	2.153	2.105	106.21
TP2/08	0.00m - 0.30m	1.809	23.5	-43.098	0.152	2	1.70	18.18	1.961	1.659	97.61
	0.40m - 0.70m	2.112	14.9	-100.5	0.128	1	1.98	3.35	2.240	2.167	109.35
	0.90m - 1.20m	2.086	14.8	-100.5	0.128	1	1.98	3.26	2.214	2.144	108.18
TP2/04	0.00m - 0.30m	1.902	18.1	-43.098	0.152	2	1.70	13.01	2.054	1.818	106.91
	0.40m - 0.70m	1.794	19	-43.098	0.152	2	1.70	13.87	1.946	1.709	100.53
	0.90m - 1.20m	1.699	33.6	-47.457	0.024	3	1.02	27.26	1.723	1.354	133.39
TP2/06	0.00m - 0.30m	1.88	18.1	-43.098	0.152	2	1.70	13.01	2.032	1.798	105.77
	0.40m - 0.70m	1.965	21.4	-43.098	0.152	2	1.70	16.17	2.117	1.822	107.20
	0.90m - 1.20m	1.954	22.4	-100.5	0.128	1	1.98	10.10	2.082	1.891	95.41
TP2/05	0.00m - 0.30m	1.919	18.1	-43.098	0.152	2	1.70	13.01	2.071	1.833	107.80
	0.40m - 0.70m	1.964	14.2	-100.5	0.128	1	1.98	2.72	2.092	2.037	102.75
	0.90m - 1.20m	1.936	17	-100.5	0.128	1	1.98	5.24	2.064	1.961	98.95
TP2/11	0.00m - 0.30m	1.771	22	-43.098	0.152	2	1.70	16.74	1.923	1.647	96.90
	0.40m - 0.70m	1.886	17.9	-100.5	0.128	1	1.98	6.05	2.014	1.899	95.82
	0.90m - 1.20m	2.051	14.1	-100.5	0.128	1	1.98	2.63	2.179	2.123	107.12
TP2/10	0.00m - 0.30m	1.89	17.2	-43.098	0.152	2	1.70	12.15	2.042	1.821	107.11
	0.40m - 0.70m	1.893	17.4	-100.5	0.128	1	1.98	5.60	2.021	1.914	96.56
	0.90m - 1.20m	1.901	25	-100.5	0.128	1	1.98	12.44	2.029	1.805	91.05
TP2/07	0.00m - 0.30m	1.879	19.1	-43.098	0.152	2	1.70	13.97	2.031	1.782	104.83
	0.40m - 0.70m	1.609	27.7	-47.457	0.024	3	1.02	21.64	1.633	1.342	132.26
	0.90m - 1.20m	1.54	71.8	-47.457	0.024	3	1.02	63.65	1.564	0.956	94.16
TP2/01	0.00m - 0.30m	1.946	13.5	-43.098	0.152	2	1.70	8.61	2.098	1.932	113.63
	0.40m - 0.70m	2.034	16.3	-100.5	0.128	1	1.98	4.61	2.162	2.067	104.27

SOIL MECHANICS

INSITU NUCLEAR DENSITY TEST RESULTS SUMMARY

BS 1377: Part 9: 1990 Clause 2.5

Site : CRONTON COLLIERY Job No : F3605

TEST POSITION	DEPTH OF TEST	WET DENSITY READING	MOISTURE READING	MBIAS FACTOR	DBIAS FACTOR	STRATA TYPE	MAX MG/M3 DRY DENSITY	MOISTURE CONTENT %	WET DENSITY MG/M3	DRY DENSITY MG/M3	% COMPACTION
	0.90m - 1.20m	1.979	15.8	-100.5	0.128	1	1.98	4.16	2.107	2.023	102.06
TP1/01	0.00m - 0.30m	1.752	18.1	-43.098	0.152	2	1.70	13.01	1.904	1.685	99.11
	0.00m - 0.30m	1.745	17.6	-43.098	0.152	2	1.70	12.53	1.897	1.686	99.16
	0.40m - 0.70m	2.064	16.3	-100.5	0.128	1	1.98	4.61	2.192	2.095	105.72
	0.40m - 0.70m	2.06	17	-100.5	0.128	1	1.98	5.24	2.188	2.079	104.90
	0.90m - 1.20m	2.012	16.2	-100.5	0.128	1	1.98	4.52	2.140	2.047	103.30
	0.90m - 1.20m	2.012	16.2	-100.5	0.128	1	1.98	4.52	2.140	2.047	103.30
TP1/02	0.00m - 0.30m	1.521	22	-43.098	0.152	2	1.70	16.74	1.673	1.433	84.30
	0.00m - 0.30m	1.524	22.5	-43.098	0.152	2	1.70	17.22	1.676	1.430	84.10
	0.40m - 0.70m	1.828	26.4	-100.5	0.128	1	1.98	13.70	1.956	1.720	86.80
	0.40m - 0.70m	1.825	27.1	-100.5	0.128	1	1.98	14.33	1.953	1.708	86.19
	0.90m - 1.20m	1.718	20	-100.5	0.128	1	1.98	7.94	1.846	1.710	86.29
	0.90m - 1.20m	1.714	20.2	-100.5	0.128	1	1.98	8.12	1.842	1.704	85.96
TP1/05	0.00m - 0.30m	1.18	29.7	-47.457	0.024	3	1.02	23.54	1.204	0.975	96.01
	0.00m - 0.30m	1.184	30.6	-47.457	0.024	3	1.02	24.40	1.208	0.971	95.67
	0.40m - 0.70m	1.779	16.1	-43.098	0.152	2	1.70	11.10	1.931	1.738	102.24
	0.40m - 0.70m	1.782	16.2	-43.098	0.152	2	1.70	11.19	1.934	1.739	102.31
	0.90m - 1.20m	1.867	15.3	-100.5	0.128	1	1.98	3.71	1.995	1.924	97.05
	0.90m - 1.20m	1.861	15.6	-100.5	0.128	1	1.98	3.98	1.989	1.913	96.51
TP1/03	0.00m - 0.30m	1.558	35.1	-47.457	0.024	3	1.02	28.69	1.582	1.229	121.12
	0.00m - 0.30m	1.555	34.2	-47.457	0.024	3	1.02	27.83	1.579	1.235	121.70
	0.40m - 0.70m	1.923	21.5	-100.5	0.128	1	1.98	9.29	2.051	1.877	94.69
	0.40m - 0.70m	1.932	21.2	-100.5	0.128	1	1.98	9.02	2.060	1.890	95.34
	0.90m - 1.20m	1.773	22.4	-100.5	0.128	1	1.98	10.10	1.901	1.727	87.12
	0.90m - 1.20m	1.778	21.7	-100.5	0.128	1	1.98	9.47	1.906	1.741	87.85
TP1/04	0.00m - 0.30m	1.547	22.5	-43.098	0.152	2	1.70	17.22	1.699	1.449	85.26
	0.00m - 0.30m	1.543	21.2	-43.098	0.152	2	1.70	15.98	1.695	1.462	85.97
	0.40m - 0.70m	1.953	16.7	-100.5	0.128	1	1.98	4.97	2.081	1.982	100.02
	0.40m - 0.70m	1.943	18	-100.5	0.128	1	1.98	6.14	2.071	1.951	98.44
	0.90m - 1.20m	2.051	16.7	-100.5	0.128	1	1.98	4.97	2.179	2.076	104.73
	0.90m - 1.20m	2.058	16.6	-100.5	0.128	1	1.98	4.88	2.186	2.084	105.16

SOIL MECHANICS

INSITU NUCLEAR DENSITY TEST RESULTS SUMMARY

BS 1377: Part 9: 1990 Clause 2.5

Site : CRONTON COLLIERY Job No : F3605

TEST POSITION	DEPTH OF TEST	WET DENSITY READING	MOISTURE READING	MBIAS FACTOR	DBIAS FACTOR	STRATA TYPE	MAX MG/MB DRY DENSITY	MOISTURE CONTENT %	WET DENSITY MG/MB	DRY DENSITY MG/M3	% COMPACTION
TP1/06	0.00m - 0.30m	1.577	11.2	-43.098	0.152	2	1.70	6.41	1.729	1.625	95.58
	0.00m - 0.30m	1.575	11.2	-43.098	0.152	2	1.70	6.41	1.727	1.623	95.47
	0.40m - 0.70m	1.796	13.6	-100.5	0.128	1	1.98	2.18	1.924	1.883	95.00
	0.40m - 0.70m	1.791	13.7	-100.5	0.128	1	1.98	2.27	1.919	1.876	94.67
	0.90m - 1.20m	1.941	20.9	-100.5	0.128	1	1.98	8.75	2.069	1.903	95.99
	0.90m - 1.20m	1.927	20.9	-100.5	0.128	1	1.98	8.75	2.055	1.890	95.34
TP1/07	0.00m - 0.30m	1.778	9.5	-43.098	0.152	2	1.70	4.78	1.930	1.842	108.35
	0.00m - 0.30m	1.78	9.2	-43.098	0.152	2	1.70	4.49	1.932	1.849	108.76
	0.40m - 0.70m	2.099	13.8	-100.5	0.128	1	1.98	2.36	2.227	2.176	109.77
	0.40m - 0.70m	2.098	14.4	-100.5	0.128	1	1.98	2.90	2.226	2.163	109.14
	0.90m - 1.20m	1.922	17.8	-100.5	0.128	1	1.98	5.96	2.050	1.935	97.61
	0.90m - 1.20m	1.91	18.3	-100.5	0.128	1	1.98	6.41	2.038	1.915	96.63

ENCLOSURE D
GEOTECHNICAL LABORATORY TEST RESULTS

Key to Geotechnical Laboratory Results — Key

Laboratory Results Summary

Particle Size Distribution Plots

Liquid Limit versus Plasticity Index

Earthworks

Table of Index Properties

Triaxial Single Stage Tests

Oedometer Results

Consolidated Triaxial Test with measurements of Porewater Pressure

Key to Geotechnical Laboratory Results

Soil Mechanics

U	Undisturbed Sample
P	Piston Sample
TWS	Thin Wall Sample
B	Bulk Sample - Disturbed
D	Jar Sample - Disturbed
W	Water Sample
pH	Acidity/Alkalinity Index
SO_3	% - Total Sulphate Content (acid soluble)
SO_3	g/ltr - Water Soluble Sulphate (Water or 2:1 Aqueous Soil Extract)
+	Calcareous Reaction
Cl	Chloride Content
I_p	Plasticity Index
<425	% of material in sample passing 425 micron sieve
w_L	Liquid Limit
w_p	Plastic Limit
w	Water Content
NP	Non Plastic
γ_b	Bulk Density
γ_d	Dry Density
Ps	Particle Density
U/D	Undrained/Drained Triaxial
U/C	Unconsolidated/Consolidated Triaxial
T/M	Single Stage/Multistage Triaxial
100/38	Sample Diameter (mm)
REM	Remoulded Triaxial Test Specimen
TST	Triaxial Suction Test
V	Vane Test
DSB	Drained Shear Box
RSB	Residual Shear Box
RS	Ring Shear
σ_3	Cell Pressure
σ_1-σ_3	Deviator Stress
c	Cohesion
c'	Effective Cohesion Intercept
ϕ	Angle of Shearing Resistance - Degrees
ϕ'	Effective Angle of Shearing Resistance
εf	Strain at Failure
*	Failed under 1st Load
**	Failed under 2nd Load
#	Untestable
##	Excessive Strain
p'o	Effective Overburden Pressure
m_v	Coefficient of Volume Decrease
c_v	Coefficient of Consolidation
Opt	Optimum
Nat	Natural
Std	Standard Compaction - 2.5kg Rammer (¶ CBR)
Hvy	Heavy Compaction - 4.5kg Rammer (§ CBR)
Vib	Vibratory Compaction
CBR	California Bearing Ratio
Sat m.c.	Saturation Moisture Content
MCV	Moisture Condition Value

Notes:	Project: Cronton Colliery Project No: F3805 Carried out for: Maro Developments	Figure

Samples				Classification					Strength			Other Tests
Hole	Depth	Type	Description	<425 I_P	Prep w_L	w_P	Water %	γ_{b_3} Mg/m	Test	σ_3 kPa	C kPa	
101	2.20 - 2.70	B	MADE GROUND:Stiff dark grey slightly sandy slightly gravelly CLAY including mudstone and coal									Particle Size analysis
101	6.50 - 7.00	B	MADE GROUND:Black slightly sandy slightly gravelly CLAY including brick,coal and coal dust									w% / Dry Density CBR Particle Size analysis CBR Test suspended : load ring maximum exceeded
101	12.50- 13.00	U	Stiff orange grey slightly sandy gravelly CLAY.Gravel includes mudstone and sandstone	87 11	425µ 25	Sieve 14	13 13		UUM 102	Untestable		
105	0.50 - 1.00	B	MADE GROUND:Black slightly sandy gravelly CLAY.Gravel includes mudstone and sandstone									w% / Dry Density CBR Particle Size analysis CBR Test suspended : load ring maximum exceeded
105	3.20 - 3.70	B	MADE GROUND:Dark grey slightly sandy gravelly CLAY.Gravel includes mudstone and coal									w% / Dry Density CBR Particle Size analysis CBR Test suspended: Load ring maximum exceeded
105	8.50 - 9.00	U	Stiff orange brown slightly sandy slightly gravelly CLAY.Gravel includes sandstone and mudstone	82 13	425µ 26	Sieve 13	12 14	2.12	UUM 102	150 300 600	111 135	Failed on stage 1 Excess strain on stage 2 Failure Mode: Compound
108	0.50 - 1.00	B	MADE GROUND:Black slightly sandy slightly gravelly CLAY.Gravel includes mudstone and coal									w% / Dry Density CBR Particle Size analysis CBR Test suspended: Load ring maximum exceeded
108	6.00 - 6.50	U	Stiff orange brown slightly sandy slightly gravelly CLAY.Gravel includes sandstone and mudstone	74 20	425µ 38	Sieve 18	17 19	2.04	UUM 102	100 200 400	88 92 97	Failed on stage 1 Failed on stage 2 Failed on stage 3 Failure Mode: Compound
111	0.20 - 1.20	B	MADE GROUND:Black slightly sandy gravelly CLAY.Gravel including sandstone mudstone and coal									w% / Dry Density CBR Particle Size analysis CBR Test suspended: Load ring maximum exceeded
112	1.50 - 1.95	D	MADE GROUND:Dark grey black SILT (possible tailings)	74 32	425µ 67	Sieve 35	130					

Remarks

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Laboratory - Results Summary

Soil Mechanics

Project
Cronton Colliery
Maro Developments

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Samples				Classification					Strength			Other Tests
Hole	Depth	Type	Description	<425 I_P	Prep w_L	w_P	Water %	γ_{b_3} Mg/m	Test	σ_3 kPa	C kPa	
117	7.50 - 8.00	B	MADE GROUND:Black slightly clayey sandy fine to coarse GRAVEL with occasional cobbles including brick,coal,slag and mudstone									Particle Size analysis
119	2.05	D	Orange brown slightly sandy gravelly CLAY.Gravel includes sandstone	69 16	425µ 37	Sieve 21	16					
121	1.50 - 1.95	U	Firm brown slightly sandy slightly gravelly CLAY	85 16	425µ 29	Sieve 13	16 15	2.16	UUM 102	25 50 100	37 43 51	Failed on stage 1 Failed on stage 2 Excess strain on stage 3 Failure Mode: Compound
124	2.50 - 2.95	U	Very stiff orange brown slightly sandy gravelly CLAY.Gravel is of mixed lithologies	72 14	425µ 28	Sieve 14	14 14	2.20	UUM 102	50 100 200	197 199 203	Failed on stage 1 Failed on stage 2 Failed on stage 3 Failure Mode: Compound
124	3.05	D	Brown slightly sandy slightly gravelly CLAY									Particle Size analysis
124	8.05	D	Brown slightly sandy slightly gravelly CLAY	87 11	425µ 21	Sieve 10	17					
125	1.00	D	Orange brown slightly sandy slightly gravelly CLAY	93 17	425µ 30	Sieve 13	13					
126	3.50 - 3.95	U	Firm brown sandy slightly gravelly CLAY	85 11	425µ 26	Sieve 15	17 12	2.17	UUM 102	50 100 200	33 48 70	Failed on stage 1 Failed on stage 2 Excess strain on stage 3 Failure Mode: Compound
128	2.05	D	Orange brown slightly sandy slightly gravelly CLAY	86 16	425µ 30	Sieve 14	16					
129	3.95 - 4.00	D	Orange brown slightly sandy slightly gravelly CLAY									Particle Size analysis
129	6.45 - 6.50	D	Orange brown slightly sandy slightly gravelly CLAY	84 20	425µ 33	Sieve 13	14					
130	1.50 - 1.95	U	Firm orange grey slightly sandy slightly gravelly CLAY	82 14	425µ 27	Sieve 13	15 15	2.22	UUM 102	50 100 200	52 56 64	Failed on stage 1 Failed on stage 2 Failed on stage 3 Failure Mode: Compound

Remarks

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Laboratory - Results Summary

Soil Mechanics

Project
Cronton Colliery
Maro Developments

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Sheet L1/2

Samples				Classification					Strength			Other Tests
Hole	Depth	Type	Description	<425 I_P	Prep w_L	w_P	Water %	γ_b Mg/m^3	Test	σ_3 kPa	C kPa	
TP1/01	0.10 - 0.20	ES	MADE GROUND:Grey,black clayey sandy fine to coarse GRAVEL including mudstone,coal,sandstone and brick				16					
TP1/01	0.50 - 0.60	ES	MADE GROUND:Grey,black clayey sandy fine to coarse GRAVEL including mudstone,coal,sandstone and brick				9.2					
TP1/01	0.50 - 0.60	B	MADE GROUND:Grey,black clayey sandy fine to coarse GRAVEL including mudstone coal,sandstone and brick									Particle Size analysis
TP1/01	1.00 - 1.20	ES	MADE GROUND:Grey,black clayey sandy fine to coarse GRAVEL including mudstone,coal,sandstone and brick				9.8					
TP1/02	0.10 - 0.20	ES	MADE GROUND:Grey and black slightly gravelly sandy TOPSOIL				17					
TP1/02	0.50 - 0.60	ES	MADE GROUND:Grey,dark grey slightly sandy gravelly CLAY including mudstone, brick,sandstone,and coal				13					
TP1/02	0.50 - 0.60	B	MADE GROUND:Grey,dark grey slightly sandy gravelly CLAY including mudstone, brick,sandstone and coal									Particle Size analysis
TP1/02	1.00 - 1.20	ES	MADE GROUND:Dark grey,black clayey GRAVEL of mudstone,siltstone and coal				9.8					
TP1/03	0.10 - 0.20	ES	MADE GROUND:Grass onto grey sandy gravelly TOPSOIL including mudstone,coal glass and occasional rootlets				38					
TP1/03	0.50 - 0.60	ES	MADE GROUND:Grey brown sandy slightly gravelly CLAY.Gravel includes mudstone,brick,sandstone and occasional plastic and wire				21					

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Laboratory - Results Summary

Soil Mechanics

Project
Cronton Colliery
Maro Developments

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Sheet L1/3

Samples				Classification					Strength			Other Tests
Hole	Depth	Type	Description	<425 I_P	Prep w_L	w_P	Water %	γ_{b_3} Mg/m	Test	σ_3 kPa	C kPa	
TP1/03	0.50 - 0.60	B	MADE GROUND:Grey brown sandy slightly gravelly CLAY.Gravel includes mudstone,brick,sandstone and occasional plastic and wire									Particle Size analysis
TP1/03	1.00 - 1.20	ES	MADE GROUND:Grey,yellow brown slightly clayey sandy GRAVEL with occasional cobbles including mudstone,brick,coal,occasional glass and wood				9.4					
TP1/04	0.10 - 0.20	ES	MADE GROUND:Grass and clover onto grey slightly clayey gravelly fine to coarse SAND.Gravel incudes mudstone,burnt shale with occasional rootlets				15					
TP1/04	0.50 - 0.60	ES	MADE GROUND:Brown and black sandy clayey fine to coarse GRAVEL including mudstone,brick with occasional coal and wood				14					
TP1/04	0.50 - 0.60	B	MADE GROUND:Brown and black sandy clayey fine to coarse GRAVEL including mudstone,brick with occasional coal and wood									Particle Size analysis
TP1/04	1.00 - 1.20	ES	MADE GROUND:Dark grey and black clayey fine to coarse GRAVEL of coal, mudstone,brick and siltstone				11					
TP1/05	0.10 - 0.20	ES	MADE GROUND:Grey silty sandy fine to coarse GRAVEL including mudstone and occasional brick				32					
TP1/05	0.50 - 0.60	ES	MADE GROUND:Dark grey,black silty sandy fine to coarse GRAVEL including burnt shale,mudstone,coal,sandstone,brick.Occasional rootlets				13					

Remarks

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Laboratory - Results Summary

Soil Mechanics

Project
Cronton Colliery
Maro Developments

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Sheet
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Samples				Classification					Strength			Other Tests
Hole	Depth	Type	Description	<425 I_P	Prep w_L	w_P	Water %	γ_{b_3} Mg/m	Test	σ_3 kPa	C kPa	
TP1/05	0.50 - 0.60	B	MADE GROUND:Dark grey,and black sandy clayey fine to coarse GRAVEL of mudstone,sandstone,coal and red burnt shale									Particle Size analysis
TP1/05	1.00 - 1.20	ES	MADE GROUND:Grey clayey sandy fine to coarse GRAVEL and occasional cobbles including mudstone,sandstone and coal				8.2					
TP1/06	0.10 - 0.20	ES	MADE GROUND:Brown slightly clayey gravelly fine to coarse SAND(TOPSOIL)				15					
TP1/06	0.50 - 0.60	ES	MADE GROUND:Brown sandy gravelly CLAY.Gravel includes brick,sandstone and coal				18					
TP1/06	1.00 - 1.20	ES	MADE GROUND:Grey slightly sandy slightly gravelly CLAY.Gravel includes brick,sandstone,coal and occasional pieces of metal				18					
TP1/07	0.10 - 0.20	ES	MADE GROUND:Grass onto brown sandy gravelly TOPSOIL.Gravel includes sandstone,brick and mudstone				12					
TP1/07	0.50 - 0.60	ES	MADE GROUND:Black slightly clayey sandy fine to coarse GRAVEL with occasional cobbles including mudstone,sandstone,coal,and brick				10					
TP1/07	0.50 - 0.60	B	MADE GROUND:Black slightly clayey sandy fine to coarse GRAVEL with occasional cobbles including mudstone,sandstone,coal and brick									Particle Size analysis
TP1/07	1.00 - 1.20	ES	MADE GROUND:Red brown slightly clayey sandy fine to coarse GRAVEL of burnt shale				12					

Remarks

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Laboratory - Results Summary

Soil Mechanics

Project: Cronton Colliery
Maro Developments

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Sheet: L1/5

Samples				Classification					Strength			Other Tests
Hole	Depth	Type	Description	<425 I_P	Prep w_L	w_P	Water %	γ_{b_3} Mg/m^3	Test	σ_3 kPa	C kPa	
TP2/01	0.10 - 0.20	ES	MADE GROUND:Black fine and medium GRAVEL of mudstone,brick,wood and occasional glass				6.1					
TP2/01	0.50 - 0.60	B	MADE GROUND:Grey,black clayey sandy fine to coarse GRAVEL including mudstone,brick,wood and glass									Particle Size analysis
TP2/01	0.50 - 0.60	ES	MADE GROUND:Grey,black clayey sandy fine to coarse GRAVEL including mudstone,brick,wood and occasional glass				23					
TP2/01	1.00 - 1.20	ES	MADE GROUND:Grey,black clayey sandy fine to coarse GRAVEL including mudstone,brick,wood and occasional glass				12					
TP2/02	0.10 - 0.20	ES	MADE GROUND:Black slightly sandy slightly gravelly CLAY including coal				10					
TP2/02	0.50 - 0.60	ES	MADE GROUD:Black slightly sandy slightly gravelly CLAY including coal				22					
TP2/02	0.50 - 0.60	B	MADE GROUND:Black slightly sandy slightly gravelly CLAY including coal									Particle Size analysis
TP2/02	1.00 - 1.20	ES	MADE GROUND:Black slightly sandy slightly gravelly CLAY including coal				15					
TP2/03	0.10 - 0.20	ES	MADE GROUND:Black,grey slightly sandy gravelly CLAY including brick, mudstone,coal and occasional wood				12					
TP2/03	0.50 - 0.60	ES	MADE GROUND:Black,grey slightly sandy gravelly CLAY including brick, mudstone,coal and occasional wood				11					

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Laboratory - Results Summary

Soil Mechanics

Project Cronton Colliery
Maro Developments

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Sheet L1/6

Samples				Classification					Strength			Other Tests
Hole	Depth	Type	Description	<425 I_P	Prep w_L	w_P	Water %	γ_{b_3} Mg/m	Test	σ_3 kPa	C kPa	
TP2/03	0.50 - 0.60	B	MADE GROUND:Black,grey slightly sandy gravelly CLAY including brick, mudstone,coal and occasional wood									Particle Size analysis
TP2/03	1.00 - 1.20	ES	MADE GROUND:Grey brown gravelly SAND				9.8					
TP2/04	0.10 - 0.20	ES	MADE GROUND:Black sandy fine to coarse GRAVEL including coal,mudstone and occasional wood				14					
TP2/04	0.50 - 0.60	B	MADE GROUND:Black slightly sandy slightly gravelly CLAY including mudstone and coal									Particle Size analysis
TP2/04	0.50 - 0.60	ES	MADE GROUND:Black slightly sandy slightly gravelly CLAY including mudstone and coal				14					
TP2/04	1.00 - 1.20	ES	MADE GROUND:Red brown silty gravelly fine to coarse SAND of burnt shale				15					
TP2/05	0.10 - 0.20	ES	MADE GROUND:Grey and black clayey sandy fine to coarse GRAVEL of mudstone and coal				13					
TP2/05	0.50 - 0.60	ES	MADE GROUND:Grey and black slightly sandy slightly gravelly CLAY including mudstone and coal				13					
TP2/05	0.50 - 0.60	B	MADE GROUND:Grey and black slightly sandy slightly gravelly CLAY including mudstone and coal									Particle Size analysis
TP2/05	1.00 - 1.20	ES	MADE GROUND:Grey and black sandy fine to coarse GRAVEL including mudstone and coal				11					
TP2/06	0.10 - 0.20	ES	MADE GROUND:Grey and green slightly sandy CLAY including mudstone				12					
TP2/06	0.50 - 0.60	ES	MADE GROUND:Black clayey sandy fine to coarse GRAVEL including mudstone and coal				11					

Remarks

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Laboratory - Results Summary

Soil Mechanics

Project
Cronton Colliery
Maro Developments

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Sheet L1/7

Samples				Classification					Strength			Other Tests
Hole	Depth	Type	Description	< 425 I_P	Prep w_L	w_P	Water %	γ_{b_3} Mg/m	Test	σ_3 kPa	C kPa	
TP2/06	0.50 - 0.60	B	MADE GROUND:Black clayey sandy fine to coarse GRAVEL including mudstone and coal									Particle Size analysis
TP2/06	1.00 - 1.20	ES	MADE GROUND:Black clayey sandy fine to coarse GRAVEL including mudstone and coal				11					
TP2/07	0.10 - 0.20	ES	MADE GROUND:Red brown slightly gravelly sandy CLAY				13					
TP2/07	0.50 - 0.60	B	MADE GROUND:Grey and black slightly sandy gravelly CLAY including mudstone									Particle Size analysis
TP2/07	0.50 - 0.60	ES	MADE GROUND:Grey and black slightly sandy gravelly CLAY including mudstone				13					
TP2/07	1.00 - 1.20	ES	MADE GROUND:Black silty sandy fine to coarse GRAVEL of mudstone and coal				16					
TP2/08	0.10 - 0.20	ES	MADE GROUND:Grey and black clayey sandy fine to coarse GRAVEL of mudstone				12					
TP2/08	0.50 - 0.60	ES	MADE GROUND:Black clayey slightly sandy fine to coarse GRAVEL of mudstone and coal				10					
TP2/08	0.50 - 0.60	B	MADE GROUND:Black clayey slightly sandy fine to coarse GRAVEL of mudstone and coal									Particle Size analysis
TP2/08	1.00 - 1.20	ES	MADE GROUND:Grey and black clayey slightly sandy fine to coarse GRAVEL of mudstone and coal				11					
TP2/09	0.10 - 0.20	ES	MADE GROUND:Black and grey slightly sandy slightly gravelly CLAY including mudstone,brick and coal				9.8					
TP2/09	0.50 - 0.60	ES	MADE GROUND:Grey and black slightly sandy slightly gravelly CLAY including mudstone brick and coal				11					

Remarks

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Laboratory - Results Summary

Soil Mechanics

Project
Cronton Colliery
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Sheet L1/8

Samples				Classification					Strength			Other Tests
Hole	Depth	Type	Description	<425 I_p	Prep w_L	w_P	Water %	γ_b Mg/m^3	Test	σ_3 kPa	C kPa	
TP2/09	0.50 - 0.60	B	MADE GROUND:Grey and black slightly sandy slightly gravelly CLAY including mudstone brick and coal									Particle Size analysis
TP2/09	1.00 - 1.20	ES	MADE GROUND:Grey silty sandy fine to coarse GRAVEL of mudstone				12					
TP2/10	0.10 - 0.20	ES	MADE GROUND:Grey and black slightly sandy slightly gravelly CLAY including mudstone,brick and coal				14					
TP2/10	0.50 - 0.60	ES	MADE GROUND:Grey and black slightly sandy slightly gravelly CLAY including mudstone brick and coal				12					
TP2/10	0.50 - 0.60	B	MADE GROUND:Grey and black slightly sandy slightly gravelly CLAY including mudstone brick and coal									Particle Size analysis
TP2/10	1.00 - 1.20	ES	MADE GROUND:Grey and black slightly sandy slightly gravelly CLAY including mudstone brick and coal				16					
TP2/11	0.10 - 0.20	ES	MADE GROUND:Grey brown sandy gravelly CLAY(TOPSOIL)				14					
TP3/01	0.10 - 0.20	ES	MADE GROUND:Black slightly sandy gravelly CLAY including mudstone				19					
TP2/11	0.50 - 0.60	ES	MADE GROUND:Brown and black slightly sandy slightly gravelly CLAY including mudstone,brick and coal				11					
TP2/11	0.50 - 0.60	B	MADE GROUND:Brown and black slightly sandy slightly gravelly CLAY including mudstone,brick and coal									Particle Size analysis
TP3/01	0.50 - 0.60	ES	MADE GROUND:Brown and black slightly sandy slightly gravelly CLAY including mudstone brick and coal				24					

Remarks

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Laboratory - Results Summary

Soil Mechanics

Project
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Sheet L1/9

Samples				Classification					Strength			Other Tests
Hole	Depth	Type	Description	<425 I_P	Prep w_L	w_P	Water %	γ_{b_3} Mg/m	Test	σ_3 kPa	C kPa	
TP3/01	0.50 - 0.60	B	MADE GROUND:Brown and black slightly, sandy slightly gravelly CLAY including mudstone brick and coal									Particle Size analysis
TP2/11	1.00 - 1.20	ES	MADE GROUND:Black sandy gravelly CLAY including mudstone and coal				12					
TP3/01	1.00 - 1.20	ES	MADE GROUND:Black sandy clayey fine to coarse GRAVEL including mudstone brick and coal				13					
TP3/02	0.10 - 0.20	ES	MADE GROUND:Grey and black sandy gravelly CLAY				18					
TP3/02	0.50 - 0.60	ES	MADE GROUND:Grey and black slightly sandy slightly gravelly CLAY including mudstone				17					
TP3/02	0.50 - 0.60	B	MADE GROUND:Grey and black slightly sandy slightly gravelly CLAY including mudstone									Particle Size analysis
TP3/02	1.00 - 1.20	ES	MADE GROUND:Grey and black slightly sandy slightly gravelly CLAY including coal and mudstone				18					
TP3/03	0.10 - 0.30	ES	MADE GROUND:Grey slightly clayey sandy fine to coarse GRAVEL				11					
TP3/03	0.50 - 0.60	ES	MADE GROUND:Grey and black slightly sandy gravelly CLAY including mudstone				11					
TP3/03	0.50 - 0.60	B	MADE GROUND:Grey and black slightly sandy gravelly CLAY including mudstone									Particle Size analysis
TP3/03	1.00 - 1.20	ES	MADE GROUND:Grey slightly clayey gravelly fine to coarse SAND of mudstone				13					
TP3/04	0.10 - 0.20	D	MADE GROUND:Grey and brown sandy gravelly CLAY				20					

Remarks

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Laboratory - Results Summary

Soil Mechanics

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Cronton Colliery
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Sheet L1/10

Samples				Classification					Strength			Other Tests
Hole	Depth	Type	Description	<425 I_P	Prep w_L	w_P	Water %	γ_{b_3} Mg/m	Test	σ_3 kPa	C kPa	
TP3/04	0.50 - 0.60	D	MADE GROUND:Yellow and grey slightly sandy slightly gravelly CLAY				15					
TP3/04	0.50 - 0.60	B	MADE GROUND:Yellow and grey slightly sandy slightly gravellly CLAY									Particle Size analysis
TP3/04	1.00 - 1.20	D	MADE GROUND:Grey and black silty fine and medium SAND				18					
TP3/05	0.10 - 0.20	ES	MADE GROUND:Black slightly sandy clayey fine to coarse GRAVELL including mudstone				12					
TP3/05	0.50 - 0.60	ES	MADE GROUND:Grey and black slightly sandy gravelly CLAY including mudstone brick and coal				12					
TP3/05	0.50 - 0.60	B	MADE GROUND:Grey and black slightly sandy gravelly CLAY including mudstone brick and coal									Particle Size analysis
TP3/05	1.00 - 1.20	ES	MADE GROUND:Grey and black slightly sandy gravelly CLAY including mudstone brick and coal				12					
TP3/6	0.10 - 0.20	D	MADE GROUND:Grey silty sandy fine to coarse GRAVEL of mudstone				5.4					
TP3/6	0.50 - 0.60	D	MADE GROUND:Grey slightly silty slightly sandy fine to coarse GRAVEL and COBBLES of mudstone and siltstone				6.1					
TP3/6	0.50 - 0.60	B	MADE GROUND:Grey slightly silty slightly sandy fine to coarse GRAVEL and COBBLES of mudstone and siltstone									Particle Size analysis
TP3/6	1.00 - 1.20	D	MADE GROUND:Grey slightly silty slightly sandy fine to coarse GRAVEL and COBBLES of mudstone and siltstone				5.7					

Remarks

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Laboratory - Results Summary

Soil Mechanics

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Sheet L1/11

Samples				Classification					Strength			Other Tests
Hole	Depth	Type	Description	<425 I_P	Prep w_L	w_P	Water %	γ_b Mg/m^3	Test	σ_3 kPa	C kPa	
TP3/7	0.10 - 0.20	D	MADE GROUND:Black slightly clayey sandy fine to coarse GRAVEL including mudstone and coal				12					
TP3/7	0.50 - 0.60	D	MADE GROUND:Black clayey sandy fine to coarse GRAVEL including mudstone brick and coal				7.1					
TP3/7	0.50 - 0.60	B	MADE GROUND:Black clayey sandy fine to coarse GRAVEL including mudstone brick and coal									Particle Size analysis
TP3/7	1.00 - 1.20	D	MADE GROUND:Black clayey sandy fine to coarse GRAVEL of mudstone				7.5					
TP3/08	0.10 - 0.20	ES	MADE GROUND:Grey and black sandy gravelly CLAY				14					
TP3/08	0.50 - 0.60	ES	MADE GROUND:Grey and black slightly sandy gravelly CLAY including mudstone brick and coal,occasional wood				14					
TP3/08	0.50 - 0.60	B	MADE GROUND:Grey and black slightly sandy gravelly CLAY including mudstone brick and coal,occasional wood									Particle Size analysis
TP3/08	1.00 - 1.20	ES	MADE GROUND:Black clayey sandy fine to coarse GRAVEL of mudstone				19					
TP3/09	0.10 - 0.20	ES	MADE GROUND:Grey clayey sandy GRAVEL including mudstone				10					
TP3/09	0.50 - 0.60	ES	MADE GROUND:Grey and black silty slightly sandy cobbly fine to coarse GRAVEL including mudstone and coal				12					
TP3/09	0.50 - 0.60	B	MADE GROUND:Grey and black silty slightly sandy cobbly fine to coarse GRAVEL including mudstone and coal									Particle Size analysis

Remarks

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Sheet L1/12

Samples				Classification					Strength			Other Tests
Hole	Depth	Type	Description	<425 I_P	Prep w_L	w_P	Water %	γ_b Mg/m^3	Test	σ_3 kPa	C kPa	
TP3/09	1.00 - 1.20	ES	MADE GROUND:Black sandy fine to coarse GRAVEL of mudstone and coal				13					
TP3/10	0.00 - 0.20	D	MADE GROUND:Grey sandy gravelly TOPSOIL				8.6					
TP3/10	0.50 - 0.60	D	MADE GROUND:Grey dark grey clayey sandy fine to coarse GRAVEL and occasional cobbles including mudstone,brick and coal				11					
TP3/10	0.50 - 0.60	B	MADE GROUND:Grey dark grey clayey sandy fine to coarse GRAVEL and occasional cobbles including mudstone brick and coal									Particle Size analysis
TP3/10	1.00 - 1.20	D	MADE GROUND:Dark grey slightly sandy clayey fine to coarse GRAVEL				9.9					
TP3/11	0.10 - 0.20	D	MADE GROUND:Grey slightly sandy GRAVEL				9.2					
TP3/11	0.50 - 0.60	ES	MADE GROUND:Brown,grey clayey slightly sandy fine to coarse GRAVEL of mudstone,coal and brick				8.6					
TP3/11	0.50 - 0.60	B	MADE GROUND:Brown,grey clayey slightly sandy fine to coarse GRAVEL of mudstone,coal and brick									Particle Size analysis
TP3/11	1.00 - 1.20	D	MADE GROUND:Dark grey clayey sandy GRAVEL of mudston,siltsone and sandstone				11					
TP41	2.00	B	Grey brown slightly sandy gravelly CLAY.Gravel includes mudstone									w% / Dry Density CBR Particle Size analysis CBR Test suspended: Load ring maximum exceeded
TP41	3.50	B	Blue grey gravelly CLAY.Gravel includes mudstone(possible bedrock)	91 17	425µ 42	Sieve 25	17					Particle Size analysis

Remarks

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Laboratory - Results Summary

Soil Mechanics

Project
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Contract F3605

Sheet L1/13

Samples				Classification					Strength			Other Tests
Hole	Depth	Type	Description	<425 I_P	Prep w_L	w_P	Water %	γ_{b_3} Mg/m	Test	σ_3 kPa	C kPa	
TP44	1.90	B	Grey,black MUDSTONE recovered as clayey slightly sandy fine to coarse gravel	67 20	425µ 47	Sieve 27	15					w% / Dry Density CBR Particle Size analysis CBR Test suspended : Load ring maximum exceeded

Remarks

Form 10/2

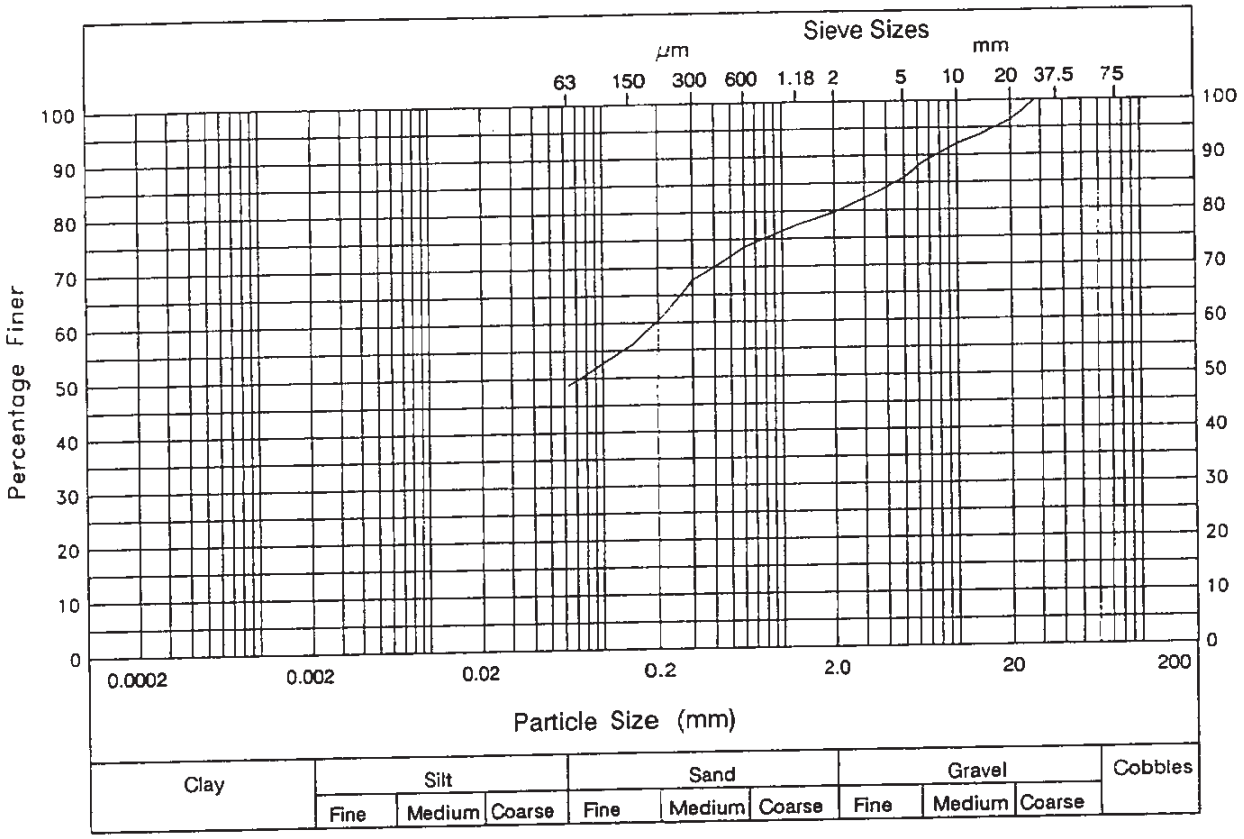
Laboratory - Results Summary

Soil Mechanics

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Cronton Colliery
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Contract
F3605

Sheet
L1/14

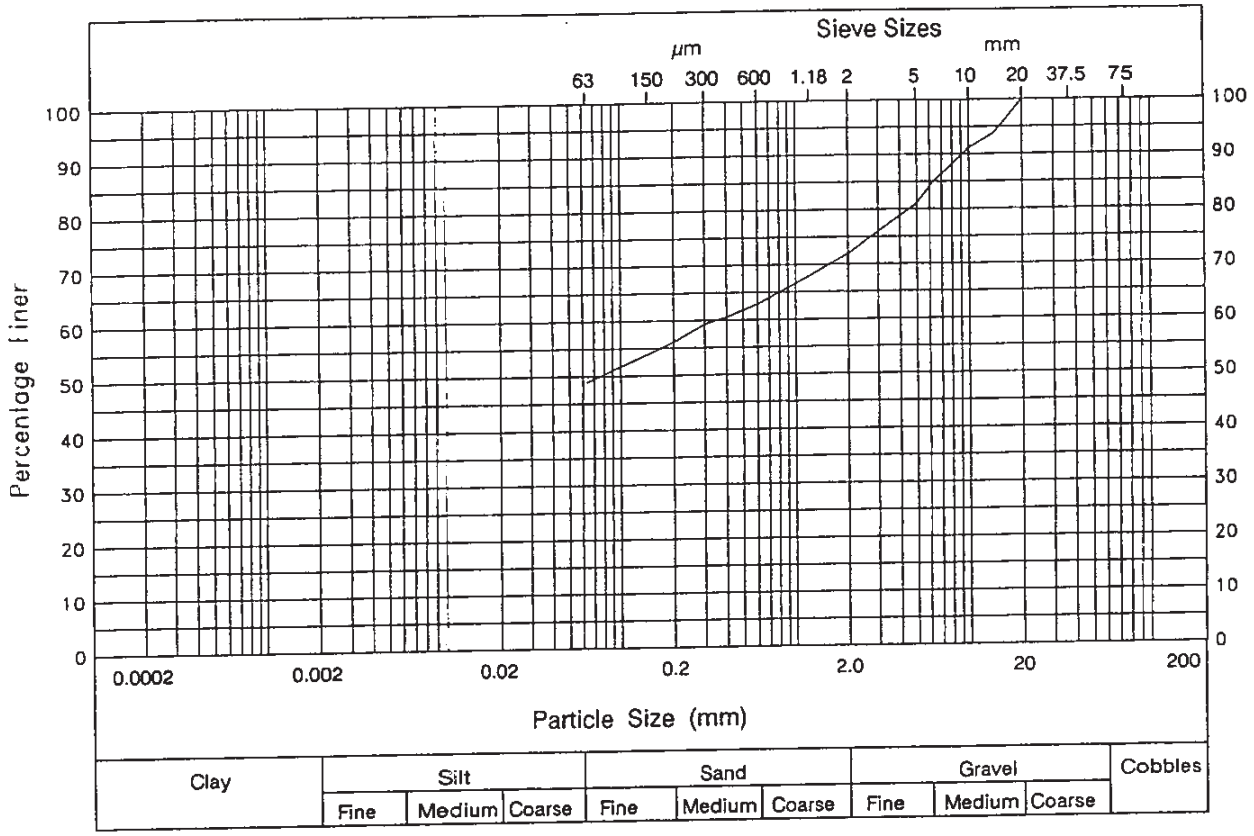


Particle Size	% Passing	Particle Size	% Passing
28 mm	100	212 µm	61
20 mm	96	150 µm	56
14 mm	94	63 µm	49
10 mm	92		
6.3 mm	88		
5 mm	86		
3.35 mm	83		
2 mm	80		
1.18 mm	77		
600 µm	74		
425 µm	71		
300 µm	68		

Hole 101	Description MADE GROUND:Stiff dark grey slightly sandy slightly gravelly CLAY including mudstone and coal
Depth 2.20 -2.70	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/1

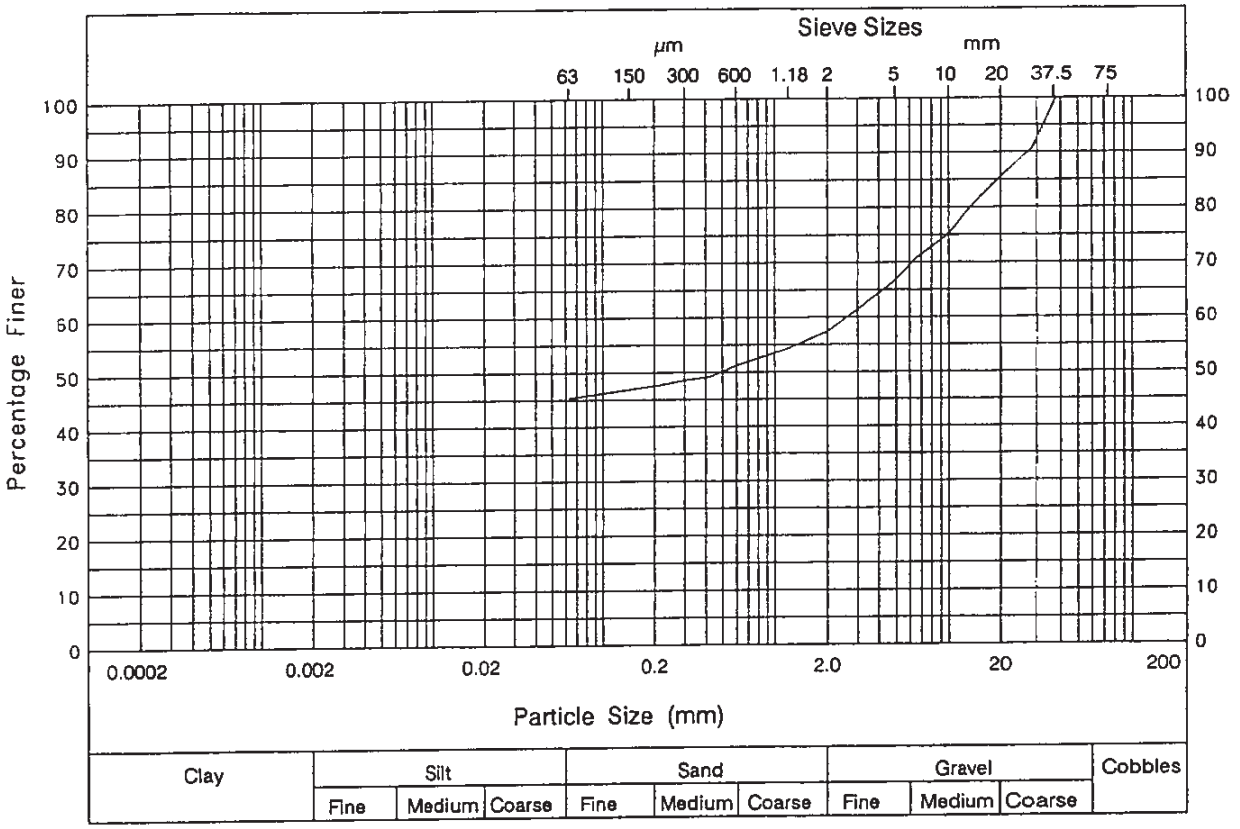


Particle Size	% Passing	Particle Size	% Passing
20 mm	100	150 µm	54
14 mm	94	63 µm	49
10 mm	91		
6.3 mm	85		
5 mm	81		
3.35 mm	77		
2 mm	72		
1.18 mm	68		
600 µm	63		
425 µm	61		
300 µm	59		
212 µm	57		

Hole 101	Description MADE GROUND:Black slightly sandy slightly gravelly CLAY including brick,coal and coal dust
Depth 6.50 -7.00	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/2

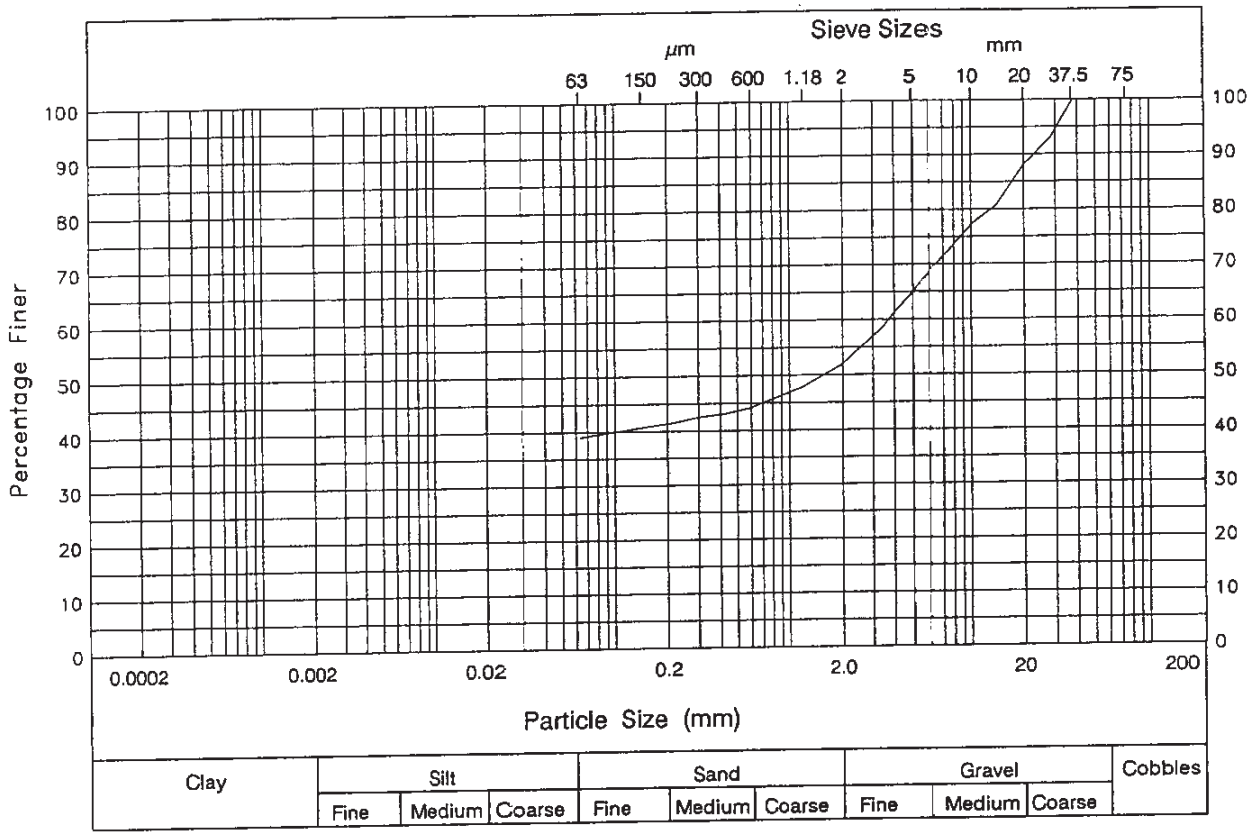


Particle Size	% Passing	Particle Size	% Passing
37.5 mm	100	300 µm	49
28 mm	90	212 µm	48
20 mm	86	150 µm	47
14 mm	81	63 µm	45
10 mm	75		
6.3 mm	70		
5 mm	67		
3.35 mm	63		
2 mm	57		
1.18 mm	54		
600 µm	51		
425 µm	49		

Hole 105	Description MADE GROUND:Black slightly sandy gravelly CLAY.Gravel includes mudstone and sandstone
Depth 0.50 -1.00	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/3

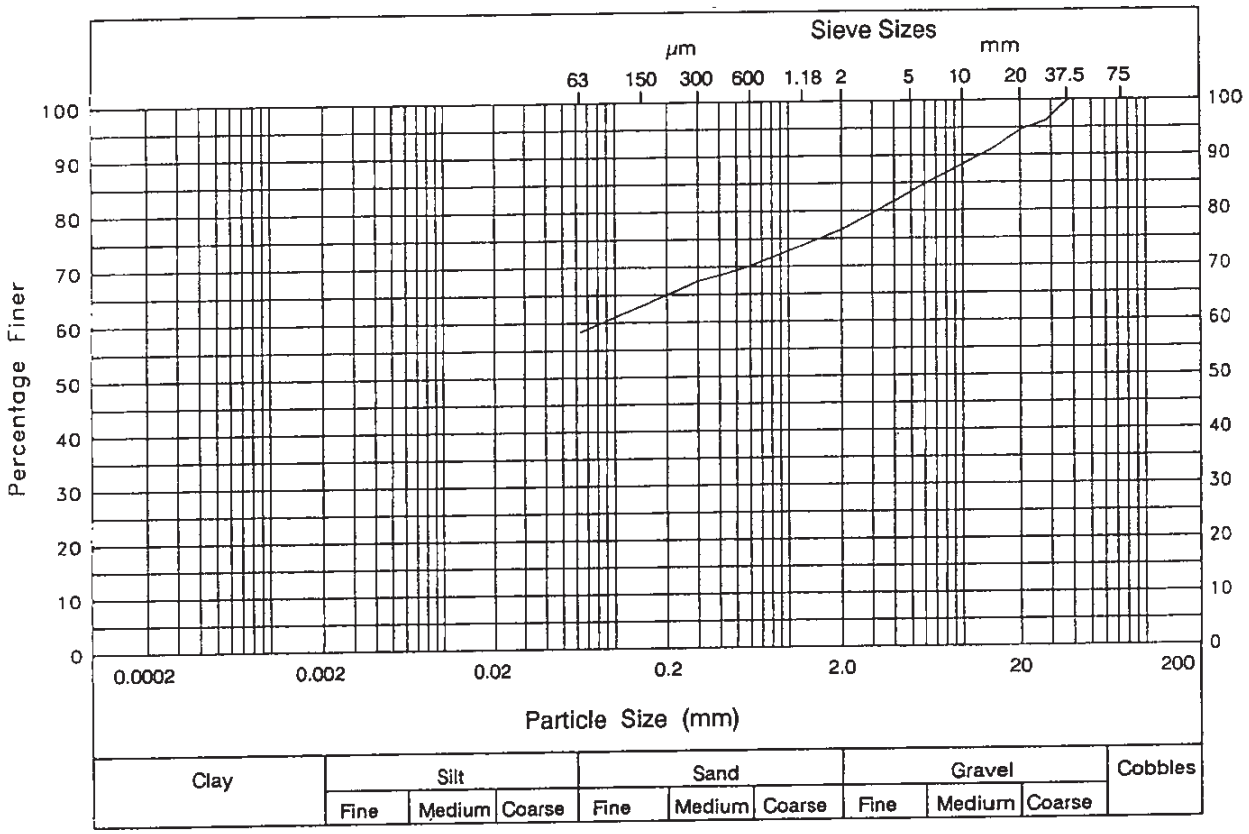


Particle Size	% Passing	Particle Size	% Passing
37.5 mm	100	300 µm	43
28 mm	93	212 µm	42
20 mm	88	150 µm	41
14 mm	81	63 µm	39
10 mm	77		
6.3 mm	70		
5 mm	65		
3.35 mm	58		
2 mm	52		
1.18 mm	48		
600 µm	44		
425 µm	43		

Hole 105	Description MADE GROUND:Dark grey slightly sandy gravelly CLAY.Gravel includes mudstone and coal
Depth 3.20 -3.70	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/4

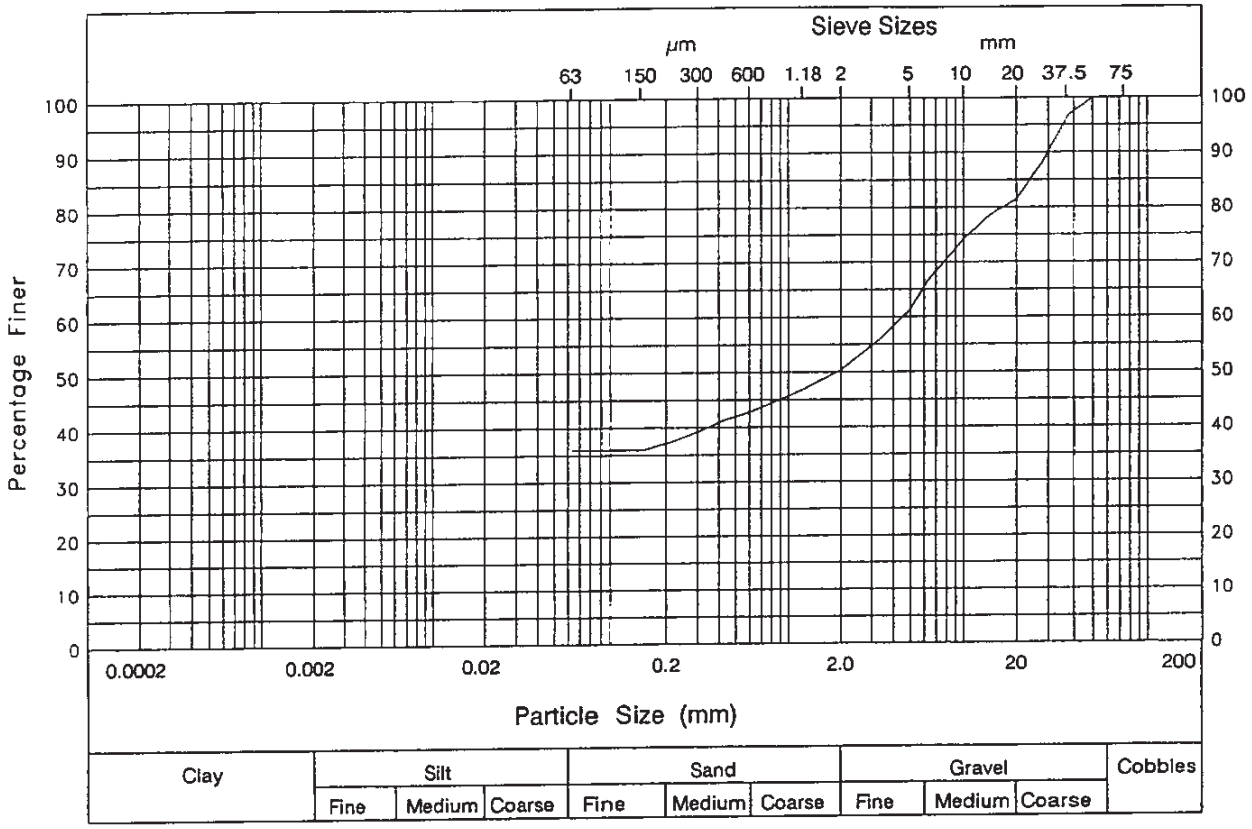


Particle Size	% Passing	Particle Size	% Passing
37.5 mm	100	300 µm	67
28 mm	96	212 µm	65
20 mm	95	150 µm	63
14 mm	91	63 µm	58
10 mm	88		
6.3 mm	85		
5 mm	83		
3.35 mm	80		
2 mm	77		
1.18 mm	74		
600 µm	70		
425 µm	69		

Hole 108	Description MADE GROUND:Black slightly sandy slightly gravelly CLAY.Gravel includes mudstone and coal
Depth 0.50 -1.00	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/5

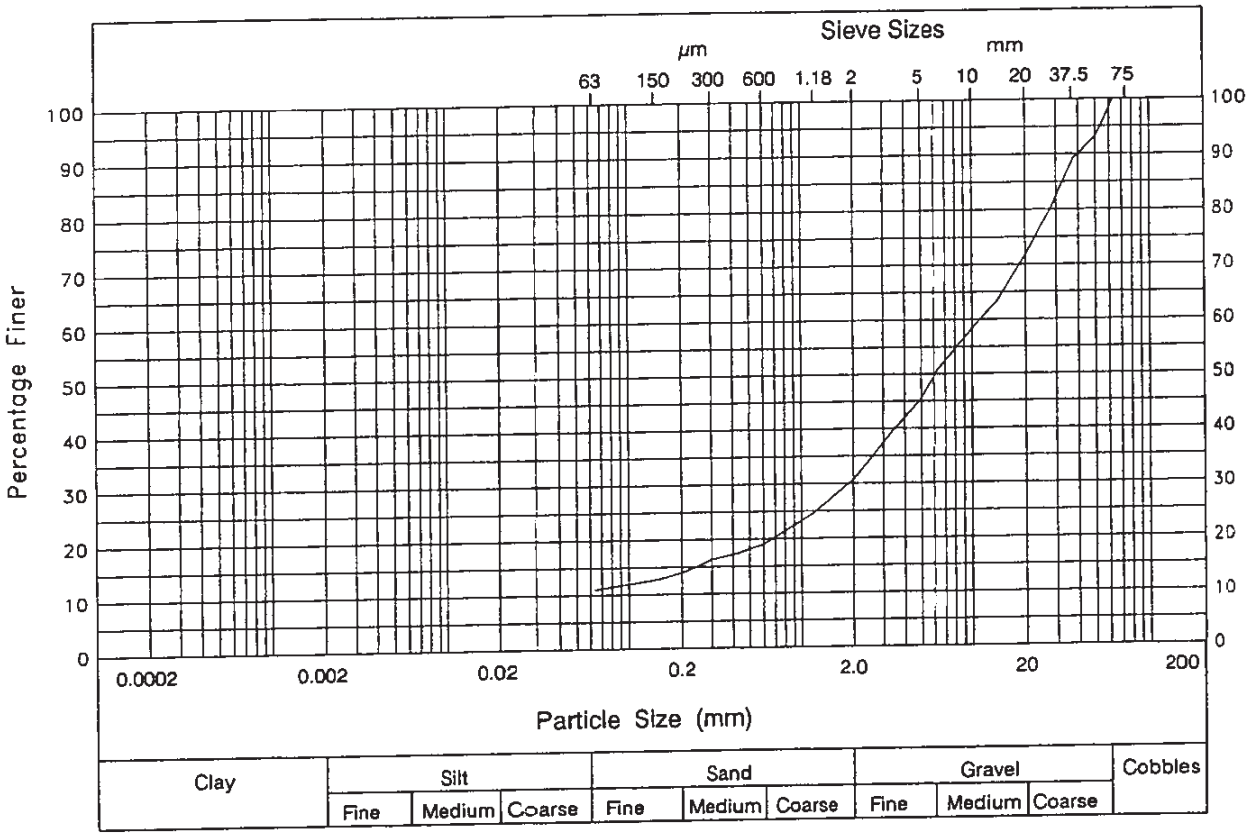


Particle Size	% Passing	Particle Size	% Passing
50 mm	100	425 µm	41
37.5 mm	97	300 µm	39
28 mm	88	212 µm	37
20 mm	81	150 µm	36
14 mm	79	63 µm	36
10 mm	74		
6.3 mm	67		
5 mm	61		
3.35 mm	56		
2 mm	50		
1.18 mm	47		
600 µm	43		

Hole 111	Description MADE GROUND:Black slightly sandy gravelly CLAY.Gravel including sandstone mudstone and coal
Depth 0.20 -1.20	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/6

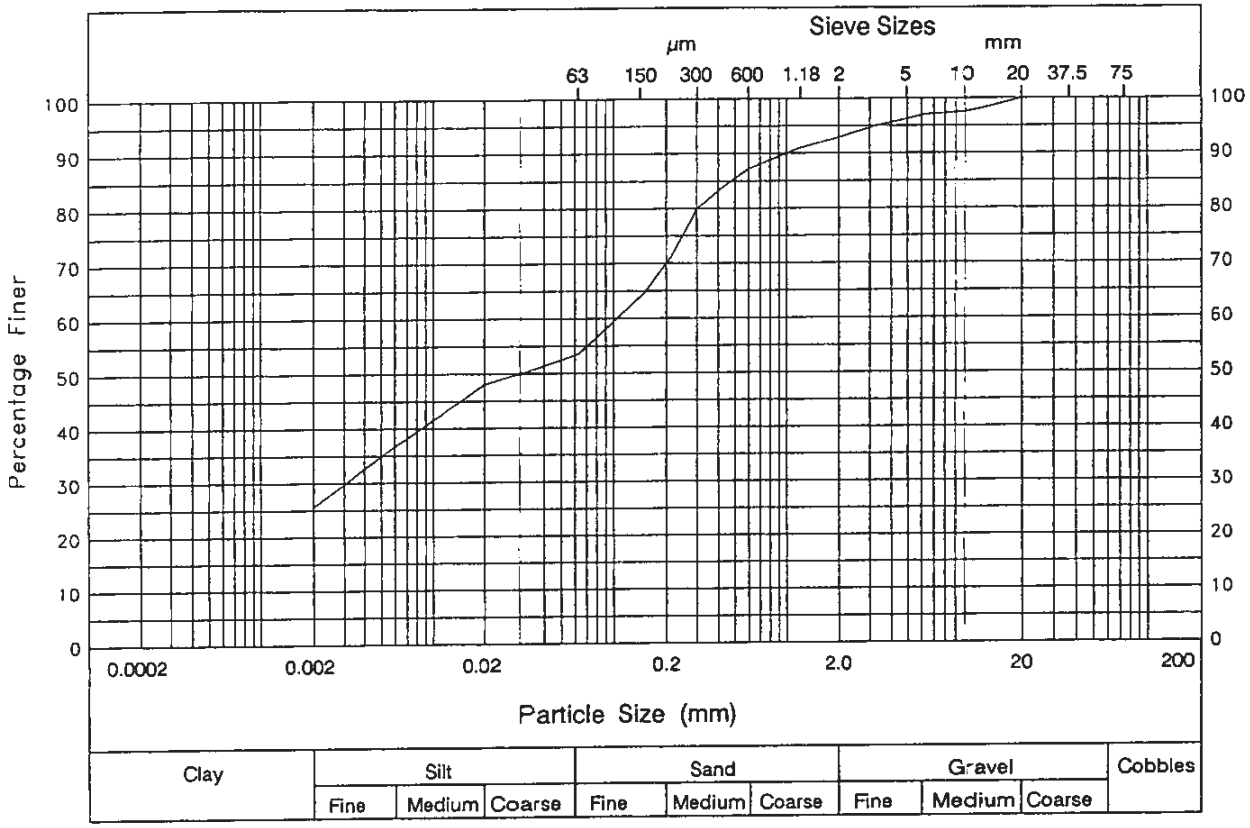


Particle Size	% Passing	Particle Size	% Passing
63 mm	100	600 μm	19
50 mm	93	425 μm	17
37.5 mm	89	300 μm	16
28 mm	80	212 μm	14
20 mm	72	150 μm	13
14 mm	63	63 μm	11
10 mm	58		
6.3 mm	51		
5 mm	45		
3.35 mm	39		
2 mm	31		
1.18 mm	25		

Hole 117	Description MADE GROUND:Black slightly clayey sandy fine to coarse GRAVEL with occasional cobbles including brick,coal,slag and mudstone
Depth 7.50 -8.00	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/7

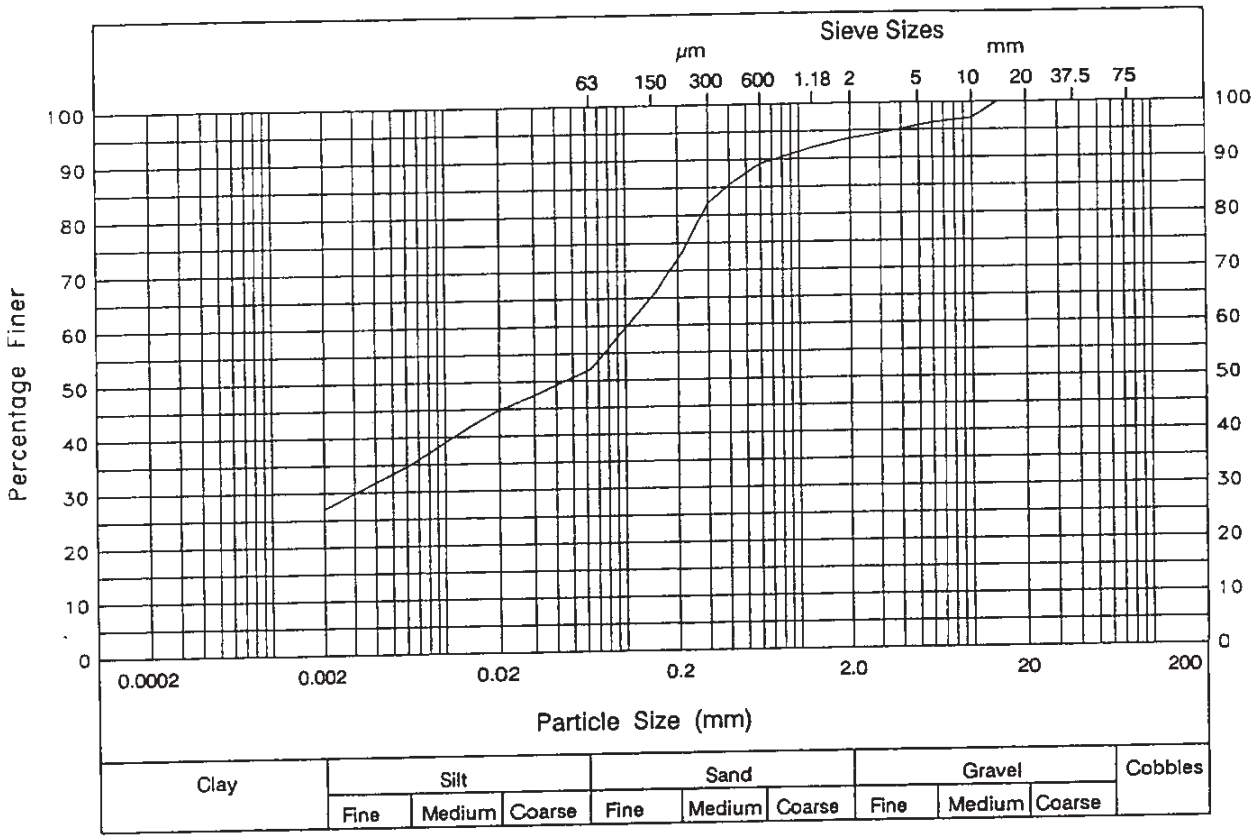


Particle Size	% Passing	Particle Size	% Passing
20 mm	100	150 µm	65
14 mm	99	63 µm	54
10 mm	98	20 µm	48
6.3 mm	97	6 µm	37
5 mm	96	2 µm	26
3.35 mm	95		
2 mm	93		
1.18 mm	91		
600 µm	87		
425 µm	84		
300 µm	80		
212 µm	71		

Hole 124	Description Brown slightly sandy slightly gravelly CLAY
Depth 3.05	
Type D	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/8

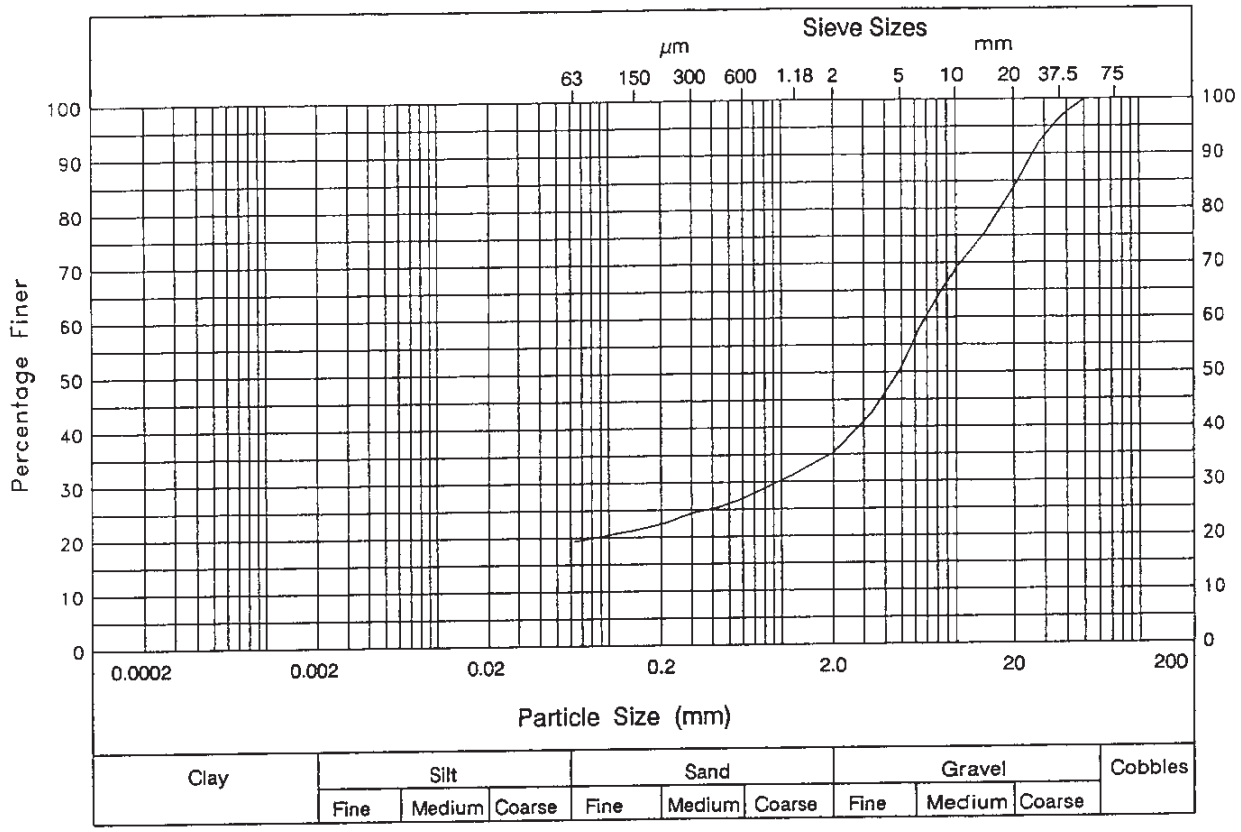


Particle Size	% Passing	Particle Size	% Passing
14 mm	100	63 μm	52
10 mm	97	20 μm	45
6.3 mm	96	6 μm	35
5 mm	96	2 μm	27
3.35 mm	95		
2 mm	94		
1.18 mm	92		
600 μm	89		
425 μm	86		
300 μm	82		
212 μm	73		
150 μm	66		

Hole 129	Description: Orange brown slightly sandy slightly gravelly CLAY
Depth 3.95 -4.00	
Type D	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/9

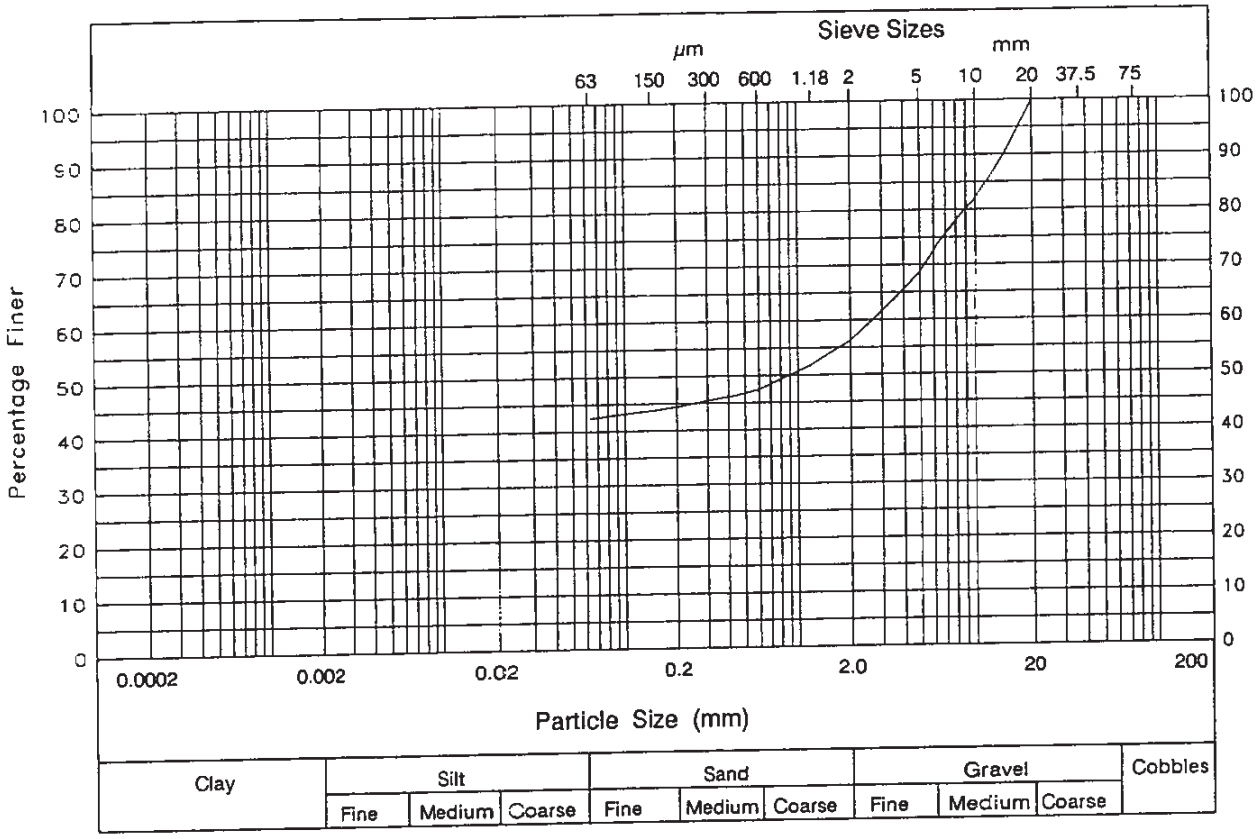


Particle Size	% Passing	Particle Size	% Passing
50 mm	100	425 μm	25
37.5 mm	97	300 μm	24
28 mm	92	212 μm	23
20 mm	84	150 μm	21
14 mm	76	63 μm	19
10 mm	69		
6.3 mm	58		
5 mm	51		
3.35 mm	43		
2 mm	35		
1.18 mm	31		
600 μm	27		

Hole TP1/01	Description MADE GROUND:Grey,black clayey sandy fine to coarse GRAVEL including mudstone coal,sandstone and brick
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/10

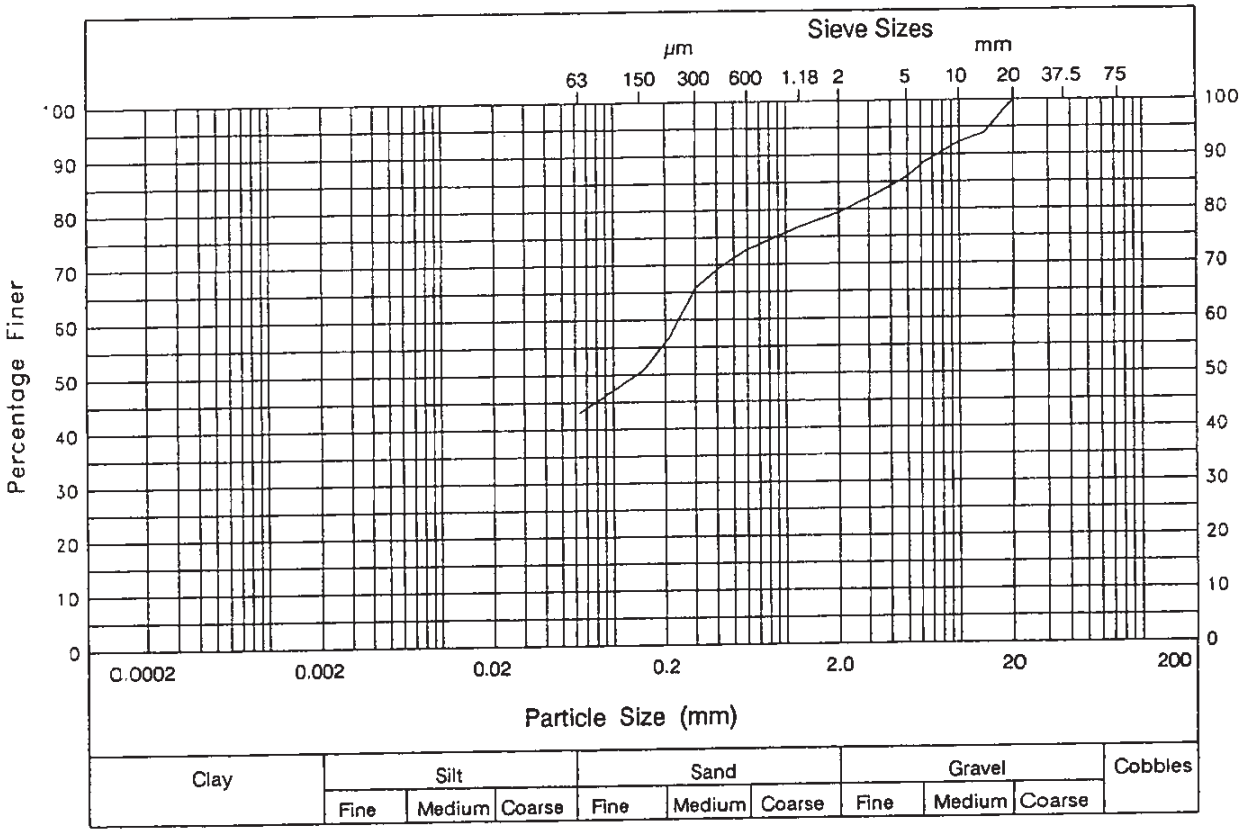


Particle Size	% Passing	Particle Size	% Passing
20 mm	100	150 μm	44
14 mm	90	63 μm	42
10 mm	82		
6.3 mm	74		
5 mm	69		
3.35 mm	63		
2 mm	56		
1.18 mm	52		
600 μm	47		
425 μm	46		
300 μm	45		
212 μm	44		

Hole TP1/02	Description MADE GROUND:Grey,dark grey slightly sandy gravelly CLAY including mudstone, brick,sandstone and coal
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/11

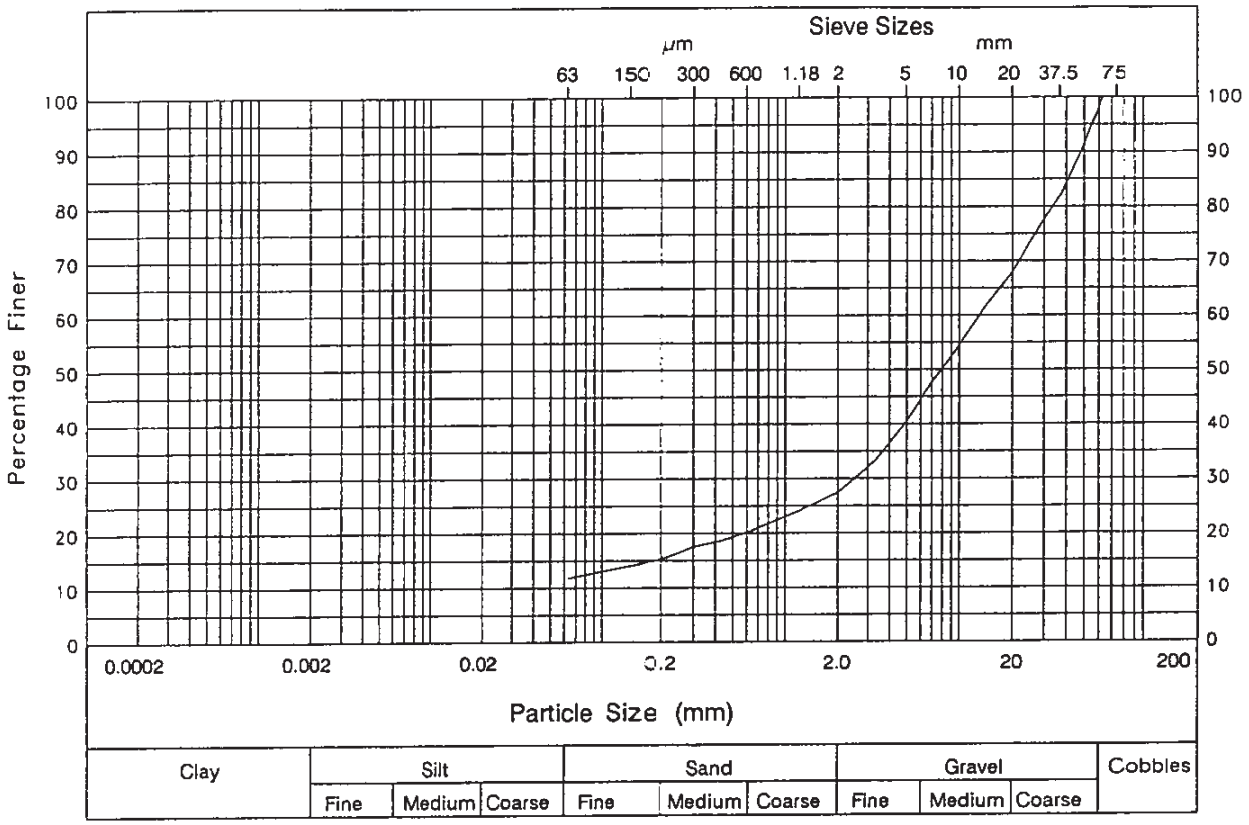


Particle Size	% Passing	Particle Size	% Passing
20 mm	100	150 µm	51
14 mm	94	63 µm	43
10 mm	92		
6.3 mm	89		
5 mm	86		
3.35 mm	83		
2 mm	79		
1.18 mm	77		
600 µm	73		
425 µm	70		
300 µm	66		
212 µm	57		

Hole TP1/03	Description MADE GROUND:Grey brown sandy slightly gravelly CLAY.Gravel includes mudstone,brick,sandstone and occasional plastic and wire
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/12

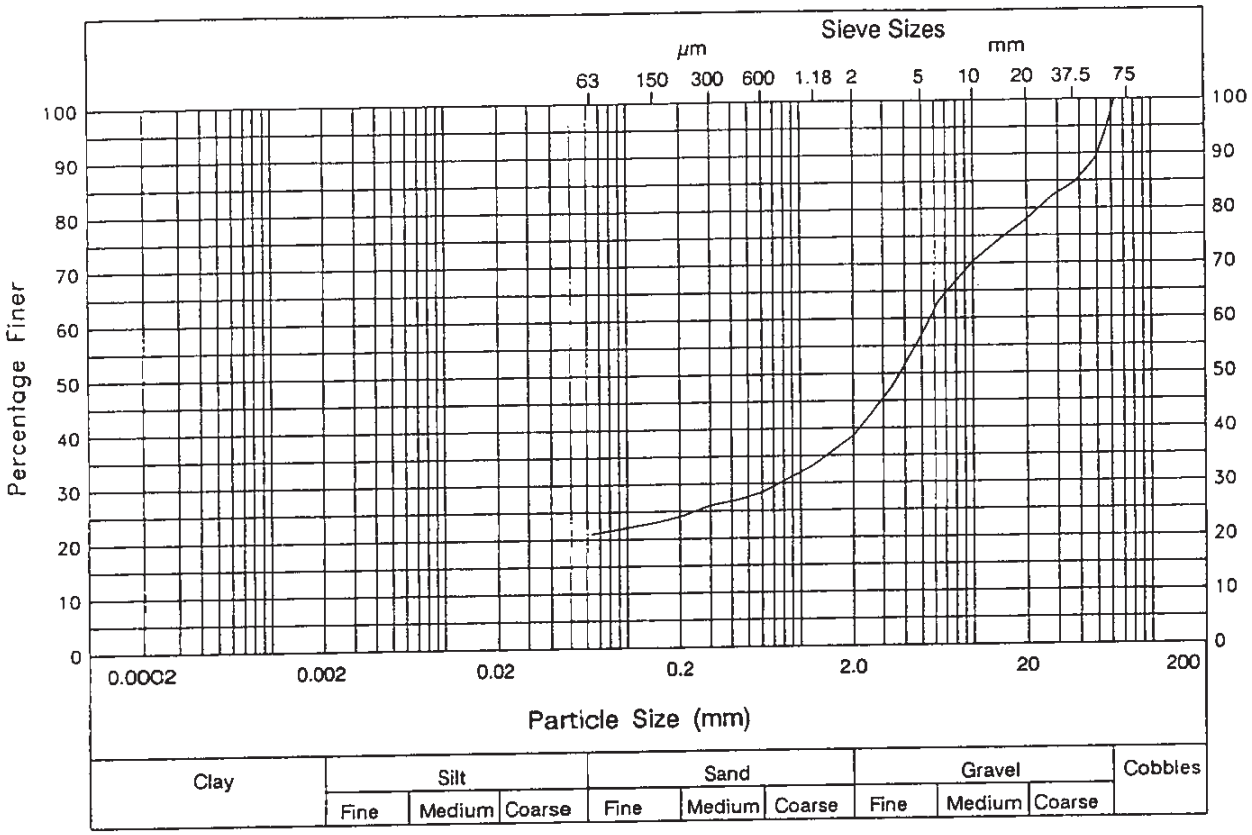


Particle Size	% Passing	Particle Size	% Passing
63 mm	100	600 μm	20
50 mm	91	425 μm	19
37.5 mm	82	300 μm	18
28 mm	76	212 μm	16
20 mm	68	150 μm	14
14 mm	61	63 μm	12
10 mm	54		
6.3 mm	46		
5 mm	40		
3.35 mm	33		
2 mm	27		
1.18 mm	24		

Hole TP1/04	Description MADE GROUND:Brown and black sandy clayey fine to coarse GRAVEL including mudstone,brick with occasional coal and wood
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/13

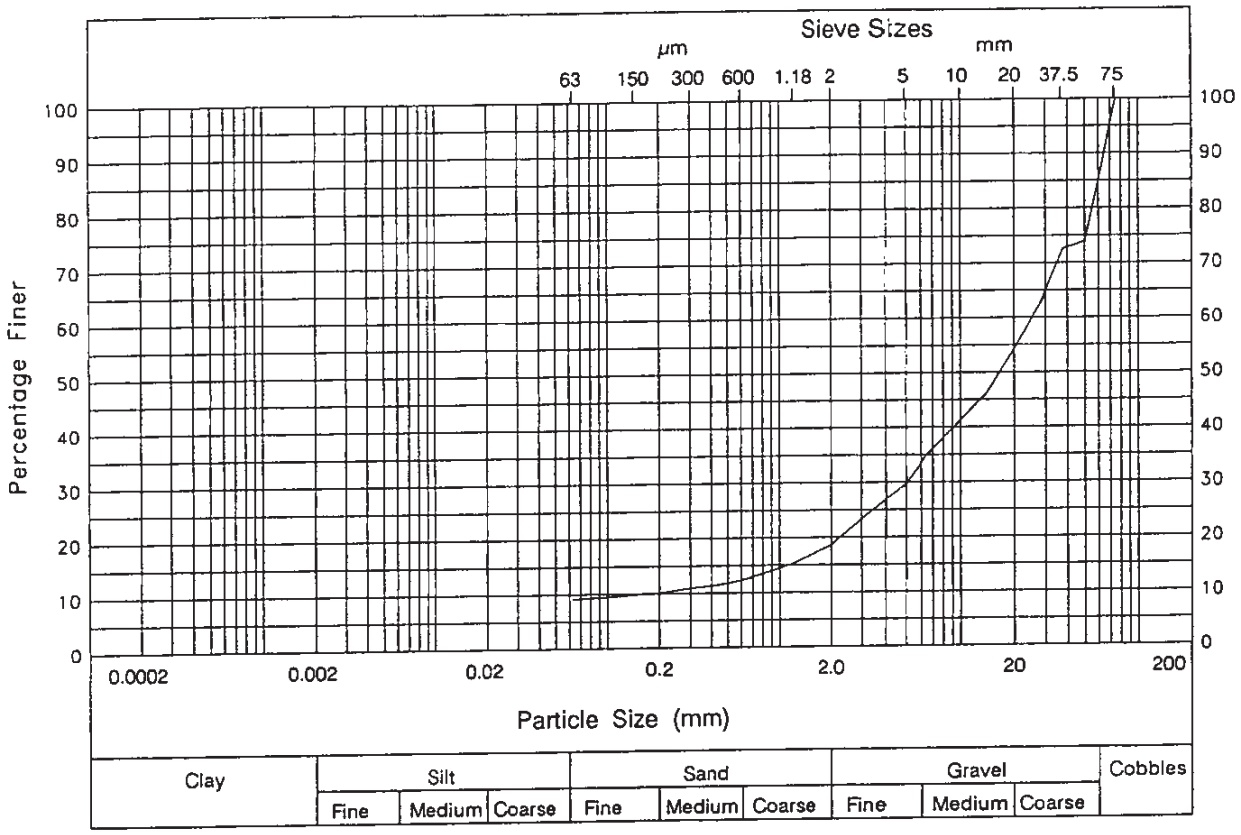


Particle Size	% Passing	Particle Size	% Passing
63 mm	100	600 µm	28
50 mm	89	425 µm	27
37.5 mm	85	300 µm	26
28 mm	82	212 µm	24
20 mm	78	150 µm	23
14 mm	74	63 µm	21
10 mm	70		
6.3 mm	63		
5 mm	57		
3.35 mm	47		
2 mm	39		
1.18 mm	33		

Hole TP1/05	Description
Depth 0.50 -0.60	MADE GROUND:Dark grey,and black sandy clayey fine to coarse GRAVEL of mudstone,sandstone,coal and red burnt shale
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/14

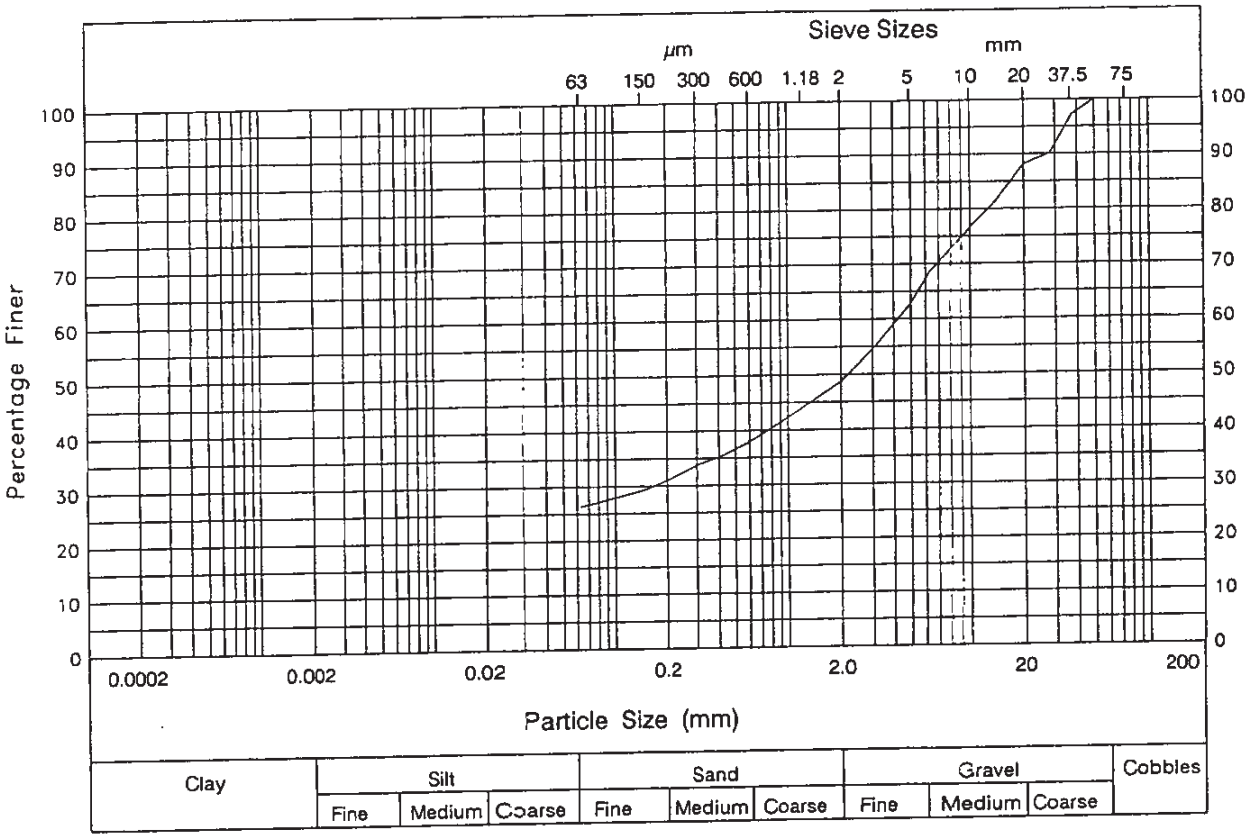


Particle Size	% Passing	Particle Size	% Passing
75 mm	100	1.18 mm	15
63 mm	88	600 μm	12
50 mm	74	425 μm	11
37.5 mm	73	300 μm	11
28 mm	63	212 μm	10
20 mm	54	150 μm	10
14 mm	46	63 μm	9
10 mm	41		
6.3 mm	34		
5 mm	30		
3.35 mm	25		
2 mm	19		

Hole TP1/07	Description MADE GROUND:Black slightly clayey sandy fine to coarse GRAVEL with occasional cobbles including mudstone,sandstone,coal and brick
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient = 169

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/15

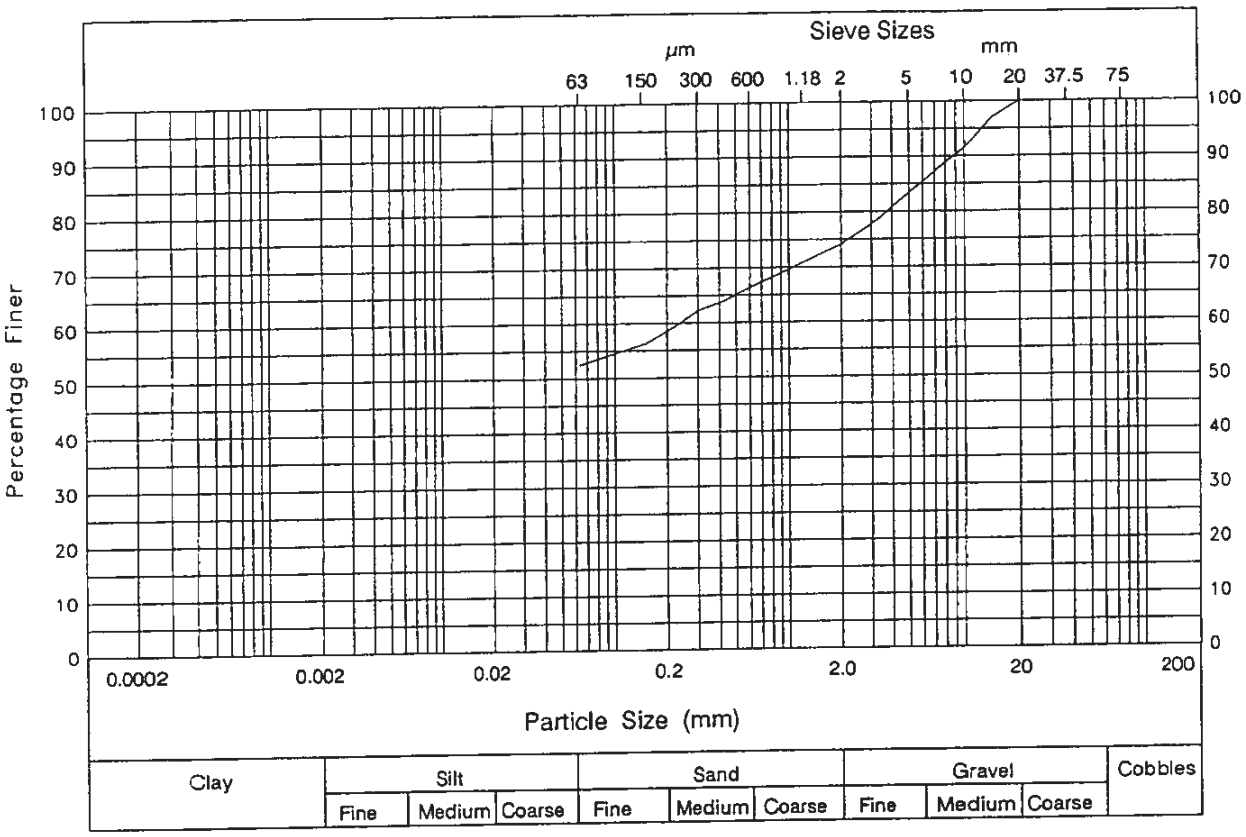


Particle Size	% Passing	Particle Size	% Passing
50 mm	100	425 µm	36
37.5 mm	97	300 µm	34
28 mm	90	212 µm	31
20 mm	88	150 µm	29
14 mm	82	63 µm	26
10 mm	77		
6.3 mm	68		
5 mm	63		
3.35 mm	56		
2 mm	49		
1.18 mm	44		
600 µm	38		

Hole TP2/01	Description MADE GROUND:Grey,black clayey sandy fine to coarse GRAVEL including mudstone,brick,wood and glass
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/16

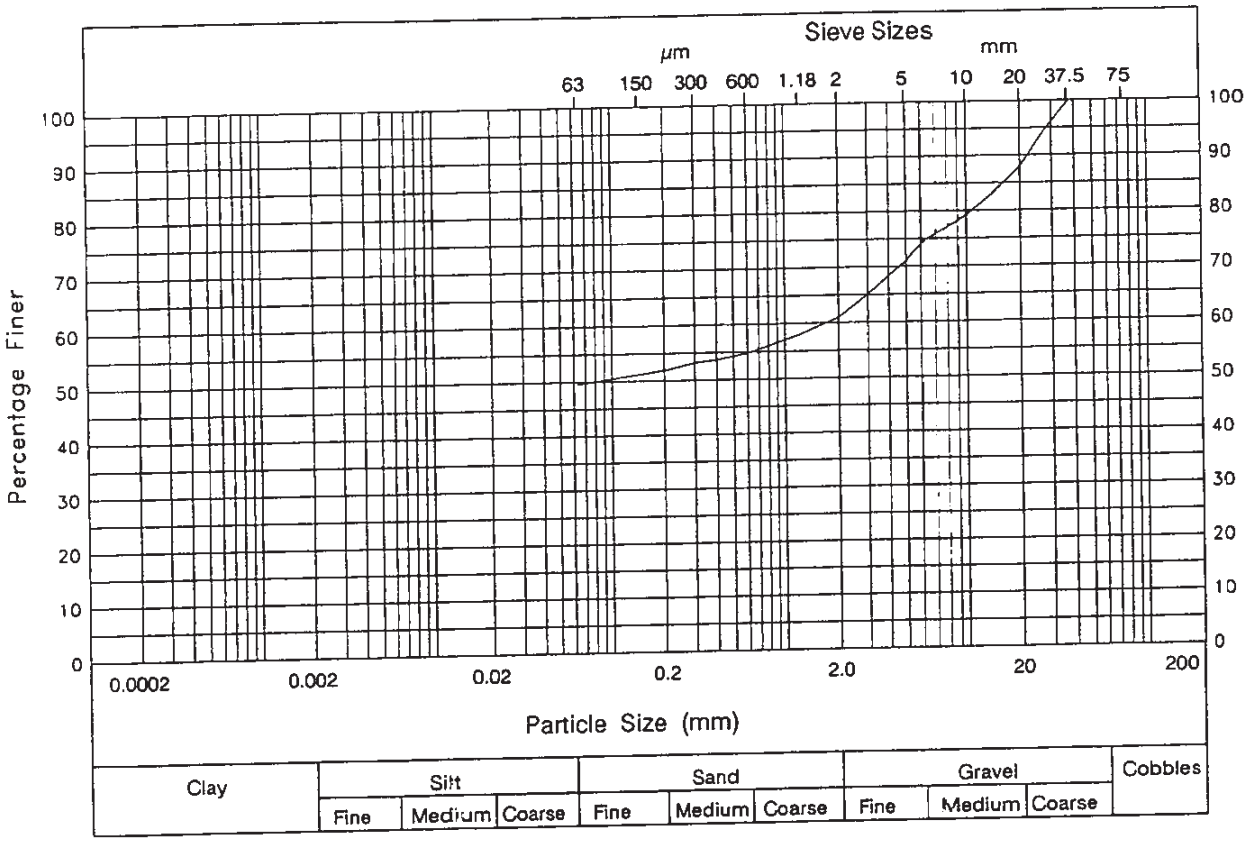


Particle Size	% Passing	Particle Size	% Passing
20 mm	100	150 µm	56
14 mm	97	63 µm	52
10 mm	92		
6.3 mm	86		
5 mm	83		
3.35 mm	79		
2 mm	74		
1.18 mm	71		
600 µm	66		
425 µm	64		
300 µm	62		
212 µm	59		

Hole TP2/02	Description MADE GROUND:Black slightly sandy slightly gravelly CLAY including coal
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

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Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/17

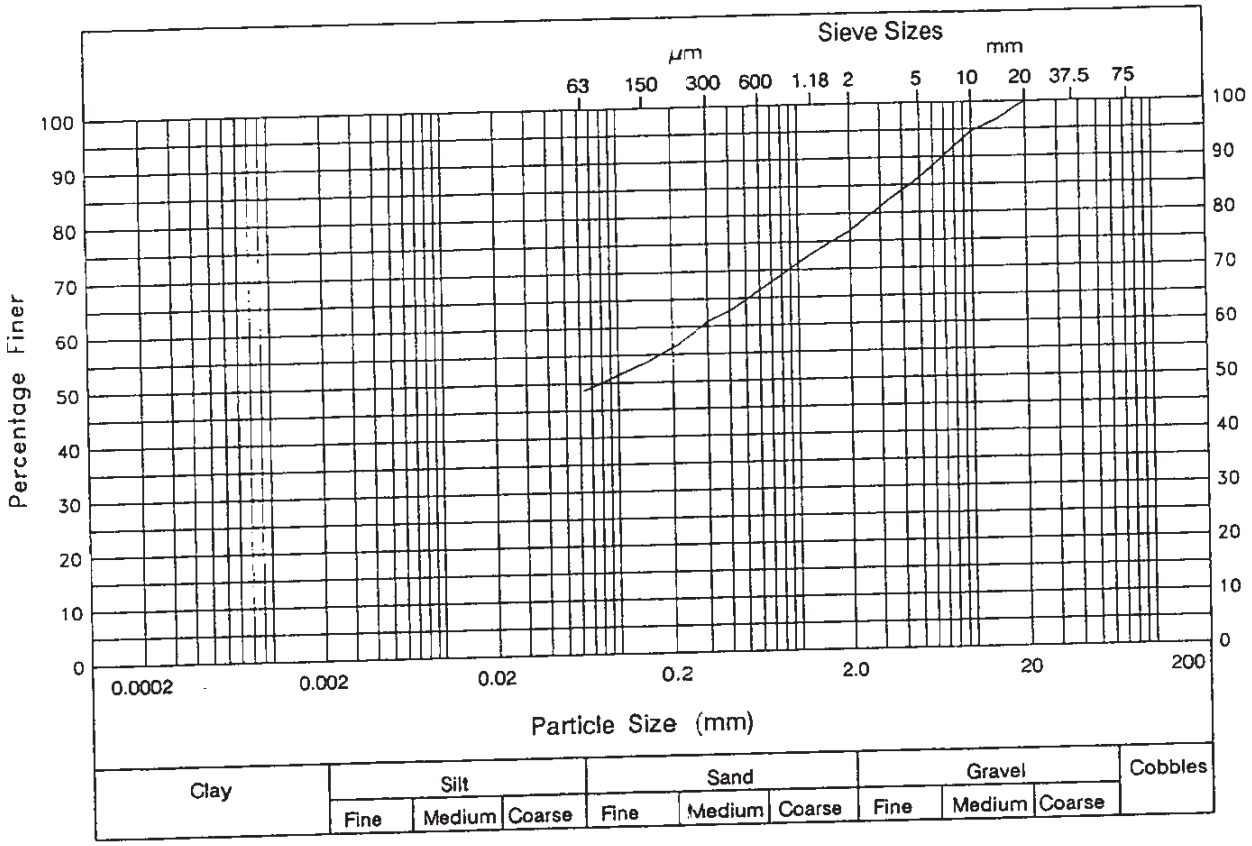


Particle Size	% Passing	Particle Size	% Passing
37.5 mm	100	300 μm	53
28 mm	95	212 μm	52
20 mm	88	150 μm	51
14 mm	83	63 μm	50
10 mm	79		
6.3 mm	75		
5 mm	71		
3.35 mm	66		
2 mm	61		
1.18 mm	58		
600 μm	55		
425 μm	54		

Hole TP2/03	Description MADE GROUND:Black,grey slightly sandy gravelly CLAY including brick, mudstone,coal and occasional wood
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/18

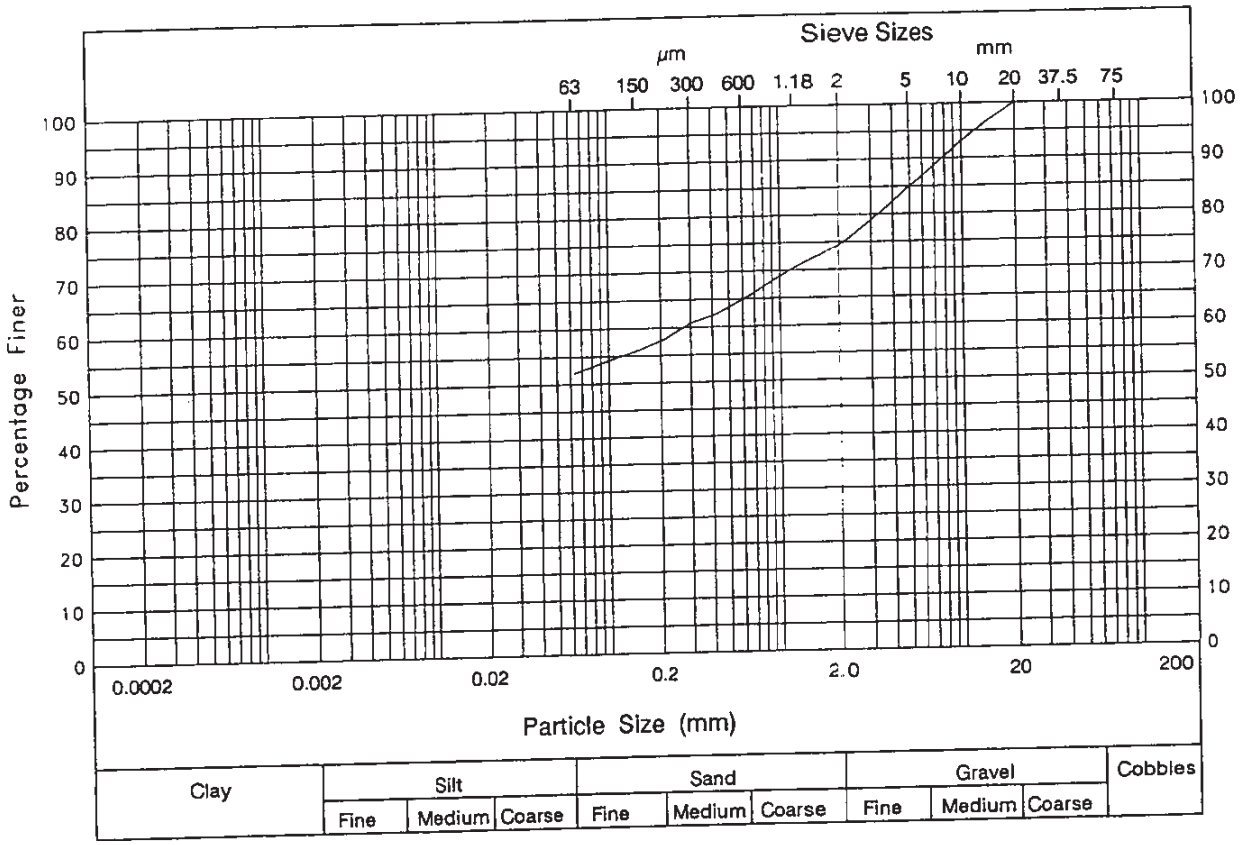


Particle Size	% Passing	Particle Size	% Passing
20 mm	100	150 µm	54
14 mm	97	63 µm	49
10 mm	95		
6.3 mm	89		
5 mm	86		
3.35 mm	82		
2 mm	77		
1.18 mm	73		
600 µm	66		
425 µm	63		
300 µm	61		
212 µm	57		

Hole TP2/04	Description MADE GROUND:Black slightly sandy slightly gravelly CLAY including mudstone and coal
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/19

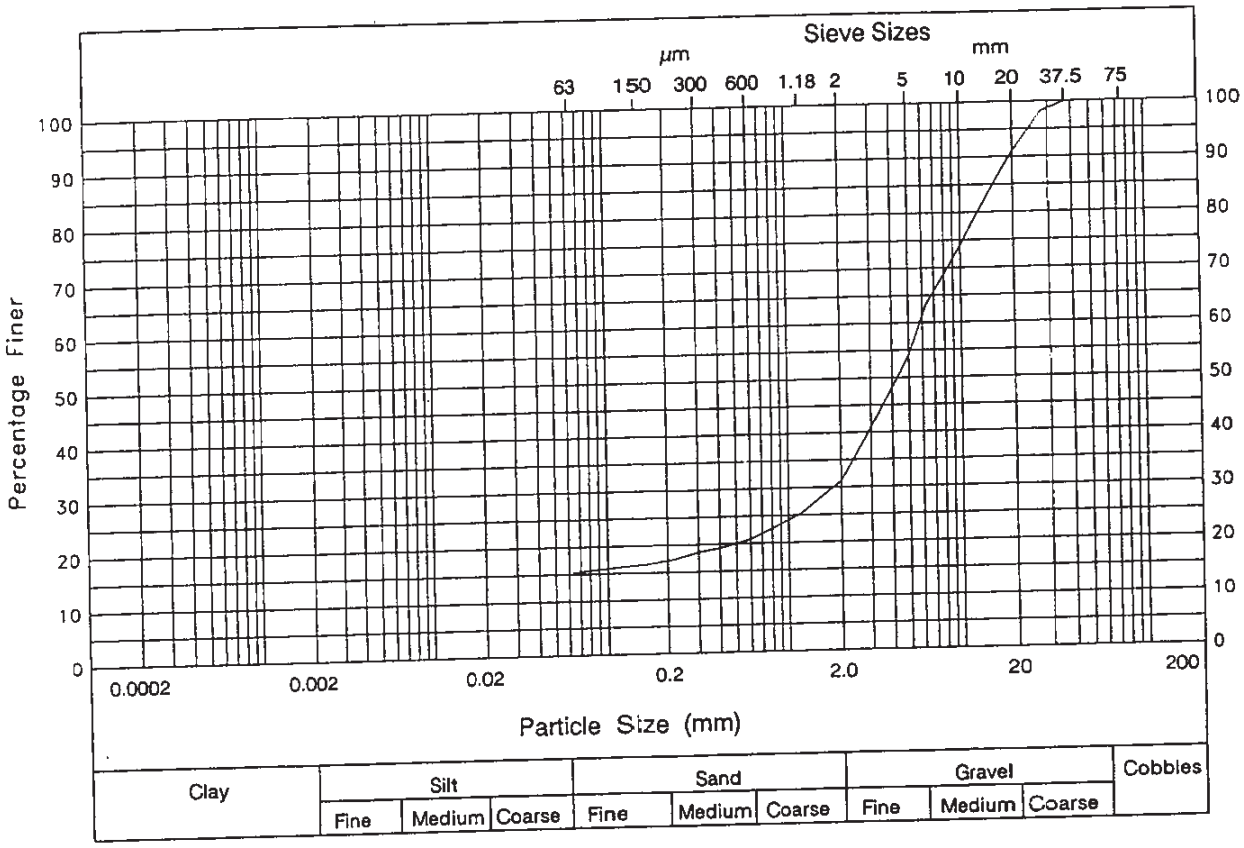


Particle Size	% Passing	Particle Size	% Passing
20 mm	100	150 μm	56
14 mm	97	63 μm	52
10 mm	93		
6.3 mm	87		
5 mm	85		
3.35 mm	80		
2 mm	74		
1.18 mm	70		
600 μm	65		
425 μm	62		
300 μm	61		
212 μm	58		

Hole TP2/05	Description MADE GROUND:Grey and black slightly sandy slightly gravelly CLAY including mudstone and coal
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/20

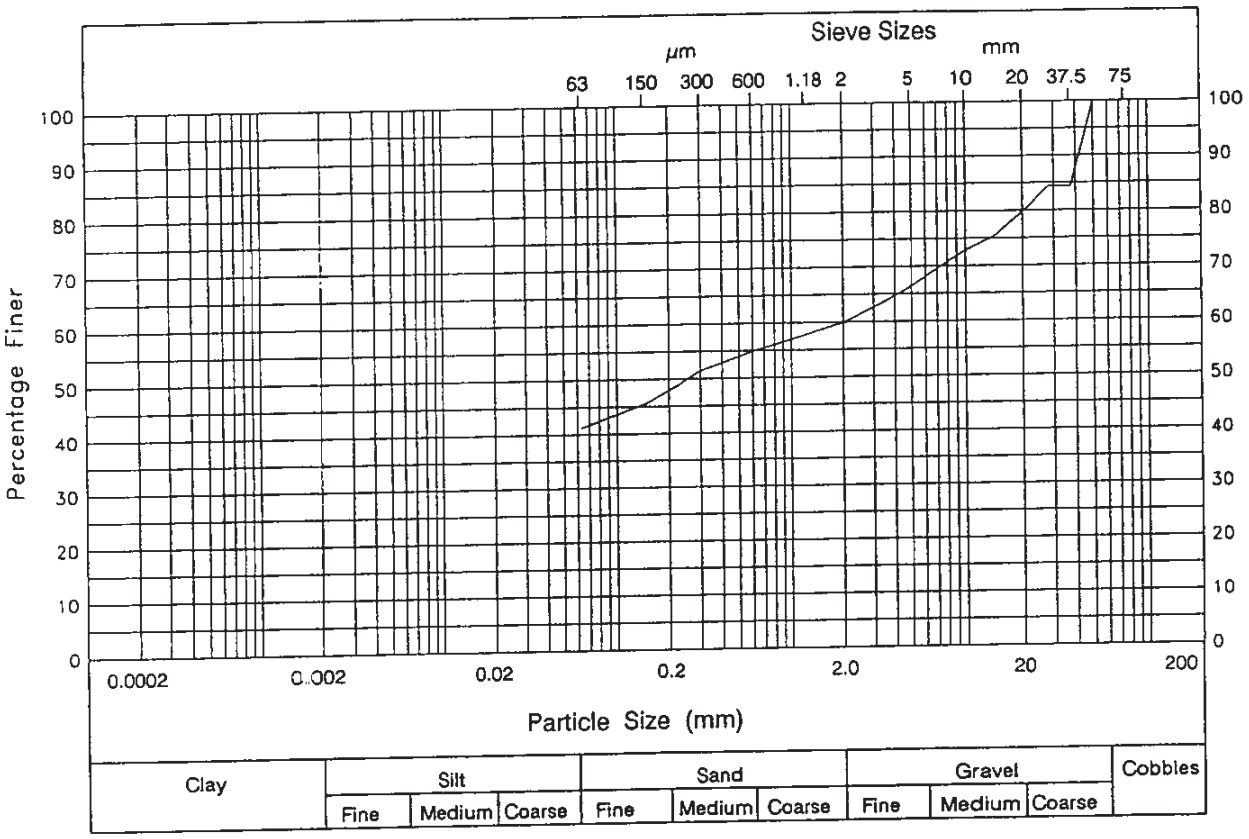


Particle Size	% Passing	Particle Size	% Passing
37.5 mm	100	300 µm	19
28 mm	98	212 µm	17
20 mm	91	150 µm	17
14 mm	82	63 µm	15
10 mm	74		
6.3 mm	63		
5 mm	54		
3.35 mm	44		
2 mm	31		
1.18 mm	25		
600 µm	21		
425 µm	19		

Hole TP2/06	Description MADE GROUND:Black clayey sandy fine to coarse GRAVEL including mudstone and coal
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/21

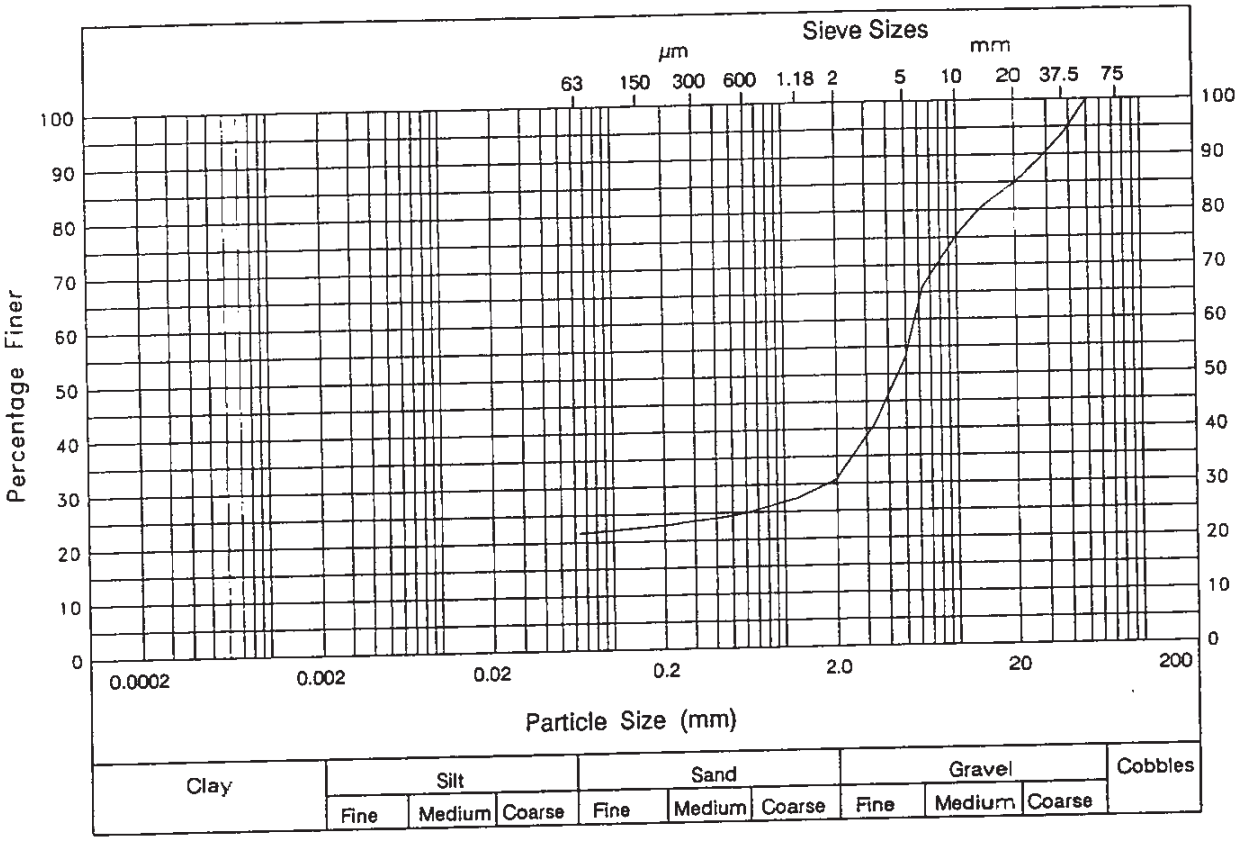


Particle Size	% Passing	Particle Size	% Passing
50 mm	100	425 µm	53
37.5 mm	84	300 µm	51
28 mm	84	212 µm	48
20 mm	80	150 µm	46
14 mm	75	63 µm	41
10 mm	73		
6.3 mm	69		
5 mm	66		
3.35 mm	63		
2 mm	60		
1.18 mm	58		
600 µm	55		

Hole TP2/07	Description MADE GROUND:Grey and black slightly sandy gravelly CLAY including mudstone
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/22

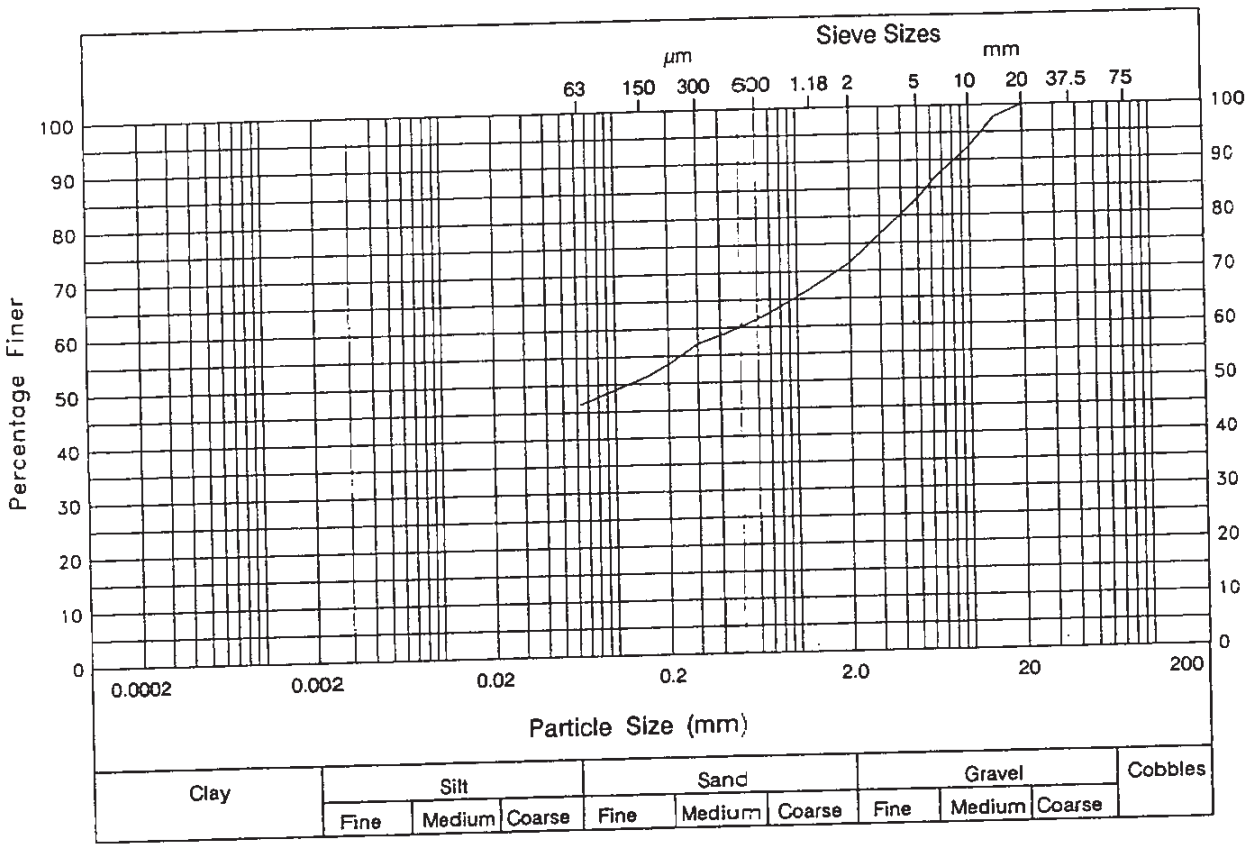


Particle Size	% Passing	Particle Size	% Passing
50 mm	100	425 µm	24
37.5 mm	94	300 µm	24
28 mm	90	212 µm	23
20 mm	85	150 µm	23
14 mm	81	63 µm	22
10 mm	75		
6.3 mm	66		
5 mm	53		
3.35 mm	41		
2 mm	31		
1.18 mm	27		
600 µm	25		

Hole TP2/08	Description MADE GROUND:Black clayey slightly sandy fine to coarse GRAVEL of mudstone and coal
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

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Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/23

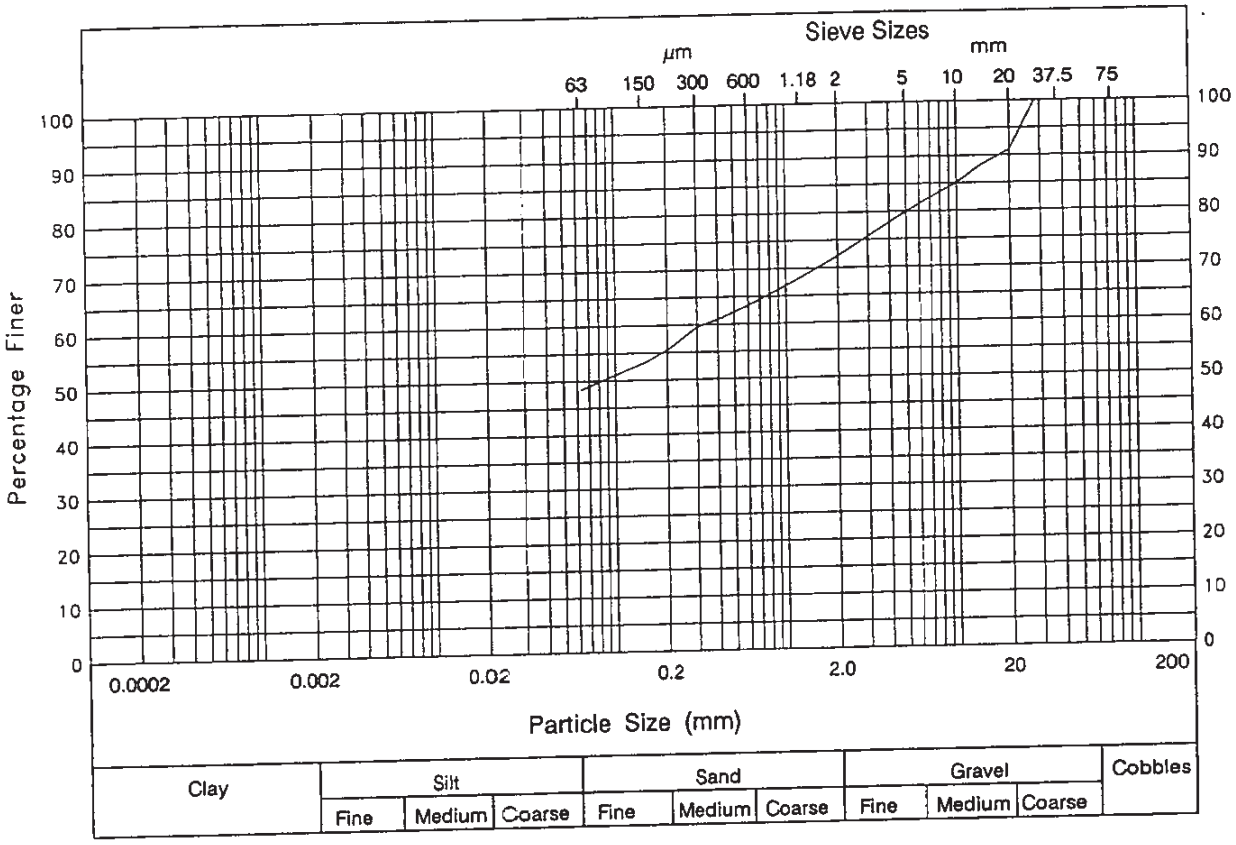


Particle Size	% Passing	Particle Size	% Passing
20 mm	100	150 µm	51
14 mm	98	63 µm	46
10 mm	92		
6.3 mm	87		
5 mm	83		
3.35 mm	78		
2 mm	71		
1.18 mm	67		
600 µm	61		
425 µm	59		
300 µm	57		
212 µm	54		

Hole TP2/09	Description MADE GROUND:Grey and black slightly sandy slightly gravelly CLAY including mudstone brick and coal
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

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Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/24

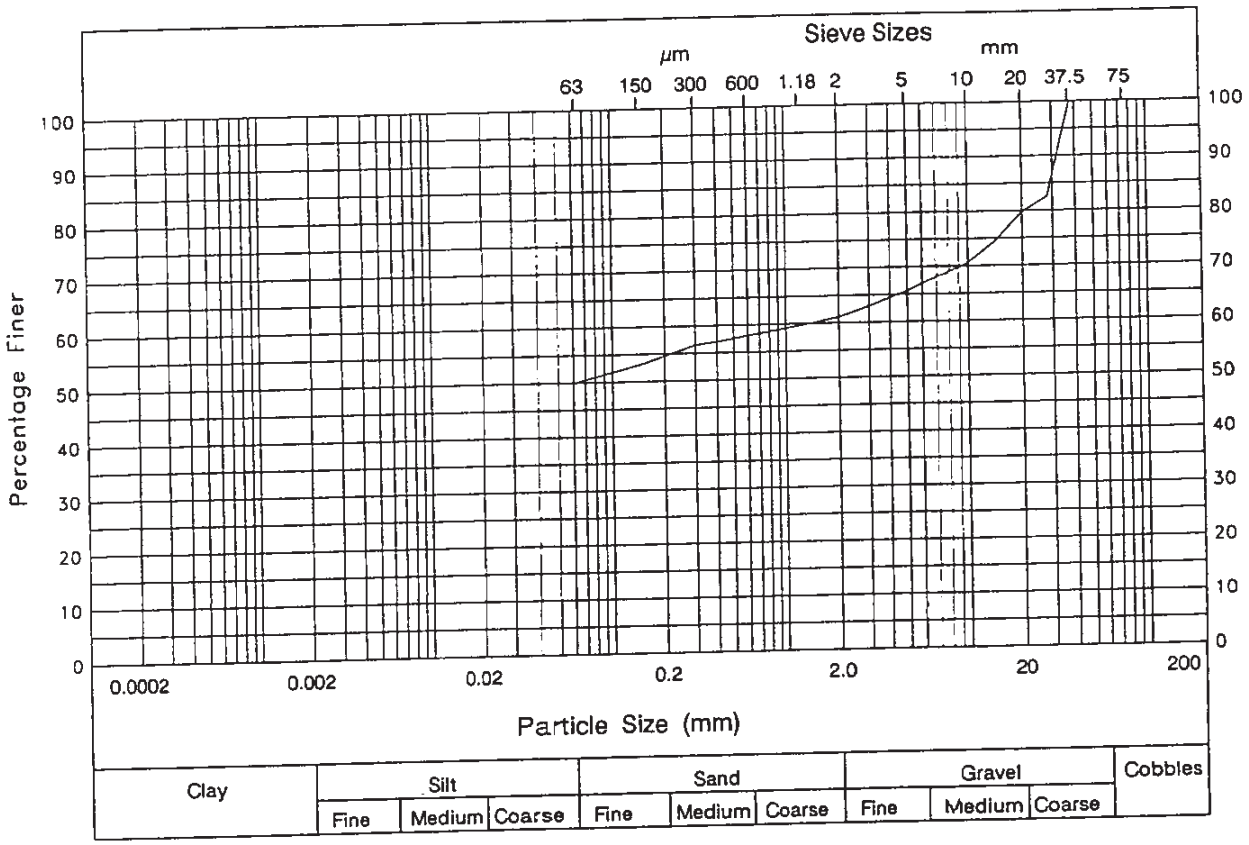


Particle Size	% Passing	Particle Size	% Passing
28 mm	100	212 µm	56
20 mm	91	150 µm	53
14 mm	88	63 µm	48
10 mm	85		
6.3 mm	82		
5 mm	80		
3.35 mm	77		
2 mm	72		
1.18 mm	68		
600 µm	63		
425 µm	61		
300 µm	60		

Hole TP2/10	Description MADE GROUND:Grey and black slightly sandy slightly gravelly CLAY including mudstone brick and coal
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

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Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/25

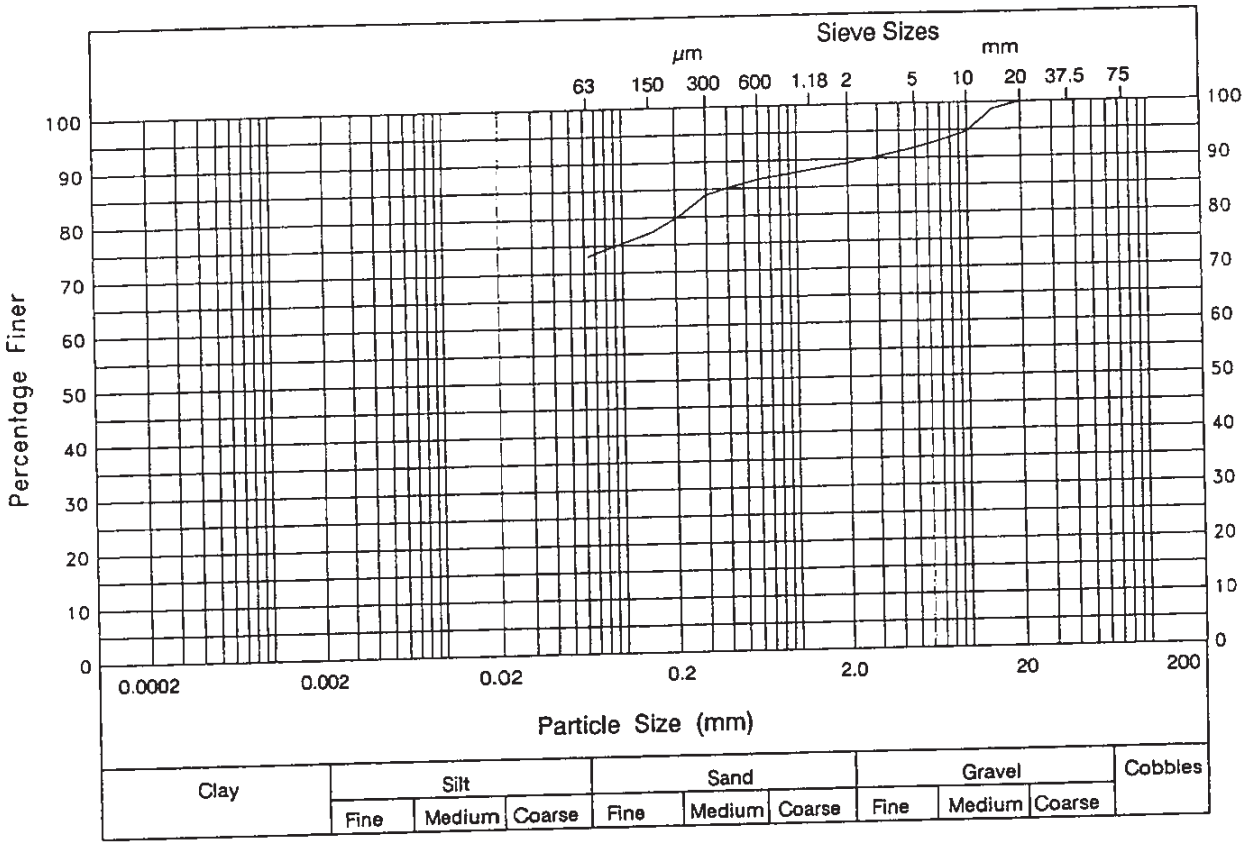


Particle Size	% Passing	Particle Size	% Passing
37.5 mm	100	300 µm	56
28 mm	83	212 µm	55
20 mm	80	150 µm	53
14 mm	74	63 µm	50
10 mm	71		
6.3 mm	67		
5 mm	66		
3.35 mm	64		
2 mm	61		
1.18 mm	60		
600 µm	58		
425 µm	57		

Hole TP2/11	Description MADE GROUND:Brown and black slightly sandy slightly gravelly CLAY including mudstone,brick and coal
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

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Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/26

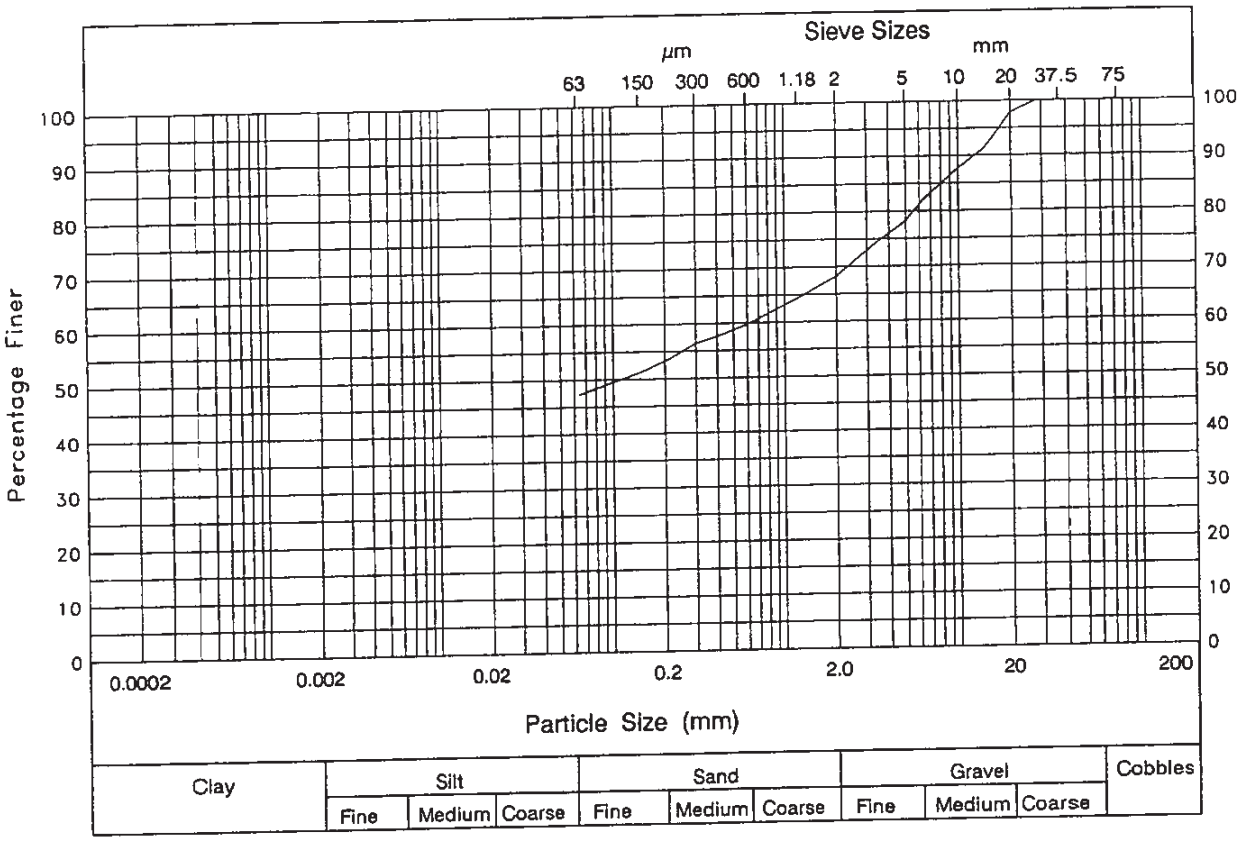


Particle Size	% Passing	Particle Size	% Passing
20 mm	100	150 µm	77
14 mm	99	63 µm	73
10 mm	95		
6.3 mm	93		
5 mm	92		
3.35 mm	91		
2 mm	89		
1.18 mm	88		
600 µm	87		
425 µm	85		
300 µm	84		
212 µm	80		

Hole TP3/01	Description MADE GROUND:Brown and black slightly, sandy slightly gravelly CLAY including mudstone brick and coal
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/27

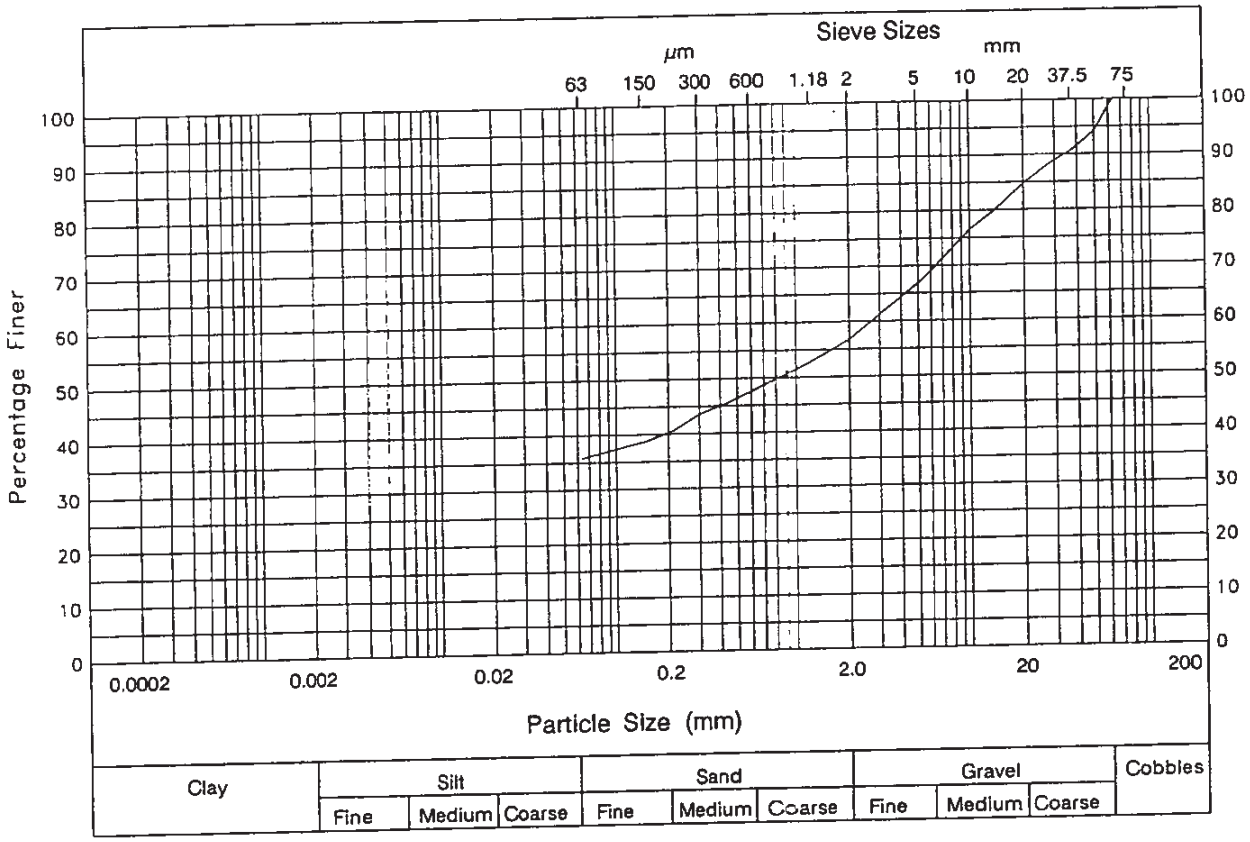


Particle Size	% Passing	Particle Size	% Passing
28 mm	100	212 µm	54
20 mm	98	150 µm	51
14 mm	91	63 µm	47
10 mm	88		
6.3 mm	82		
5 mm	78		
3.35 mm	74		
2 mm	68		
1.18 mm	64		
600 µm	60		
425 µm	58		
300 µm	56		

Hole TP3/02	Description MADE GROUND:Grey and black slightly sandy slightly gravelly CLAY including mudstone
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/28

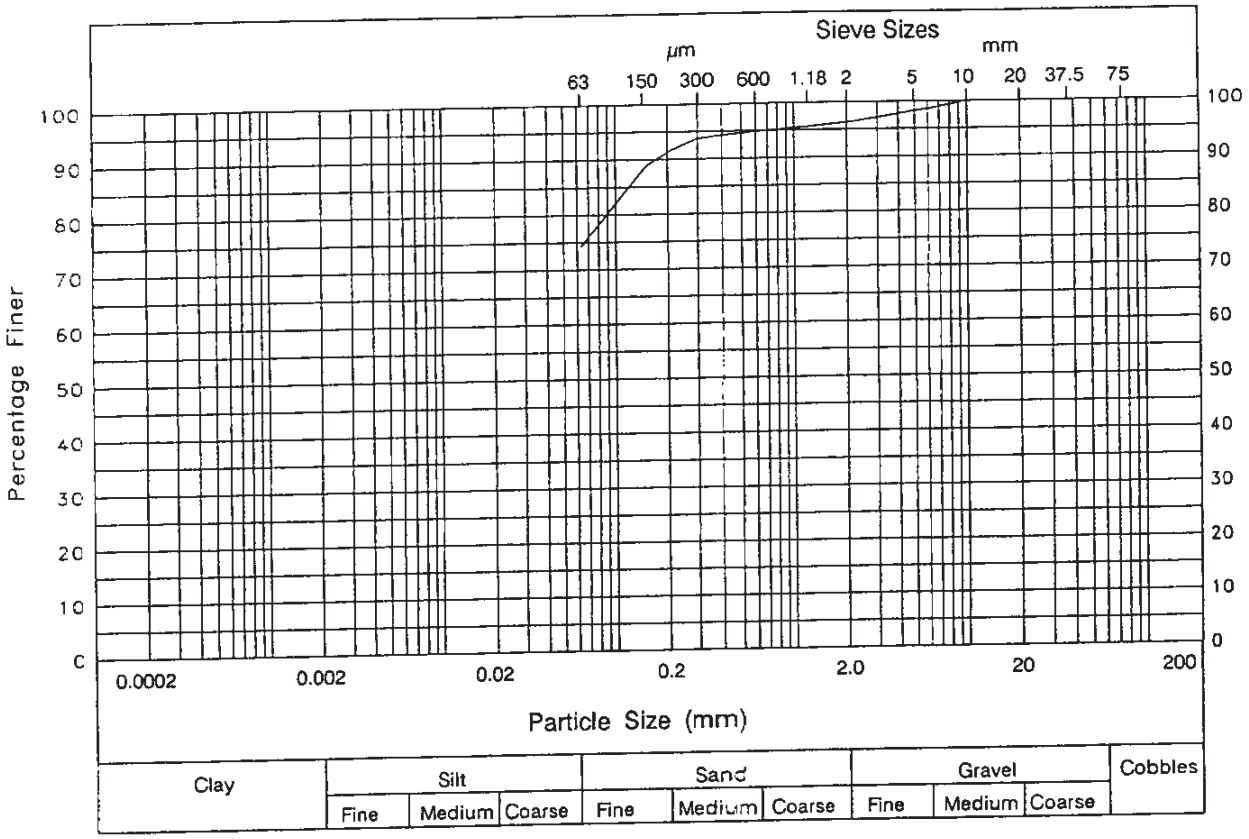


Particle Size	% Passing	Particle Size	% Passing
63 mm	100	600 µm	48
50 mm	94	425 µm	45
37.5 mm	91	300 µm	44
28 mm	88	212 µm	41
20 mm	85	150 µm	39
14 mm	80	63 µm	36
10 mm	76		
6.3 mm	70		
5 mm	67		
3.35 mm	62		
2 mm	57		
1.18 mm	53		

Hole TP3/03	Description MADE GROUND:Grey and black slightly sandy gravelly CLAY including mudstone
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

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Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/29

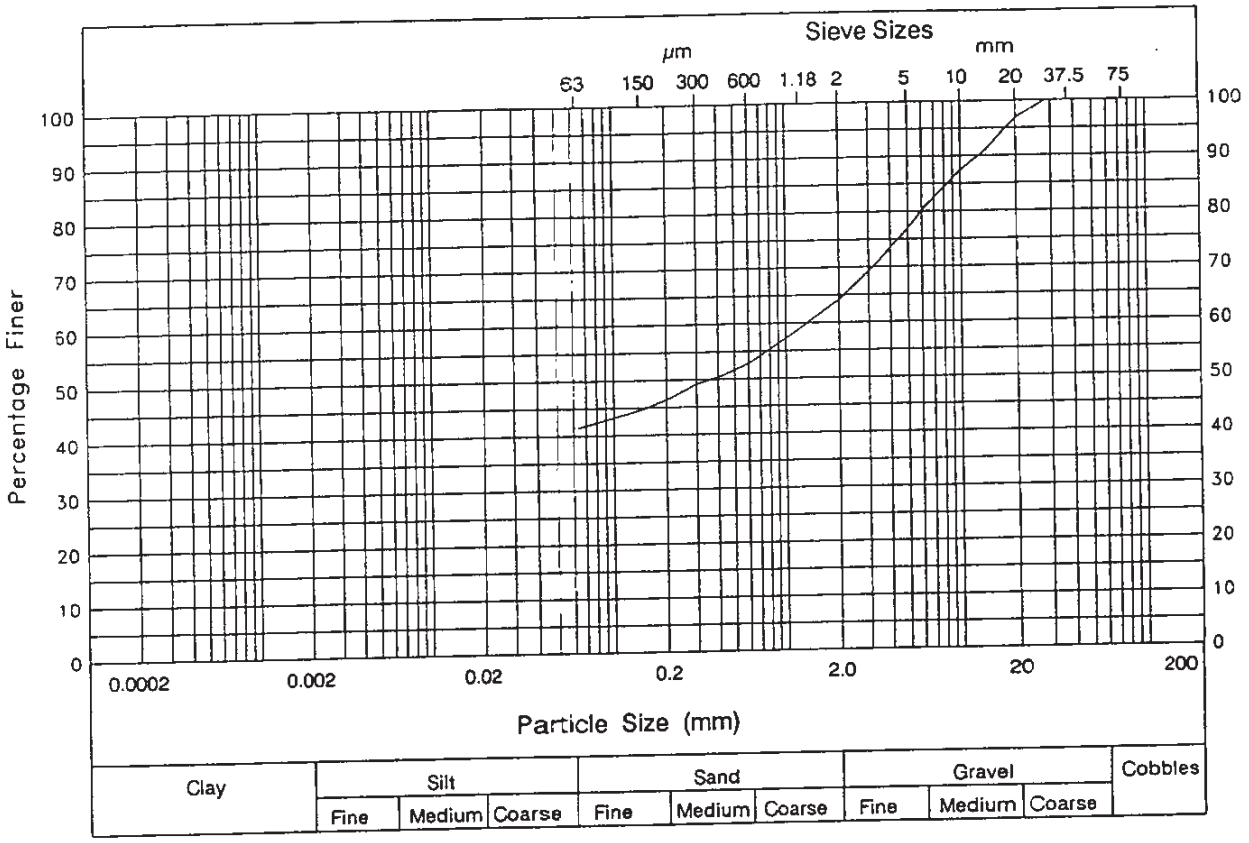


Particle Size	% Passing	Particle Size	% Passing
10 mm	100		
6.3 mm	99		
5 mm	98		
3.35 mm	97		
2 mm	96		
1.18 mm	96		
600 µm	95		
425 µm	94		
300 µm	94		
212 µm	92		
150 µm	89		
63 µm	74		

Hole TP3/04	Description MADE GROUND:Yellow and grey slightly sandy slightly gravellly CLAY
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

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Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/30

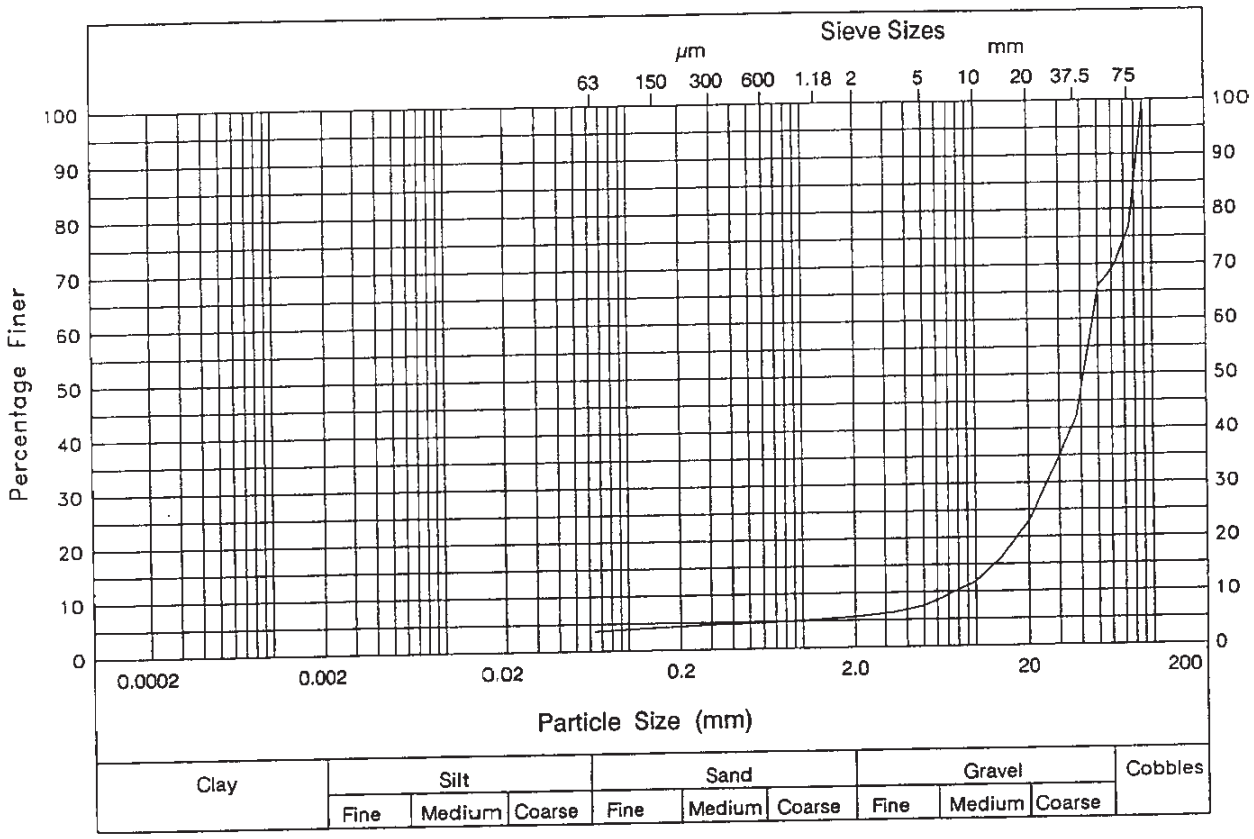


Particle Size	% Passing	Particle Size	% Passing
28 mm	100	212 µm	47
20 mm	97	150 µm	45
14 mm	91	63 µm	41
10 mm	87		
6.3 mm	81		
5 mm	77		
3.35 mm	71		
2 mm	64		
1.18 mm	59		
600 µm	53		
425 µm	51		
300 µm	49		

Hole TP3/05	Description MADE GROUND:Grey and black slightly sandy gravelly CLAY including mudstone brick and coal
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

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Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/31

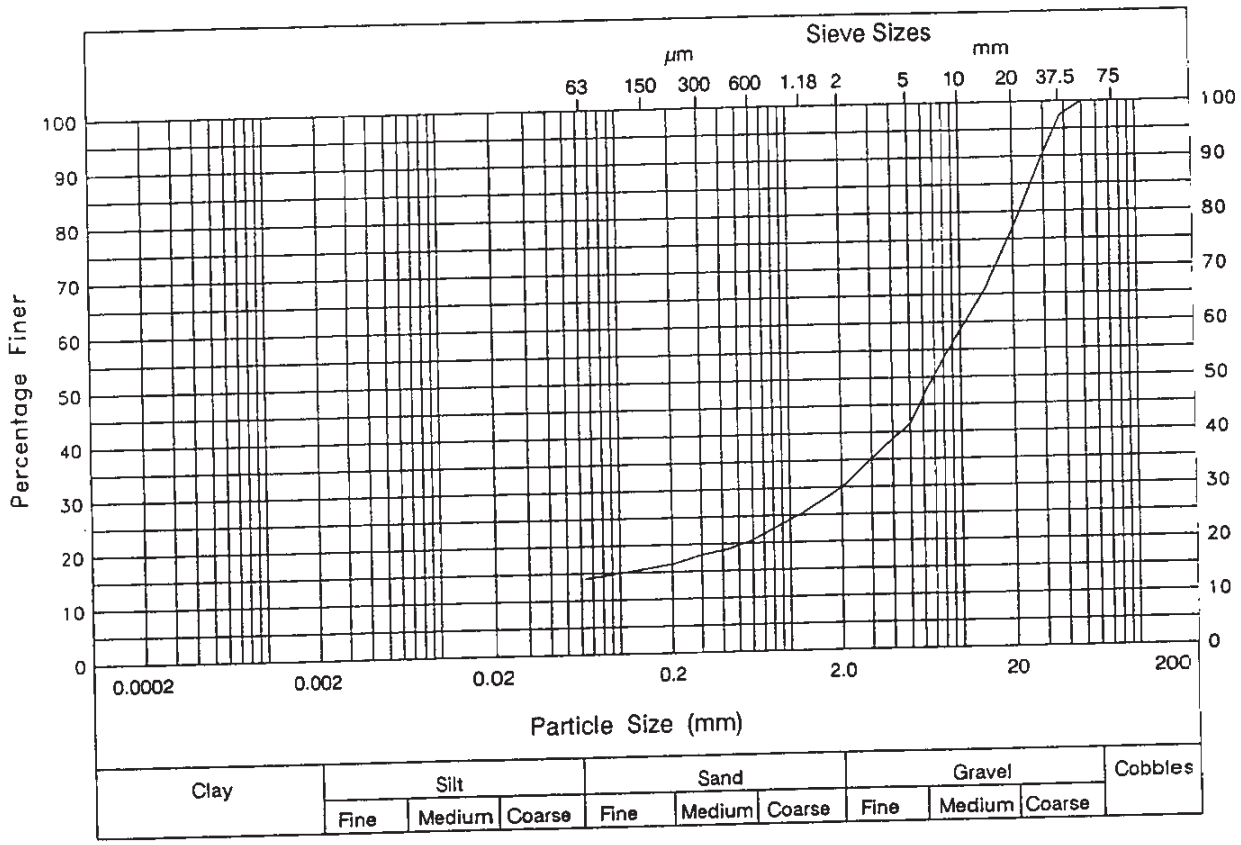


Particle Size	% Passing	Particle Size	% Passing
90 mm	100	2 mm	6
75 mm	77	1.18 mm	5
63 mm	70	600 µm	5
50 mm	66	425 µm	5
37.5 mm	42	300 µm	5
28 mm	33	212 µm	4
20 mm	23	150 µm	4
14 mm	16	63 µm	4
10 mm	12		
6.3 mm	9		
5 mm	7		
3.35 mm	6		

Hole TP3/6	Description MADE GROUND:Grey slightly silty slightly sandy fine to coarse GRAVEL and COBBLES of mudstone and siltstone
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient = 6.3

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Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/32

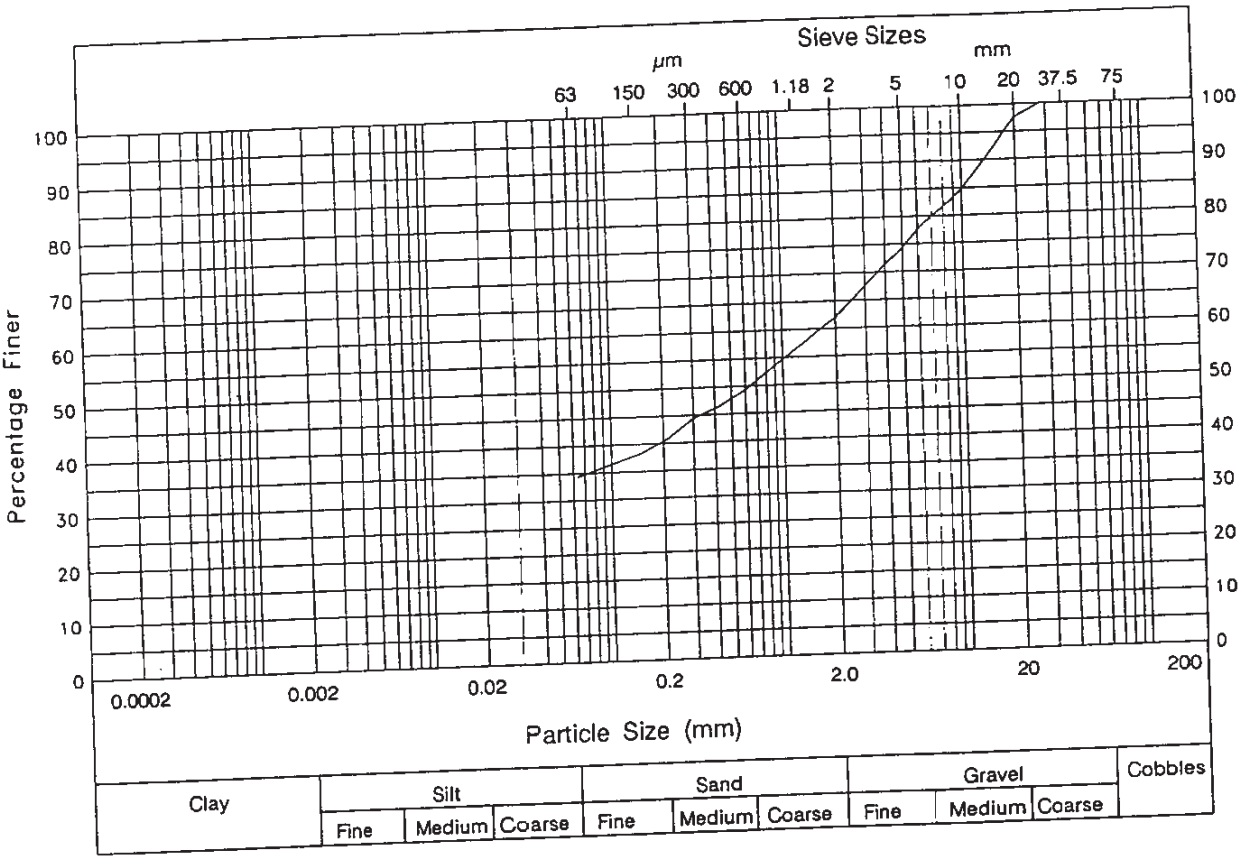


Particle Size	% Passing	Particle Size	% Passing
50 mm	100	425 μm	19
37.5 mm	97	300 μm	18
28 mm	89	212 μm	17
20 mm	77	150 μm	16
14 mm	66	63 μm	14
10 mm	59		
6.3 mm	48		
5 mm	41		
3.35 mm	37		
2 mm	30		
1.18 mm	25		
600 μm	21		

Hole TP3/7	Description MADE GROUND:Black clayey sandy fine to coarse GRAVEL including mudstone brick and coal
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

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Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** 12/33



Particle Size	% Passing	Particle Size	% Passing
28 mm	100	212 µm	41
20 mm	98	150 µm	38
14 mm	91	63 µm	34
10 mm	85		
6.3 mm	78		
5 mm	74		
3.35 mm	69		
2 mm	62		
1.18 mm	56		
600 µm	49		
425 µm	46		
300 µm	44		

Hole TP3/08	Description MADE GROUND:Grey and black slightly sandy gravelly CLAY including mudstone brick and coal,occasional wood
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

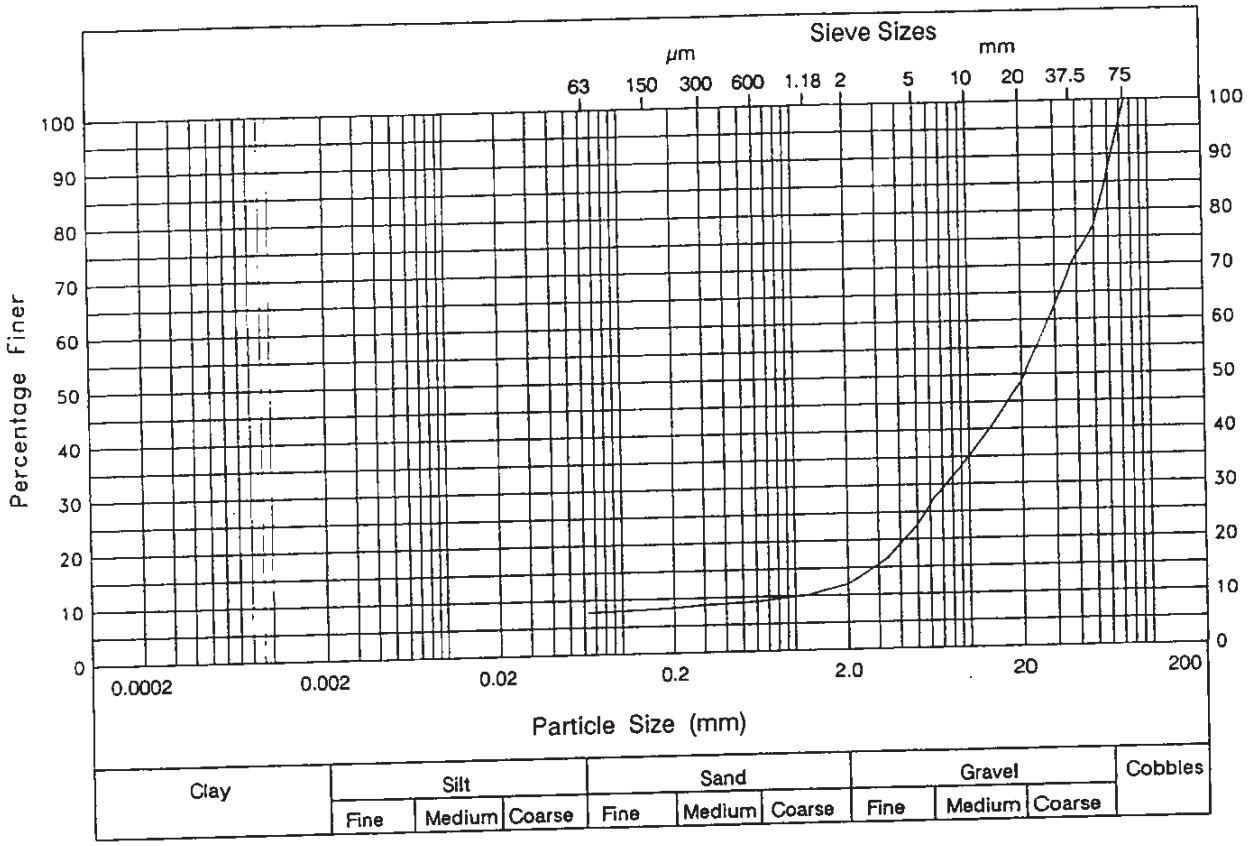
Laboratory - Particle Size Plot

Soil Mechanics

Project Cronton Colliery
Maro Developments

Contract F3605

Sheet L2/34

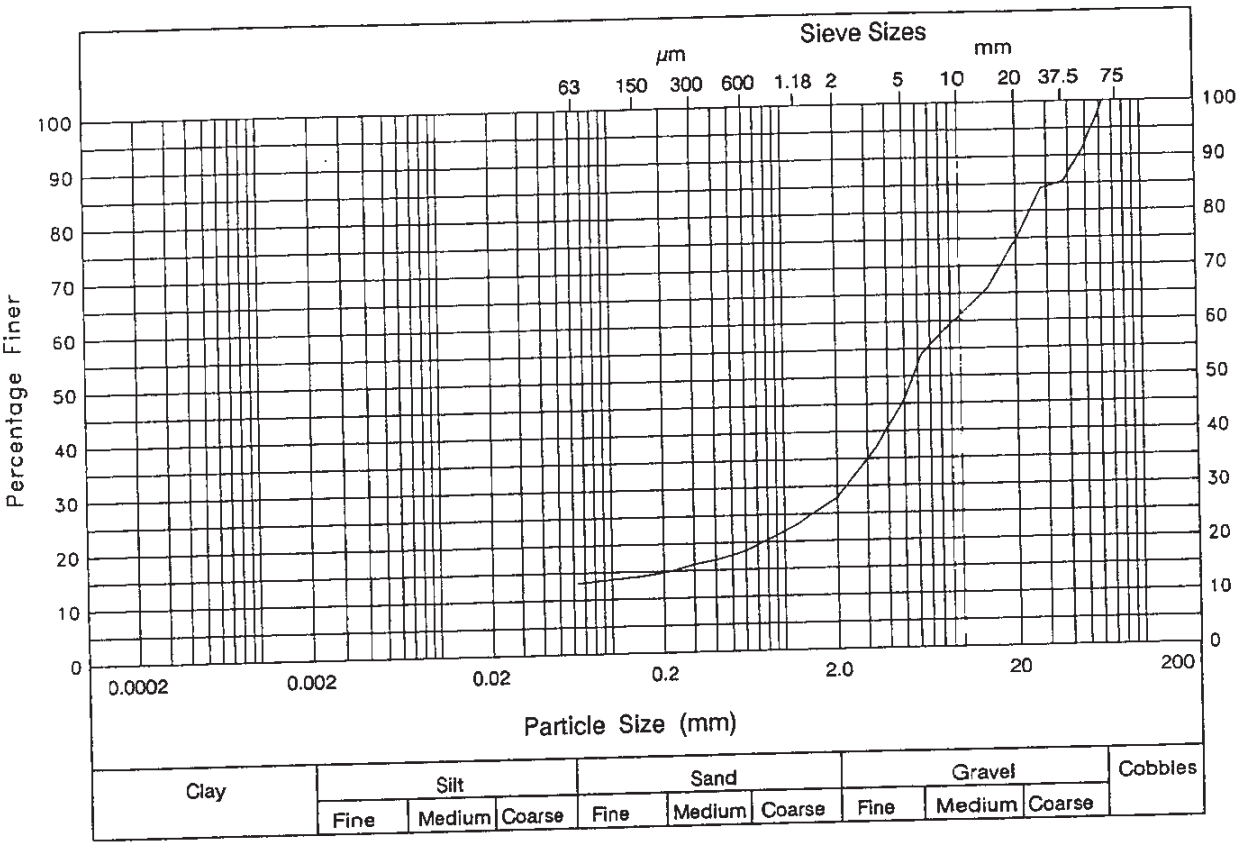


Particle Size	% Passing	Particle Size	% Passing
75 mm	100	1.18 mm	10
63 mm	90	600 µm	9
50 mm	77	425 µm	9
37.5 mm	70	300 µm	9
28 mm	60	212 µm	8
20 mm	49	150 µm	8
14 mm	41	63 µm	8
10 mm	35		
6.3 mm	27		
5 mm	23		
3.35 mm	17		
2 mm	12		

Hole TP3/09	Description MADE GROUND:Grey and black silty slightly sandy cobbly fine to coarse GRAVEL including mudstone and coal
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient = 26

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/35

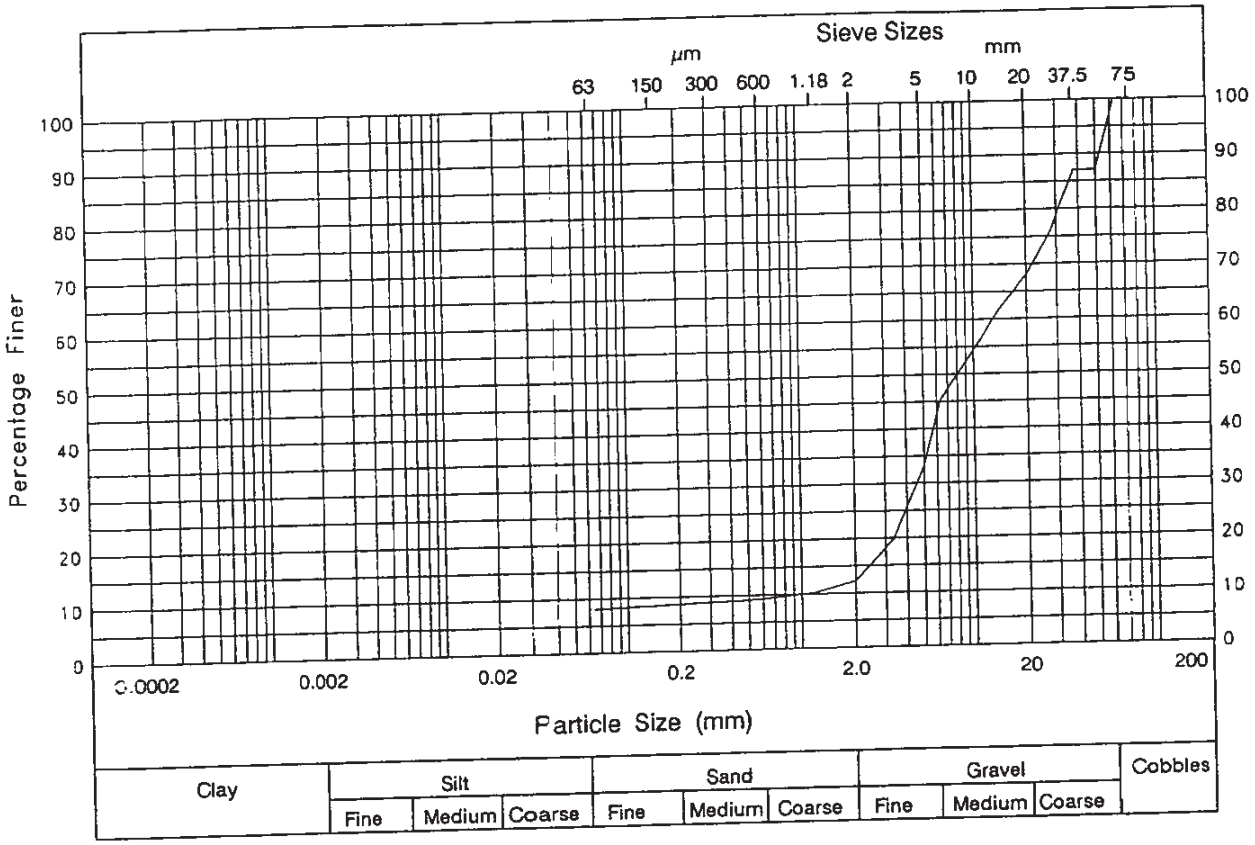


Particle Size	% Passing	Particle Size	% Passing
63 mm	100	600 µm	18
50 mm	92	425 µm	17
37.5 mm	85	300 µm	16
28 mm	84	212 µm	15
20 mm	75	150 µm	14
14 mm	66	63 µm	13
10 mm	61		
6.3 mm	54		
5 mm	46		
3.35 mm	37		
2 mm	28		
1.18 mm	23		

Hole TP3/10	Description MADE GROUND:Grey dark grey clayey sandy fine to coarse GRAVEL and occasional cobbles including mudstone brick and coal
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/36

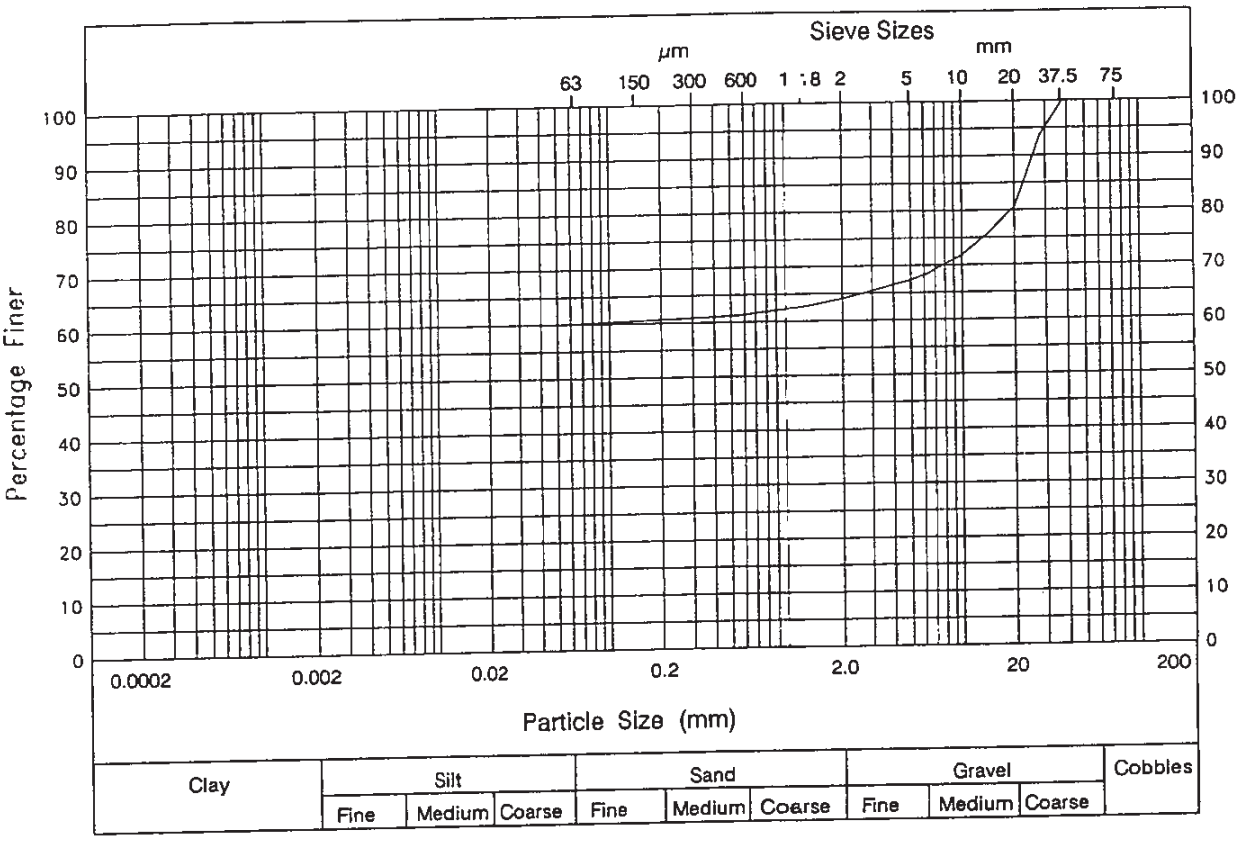


Particle Size	% Passing	Particle Size	% Passing
63 mm	100	600 μm	9
50 mm	87	425 μm	9
37.5 mm	87	300 μm	9
28 mm	76	212 μm	9
20 mm	68	150 μm	9
14 mm	62	63 μm	8
10 mm	54		
6.3 mm	45		
5 mm	33		
3.35 mm	20		
2 mm	12		
1.18 mm	10		

Hole TP3/11	Description MADE GROUND:Brown,grey clayey slightly sandy fine to coarse GRAVEL of mudstone,coal and brick
Depth 0.50 -0.60	
Type B	
Test Performed Wet	Uniformity Coefficient = 13

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/37

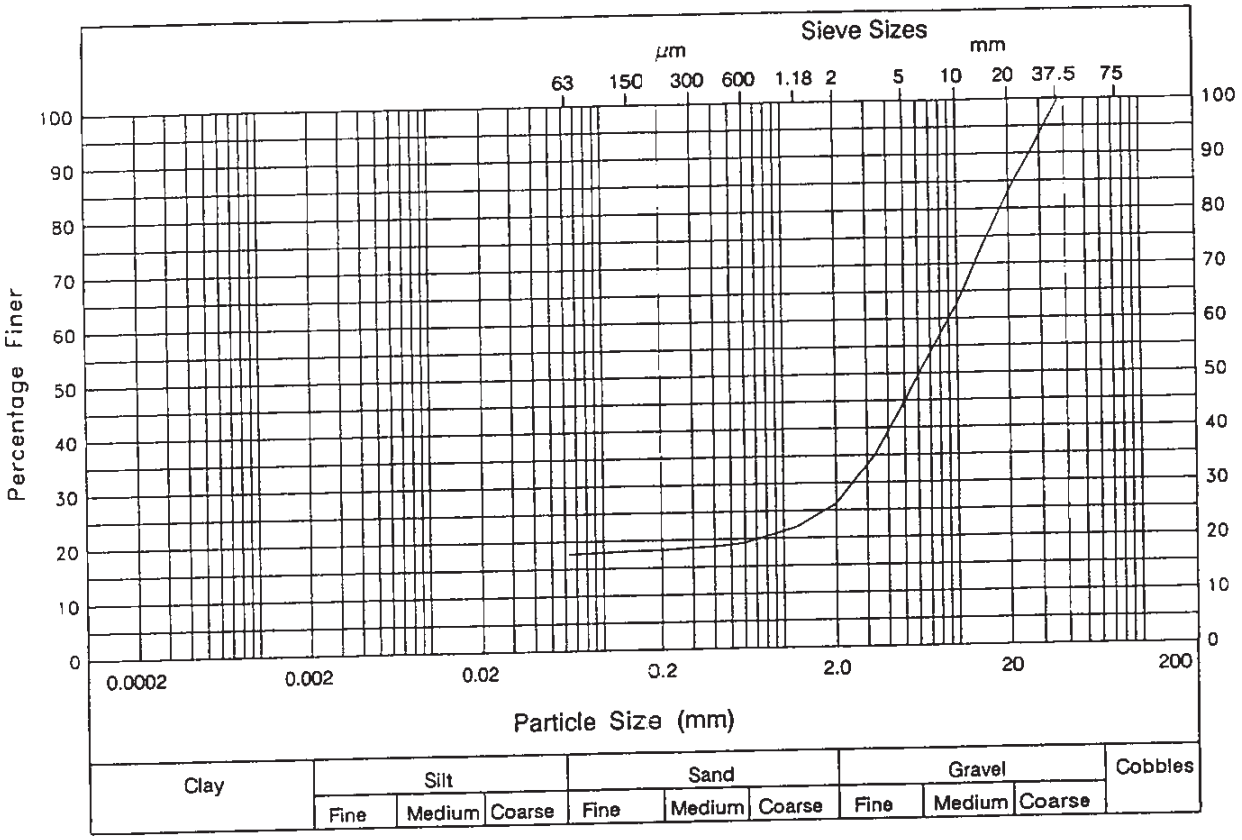


Particle Size	% Passing	Particle Size	% Passing
37.5 mm	100	300 µm	61
28 mm	94	212 µm	61
20 mm	81	150 µm	61
14 mm	76	63 µm	60
10 mm	72		
6.3 mm	68		
5 mm	67		
3.35 mm	66		
2 mm	64		
1.18 mm	63		
600 µm	61		
425 µm	61		

Hole TP41	Description Grey brown slightly sandy gravelly CLAY.Gravel includes mudstone
Depth 2.00	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/38

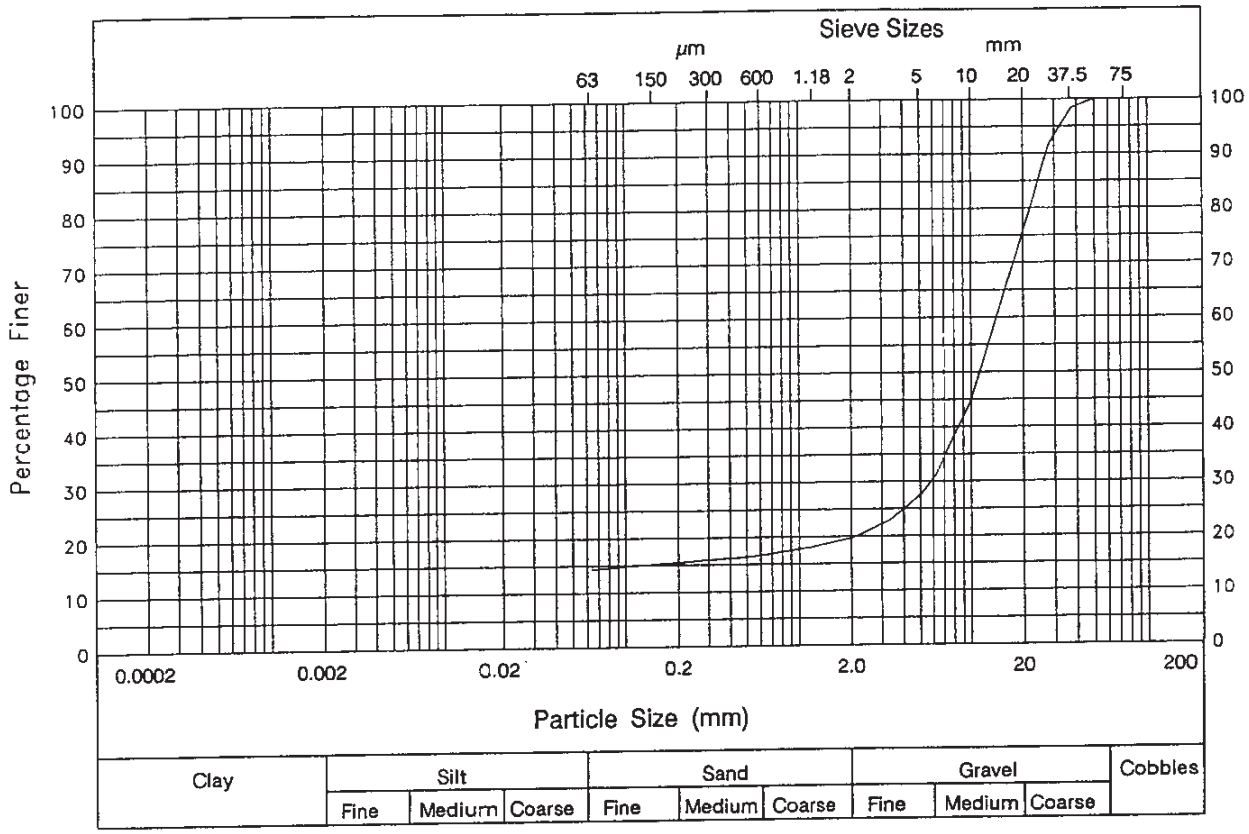


Particle Size	% Passing	Particle Size	% Passing
37.5 mm	100	300 µm	19
28 mm	91	212 µm	18
20 mm	83	150 µm	18
14 mm	73	63 µm	18
10 mm	63		
6.3 mm	51		
5 mm	45		
3.35 mm	35		
2 mm	26		
1.18 mm	22		
600 µm	19		
425 µm	19		

Hole TP41	Description Blue grey gravelly CLAY.Gravel includes mudstone(possible bedrock)
Depth 3.50	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/39

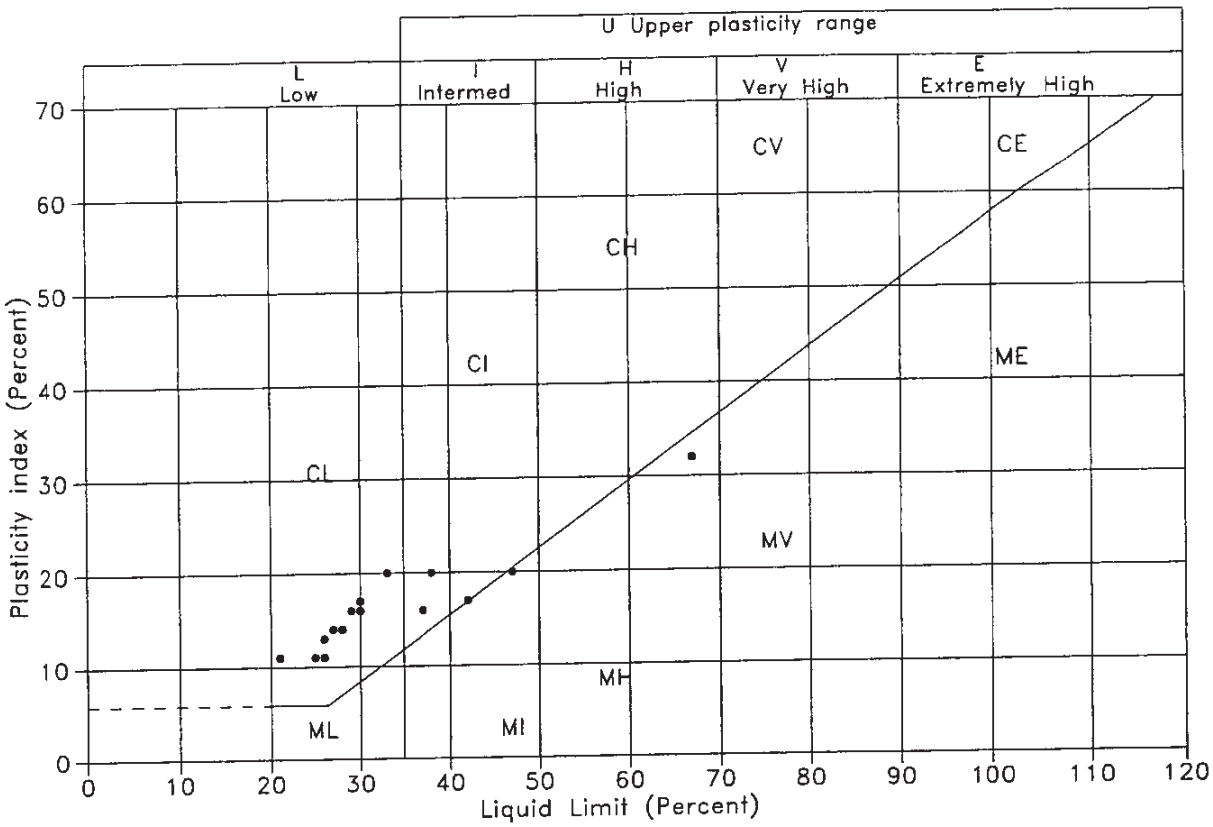


Particle Size	% Passing	Particle Size	% Passing
50 mm	100	425 µm	16
37.5 mm	98	300 µm	16
28 mm	92	212 µm	16
20 mm	76	150 µm	15
14 mm	60	63 µm	14
10 mm	45		
6.3 mm	31		
5 mm	27		
3.35 mm	23		
2 mm	20		
1.18 mm	18		
600 µm	17		

Hole TP44	Description Grey,black MUDSTONE recovered as clayey slightly sandy fine to coarse gravel
Depth 1.90	
Type B	
Test Performed Wet	Uniformity Coefficient not applicable.

Form 25/4

Laboratory - Particle Size Plot	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Sheet** L2/40



Liquid Limit Versus Plasticity Index	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		**Figure** LLvPL

Samples				Earthworks												
Hole	Depth	Type	Description	CBR Top	CBR Base	CBR Top w%	CBR Base w%	CBR Surch kg.	γ_b Mg/m^3	Comp Type	w% (Opt) <Nat>	γ_d (max) Mg/m^3	ρ_s Mg/m^3	% ret 20/ 37.5 mm	MCV
101	6.50-7.00	B	MADE GROUND:Black slightly sandy slightly gravelly CLAY including brick,coal and coal dust							4.5kg	(11)	(1.78)	2.65	6.0/	
									1.86	4.5kg	<23>	1.52		2.5	
									1.84	4.5kg	24	1.49			
									2.00	4.5kg	15	1.74			
									1.96	4.5kg	10	1.78			
									1.87	4.5kg	6.8	1.75			
				89	108	10	11		1.99	4.5kg		1.80		8	
105	0.50-1.00	B	MADE GROUND:Black slightly sandy gravelly CLAY.Gravel includes mudstone and sandstone							4.5kg	(9.5)	(1.95)	2.65	6.4/	
									2.14	4.5kg	<10>	1.94		0	
									2.09	4.5kg	12	1.87			
									2.13	4.5kg	10	1.93			
									2.12	4.5kg	8.7	1.95			
									2.03	4.5kg	6.8	1.91			
				107	104	7.6	7.8		2.12	4.5kg		1.96		6	
105	3.20-3.70	B	MADE GROUND:Dark grey slightly sandy gravelly CLAY.Gravel includes mudstone and coal							4.5kg	(9.6)	(1.96)	2.65	14/	
									2.03	4.5kg	<14>	1.78		6.0	
									1.99	4.5kg	17	1.70			
									2.11	4.5kg	13	1.87			
									2.12	4.5kg	8.8	1.95			
									2.07	4.5kg	8.0	1.92			
				96	103	8.1	8.2		2.14	4.5kg		1.98		20	
108	0.50-1.00	B	MADE GROUND:Black slightly sandy slightly gravelly CLAY.Gravel includes mudstone and coal							4.5kg	(10)	(1.83)	2.65	2.4/	
									1.96	4.5kg	<17>	1.68		2.1	
									1.92	4.5kg	18	1.62			
									2.03	4.5kg	13	1.80			
									2.02	4.5kg	11	1.82			
									1.91	4.5kg	5.9	1.80			
				102	90	10	9.8		2.03	4.5kg		1.84		5	
111	0.20-1.20	B	MADE GROUND:Black slightly sandy gravelly CLAY.Gravel including sandstone mudstone and coal							4.5kg	(9.0)	(1.95)	2.65	14/	
									1.98	4.5kg	<18>	1.67		3.1	
									1.96	4.5kg	20	1.64			
									2.13	4.5kg	10	1.93			
									2.09	4.5kg	7.8	1.94			
									1.99	4.5kg	5.5	1.89			
				95	118	8.6	8.6		2.12	4.5kg		1.96		17	
TP41	2.00	B	Grey brown slightly sandy gravelly CLAY.Gravel includes mudstone							4.5kg	(10)	(2.01)	2.65	15/	
									2.19	4.5kg	<15>	1.90		4.2	
									2.25	4.5kg	13	1.98			
									2.16	4.5kg	6.9	2.02			
									2.07	4.5kg	4.4	1.98			
									2.08	4.5kg	20	1.74			
				86	96	9.1	9.1		2.18	4.5kg		2.00		19	

Remarks

Form 6/2

Laboratory - Compaction, CBR & MCV Summary

Soil Mechanics

Project Cronton Colliery
Maro Developments

Contract F3605

Sheet L3/1

Samples				Earthworks												
Hole	Depth	Type	Description	CBR Top	CBR Base	CBR Top w%	CBR Base w%	CBR Surch kg.	γ_b Mg/m^3	Comp Type	w% (Opt) <Nat>	γ_d (max) Mg/m^3	ρ_s Mg/m^3	% ret 20/ 37.5 mm	MCV
TP44	1.90	B	Grey,black MUDSTONE recovered as clayey slightly sandy fine to coarse gravel							4.5kg	(9.6)	(2.04)	2.65	23/	
									2.15	4.5kg	<17>	1.84		0	
									2.10	4.5kg	18	1.79			
									2.22	4.5kg	12	1.98			
									2.09	4.5kg	6.8	1.95			
									2.01	4.5kg	5.6	1.90			
				83	101	8.3	8.4		2.16	4.5kg		1.99		23	

Remarks

Form 6/2

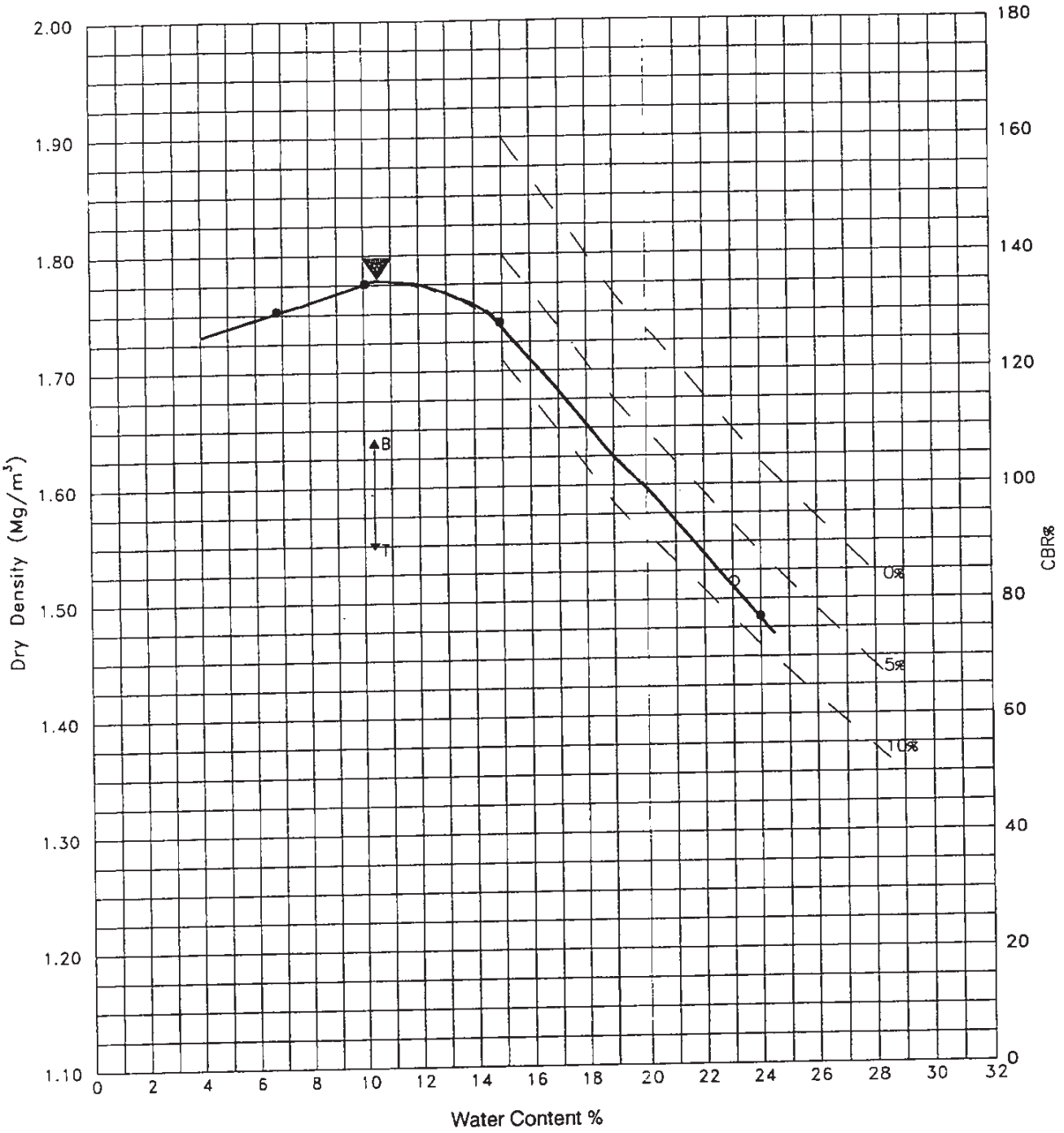
Laboratory - Compaction, CBR & MCV Summary

Soil Mechanics

Project
Cronton Colliery
Maro Developments

Contract F3605

Sheet L3/2



● Moisture Content/Dry Density
o Compaction at Natural Water Content
▼ Maximum Dry Density/Optimum Water Content
▼ CBR% Top
▲ CBR% Bottom
▲ CBR% Average (if Top and Bottom are within 10%)

Type of Test/Mould	4.5Kg/CBR		
Particle Density Assumed	2.65	Mg/m^3	
Maximum Dry Density	1.78	Mg/m^3	
Optimum Water Content	11	%	
% retained 37.5mm sieve	2		
% retained 20mm sieve	6		

Description

MADE GROUND:Black slightly sandy slightly gravelly CLAY including brick,coal and coal dust

Hole 101
Depth 6.50 -7.00
Type B

Form 54/0

Remarks

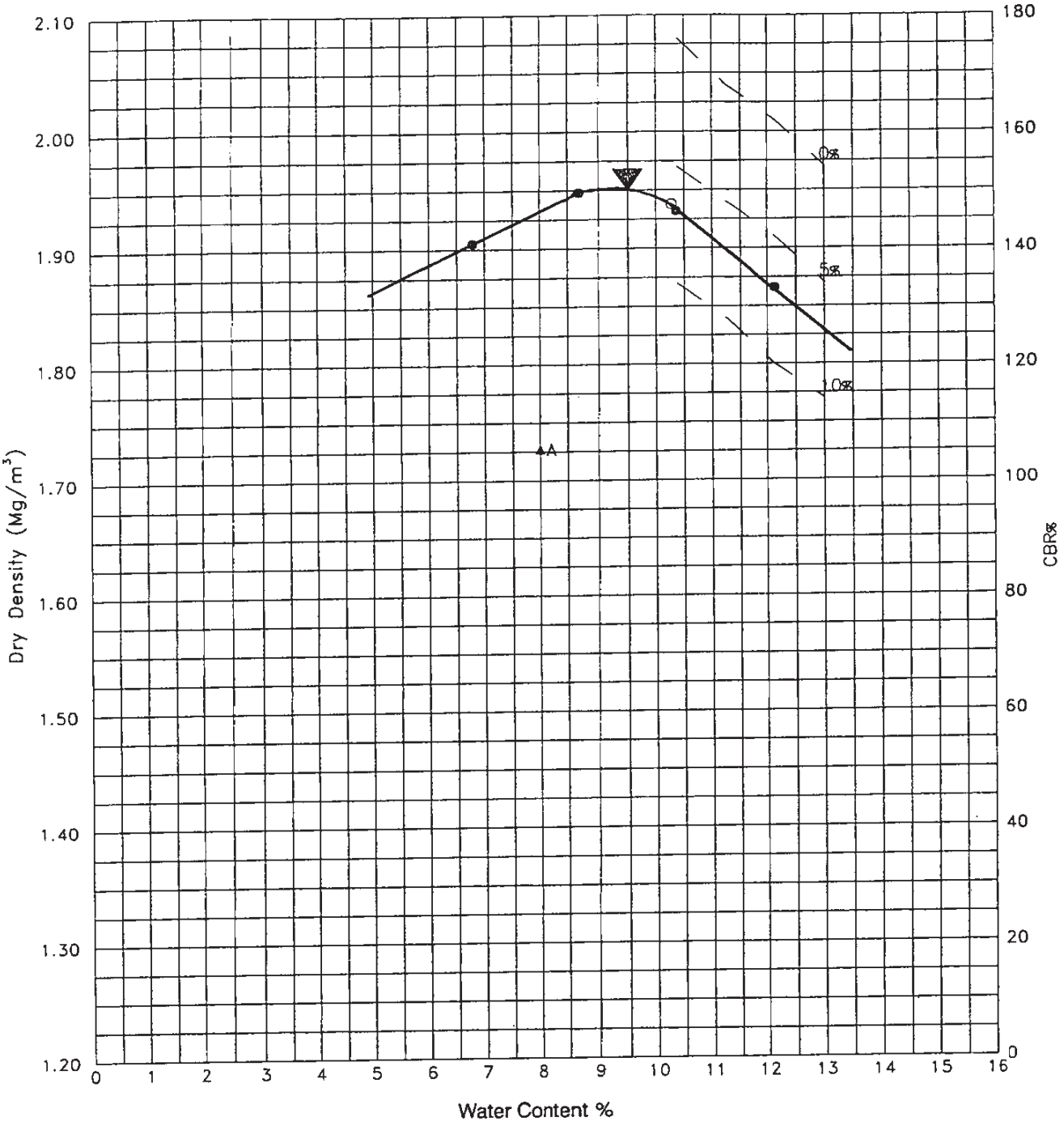
Laboratory - Moisture Content/ Dry Density Relationship

Project
Cronton Colliery
Maro Developments

Contract
F3605

L3/3

Soil Mechanics



- ● Moisture Content/Dry Density
- o Compaction at Natural Water Content
- ▼ Maximum Dry Density/Optimum Water Content
- ▾ CBR% Top
- ▲ CBR% Bottom
- ▲ CBR% Average (if Top and Bottom are within 10%)

Type of Test/Mould	4.5Kg/CBR	
Particle Density Assumed	2.65	Mg/m³
Maximum Dry Density	1.95	Mg/m³
Optimum Water Content	9.5	%
% retained 37.5mm sieve	0	
% retained 20mm sieve	6	

Description

MADE GROUND:Black slightly sandy gravelly CLAY.Gravel includes mudstone and sandstone

Hole	105
Depth	0.50 -1.00
Type	B

Form 54/0

Remarks

Laboratory - Moisture Content/ Dry Density Relationship

Soil Mechanics

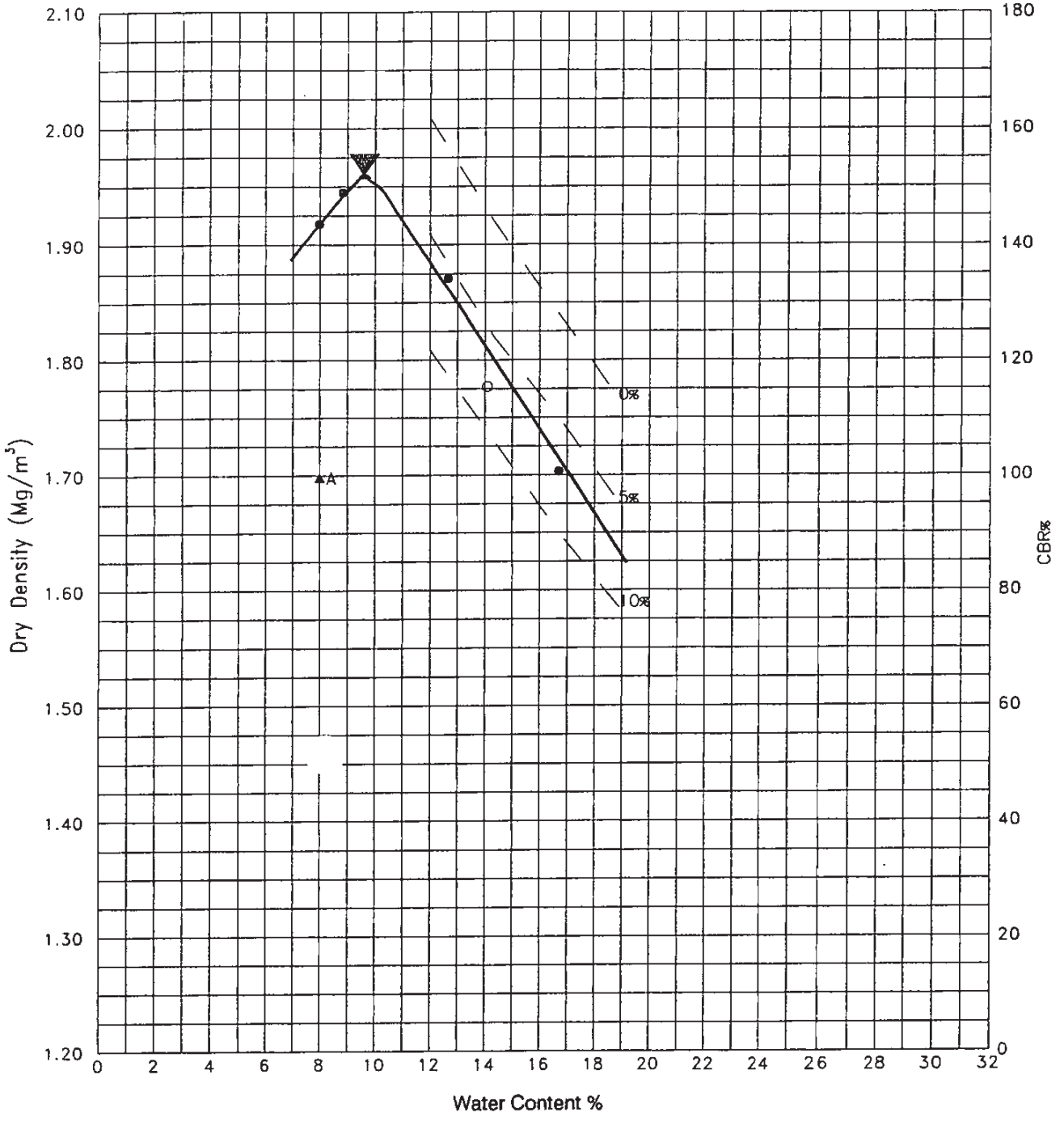
Project

Cronton Colliery
Maro Developments

Contract

F3605

L3/4



- ● Moisture Content/Dry Density
- o Compaction at Natural Water Content
- ▼ Maximum Dry Density/Optimum Water Content
- ▼ CBR% Top
- ▲ CBR% Bottom
- ▲ CBR% Average (if Top and Bottom are within 10%)

Type of Test/Mould	4.5Kg/CBR	
Particle Density Assumed	2.65	Mg/m³
Maximum Dry Density	1.96	Mg/m³
Optimum Water Content	9.6	%
% retained 37.5mm sieve	6	
% retained 20mm sieve	14	

Description

MADE GROUND:Dark grey slightly sandy gravelly CLAY.Gravel includes mudstone and coal

Hole 105

Depth 3.20 -3.70

Type B

Form 54/0

Remarks

Laboratory - Moisture Content/ Dry Density Relationship

Soil Mechanics

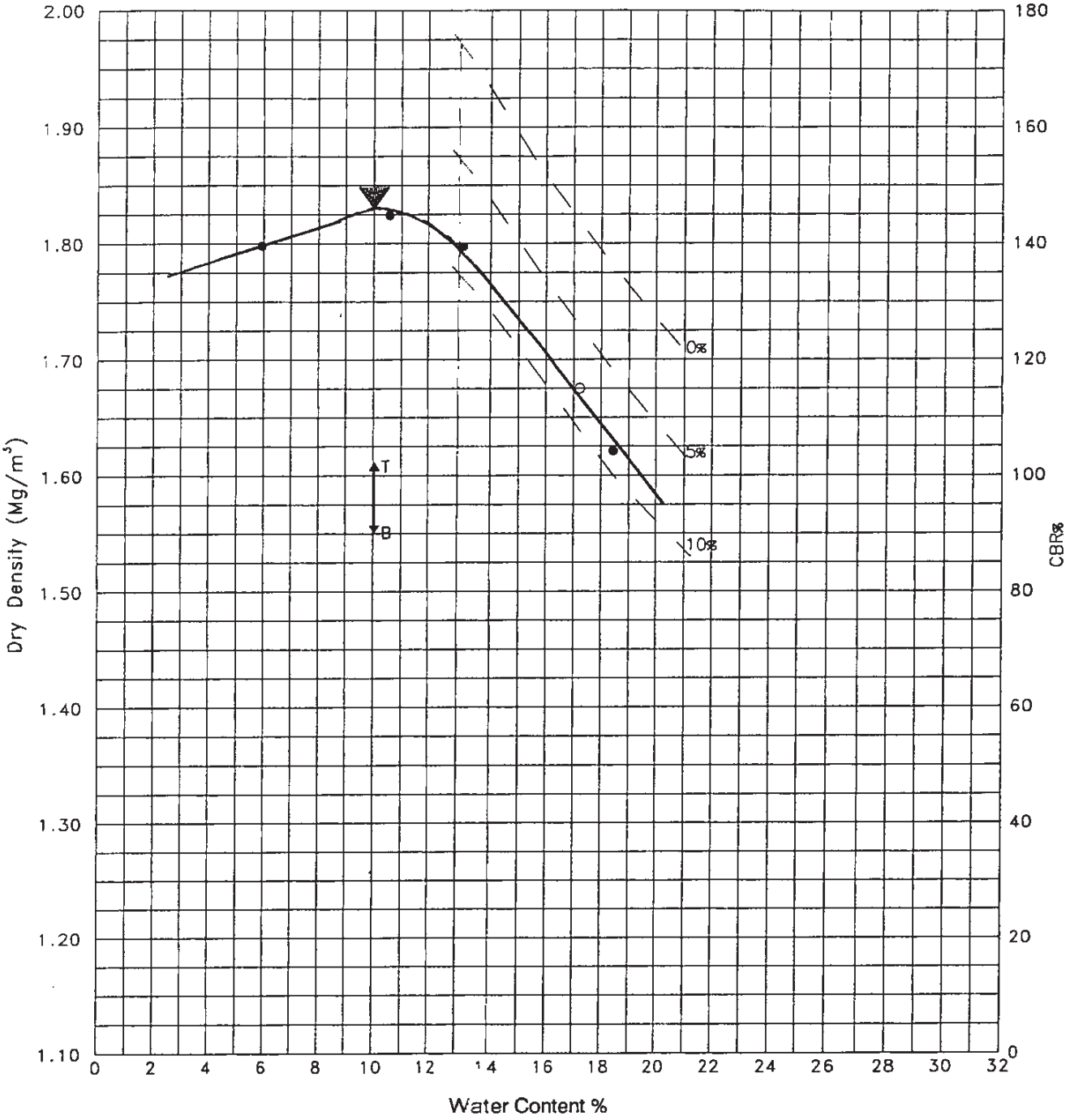
Project

Cronton Colliery
Maro Developments

Contract

F3605

L3/5



- ● Moisture Content/Dry Density
- o Compaction at Natural Water Content
- ▼ Maximum Dry Density/Optimum Water Content
- ▼ CBR% Top
- ▲ CBR% Bottom
- ▲ CBR% Average (if Top and Bottom are within 10%)

Type of Test/Mould	4.5Kg/CBR		
Particle Density Assumed	2.65	Mg/m^3	
Maximum Dry Density	1.83	Mg/m^3	
Optimum Water Content	10	%	
% retained 37.5mm sieve	2		
% retained 20mm sieve	2		

Description

MADE GROUND:Black slightly sandy slightly gravelly CLAY.Gravel includes mudstone and coal

Hole 108

Depth 0.50 -1.00

Type B

Form 54/0

Remarks

Laboratory - Moisture Content/ Dry Density Relationship

Soil Mechanics

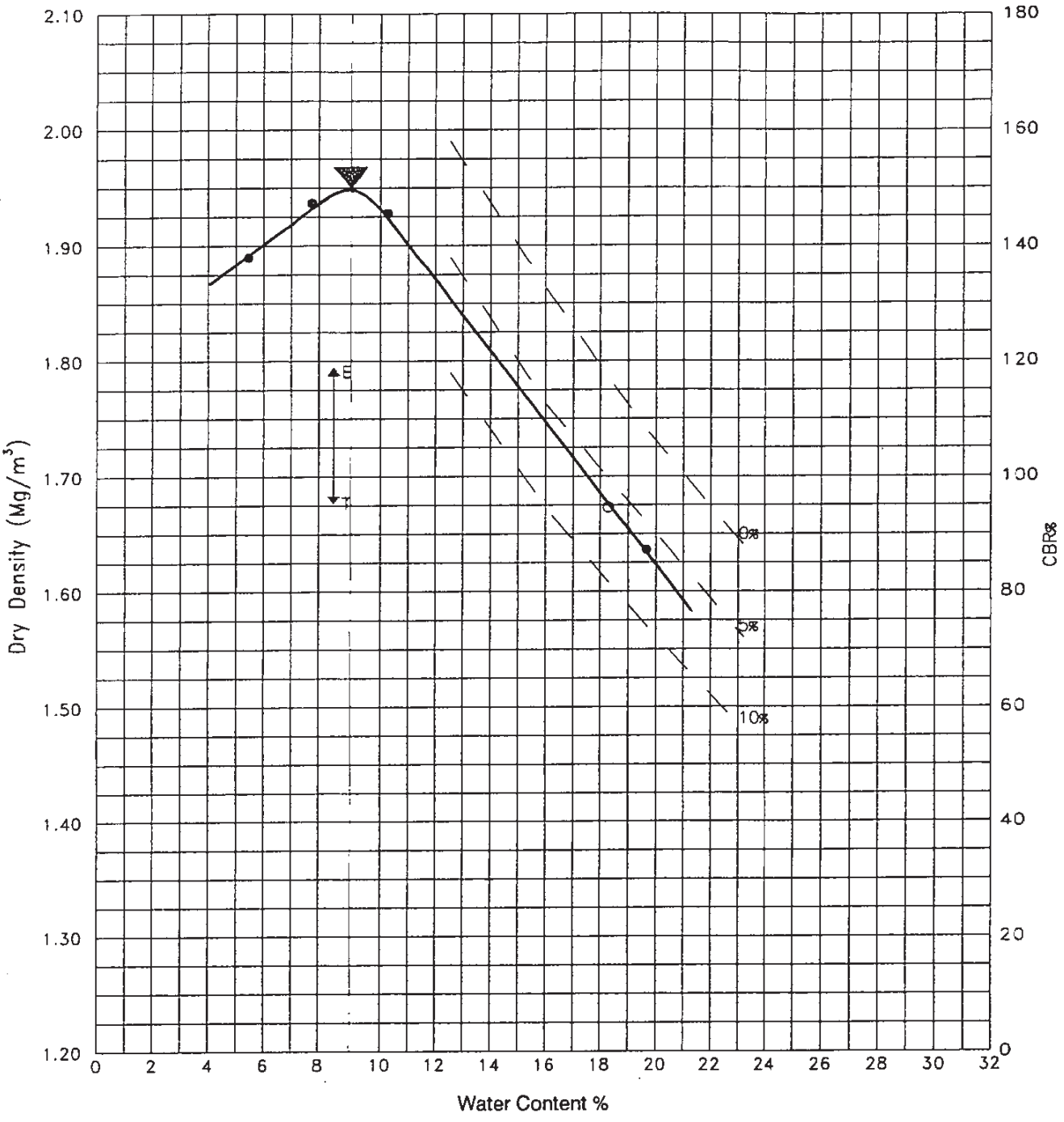
Project

Cronton Colliery
Maro Developments

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F3605

L3/6



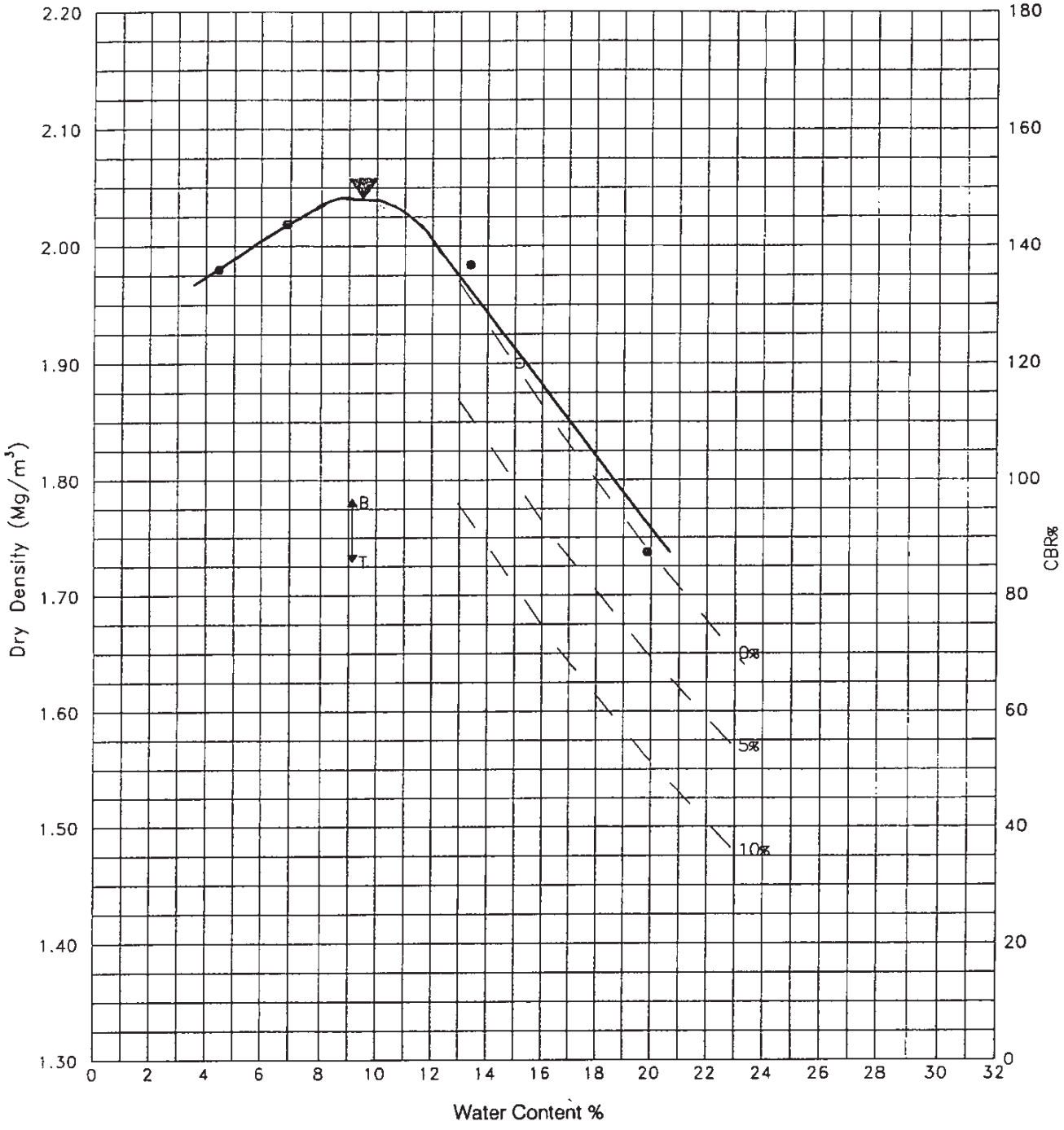
- ● Moisture Content/Dry Density
- o Compaction at Natural Water Content
- ▼ Maximum Dry Density/Optimum Water Content
- ▼ CBR% Top
- ▲ CBR% Bottom
- ▲ CBR% Average (if Top and Bottom are within 10%)

Type of Test/Mould	4.5Kg/CBR	Description	Hole 111
Particle Density Assumed	2.65 Mg/m^3	MADE GROUND:Black slightly sandy gravelly CLAY.Gravel including sandstone mudstone and coal	Depth 0.20 -1.20
Maximum Dry Density	1.95 Mg/m^3		Type B
Optimum Water Content	9.0 %		
% retained 37.5mm sieve	3		
% retained 20mm sieve	14		

Form 54/0

Remarks

Laboratory - Moisture Content/ Dry Density Relationship	**Project** Cronton Colliery Maro Developments	**Contract** F3605
Soil Mechanics		L3/7



- ● Moisture Content/Dry Density
- o Compaction at Natural Water Content
- ▼ Maximum Dry Density/Optimum Water Content
- ▾ CBR% Top
- ▲ CBR% Bottom
- ▲ CBR% Average (if Top and Bottom are within 10%)

Type of Test/Mould	4.5Kg/CBR		
Particle Density Assumed	2.65	Mg/m^3	
Maximum Dry Density	2.04	Mg/m^3	
Optimum Water Content	9.5	%	
% retained 37.5mm sieve	4		
% retained 20mm sieve	15		

Description

Grey brown slightly sandy gravelly CLAY. Gravel includes mudstone

Hole TP41

Depth 2.00

Type B

Form 54/0

Remarks

Laboratory - Moisture Content/ Dry Density Relationship

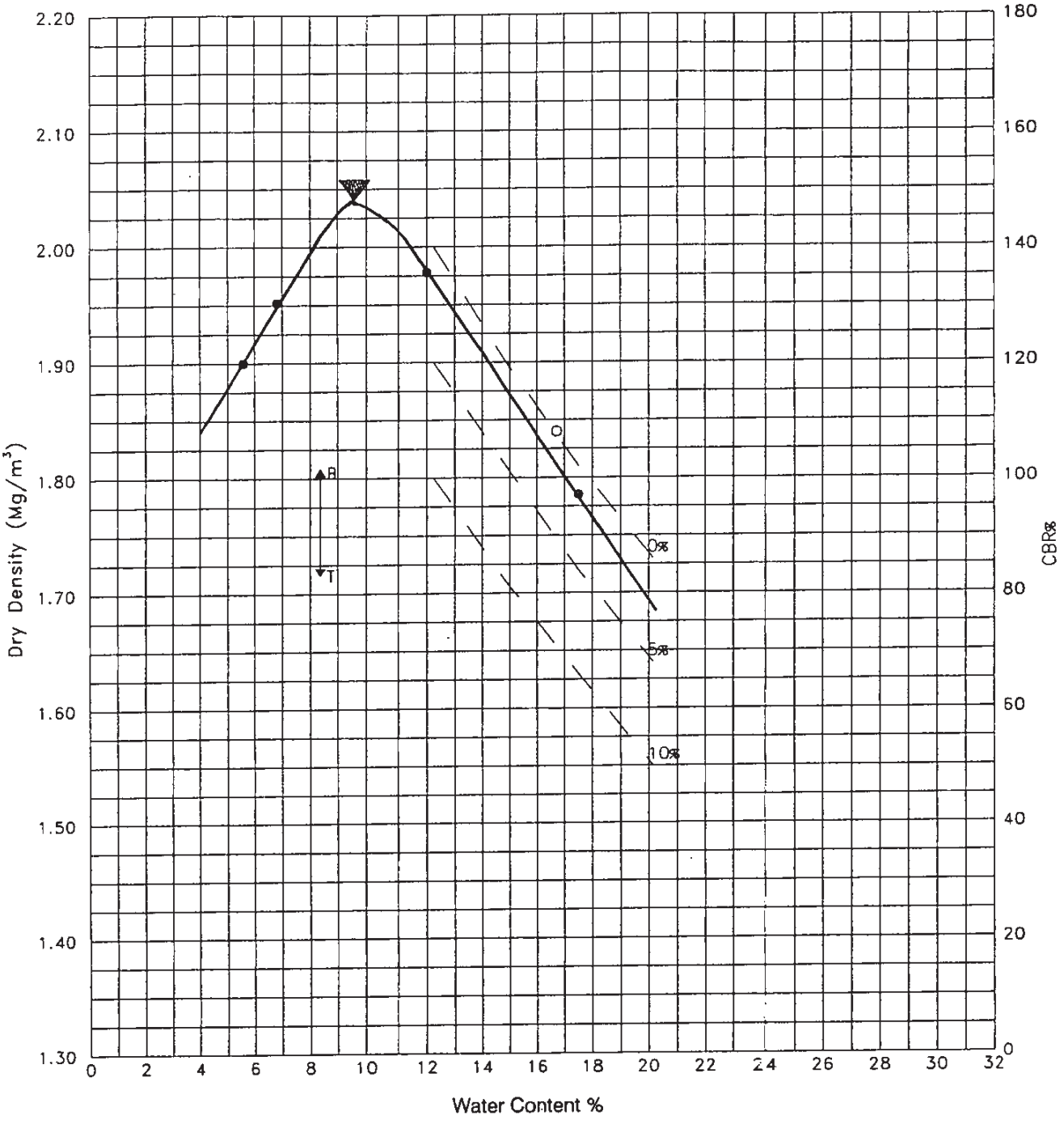
Soil Mechanics

Project

Cronton Colliery
Maro Developments

Contract

F3605



- ● Moisture Content/Dry Density
- o Compaction at Natural Water Content
- ▼ Maximum Dry Density/Optimum Water Content
- ▼ CBR% Top
- ▲ CBR% Bottom
- ▲ CBR% Average (if Top and Bottom are within 10%)

Type of Test/Mould	4.5Kg/CBR		
Particle Density Assumed	2.65	Mg/m^3	
Maximum Dry Density	2.04	Mg/m^3	
Optimum Water Content	9.6	%	
% retained 37.5mm sieve	0		
% retained 20mm sieve	23		

Description

Grey,black MUDSTONE recovered as clayey slightly sandy fine to coarse gravel

Hole TP44

Depth 1.90

Type B

Form 54/0

Remarks

Laboratory - Moisture Content/ Dry Density Relationship

Soil Mechanics

Project

Cronton Colliery
Maro Developments

Contract

F3605

L3/9

TABLE OF INDEX PROPERTIES

Project No	Project Name
F3605	Cronton Colliery

Hole No.	Sample No.	Depth (m) from	Depth (m) to	type	Soil Description	ρ Mg/m³	ρ_d Mg/m³	w %	< 425 µm sieve %	W_L %	W_P %	I_P	LS %	ρ_s Mg/m³	Remarks
124	4	1.50	1.95	U	Firm brown gravelly slightly sandy CLAY.Gravel is fine.			17	100	29	15	14			
124	11	4.50	4.95	U	Soft to firm greyish brown slightly sandy slightly gravelly CLAY.Sand and gravel are fine to medium.			14	100	26	12	14			
125	11	3.20	3.70	U	Stiff greyish brown gravelly sandy CLAY.Gravel and sand are fine to medium.			12	93	26	13	13			
127	6	3.50	3.95	U	Firm greyish brown slightly sandy slightly gravelly CLAY.Sand and gravel are fine to medium.			14	100	27	12	15			
129	9	3.50	3.95	U	Stiff greyish brown very gravelly sandy CLAY.Gravel and sand are fine to medium.			12	100	30	13	17			

General notes: Definitive method used in all cases unless annotated otherwise. See individual test reports for further details.

Key :

- ρ bulk density, linear
- ρ_d dry density
- w moisture content
- W_L Liquid limit
- W_P Plastic limit
- I_P Plasticity Index
- LS Linear shrinkage
- ρ_s particle density
  - -g = gas jar
  - -p = small pyknometer

Ref: SLR - I Rev 0/02

Soil Mechanics

UKAS TESTING 1157

Sheet Printed: 09/10/2003 14:45

UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TESTS WITHOUT MEASUREMENT OF PORE PRESSURE - SUMMARY OF RESULTS

Project No	Project Name
F3605	Cronton Colliery

Hole No.	Sample No.	Depth (m) from	Depth (m) to	type	Soil Description	Density bulk Mg/m³	Density dry Mg/m³	w %	Test type	Dia. mm	$\acute{o}_3$ kPa	At failure / end of stage: Axial strain %	$\acute{o}_1 - \acute{o}_3$ kPa	C_u kPa	MODE	Remarks
125	11	3.20	3.70	U	Stiff greyish brown gravelly sandy CLAY.Gravel and sand are fine to medium.	2.17	1.93	12	UUM	102.4	50	6.3	164	82	P	
										102.4	100	8.8	203	102		
										102.4	200	19.5	319	159		
129	9	3.50	3.95	U	Stiff greyish brown very gravelly sandy CLAY.Gravel and sand are fine to medium.	2.20	1.96	12	UUM	104.2	50	6.8	426	213	C	
										104.2	100	9.2	473	237		
										104.2	200	19.5	568	284		

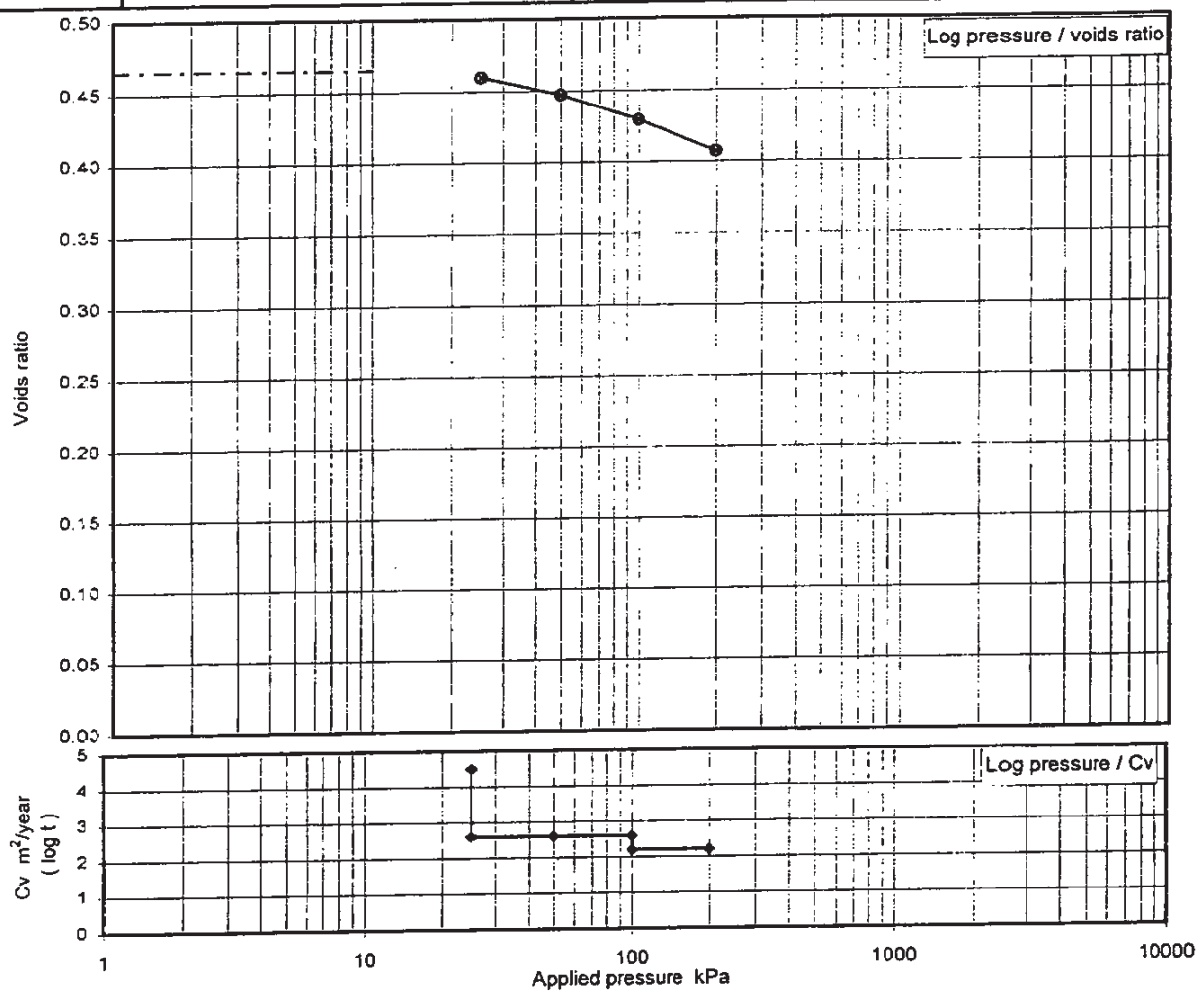
General notes: Tests carried out in accordance with BS1377: Part 7: 1990, clause 8 for single stage, clause 9 for multistage tests. Specimens nominally 2:1 height diameter ratio and tested at a rate of strain of 2%/minute, unless annotated otherwise. See individual test reports for further details.

Legend
- UU - single stage test (may be in sets of specimens)
- UUM - multistage test on a single specimen
- suffix R - remoulded or recompacted
- $\acute{o}_3$ cell pressure
- $\acute{o}_1 - \acute{o}_3$ deviator stress
- C_u undrained shear strength

Mode of failure: P plastic; B brittle; C compound

ONE DIMENSIONAL CONSOLIDATION TEST
BS 1377 : Part 5 : 1990 : clause 3

Project No	F3605	Sample Details:	Hole No	124
Project Name	Cronton Colliery		Depth (m BGL)	1.5
			No	4
			Type	U
			ID	N500049059



Soil description	Firm brown gravelly slightly sandy CLAY.Gravel is fine.	Liquid limit %	
Preparation	Undisturbed	Plastic limit %	

Specimen details	Initial	Final	
Particle density	2.65 assumed		Mg/m³
Diameter	74.96		mm
Height	18.86	18.11	mm
Voids ratio	0.465	0.407	
Moisture content	17	16	%
Bulk density	2.12	2.18	Mg/m³
Dry density	1.81	1.88	Mg/m³
Saturation	97	101	%
Average temperature for test	23		°C

Swelling pressure: not measured kPa

Notes :

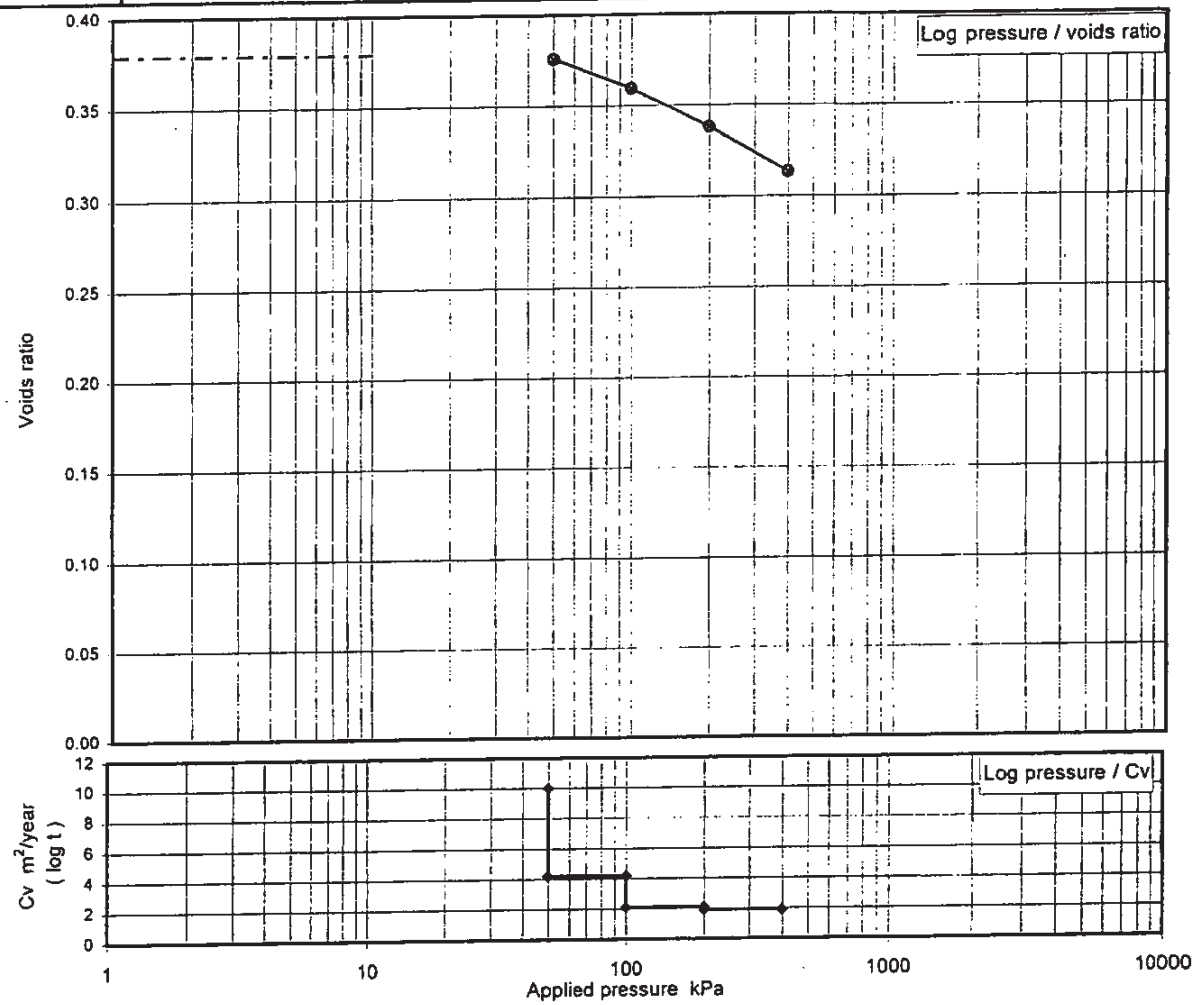
Specimen taken 30 mm from base of sample

Applied Pressure kPa	Voids ratio	M_v m²/MN	C_v ($t_{50, log}$) m²/year	C_v ($t_{90, root}$) m²/year	
0	0.4654				
25	0.4599	0.148	4.5	7.2	
50	0.4474	0.343	2.6	3.4	
100	0.4296	0.246	2.6	3.6	
200	0.4072	0.157	2.2	3.7	

Ref SLR 5.3 Rev. 1 DEC 01	Soil Mechanics	UKAS TESTING 1157	Approved for issue (authorised signatory)	Date 23/09/03
				Report page 1 of 1

ONE DIMENSIONAL CONSOLIDATION TEST
BS 1377 : Part 5 : 1990 : clause 3

Project No	F3605	Sample Details:	Hole No	125
Project Name	Cronton Colliery		Depth (m BGL)	3.2
			No	11
			Type	U
			ID	N500049084



Soil description	Stiff greyish brown gravelly sandy CLAY.Gravel and sand are fine to medium.	Liquid limit %	
Preparation	Undisturbed	Plastic limit %	

Specimen details	Initial	Final	
Particle density	2.65 assumed		Mg/m³
Diameter	74.96		mm
Height	18.90	18.00	mm
Voids ratio	0.379	0.313	
Moisture content	12	12	%
Bulk density	2.18	2.26	Mg/m³
Dry density	1.92	2.02	Mg/m³
Saturation	86	101	%
Average temperature for test	23		°C

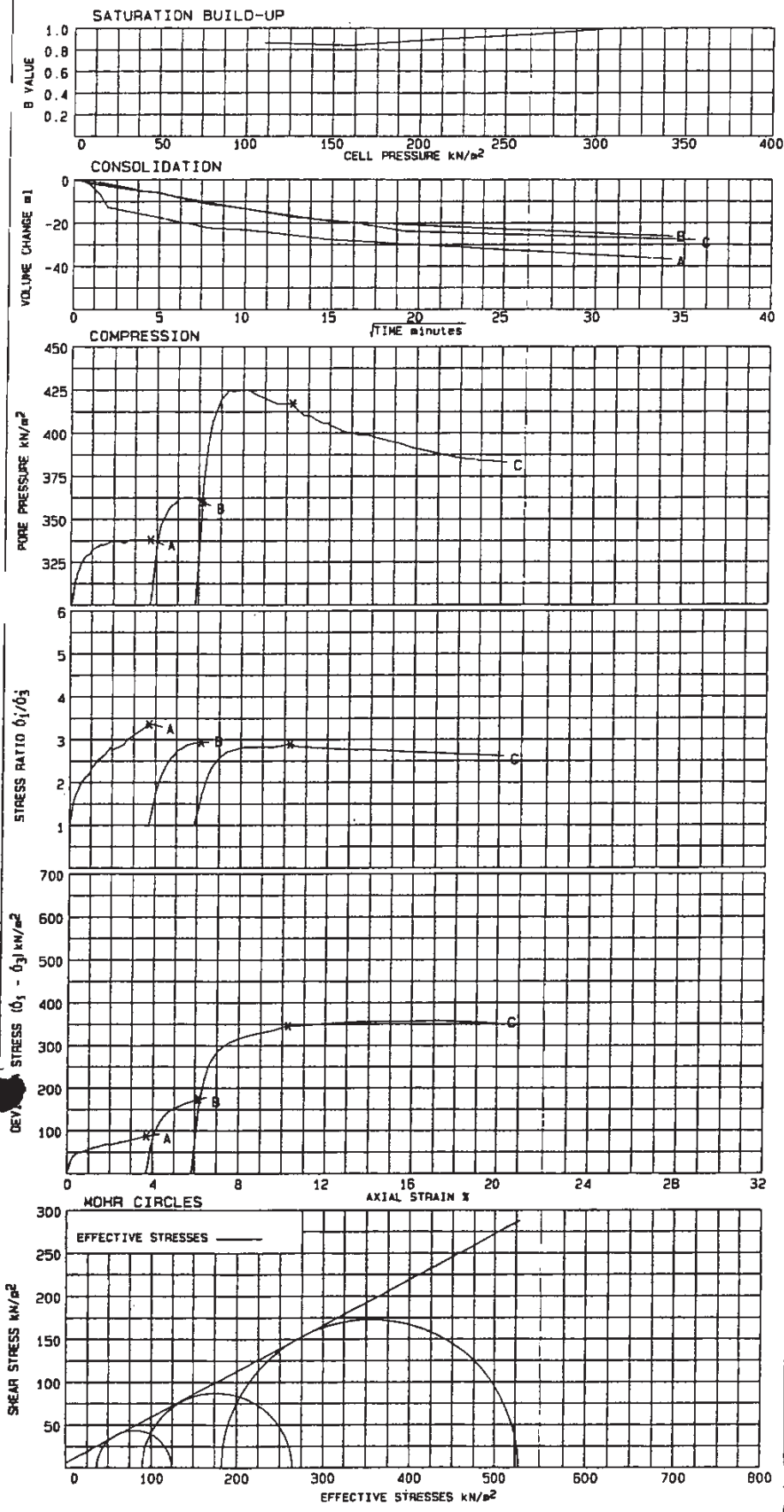
Swelling pressure: not measured kPa

Notes :

Specimen taken 30 mm from base of sample

Applied Pressure kPa	Voids ratio	M_v m²/MN	C_v ($t_{50,\ log}$) m²/year	C_v ($t_{90,\ root}$) m²/year	
0	0.3792				
50	0.3760	0.047	10	8.1	
100	0.3594	0.241	4.2	6.3	
200	0.3382	0.156	2.1	5	
400	0.3135	0.092	1.9	3.8	

Ref SLR 5.3 Rev. 1 DEC 01	Soil Mechanics	UKAS TESTING 1187	Approved for issue (authorised signatory)	Date 23/09/03
				Report page 1 of 1



		STAGE	A	B	C
INITIAL	Density Mg/m³		2.22	2.25	2.27
	Moisture %		14	13	13
	Dry Density Mg/m³		1.95	1.98	2.01
AFTER CONSOLIDATION	Density Mg/m³		2.25	2.27	2.29
	Moisture %		13	13	12
	Dry Density Mg/m³		1.98	2.01	2.05
SATURATION STAGE	Initial pwp	kN/m²	3		
	Saturated pwp	kN/m²	250		
	Final cell pressure	kN/m²	310		
	B value		1.00		
CONSOLIDATION STAGE	Cell Pressure	kN/m²	375	450	600
	Back Pressure	kN/m²	300	300	300
	Initial pwp	kN/m²	362	439	572
	Final pwp	kN/m²	300	300	300
CONSOLIDATION PARAMETERS	c_{v_3} m²/year		2.18	0.62	0.52
	m_{v_3} m²/MN		0.35	0.11	0.06
COMPRESSION STAGE	Cell Pressure	kN/m²	375	450	600
	Initial pwp	kN/m²	300	300	300
	Inital $\acute{\sigma}_3$	kN/m²	75	150	300
	Rate of strain % per hour		1.00	1.00	1.00
FAILURE CONDITIONS AT PEAK STRESS RATIO	Axial Strain %		3.7	6.2	10.3
	$(\acute{\sigma}_1 - \acute{\sigma}_3)_f$	kN/m²	87	174	346
	u_f	kN/m²	338	360	417
	$\acute{\sigma}_{3f}$	kN/m²	37	90	183
	$\acute{\sigma}_{1f}$	kN/m²	124	264	529
	A_f		0.44	0.34	0.34
	Time to failure hours		3.7	6.2	10.3
	MODE OF FAILURE				

SHEAR STRENGTH PARAMETERS BY LINEAR REGRESSION	C'	ø'
	6 kN/m²	28 °

NOTES

Saturation by application of cell/back pressure increments of 50 kN/m2 with a differential of 10 kN/m2.

Drainage during consolidation to top with vertical side drains fitted

Stress/strain curves corrected for area change, side drains and .33 mm thick membrane

SOIL DESCRIPTION
Soft to firm greyish brown slightly sandy, slightly gravelly CLAY. Sand and gravel are fine to medium.

TYPE OF SPECIMEN: UNDISTURBED

SPECIMEN DIMENSIONS: 102.6mm dia x 204.2 mm long

Test carried out to BS 1377 : Part 8 : 1990 : Test 7 and in house procedure IHP0041, multistage test

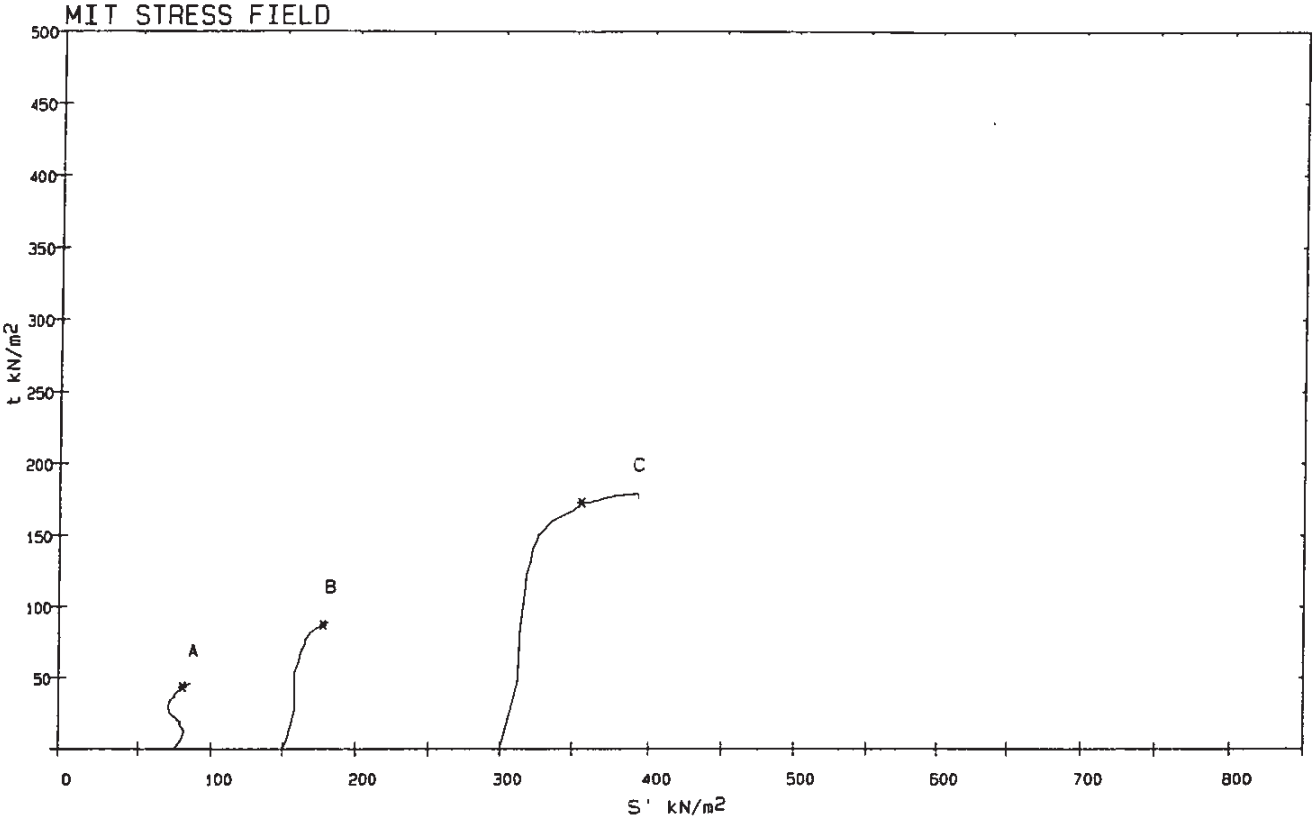
Consolidated Undrained Triaxial Compression Test with measurement of Pore Pressure - Multistage Test

Borehole No. BH124 Depth 4.50-4.95m
Sample No. U11

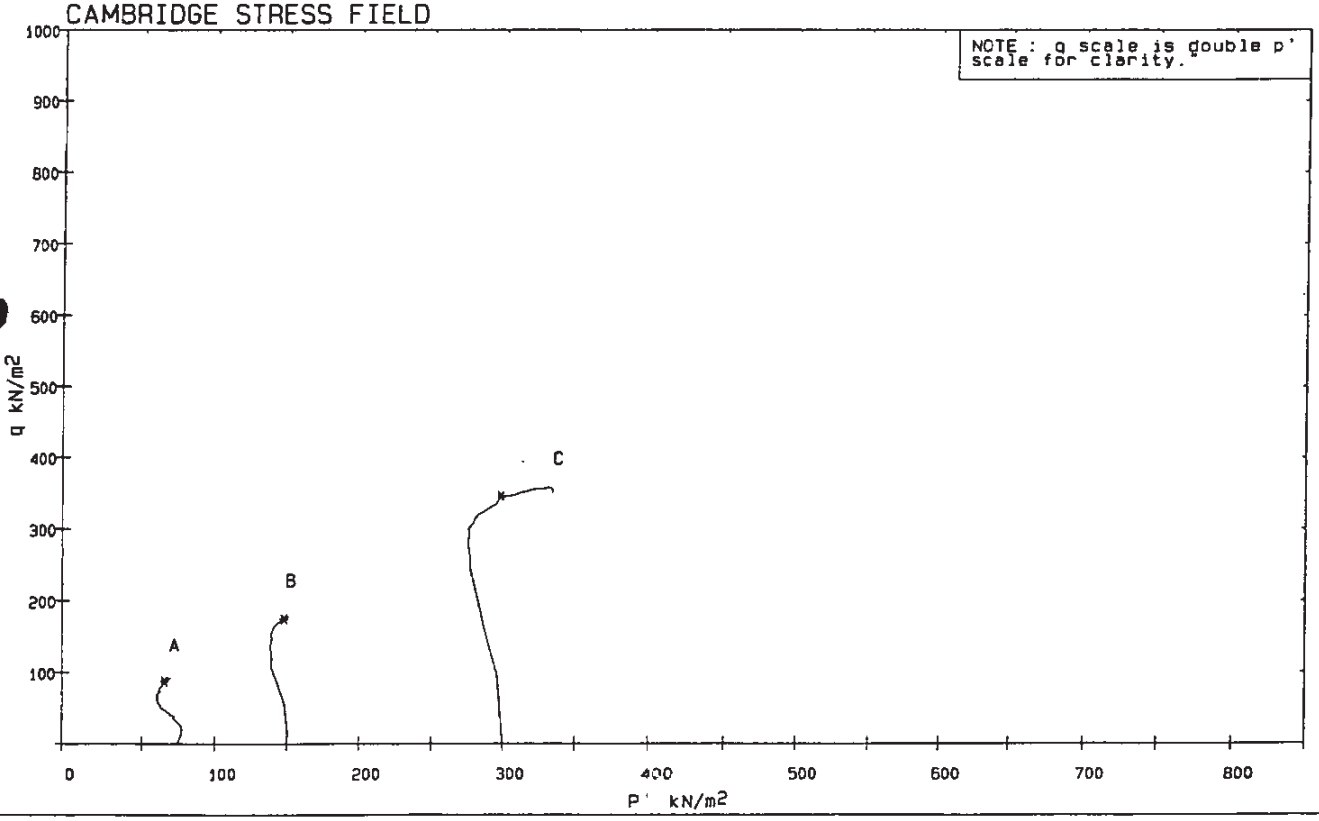
SLRIH 8.7A	Soil Mechanics	Location: CRONTON COLLIERY	Loc. No. F3605	Fig.

NOTE : Tested at rate of strain based on pore pressure equalisation at failure only.

MIT STRESS FIELD



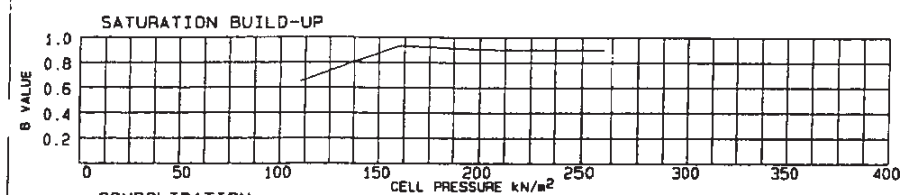
CAMBRIDGE STRESS FIELD

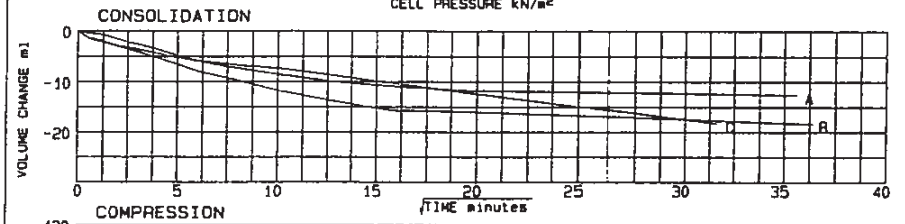


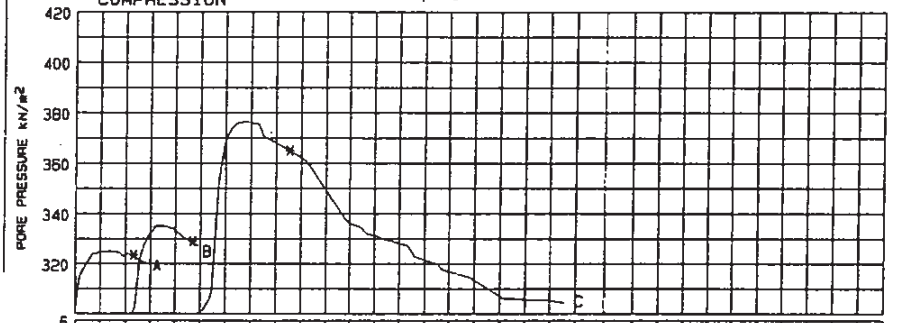
Consolidated Undrained Triaxial Compression Test with measurement of Pore Pressure - Multistage test

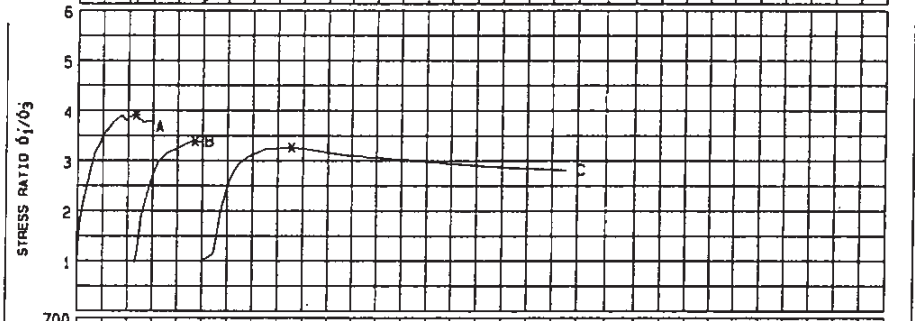
Borehole No. BH124 Depth 4.50-4.95m
Sample No. U11

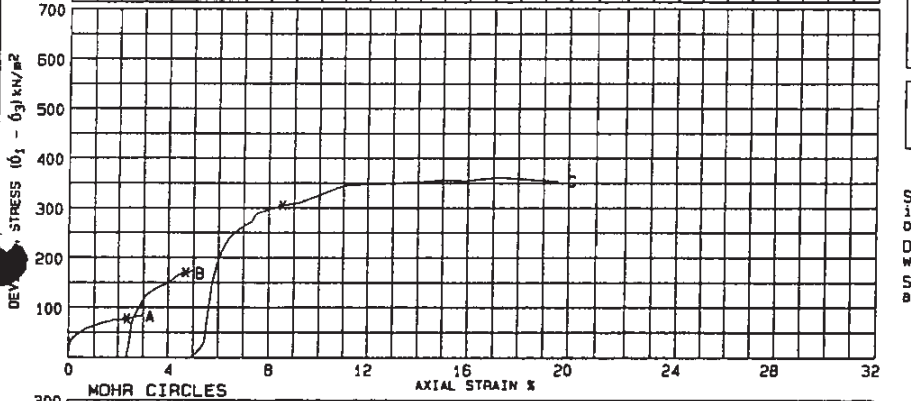
SLR 8.78	Soil Mechanics	Location CRONTON COLLIERY	Loc. No. F3605	Fig.

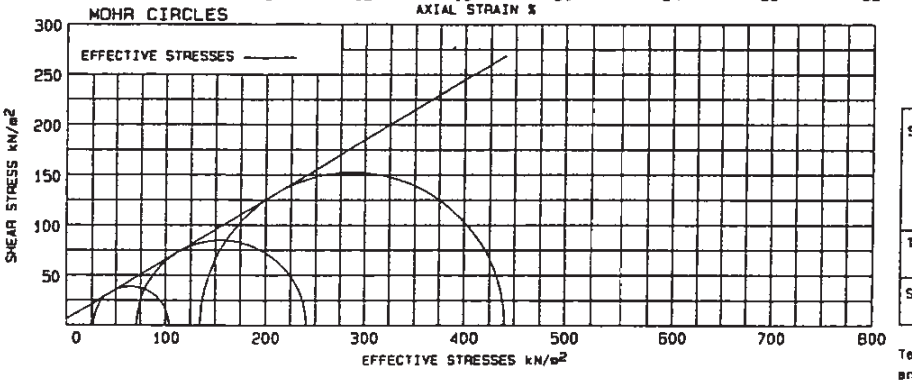












		STAGE	A	B	C
INITIAL	Density Mg/m³		2.25	2.25	2.27
	Moisture %		14	14	14
	Dry Density Mg/m³		1.97	1.97	1.99
AFTER CONSOLIDATION	Density Mg/m³		2.25	2.27	2.29
	Moisture %		14	14	13
	Dry Density Mg/m³		1.97	1.99	2.02
SATURATION STAGE	Initial pwp	kN/m²	2		
	Saturated pwp	kN/m²	200		
	Final cell pressure	kN/m²	260		
	B value		0.90		
CONSOLIDATION STAGE	Cell Pressure	kN/m²	350	400	500
	Back Pressure	kN/m²	300	300	300
	Initial pwp	kN/m²	329	376	422
	Final pwp	kN/m²	300	300	300
CONSOLIDATION PARAMETERS	C_{v3} m²/year		1.32	0.77	0.69
	m_{v3} m²/MN		0.29	0.16	0.10
COMPRESSION STAGE	Cell Pressure	kN/m²	350	400	500
	Initial pwp	kN/m²	300	300	300
	Initial δ_3'	kN/m²	50	100	200
	Rate of strain	% per hour	0.99	0.99	0.99
FAILURE CONDITIONS AT PEAK STRESS RATIO	Axial Strain %		2.3	4.7	8.6
	$(\delta_1 - \delta_3)_f$	kN/m²	77	170	305
	u_f	kN/m²	324	329	365
	$\delta_3'_f$	kN/m²	27	71	135
	$\delta_1'_f$	kN/m²	104	241	440
	A_f		0.30	0.17	0.21
	Time to failure	hours	2.4	4.7	8.6
	MODE OF FAILURE				

SHEAR STRENGTH PARAMETERS BY LINEAR REGRESSION	C'	Ø'
	6 kN/m²	31 °

NOTES

Saturation by application of cell/back pressure increments of 50 kN/m2 with a differential of 10 kN/m2.

Drainage during consolidation to top with vertical side drains fitted

Stress/strain curves corrected for area change, side drains and .33 mm thick membrane

SOIL DESCRIPTION
Firm greyish brown slightly sandy, slightly gravelly CLAY. Sand and gravel are fine to medium.

TYPE OF SPECIMEN: UNDISTURBED

SPECIMEN DIMENSIONS: 104.1 mm dia x 179.0 mm long

Test carried out to BS 1377 : Part 8 : 1990 : Test 7 and in house procedure IHP0041, multistage test

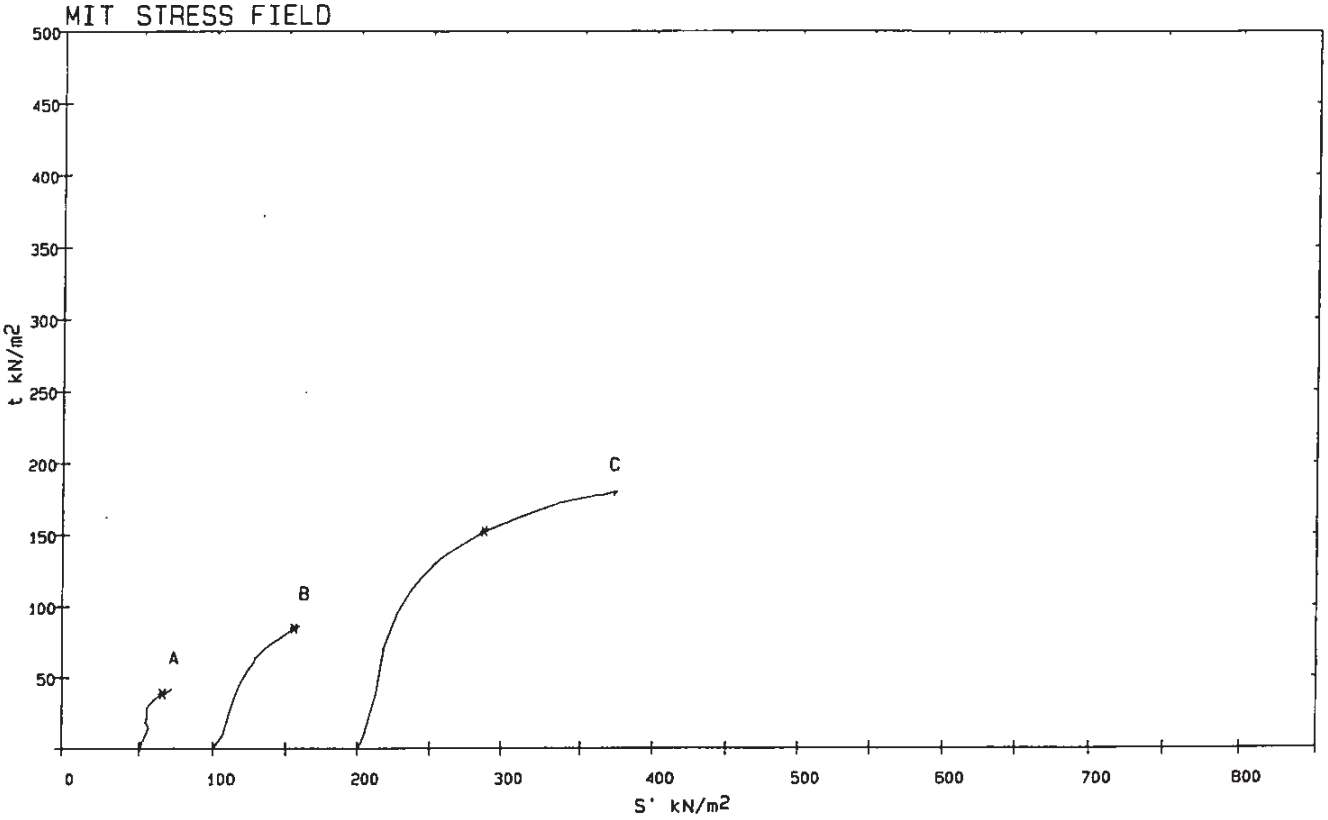
Consolidated Undrained Triaxial Compression Test with measurement of Pore Pressure - Multistage Test

Borehole No. BH127 Depth 3.50-3.95m
Sample No. U6

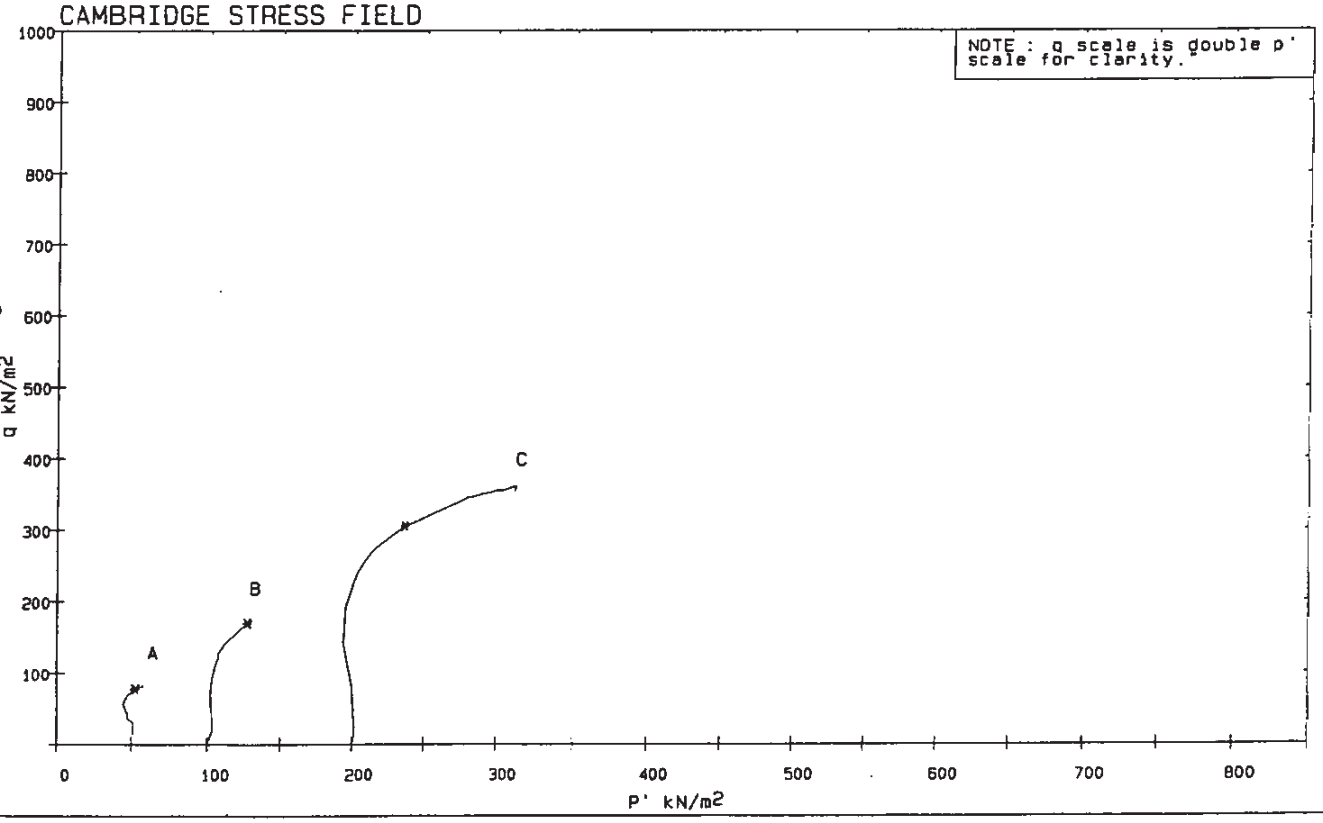
SLRIH 8.7A	Soil Mechanics	Location: CRONTON COLLIERY	Loc. No. F3605	Fig.

NOTE : Tested at rate of strain based on pore pressure equalisation at failure only.

MIT STRESS FIELD



CAMBRIDGE STRESS FIELD



Consolidated Undrained Triaxial Compression Test with measurement of Pore Pressure - Multistage test

Borehole No. BH127 Depth 3.50-3.95m
Sample No. U6

SLR B.78	Soil Mechanics	Location CRONTON COLLIERY	Loc. No. F3605	Fig.

ENCLOSURE E
GEOENVIRONMENTAL LABORATORY TEST RESULTS

TES Report	EXR/034137	EFS/033127
	EXR/034138	EFS/033174
	EXR/034213	EFS/033198
	EXR/034214	EFS/033199
	EXR/034243	EFS/033215
	EXR/034460	EFS/033264
	EXR/034461	EFS/033265
	EXR/034462	EFS/033266
	EXR/034835	EFS/033426
		EFS/033427
		EFS/033428
		EFS/033429
		EFS/033430
		EFS/033761

TEST REPORT
LEACHATE SAMPLE ANALYSIS

1252

TES Report No. EXR/034137

Soil Mechanics
Unit 18
Deeside Industrial Estate
Deeside
Flintshire
CH5 2LR

Site: Cronton Colliery

The 2 samples described in this report were scheduled for analysis by TES Bretby on 05-Aug-2003.
The analysis was completed by: 29-Aug-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of GRO Results (Page 4)
Table of PAH HPLC(VL) Results (Pages 5 to 6)
Table of TPH (Si) banding (Page 7)
GC-FID Chromatograms (Pages 8 to 11)
Table of Report Notes (Page 12)

On behalf of
TES Bretby :
J Hannah

Date of Issue: 29-Aug-2003

Tests marked 'not UKAS accredited' in this report are not included
in the UKAS Accreditation Schedule for our laboratory.
TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :		WSLM3	ICPWATER	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATER	ICPMSW	ICPMSW	SCNCR6	SCNCR6	ISESW24	GROHSA
Detection Limits :			0.06	0.001	0.001	0.0001	0.001	0.001	0.002	0.001	0.05	0.0001	0.001	0.1	0.01	0.2	0.01
UKAS Accredited :		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
TES ID Number EXV	Client Sample Description	pH units	Total Sulphur as SO4 (Dissolved)	Nickel as Ni (Dissolved)	Chromium as Cr (Dissolved)	Cadmium as Cd (Dissolved)	Copper as Cu (Dissolved)	Lead as Pb (Dissolved)	Zinc as Zn (Dissolved)	Arsenic as As (Dissolved)	Boron as B (Dissolved)	Mercury as Hg (Dissolved)	Selenium as Se (Dissolved)	Thiocyanate as SCN	Chromium VI as Cr	Sulphide (Free) as S	GRO-HSA (AA)
0318288	B/H 101 @ 2 m	7.8	490	0.002	<0.001	0.0002	0.002	<0.001	0.064	0.001	<0.05	<0.0001	0.002	<0.1	<0.01	<0.2	Req
0318289	B/H 111A @ 6.3 m	7.9	154	<0.001	<0.001	<0.0001	<0.001	<0.001	0.029	0.001	<0.05	<0.0001	0.001	<0.1	<0.10	<0.2	Req

TES Bretby

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Fax +44 (0) 1283 554422

Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Leachate Sample Analysis

Date Printed	29 August 2003
Report Number	EXR/034137
Table Number	1

TES Bretby

Units :		mg/l	mg/l	mg/l	ug/l	mg/l	mg/l	mg/l	mg/l									
Method Codes :		CNWFREE	ICTSCN28	TPHFID	PAHHPLC_VI	PHEHPLC	PHEHPLC	PHEHPLC	PHEHPLC									
Detection Limits :		0.05	0.05	0.05	0.003	0.0005	0.0005	0.0005	0.0005									
UKAS Accredited :		no	no	no	no	yes	yes	yes	yes									
TES ID Number EXV	Client Sample Description	Cyanide (Free) as CN	Cyanide (Total) as CN	TPH GC (AA)	PAH HPLC	Phenol	Cresols	Dimethylphenols	Trimethylphenols									
0318288	B/H 101 @ 2 m	<0.05	<0.05	Req	Req	<0.0005	<0.0005	<0.0005	<0.0005									
0318289	B/H 111A @ 6.3 m	<0.05	<0.05	Req	Req	<0.0005	<0.0005	<0.0005	<0.0005									

TES Bretby

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Leachate Sample Analysis

Date Printed	29 August 2003
Report Number	EXR/034137
Table Number	1

TES Bretby

Gasoline Range Organics
(BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: Soil Mechanics: Cronton Colliery
Job Number: W034137
Directory: 0815HSA.GC6
Method: Headspace GCFID

Matrix: Leachate
Date Booked in: 05-Aug-03
Date extracted: 14-Aug-03
Date Analysed: 18-Aug-03

*** Sample data with an asterisk are not UKAS accredited.**

		Concentration, (mg/l)					Aliphatics			
Sample ID	**Client ID**	**Benzene**	**Toluene**	**Ethyl benzene**	**m/p-Xylene**	**o-Xylene**	**C5 - C6**	**>C6 - C7**	**>C7 - C8**	**>C8 - C10**
EX0318288*	BH101 2.0m	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1
EX0318289*	BH111A 6.3m	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1

Note: Benzene elutes between C6 and C7, toluene elutes between C7 and C8, ethyl benzene and the xylenes elute between C8 and C9.

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH101 2.0	**Job Number:**	W03_4137
LIMS ID Number:	EX0318288	**Date Booked in:**	05-Aug-03
QC Batch Number:	302	**Date Extracted:**	13-Aug-03
Directory:	0815PAH.LC2	**Date Analysed:**	15-Aug-03
Dilution (fluorescence):	1.0	**Matrix:**	Leachate
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	950		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	< 0.063	Fluorescence
Acenaphthylene	208-96-8	< 0.105	UV
Acenaphthene	83-32-9	< 0.006	Fluorescence
Fluorene	86-73-7	< 0.006	Fluorescence
Phenanthrene	85-01-8	0.012	Fluorescence
Anthracene	120-12-7	< 0.006	Fluorescence
Fluoranthene	206-44-0	< 0.006	Fluorescence
Pyrene	129-00-0	< 0.006	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.105	UV
Benzo[a]anthracene	56-55-3	< 0.006	Fluorescence
Chrysene	218-01-9	< 0.006	Fluorescence
* Benzo-e-pyrene	192-97-2	< 0.006	Fluorescence
Benzo[b]fluoranthene	205-99-2	< 0.006	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.006	Fluorescence
Benzo[a]pyrene	50-32-8	< 0.006	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	< 0.006	Fluorescence
Benzo[g,h,i]perylene	191-24-2	< 0.006	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	< 0.006	Fluorescence
* Anthanthrene	191-26-4	< 0.006	Fluorescence
Total PAHs (USEPA 16)	-	< 0.263	-

Surrogate Recovery (%) =	85	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH111A 6.3	**Job Number:**	W03_4137
LIMS ID Number:	EX0318289	**Date Booked in:**	05-Aug-03
QC Batch Number:	302	**Date Extracted:**	13-Aug-03
Directory:	0815PAH.LC2	**Date Analysed:**	15-Aug-03
Dilution (fluorescence):	1.0	**Matrix:**	Leachate
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	950		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	< 0.063	Fluorescence
Acenaphthylene	208-96-8	< 0.105	UV
Acenaphthene	83-32-9	< 0.006	Fluorescence
Fluorene	86-73-7	< 0.006	Fluorescence
Phenanthrene	85-01-8	0.007	Fluorescence
Anthracene	120-12-7	< 0.006	Fluorescence
Fluoranthene	206-44-0	< 0.006	Fluorescence
Pyrene	129-00-0	< 0.006	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.105	UV
Benzo[a]anthracene	56-55-3	< 0.006	Fluorescence
Chrysene	218-01-9	< 0.006	Fluorescence
* Benzo-e-pyrene	192-97-2	< 0.006	Fluorescence
Benzo[b]fluoranthene	205-99-2	< 0.006	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.006	Fluorescence
Benzo[a]pyrene	50-32-8	< 0.006	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	< 0.006	Fluorescence
Benzo[g,h,i]perylene	191-24-2	< 0.006	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	< 0.006	Fluorescence
* Anthanthrene	191-26-4	< 0.006	Fluorescence
Total PAHs (USEPA 16)	-	< 0.258	-

Surrogate Recovery (%) =	79	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Soil Mechanics : Cronton Colliery
Job Number: W03_4137
QC Batch Number: 1515
Directory: L:\DATA\0820TPH.GC2\067B0801.D
Method: Separating Funnel

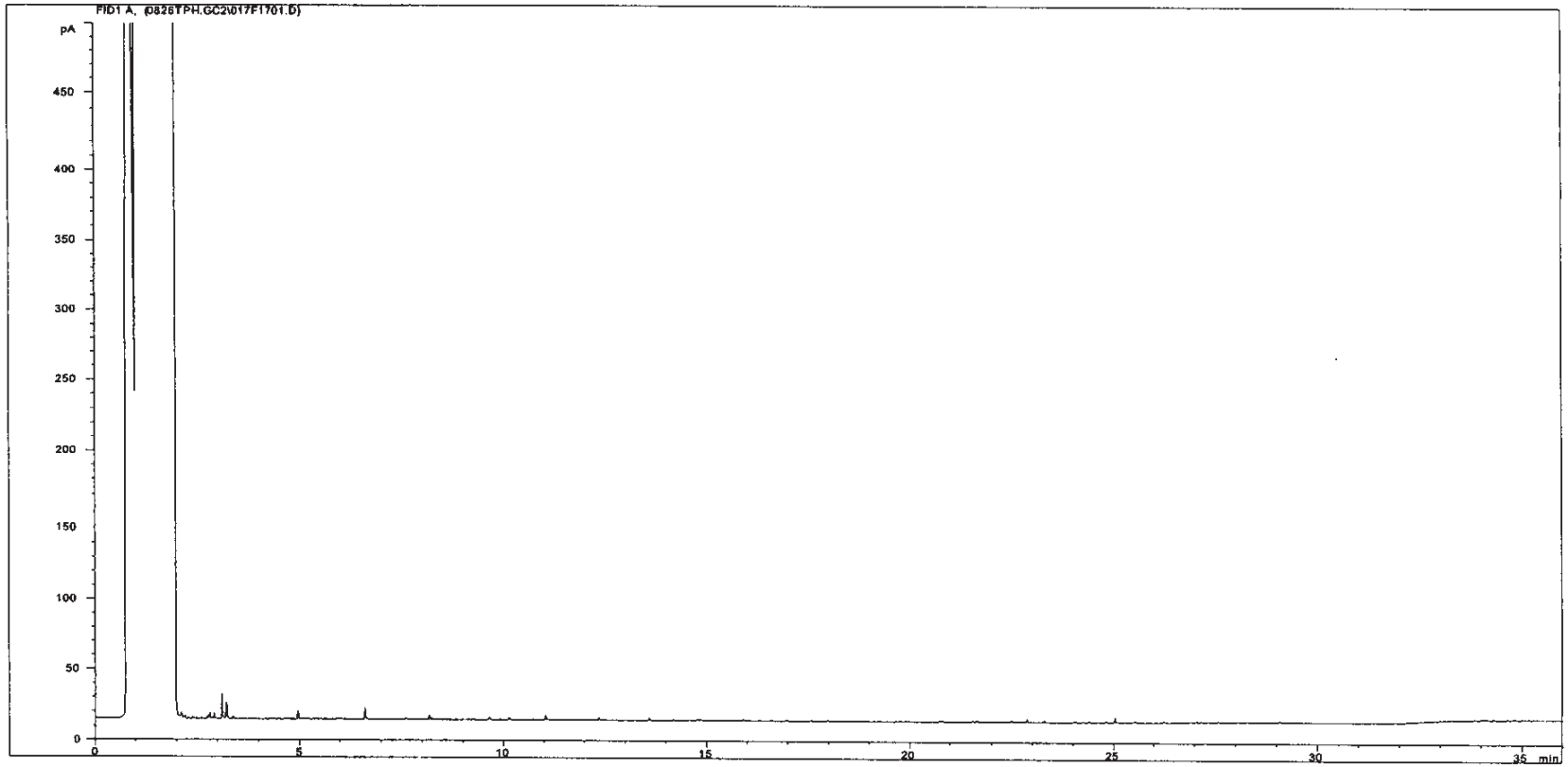
Separation: Silica gel
Eluents: Pentane, DCM

Matrix: Water
Date Booked In 08/05/2003
Date Extracted 13/08/2003
Date Analysed: 21/08/2003

This sample data is not UKAS accredited.

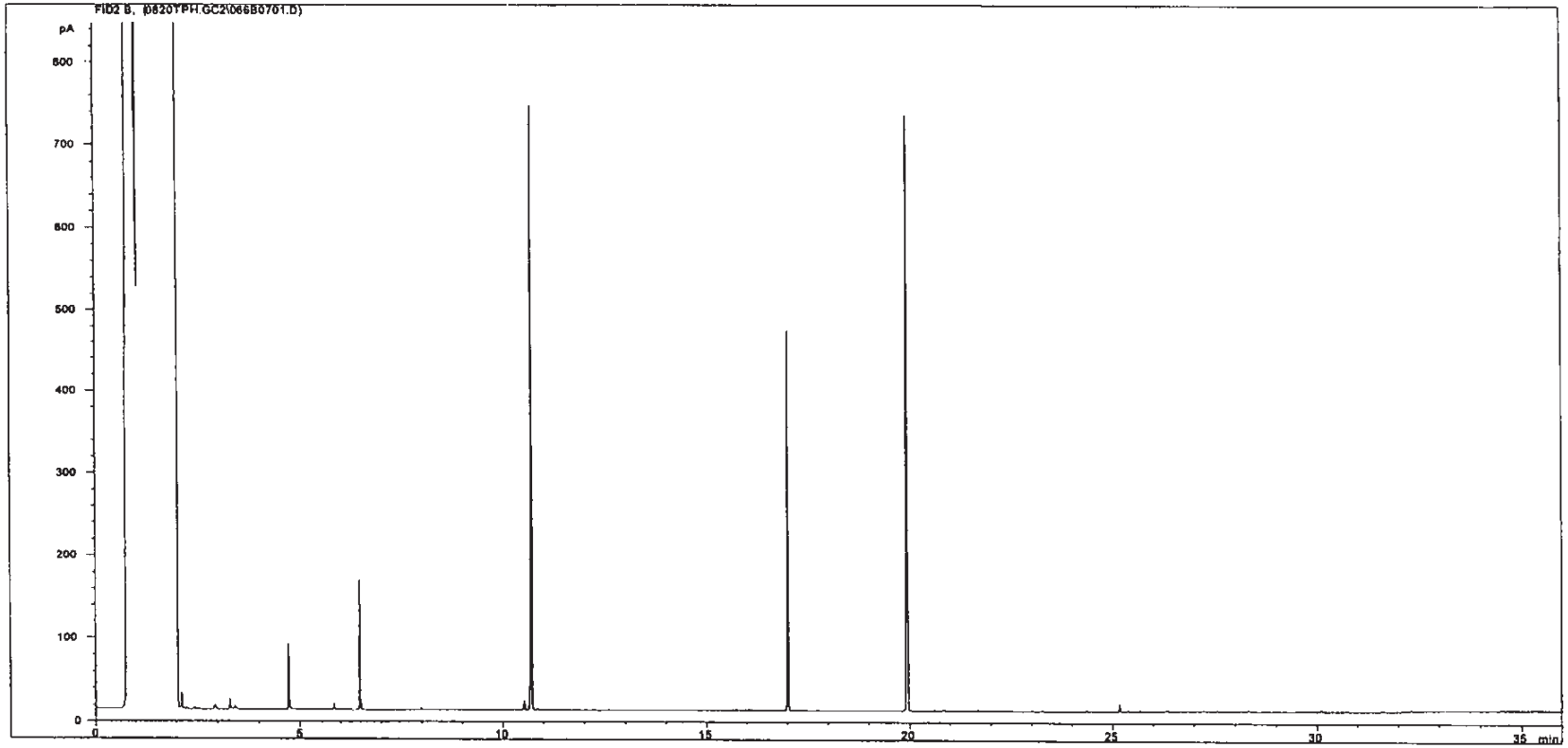
		Concentration, (mg/l)									
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35	
Sample ID	Client ID	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics
EX0318288	BH101 2.0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
EX0318289	BH111A 6.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aliphatics Fraction.



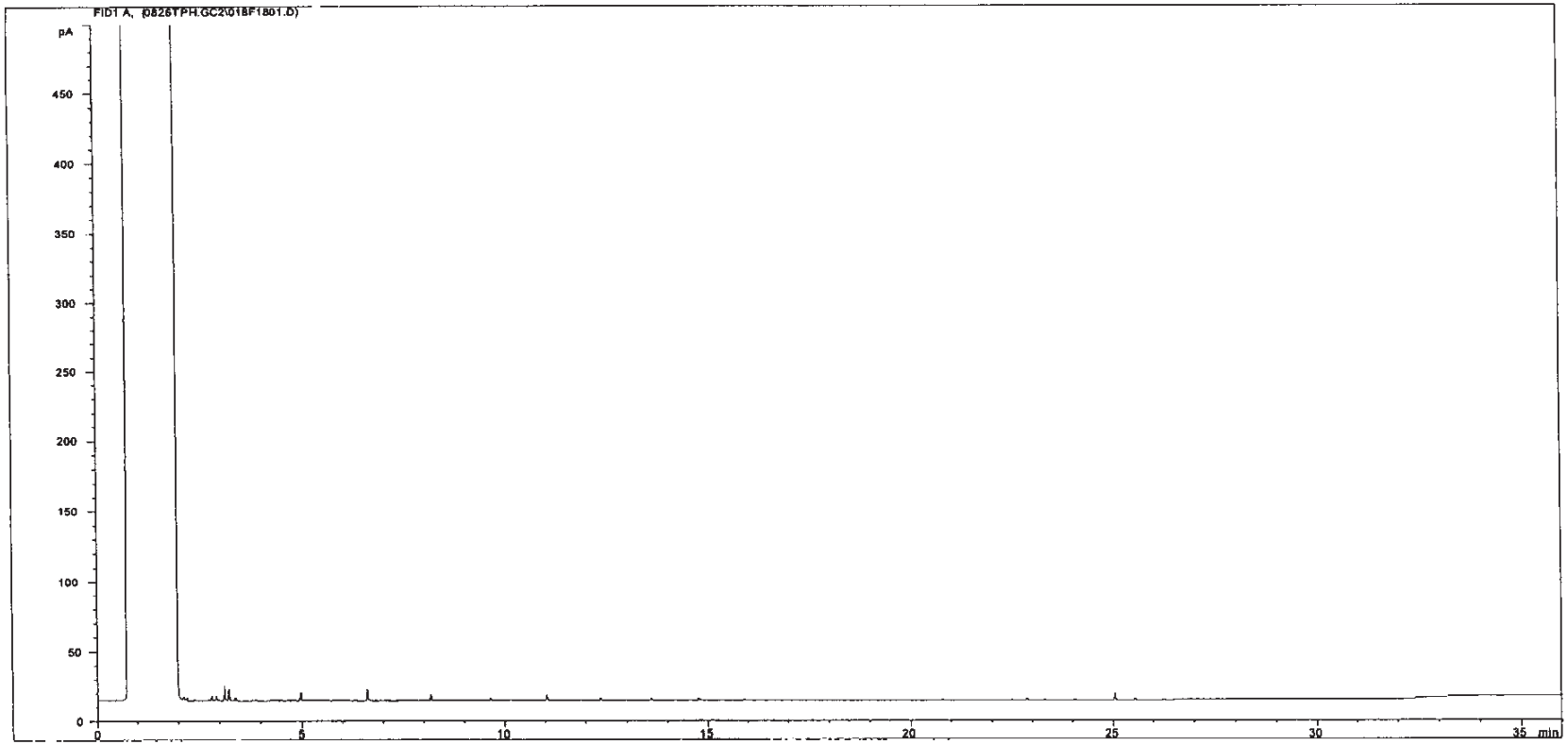
Sample ID:	EX0318288ALI	**Job Number:**	W03_4137
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH101 2.0
Acquisition Date/Time:	27/08/2003 00:06:31		
Datafile:	L:\DATA\0826TPH.GC2\017F1701.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aromatics Fraction.



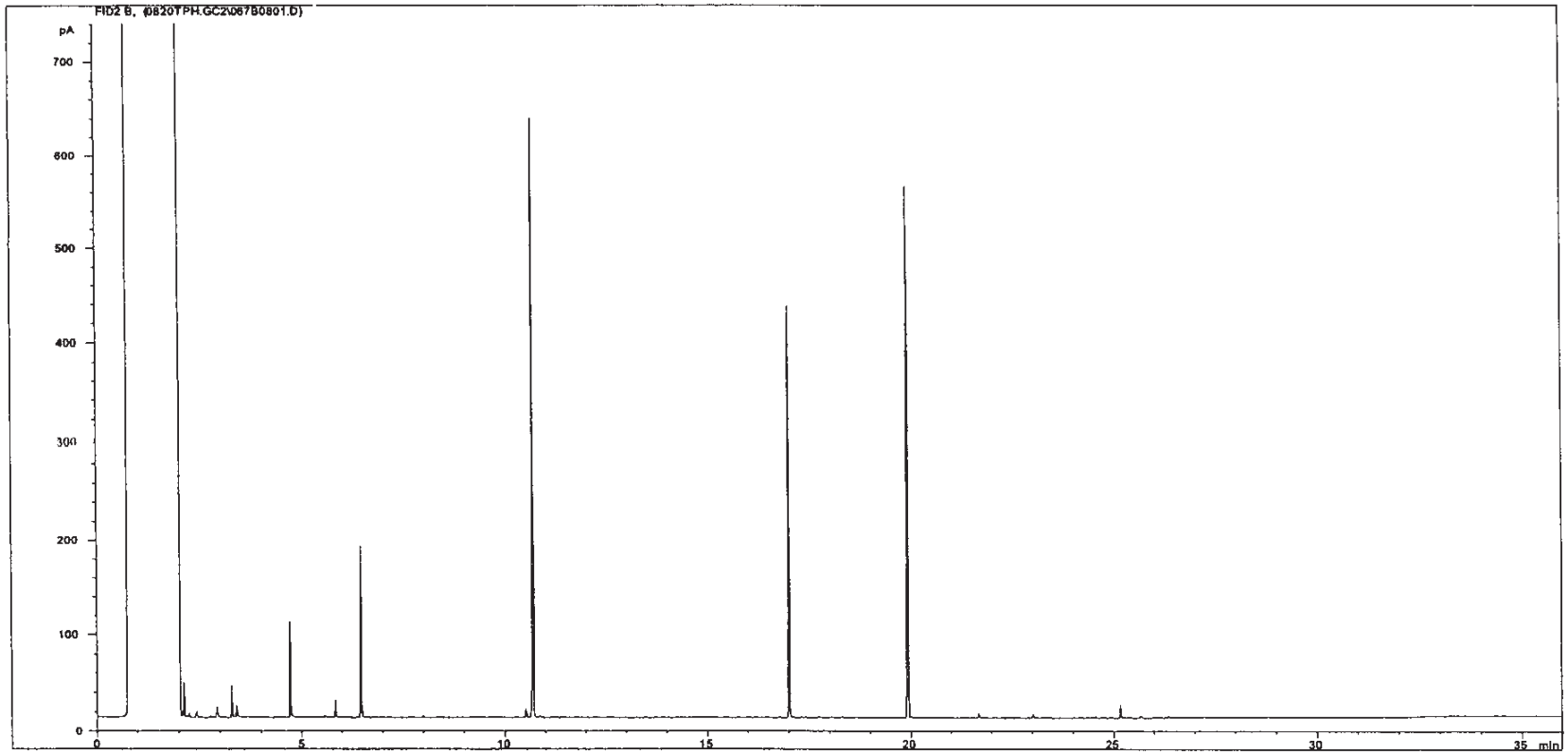
Sample ID:	EX0318288ARO	**Job Number:**	W03_4137
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH101 2.0
Acquisition Date/Time:	21/08/2003 17:03:46		
Datafile:	L:\DATA\0820TPH.GC2\066B0701.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aliphatics Fraction.



Sample ID:	EX0318289ALI	**Job Number:**	W03_4137
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH111A 6.3
Acquisition Date/Time:	27/08/2003 00:52:58		
Datafile:	L:\DATA\0826TPH.GC2\018F1801.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aromatics Fraction.



Sample ID:	EX0318289ARO	**Job Number:**	W03_4137
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH111A 6.3
Acquisition Date/Time:	21/08/2003 17:50:22		
Datafile:	L:\DATA\0820TPH.GC2\067B0801.D		

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3 @ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

TEST REPORT
LEACHATE SAMPLE ANALYSIS

1252

TES Report No. EXR/034138

Soil Mechanics
Unit 18
Deeside Industrial Estate
Deeside
Flintshire
CH5 2LR

Site: Cronton Colliery

The 2 samples described in this report were scheduled for analysis by TES Bretby on 05-Aug-2003.
The analysis was completed by: 18-Aug-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of GRO Results (Page 4)
Table of PAH HPLC(VL) Results (Pages 5 to 6)
Table of TPH (Si) banding (Page 7)
GC-FID Chromatograms (Pages 8 to 11)
Table of Report Notes (Page 12)

On behalf of
TES Bretby :
J Elstub

Date of Issue: 18-Aug-2003

Tests marked 'not UKAS accredited' in this report are not included
in the UKAS Accreditation Schedule for our laboratory.
TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :		WSLM3	ICPWATER	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATER	ICPMSW	ICPMSW	SCNCR6	SCNCR6	ISESW24	GROHSA
Detection Limits :			0.06	0.001	0.001	0.0001	0.001	0.001	0.002	0.001	0.05	0.0001	0.001	0.1	0.01	0.2	0.01
UKAS Accredited :		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
TES ID Number EX/	Client Sample Description	pH units	Total Sulphur as SO4 (Dissolved)	Nickel as Ni (Dissolved)	Chromium as Cr (Dissolved)	Cadmium as Cd (Dissolved)	Copper as Cu (Dissolved)	Lead as Pb (Dissolved)	Zinc as Zn (Dissolved)	Arsenic as As (Dissolved)	Boron as B (Dissolved)	Mercury as Hg (Dissolved)	Selenium as Se (Dissolved)	Thiocyanate as SCN	Chromium VI as Cr	Sulphide (Free) as S	GRO-HSA (AA)
0318290	B/H 105 @ 0.2 m	8.4	59.5	<0.001	<0.001	<0.0001	0.005	<0.001	0.019	0.001	<0.05	<0.0001	<0.001	0.2	0.01	<0.2	Req
0318313	B/H 109 @ 2.3 m	7.9	135	0.003	<0.001	<0.0001	0.002	<0.001	0.030	<0.001	<0.05	<0.0001	0.002	<0.1	<0.01	<0.2	Req

TES Bretby
PO Box 100, Bretby Business Park,
Burton-on-Trent, Staffordshire, DE15 0XD
Tel +44 (0) 1283 554400
Fax +44 (0) 1283 554422

Client Name Soil Mechanics

Contact Mr J Northeast

Cronton Colliery

Leachate Sample Analysis

Date Printed	18 August 2003
Report Number	EXR/034138
Table Number	1

TES Bretby

Units :		mg/l	mg/l	mg/l	ug/l	mg/l	mg/l	mg/l	mg/l									
Method Codes :		CNWFREE	ICTSCN28	TPHFID	PAHHPLC_V	PHEHPLC	PHEHPLC	PHEHPLC	PHEHPLC									
Detection Limits :		0.05	0.05	0.05	0.003	0.0005	0.0005	0.0005	0.0005									
UKAS Accredited :		no	no	no	no	yes	yes	yes	yes									
TES ID Number EX/	Client Sample Description	Cyanide (Free) as CN	Cyanide (Total) as CN	TPH GC (AA)	PAH HPLC	Phenol	Cresols	Dimethylphenols	Trimethylphenols									
0318290	B/H 105 @ 0.2 m	<0.05	<0.05	Req	Req	<0.0005	<0.0005	<0.0005	<0.0005									
0318313	B/H 109 @ 2.3 m	<0.05	<0.05	Req	Req	<0.0005	<0.0005	<0.0005	<0.0005									

TES Bretby

PO Box 100, Bretby Business Park,

Burton-on-Trent, Staffordshire, DE15 0XD

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Leachate Sample Analysis

Date Printed	18 August 2003
Report Number	EXR/034138
Table Number	1

TES Bretby

Gasoline Range Organics
(BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: Soil Mechanics: Cronton Colliery
Job Number: W034138
Directory: 0814HSA.GC6
Method: Headspace GCFID

Matrix: Leachate
Date Booked in: 05-Aug-03
Date extracted: 13-Aug-03
Date Analysed: 15-Aug-03

*** Sample data with an asterisk are not UKAS accredited.**

		Concentration, (mg/l)					Aliphatics			
Sample ID	**Client ID**	**Benzene**	**Toluene**	**Ethyl benzene**	**m/p-Xylene**	**o-Xylene**	**C5 - C6**	**>C6 - C7**	**>C7 - C8**	**>C8 - C10**
EX0318290*	BH105 0.2m	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1
EX0318313*	BH109 2.3m	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1

Note: Benzene elutes between C6 and C7, toluene elutes between C7 and C8, ethyl benzene and the xylenes elute between C8 and C9.

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH105 0.2	**Job Number:**	W03_4138
LIMS ID Number:	EX0318290	**Date Booked in:**	05-Aug-03
QC Batch Number:	298	**Date Extracted:**	11-Aug-03
Directory:	0813PAH.LC2	**Date Analysed:**	14-Aug-03
Dilution (fluorescence):	1.0	**Matrix:**	Leachate
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	950		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	< 0.063	Fluorescence
Acenaphthylene	208-96-8	< 0.105	UV
Acenaphthene	83-32-9	< 0.006	Fluorescence
Fluorene	86-73-7	< 0.006	Fluorescence
Phenanthrene	85-01-8	0.018	Fluorescence
Anthracene	120-12-7	< 0.006	Fluorescence
Fluoranthene	206-44-0	< 0.006	Fluorescence
Pyrene	129-00-0	< 0.006	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.105	UV
Benzo[a]anthracene	56-55-3	< 0.006	Fluorescence
Chrysene	218-01-9	< 0.006	Fluorescence
* Benzo-e-pyrene	192-97-2	< 0.006	Fluorescence
Benzo[b]fluoranthene	205-99-2	< 0.006	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.006	Fluorescence
Benzo[a]pyrene	50-32-8	< 0.006	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	< 0.006	Fluorescence
Benzo[g,h,i]perylene	191-24-2	< 0.006	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	< 0.006	Fluorescence
* Anthanthrene	191-26-4	< 0.006	Fluorescence
Total PAHs (USEPA 16)	-	< 0.269	-

Surrogate Recovery (%) =	72	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH109 2.3	**Job Number:**	W03_4138
LIMS ID Number:	EX0318313	**Date Booked in:**	05-Aug-03
QC Batch Number:	298	**Date Extracted:**	11-Aug-03
Directory:	0813PAH.LC2	**Date Analysed:**	14-Aug-03
Dilution (fluorescence):	1.0	**Matrix:**	Leachate
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	950		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	< 0.063	Fluorescence
Acenaphthylene	208-96-8	< 0.105	UV
Acenaphthene	83-32-9	< 0.006	Fluorescence
Fluorene	86-73-7	< 0.006	Fluorescence
Phenanthrene	85-01-8	0.007	Fluorescence
Anthracene	120-12-7	< 0.006	Fluorescence
Fluoranthene	206-44-0	< 0.006	Fluorescence
Pyrene	129-00-0	< 0.006	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.105	UV
Benzo[a]anthracene	56-55-3	< 0.006	Fluorescence
Chrysene	218-01-9	< 0.006	Fluorescence
* Benzo-e-pyrene	192-97-2	< 0.006	Fluorescence
Benzo[b]fluoranthene	205-99-2	< 0.006	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.006	Fluorescence
Benzo[a]pyrene	50-32-8	< 0.006	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	< 0.006	Fluorescence
Benzo[g,h,i]perylene	191-24-2	< 0.006	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	< 0.006	Fluorescence
* Anthanthrene	191-26-4	< 0.006	Fluorescence
Total PAHs (USEPA 16)	-	< 0.258	-

Surrogate Recovery (%) =	66	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Soil Mechanics : Cronton Colliery
Job Number: W03_4138
QC Batch Number: 1485
Directory: L:\DATA\0813TPH.GC2\012F0901.D
Method: Separating Funnel

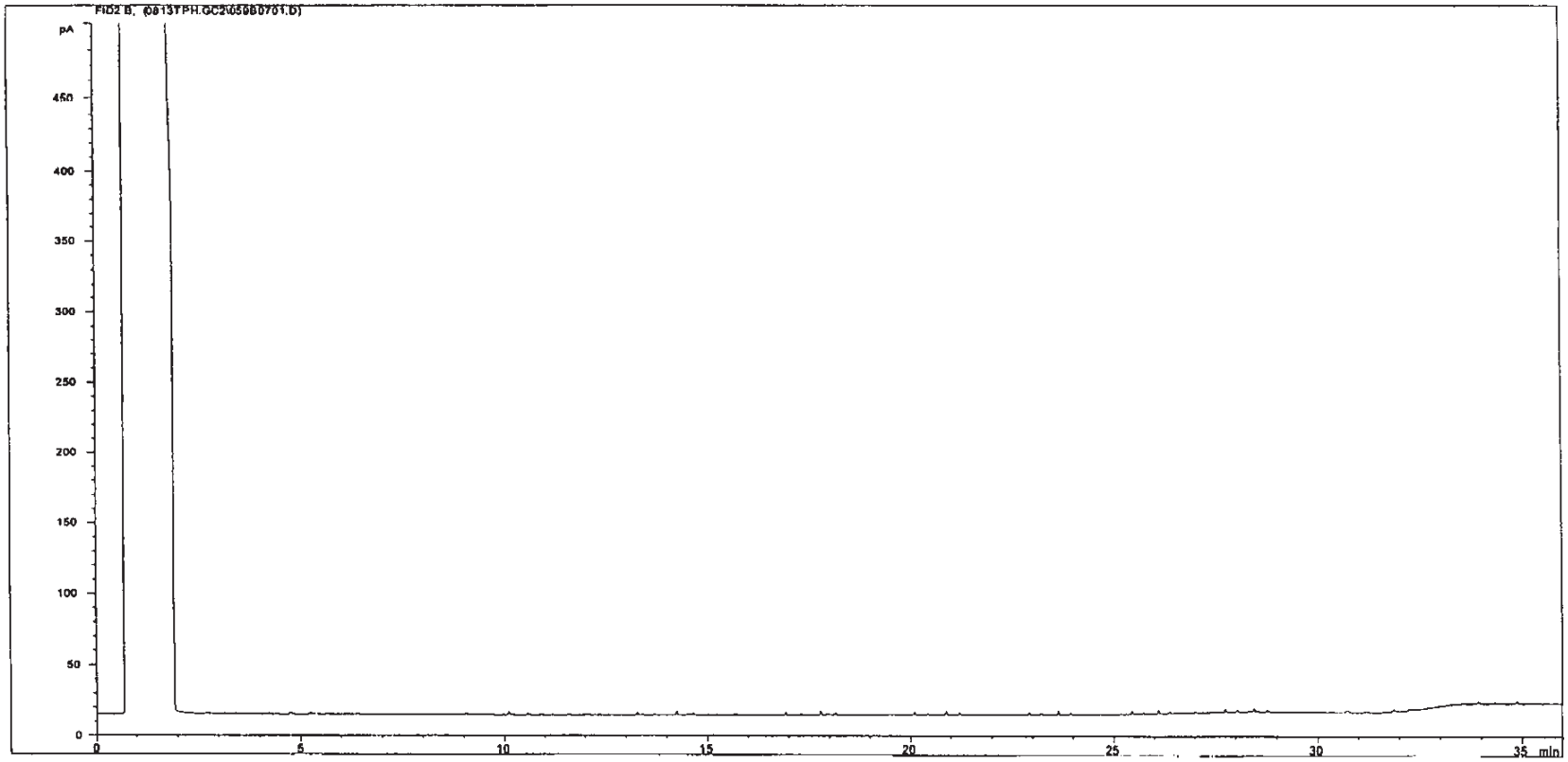
Separation: Silica gel
Eluents: Pentane, DCM

Matrix: Water
Date Booked in 08/05/2003
Date Extracted 08/08/2003
Date Analysed: 13/08/2003

This sample data is not UKAS accredited.

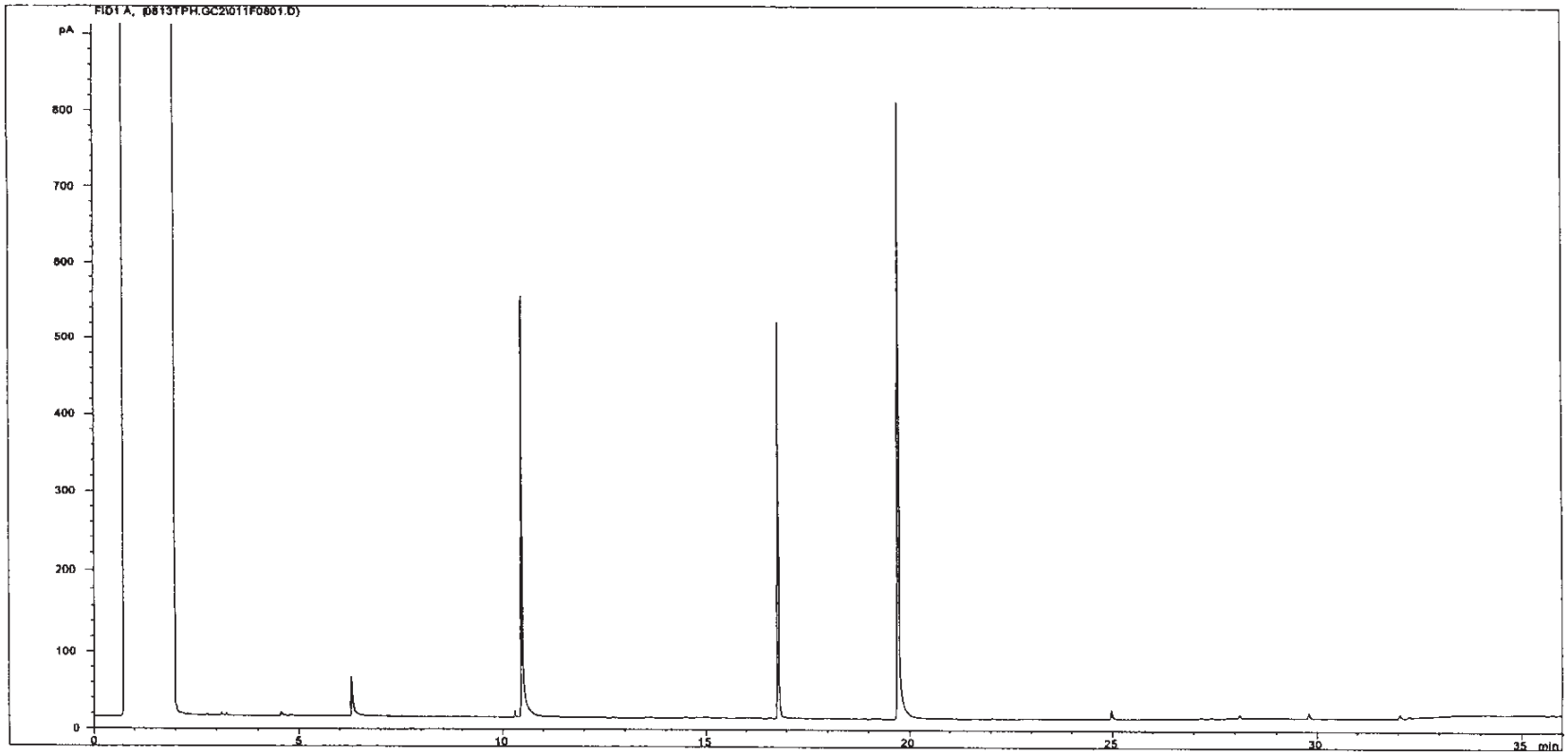
		Concentration, (mg/l)									
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35	
Sample ID	Client ID	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics
EX0318290	BH105 0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
EX0318313	BH109 2.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aliphatics Fraction.



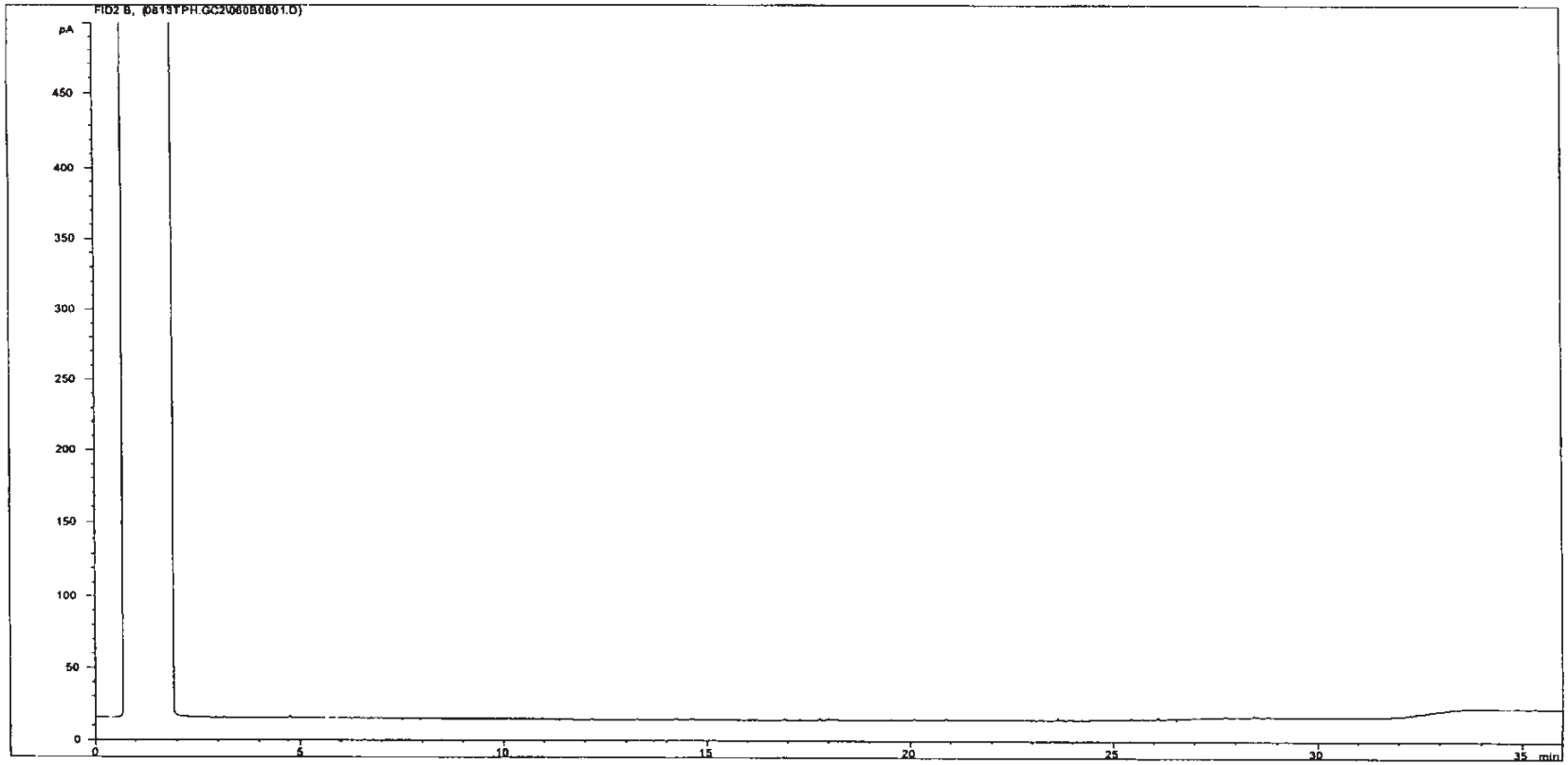
Sample ID:	EX0318290ALI	**Job Number:**	W03_4138
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH105 0.2
Acquisition Date/Time:	13/08/2003 19:50:38		
Datafile:	L:\DATA\0813TPH.GC2\059B0701.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aromatics Fraction.



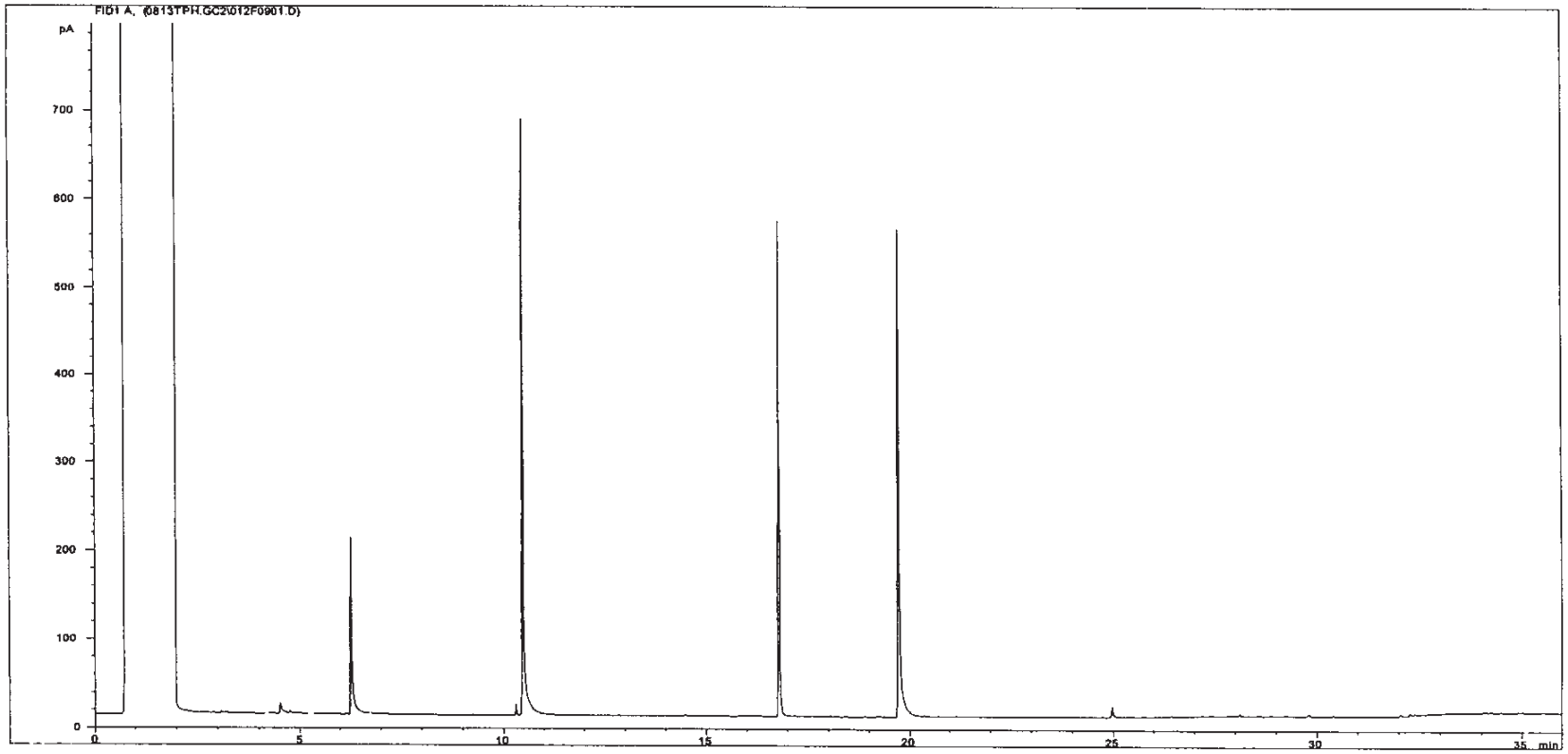
Sample ID:	EX0318290ARO	**Job Number:**	W03_4138
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH105 0.2
Acquisition Date/Time:	13/08/2003 20:37:54		
Datafile:	L:\DATA\0813TPH.GC2\011F0801.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aliphatics Fraction.



Sample ID:	EX0318313ALI	**Job Number:**	W03_4138
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH109 2.3
Acquisition Date/Time:	13/08/2003 20:37:53		
Datafile:	L:\DATA\0813TPH.GC2\060B0801.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aromatics Fraction.



Sample ID:	EX0318313ARO	**Job Number:**	W03_4138
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH109 2.3
Acquisition Date/Time:	13/08/2003 21:24:28		
Datafile:	L:\DATA\0813TPH.GC2\012F0901.D		

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3 @ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S Insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

TEST REPORT
LEACHATE SAMPLE ANALYSIS

1252

TES Report No. EXR/034213

Soil Mechanics
Unit 18
Deeside Industrial Estate
Deeside
Flintshire
CH5 2LR

Site: Cronton Colliery

The 2 samples described in this report were scheduled for analysis by TES Bretby on 08-Aug-2003.
The analysis was completed by: 29-Aug-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of GRO Results (Page 4)
Table of PAH HPLC(VL) Results (Pages 5 to 6)
Table of TPH (Si) banding (Page 7)
GC-FID Chromatograms (Pages 8 to 11)
Table of Report Notes (Page 12)

On behalf of
TES Bretby :
J Hannah

Date of Issue: 29-Aug-2003

Tests marked 'not UKAS accredited' in this report are not included
in the UKAS Accreditation Schedule for our laboratory.
TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :		WSLM3	ICPWATER	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATER	ICPMSW	ICPMSW	SCNCR6	SCNCR6	ISESW24	GROHSA
Detection Limits :			0.06	0.001	0.001	0.0001	0.001	0.001	0.002	0.001	0.05	0.0001	0.001	0.1	0.01	0.2	0.01
UKAS Accredited :		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
TES ID Number EXJ	Client Sample Description	pH units	Total Sulphur as SO4 (Dissolved)	Nickel as Ni (Dissolved)	Chromium as Cr (Dissolved)	Cadmium as Cd (Dissolved)	Copper as Cu (Dissolved)	Lead as Pb (Dissolved)	Zinc as Zn (Dissolved)	Arsenic as As (Dissolved)	Boron as B (Dissolved)	Mercury as Hg (Dissolved)	Selenium as Se (Dissolved)	Thiocyanate as SCN	Chromium VI as Cr	Sulphide (Free) as S	GRO-HSA (AA)
0318626	B/H 129 @ 0.3 m	8.4	24.9	<0.001	0.001	0.0001	0.003	0.003	0.012	0.003	<0.05	<0.0001	<0.001	0.2	0.01	<0.2	Req
0318627	B/H 102A @ 1.7 m	6.8	886	0.007	<0.001	0.0004	0.003	<0.001	0.185	<0.001	0.05	<0.0001	0.002	<0.1	<0.01	<0.2	Req

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Leachate Sample Analysis

Date Printed	29 August 2003
Report Number	EXR/034213
Table Number	1

TES Bretby

Units :		mg/l	mg/l	mg/l	ug/l	mg/l	mg/l	mg/l	mg/l									
Method Codes :		CNWFREE	ICTSCN28	TPHFID	PAHHPLC_V	PHEHPLC	PHEHPLC	PHEHPLC	PHEHPLC									
Detection Limits :		0.05	0.05	0.05	0.003	0.0005	0.0005	0.0005	0.0005									
UKAS Accredited :		no	no	no	no	yes	yes	yes	yes									
TES ID Number EXI	Client Sample Description	Cyanide (Free) as CN	Cyanide (Total) as CN	TPH GC (AA)	PAH HPLC	Phenol	Cresols	Dimethylphenols	Trimethylphenols									
0318626	B/H 129 @ 0.3 m	<0.05	<0.05	Req	Req	0.0008	<0.0005	<0.0005	<0.0005									
0318627	B/H 102A @ 1.7 m	<0.05	<0.05	Req	Req	<0.0005	<0.0005	<0.0005	<0.0005									

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Leachate Sample Analysis

Date Printed	29 August 2003
Report Number	EXR/034213
Table Number	1

TES Bretby

Gasoline Range Organics
(BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: Soil Mechanics: Cronton Colliery
Job Number: W034213
Directory: 0815HSA.GC6
Method: Headspace GCFID

Matrix: Leachate
Date Booked in: 08-Aug-03
Date extracted: 14-Aug-03
Date Analysed: 18-Aug-03

*** Sample data with an asterisk are not UKAS accredited.**

		Concentration, (mg/l)					Aliphatics			
Sample ID	Client ID	Benzene	Toluene	Ethyl benzene	m/p-Xylene	o-Xylene	C5 - C6	>C6 - C7	>C7 - C8	>C8 - C10
EX0318626*	BH129 0.3m	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1
EX0318627*	BH102A 1.7m	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1

Note: Benzene elutes between C6 and C7, toluene elutes between C7 and C8, ethyl benzene and the xylenes elute between C8 and C9.

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH129 0.3	**Job Number:**	W03_4213
LIMS ID Number:	EX0318626	**Date Booked in:**	08-Aug-03
QC Batch Number:	308	**Date Extracted:**	15-Aug-03
Directory:	0815PAH.LC2	**Date Analysed:**	19-Aug-03
Dilution (fluorescence):	1.0	**Matrix:**	Leachate
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	900		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	< 0.067	Fluorescence
Acenaphthylene	208-96-8	< 0.111	UV
Acenaphthene	83-32-9	< 0.007	Fluorescence
Fluorene	86-73-7	< 0.007	Fluorescence
Phenanthrene	85-01-8	0.007	Fluorescence
Anthracene	120-12-7	< 0.007	Fluorescence
Fluoranthene	206-44-0	< 0.007	Fluorescence
Pyrene	129-00-0	< 0.007	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.111	UV
Benzo[a]anthracene	56-55-3	< 0.007	Fluorescence
Chrysene	218-01-9	< 0.007	Fluorescence
* Benzo-e-pyrene	192-97-2	< 0.007	Fluorescence
Benzo[b]fluoranthene	205-99-2	< 0.007	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.007	Fluorescence
Benzo[a]pyrene	50-32-8	< 0.007	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	< 0.007	Fluorescence
Benzo[g,h,i]perylene	191-24-2	< 0.007	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	< 0.007	Fluorescence
* Anthanthrene	191-26-4	< 0.007	Fluorescence
Total PAHs (USEPA 16)	-	< 0.272	-

Surrogate Recovery (%) =	81	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH102A 1.7	**Job Number:**	W03_4213
LIMS ID Number:	EX0318627	**Date Booked in:**	08-Aug-03
QC Batch Number:	316	**Date Extracted:**	15-Aug-03
Directory:	0821PAH.LC2	**Date Analysed:**	21-Aug-03
Dilution (fluorescence):	1.0	**Matrix:**	Leachate
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	900		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	< 0.067	Fluorescence
Acenaphthylene	208-96-8	< 0.111	UV
Acenaphthene	83-32-9	< 0.007	Fluorescence
Fluorene	86-73-7	< 0.007	Fluorescence
Phenanthrene	85-01-8	< 0.007	Fluorescence
Anthracene	120-12-7	< 0.007	Fluorescence
Fluoranthene	206-44-0	< 0.007	Fluorescence
Pyrene	129-00-0	< 0.007	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.111	UV
Benzo[a]anthracene	56-55-3	< 0.007	Fluorescence
Chrysene	218-01-9	< 0.007	Fluorescence
* Benzo-e-pyrene	192-97-2	< 0.007	Fluorescence
Benzo[b]fluoranthene	205-99-2	< 0.007	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.007	Fluorescence
Benzo[a]pyrene	50-32-8	< 0.007	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	< 0.007	Fluorescence
Benzo[g,h,i]perylene	191-24-2	< 0.007	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	< 0.007	Fluorescence
* Anthanthrene	191-26-4	< 0.007	Fluorescence
Total PAHs (USEPA 16)	-	< 0.276	-

Surrogate Recovery (%) =	83	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Soil Mechanics : Cronton Colliery
Job Number: W03_4213
QC Batch Number: 1515
Directory: L:\DATA\0820TPH.GC2\063B0401.D
Method: Separating Funnel

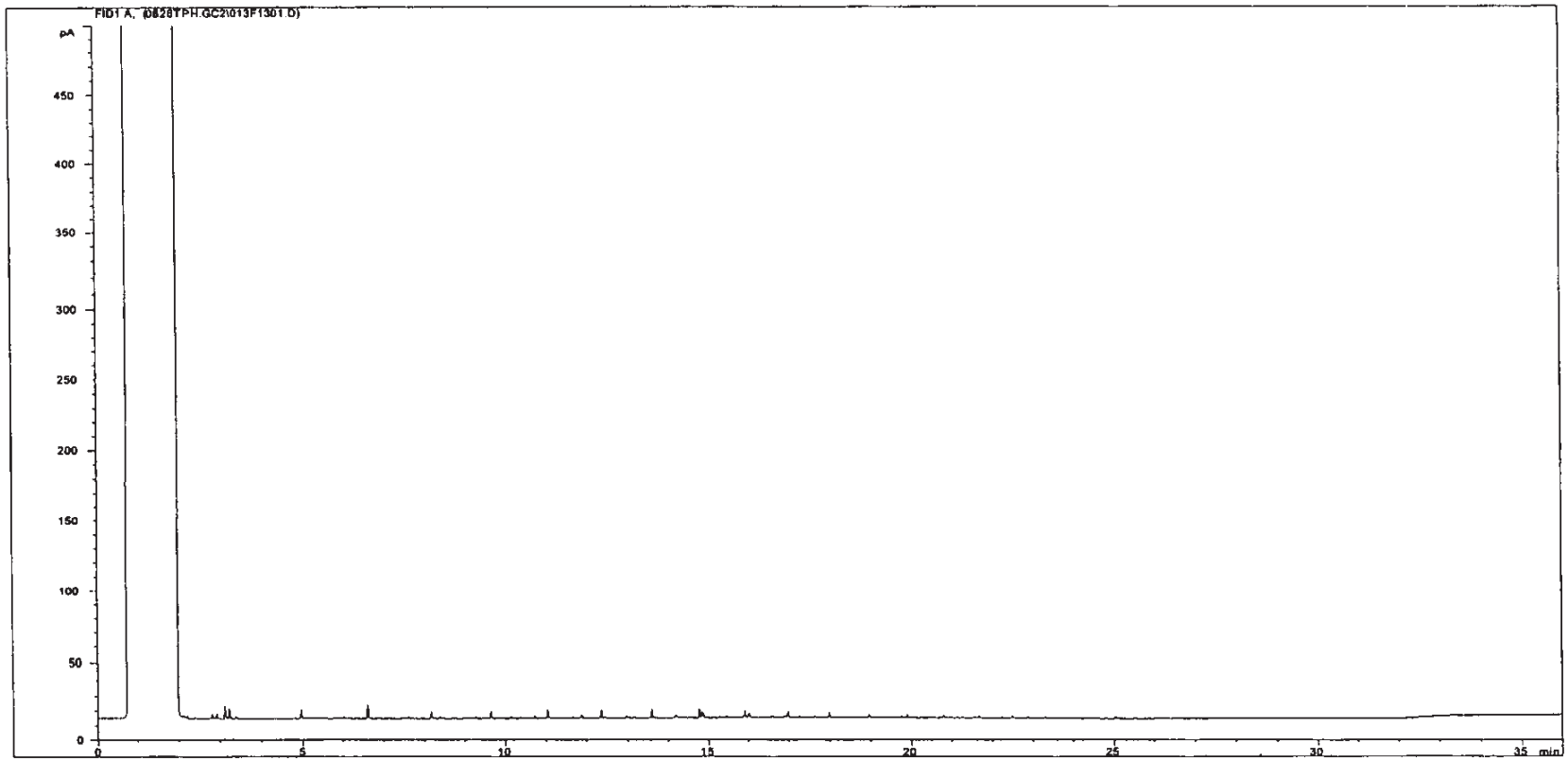
Separation: Silica gel
Eluents: Pentane, DCM

Matrix: Water
Date Booked in 08/08/2003
Date Extracted 13/08/2003
Date Analysed: 21/08/2003

This sample data is not UKAS accredited.

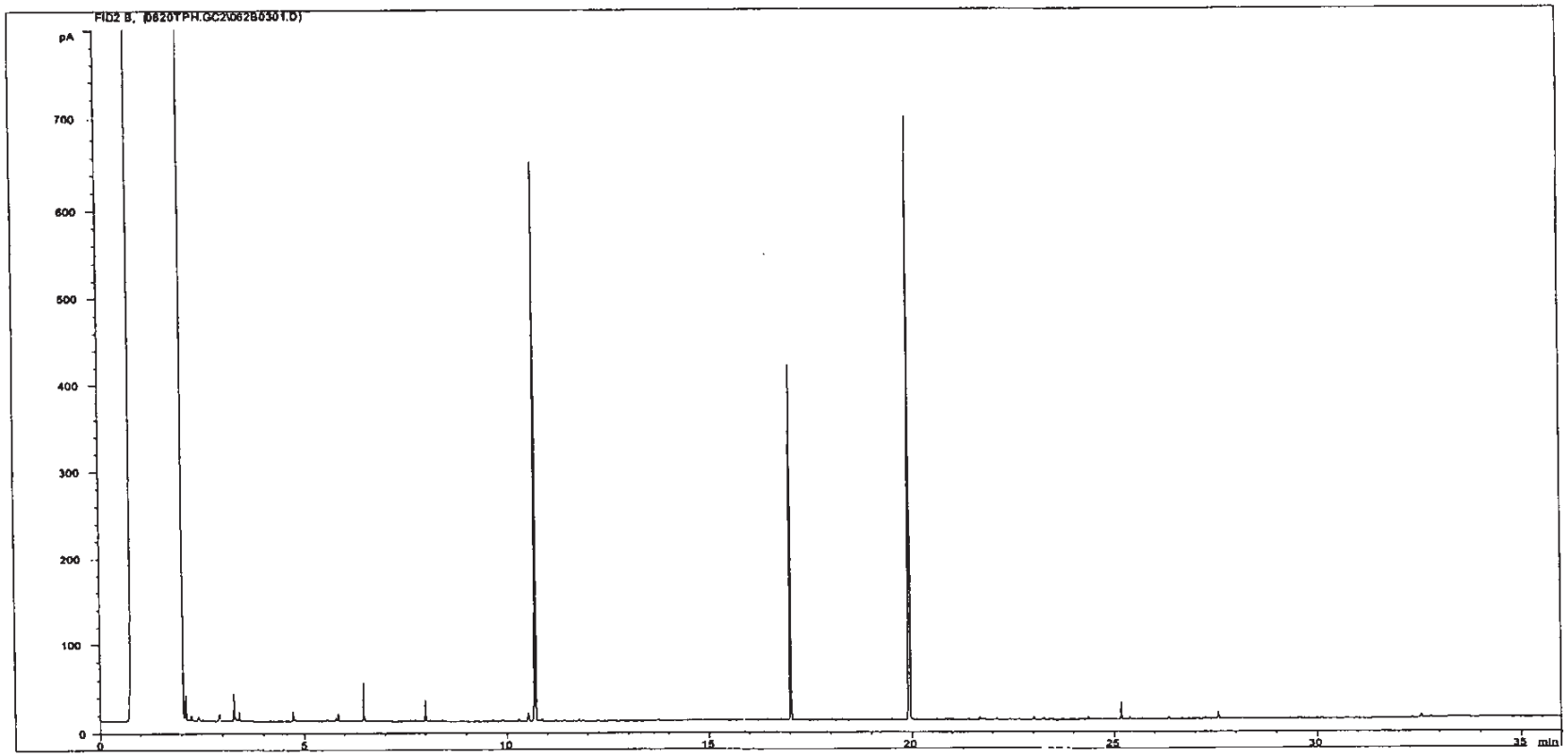
		Concentration, (mg/l)									
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35	
Sample ID	**Client ID**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**
EX0318626	BH129 0.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
EX0318627	BH102A 1.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aliphatics Fraction.



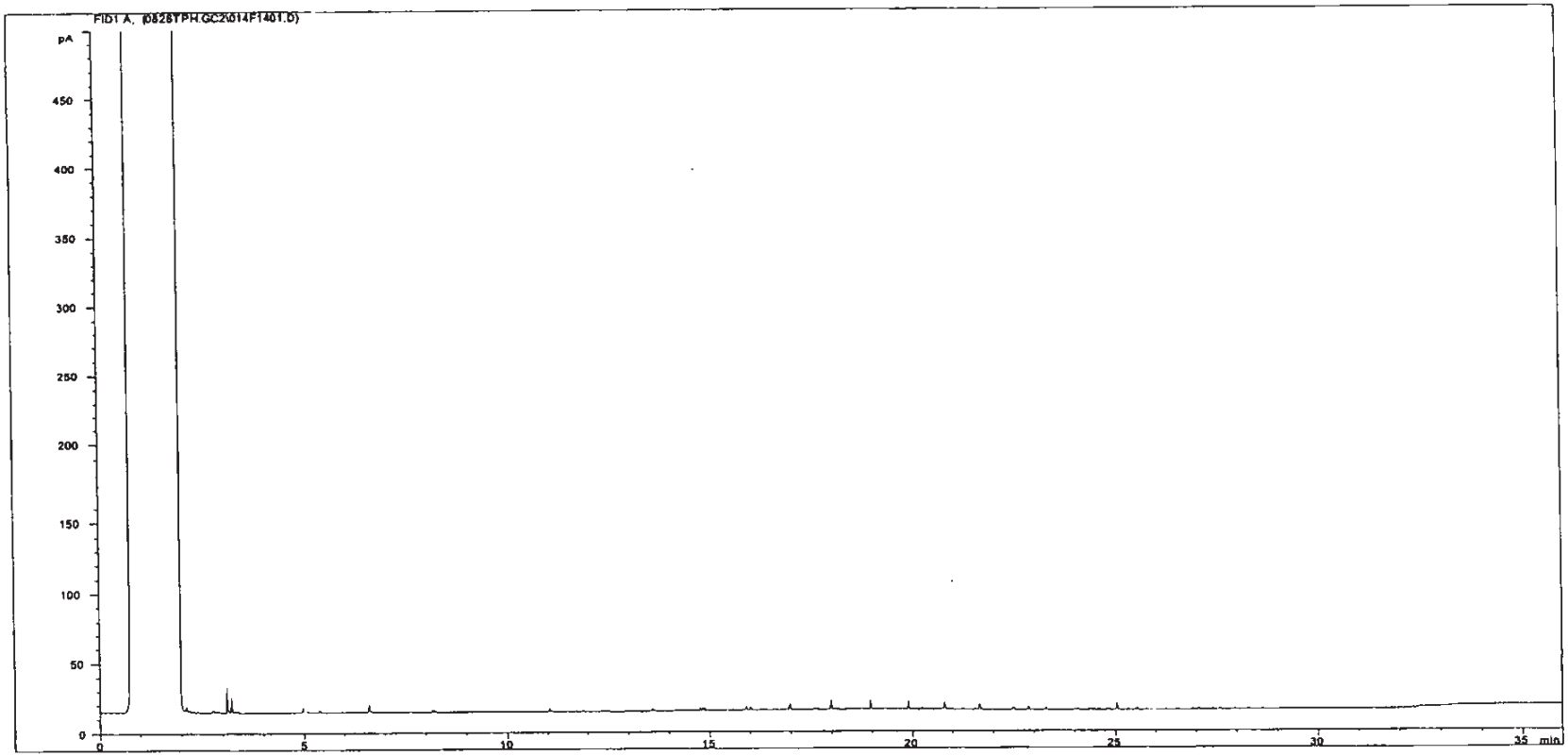
Sample ID:	EX0318626ALI	**Job Number:**	W03_4213
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH129 0.3
Acquisition Date/Time:	26/08/2003 20:59:42		
Datafile:	L:\DATA\0826TPH.GC2\013F1301.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aromatics Fraction.



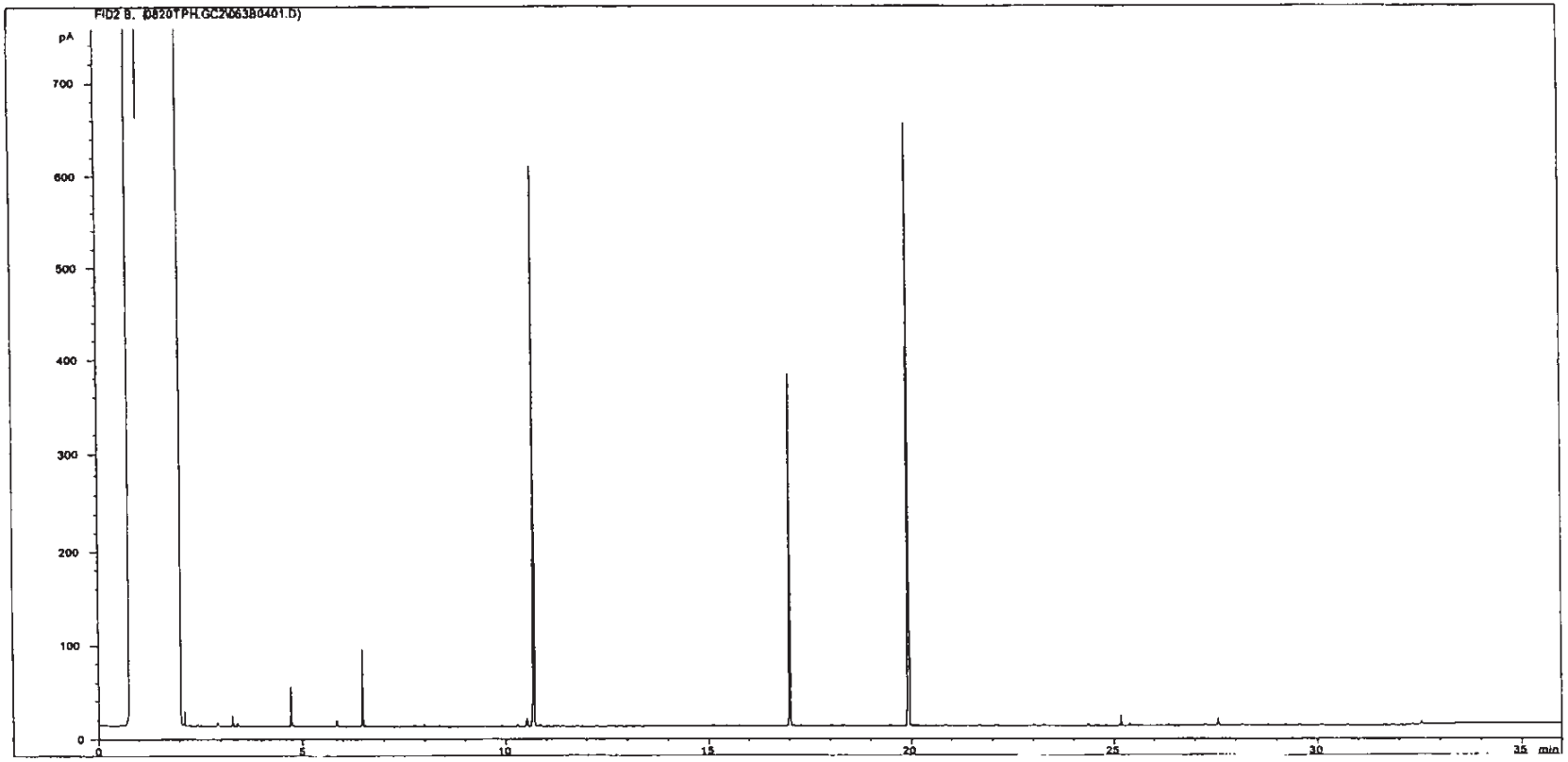
Sample ID:	EX0318626ARO	**Job Number:**	W03_4213
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH129 0.3
Acquisition Date/Time:	21/08/2003 13:57:56		
Datafile:	L:\DATA\0820TPH.GC2\062B0301.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aliphatics Fraction.



Sample ID:	EX0318627ALI	**Job Number:**	W03_4213
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH102A 1.7
Acquisition Date/Time:	26/08/2003 21:46:26		
Datafile:	L:\DATA\0826TPH.GC2\014F1401.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aromatics Fraction.



Sample ID:	EX0318627ARO	**Job Number:**	W03_4213
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH102A 1.7
Acquisition Date/Time:	21/08/2003 14:44:22		
Datafile:	L:\DATA\0820TPH.GC2\063B0401.D		

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3@ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

TEST REPORT
LEACHATE SAMPLE ANALYSIS

1252

TES Report No. EXR/034214

Soil Mechanics
Unit 18
Deeside Industrial Estate
Deeside
Flintshire
CH5 2LR

Site: Cronton Colliery

The 1 sample described in this report were scheduled for analysis by TES Bretby on 08-Aug-2003.
The analysis was completed by: 29-Aug-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of GRO Results (Page 4)
Table of PAH HPLC(VL) Results (Page 5)
Table of TPH (Si) banding (Page 6)
GC-FID Chromatograms (Pages 7 to 8)
Table of Report Notes (Page 9)

On behalf of
TES Bretby :
J Hannah

Date of Issue: 29-Aug-2003

Tests marked 'not UKAS accredited' in this report are not included
in the UKAS Accreditation Schedule for our laboratory.
TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :		WSLM3	ICPWATER	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATER	ICPMSW	ICPMSW	SCNCR6	SCNCR6	ISESW24	GROHSA
Detection Limits :			0.06	0.001	0.001	0.0001	0.001	0.001	0.002	0.001	0.05	0.0001	0.001	0.1	0.01	0.2	0.01
UKAS Accredited :		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
TES ID Number EXJ	Client Sample Description	pH units	Total Sulphur as SO4 (Dissolved)	Nickel as Ni (Dissolved)	Chromium as Cr (Dissolved)	Cadmium as Cd (Dissolved)	Copper as Cu (Dissolved)	Lead as Pb (Dissolved)	Zinc as Zn (Dissolved)	Arsenic as As (Dissolved)	Boron as B (Dissolved)	Mercury as Hg (Dissolved)	Selenium as Se (Dissolved)	Thiocyanate as SCN	Chromium VI as Cr	Sulphide (Free) as S	GRO-HSA (AA)
0318628	B/H 120 @ 0.3 m	7.6	433	0.005	<0.001	<0.0001	<0.001	<0.001	0.040	<0.001	0.05	<0.0001	0.004	<0.1	<0.01	<0.2	Req

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Fax +44 (0) 1283 554422

Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Leachate Sample Analysis

Date Printed	29 August 2003
Report Number	EXR/034214
Table Number	1

TES Bretby

Units :		mg/l	mg/l	mg/l	ug/l	mg/l	mg/l	mg/l	mg/l								
Method Codes :		CNWFREE	ICTSCN28	TPHFID	PAHHPLC_VI	PHEHPLC	PHEHPLC	PHEHPLC	PHEHPLC								
Detection Limits :		0.05	0.05	0.05	0.003	0.0005	0.0005	0.0005	0.0005								
UKAS Accredited :		no	no	no	no	yes	yes	yes	yes								
TES ID Number EX/	Client Sample Description	Cyanide (Free) as CN	Cyanide (Total) as CN	TPH GC (AA)	PAH HPLC	Phenol	Cresols	Dimethylphenols	Trimethylphenols								
0318628	B/H 120 @ 0.3 m	<0.05	<0.05	Req	Req	0.0009	<0.0005	<0.0005	<0.0005								

TES Bretby

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Burton-on-Trent, Staffordshire, DE15 0XD

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Fax +44 (0) 1283 554422

Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Leachate Sample Analysis

Date Printed	29 August 2003
Report Number	EXR/034214
Table Number	1

TES Bretby

Gasoline Range Organics
(BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: Soil Mechanics: Cronton Colliery
Job Number: W034214
Directory: 0814HSA.GC6
Method: Headspace GCFID

Matrix: Leachate
Date Booked in: 08-Aug-03
Date extracted: 13-Aug-03
Date Analysed: 15-Aug-03

*** Sample data with an asterisk are not UKAS accredited.**

		Concentration, (mg/l)					Aliphatics			
Sample ID	**Client ID**	**Benzene**	**Toluene**	**Ethyl benzene**	**m/p-Xylene**	**o-Xylene**	**C5 - C6**	**>C6 - C7**	**>C7 - C8**	**>C8 - C10**
EX0318628*	BH120 0.3m	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1

Note: Benzene elutes between C6 and C7, toluene elutes between C7 and C8, ethyl benzene and the xylenes elute between C8 and C9.

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH120 0.3	**Job Number:**	W03_4243
LIMS ID Number:	EX0318628	**Date Booked in:**	08-Aug-03
QC Batch Number:	308	**Date Extracted:**	15-Aug-03
Directory:	0819PAH.LC2	**Date Analysed:**	19-Aug-03
Dilution (fluorescence):	1.0	**Matrix:**	Leachate
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	900		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	0.080	Fluorescence
Acenaphthylene	208-96-8	< 0.111	UV
Acenaphthene	83-32-9	< 0.007	Fluorescence
Fluorene	86-73-7	< 0.007	Fluorescence
Phenanthrene	85-01-8	< 0.007	Fluorescence
Anthracene	120-12-7	< 0.007	Fluorescence
Fluoranthene	206-44-0	< 0.007	Fluorescence
Pyrene	129-00-0	< 0.007	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.111	UV
Benzo[a]anthracene	56-55-3	< 0.007	Fluorescence
Chrysene	218-01-9	< 0.007	Fluorescence
* Benzo-e-pyrene	192-97-2	< 0.007	Fluorescence
Benzo[b]fluoranthene	205-99-2	< 0.007	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.007	Fluorescence
Benzo[a]pyrene	50-32-8	< 0.007	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	< 0.007	Fluorescence
Benzo[g,h,i]perylene	191-24-2	< 0.007	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	< 0.007	Fluorescence
* Anthanthrene	191-26-4	< 0.007	Fluorescence
Total PAHs (USEPA 16)	-	< 0.284	-

Surrogate Recovery (%) =	75	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Soil Mechanics : Cronton Colliery
Job Number: W03_4214
QC Batch Number: 1515
Directory: L:\DATA\0820TPH.GC2\064B0501.D
Method: Separating Funnel

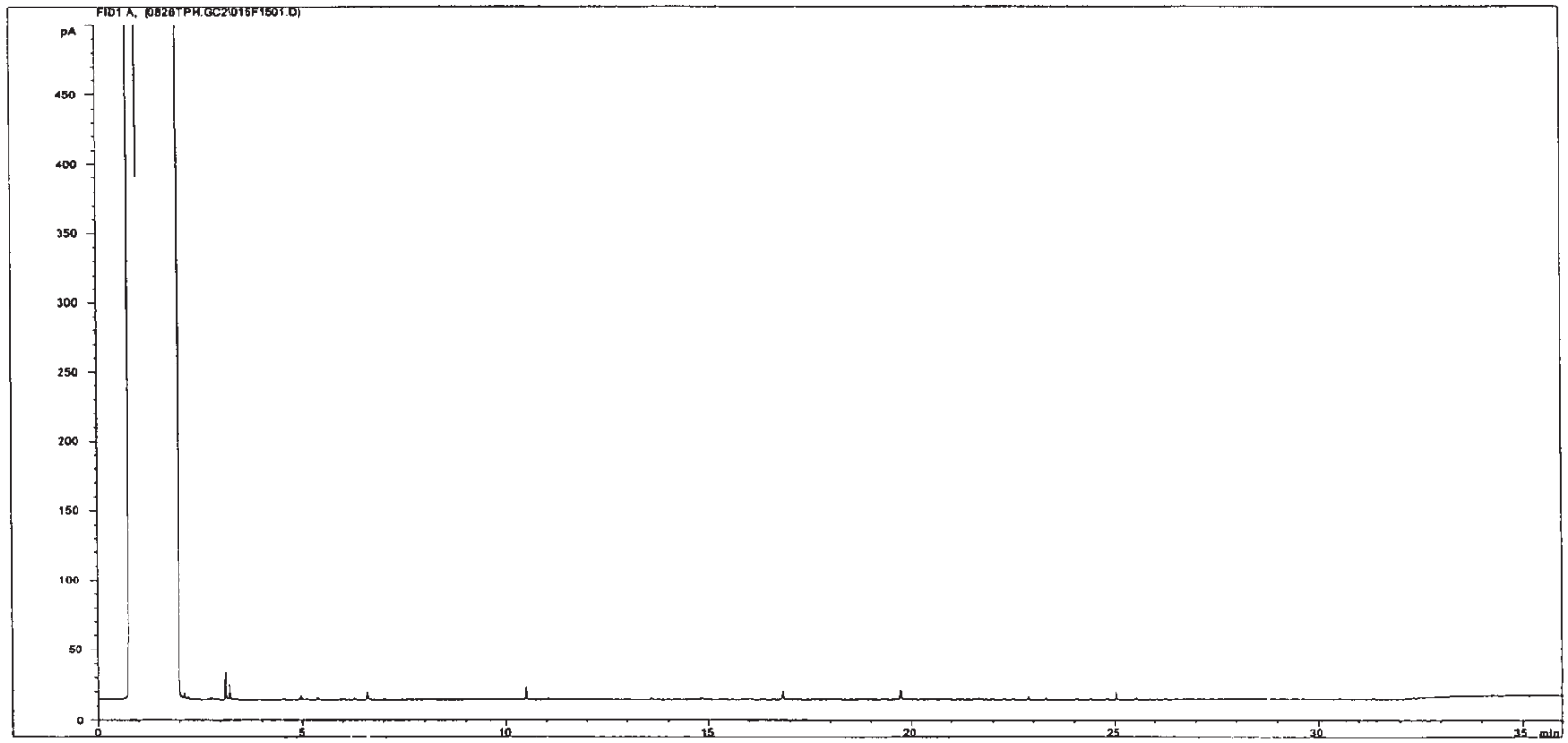
Separation: Silica gel
Eluents: Pentane, DCM

Matrix: Water
Date Booked In 08/08/2003
Date Extracted 13/08/2003
Date Analysed: 21/08/2003

This sample data is not UKAS accredited.

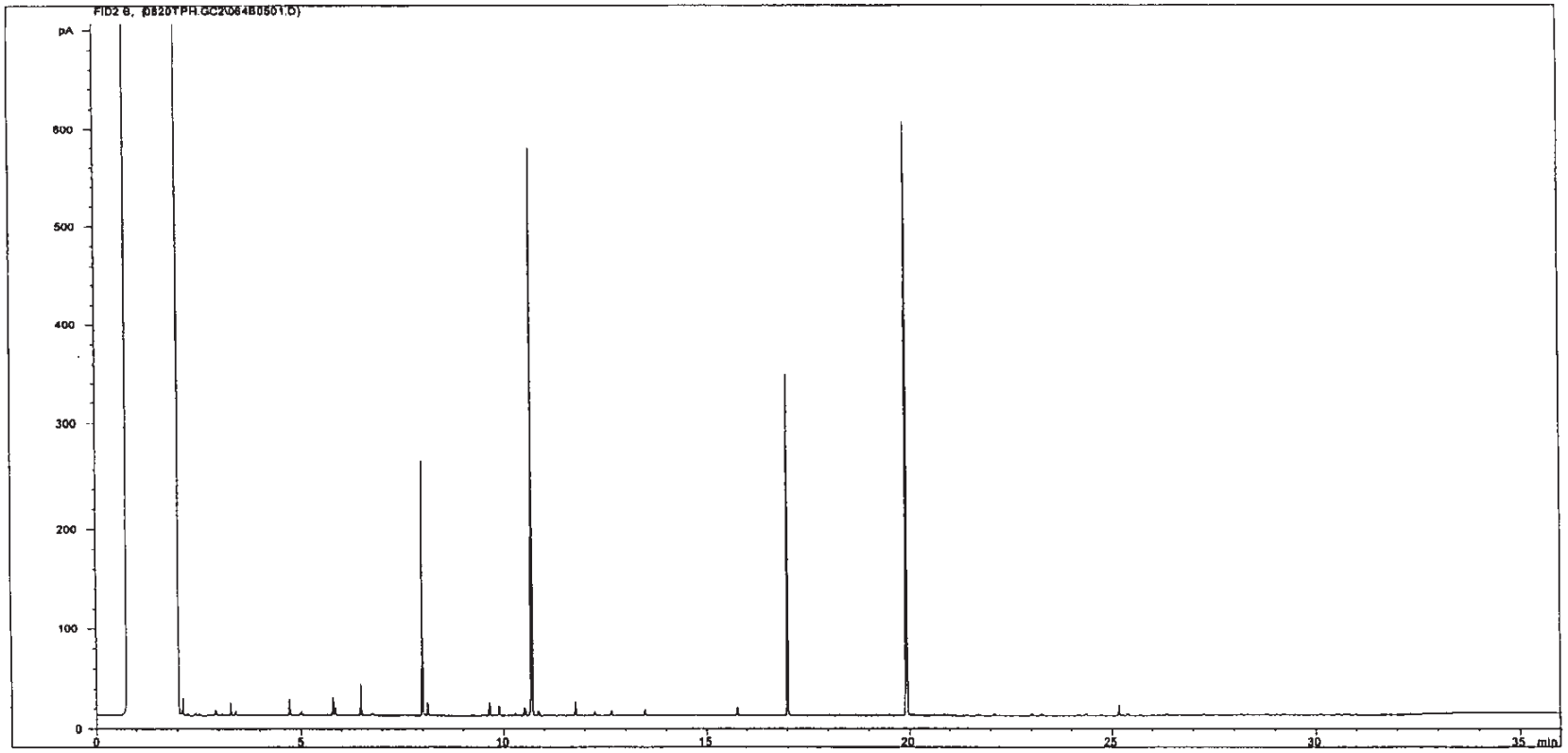
		Concentration, (mg/l)									
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35	
Sample ID	**Client ID**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**
EX0318628	BH120 0.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aliphatics Fraction.



Sample ID:	EX0318628ALI	**Job Number:**	W03_4214
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH120 0.3
Acquisition Date/Time:	26/08/2003 22:33:01		
Datafile:	L:\DATA\0826TPH.GC2\015F1501.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aromatics Fraction.



Sample ID:	EX0318628ARO	**Job Number:**	W03_4214
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH120 0.3
Acquisition Date/Time:	21/08/2003 15:30:45		
Datafile:	L:\DATA\0820TPH.GC2\064B0501.D		

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3 @ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S Insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

TEST REPORT
LEACHATE SAMPLE ANALYSIS

1252

TES Report No. EXR/034243

Soil Mechanics
Unit 18
Deeside Industrial Estate
Deeside
Flintshire
CH5 2LR

Site: Cronton Colliery

The 1 sample described in this report were scheduled for analysis by TES Bretby on 11-Aug-2003.
The analysis was completed by: 29-Aug-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of GRO Results (Page 4)
Table of PAH HPLC(VL) Results (Page 5)
Table of TPH (Si) banding (Page 6)
GC-FID Chromatograms (Pages 7 to 8)
Table of Report Notes (Page 9)

On behalf of
TES Bretby :
J Hannah

J Hannah

Date of Issue: 29-Aug-2003

Tests marked 'not UKAS accredited' in this report are not included
in the UKAS Accreditation Schedule for our laboratory.
TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :		WSLM3	ICPWATER	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATER	ICPMSW	ICPMSW	SCNCR6	SCNCR6	ISESW24	GROHSA
Detection Limits :			0.06	0.001	0.001	0.0001	0.001	0.001	0.002	0.001	0.05	0.0001	0.001	0.1	0.01	0.2	0.01
UKAS Accredited :		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
TES ID Number EX/	Client Sample Description	pH units	Total Sulphur as SO4 (Dissolved)	Nickel as Ni (Dissolved)	Chromium as Cr (Dissolved)	Cadmium as Cd (Dissolved)	Copper as Cu (Dissolved)	Lead as Pb (Dissolved)	Zinc as Zn (Dissolved)	Arsenic as As (Dissolved)	Boron as B (Dissolved)	Mercury as Hg (Dissolved)	Selenium as Se (Dissolved)	Thiocyanate as SCN	Chromium VI as Cr	Sulphide (Free) as S	GRO-HSA (AA)
0318772	B/H 108 @ 5 m	7.5	224	0.002	<0.001	0.0001	<0.001	<0.001	0.030	<0.001	<0.05	<0.0001	0.006	<0.1	<0.01	<0.2	Req

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Fax +44 (0) 1283 554422

Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Leachate Sample Analysis

Date Printed	29 August 2003
Report Number	EXR/034243
Table Number	1

TES Bretby

Units :		mg/l	mg/l	mg/l	ug/l	mg/l	mg/l	mg/l	mg/l								
Method Codes :		CNWFREE	ICTSCN28	TPHFID	PAHHPLC_VI	PHEHPLC	PHEHPLC	PHEHPLC	PHEHPLC								
Detection Limits :		0.05	0.05	0.05	0.003	0.0005	0.0005	0.0005	0.0005								
UKAS Accredited :		no	no	no	no	yes	yes	yes	yes								
TES ID Number EXI	Client Sample Description	Cyanide (Free) as CN	Cyanide (Total) as CN	TPH GC (AA)	PAH HPLC	Phenol	Cresols	Dimethylphenols	Trimethylphenols								
0318772	B/H 108 @ 5 m	<0.05	<0.05	Req	Req	<0.0005	<0.0005	<0.0005	<0.0005								

TES Bretby

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Burton-on-Trent, Staffordshire, DE15 0XD

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Leachate Sample Analysis

Date Printed	29 August 2003
Report Number	EXR/034243
Table Number	1

TES Bretby

Gasoline Range Organics
(BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: Soil Mechanics: Cronton Colliery
Job Number: W034243
Directory: 0814HSA.GC6
Method: Headspace GCFID

Matrix: Leachate
Date Booked in: 11-Aug-03
Date extracted: 13-Aug-03
Date Analysed: 15-Aug-03

*** Sample data with an asterisk are not UKAS accredited.**

		Concentration, (mg/l)					Aliphatics			
Sample ID	**Client ID**	**Benzene**	**Toluene**	**Ethyl benzene**	**m/p-Xylene**	**o-Xylene**	**C5 - C6**	**>C6 - C7**	**>C7 - C8**	**>C8 - C10**
EX0318772*	BH108 5.0m	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1

Note: Benzene elutes between C6 and C7, toluene elutes between C7 and C8, ethyl benzene and the xylenes elute between C8 and C9.

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH108 5.0	**Job Number:**	W03_4243
LIMS ID Number:	EX0318772	**Date Booked in:**	11-Aug-03
QC Batch Number:	308	**Date Extracted:**	15-Aug-03
Directory:	0819PAH.LC2	**Date Analysed:**	19-Aug-03
Dilution (fluorescence):	1.0	**Matrix:**	Leachate
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	900		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	< 0.067	Fluorescence
Acenaphthylene	208-96-8	< 0.111	UV
Acenaphthene	83-32-9	0.237	Fluorescence
Fluorene	86-73-7	0.217	Fluorescence
Phenanthrene	85-01-8	0.019	Fluorescence
Anthracene	120-12-7	< 0.007	Fluorescence
Fluoranthene	206-44-0	< 0.007	Fluorescence
Pyrene	129-00-0	< 0.007	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.111	UV
Benzo[a]anthracene	56-55-3	< 0.007	Fluorescence
Chrysene	218-01-9	< 0.007	Fluorescence
* Benzo-e-pyrene	192-97-2	< 0.007	Fluorescence
Benzo[b]fluoranthene	205-99-2	< 0.007	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.007	Fluorescence
Benzo[a]pyrene	50-32-8	< 0.007	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	< 0.007	Fluorescence
Benzo[g,h,i]perylene	191-24-2	< 0.007	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	< 0.007	Fluorescence
* Anthanthrene	191-26-4	< 0.007	Fluorescence
Total PAHs (USEPA 16)	-	< 0.724	-

Surrogate Recovery (%) =	81	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Soil Mechanics : Cronton Colliery
Job Number: W03_4243
QC Batch Number: 1528
Directory: L:\DATA\0820TPH.GC2\068B0901.D
Method: Separating Funnel

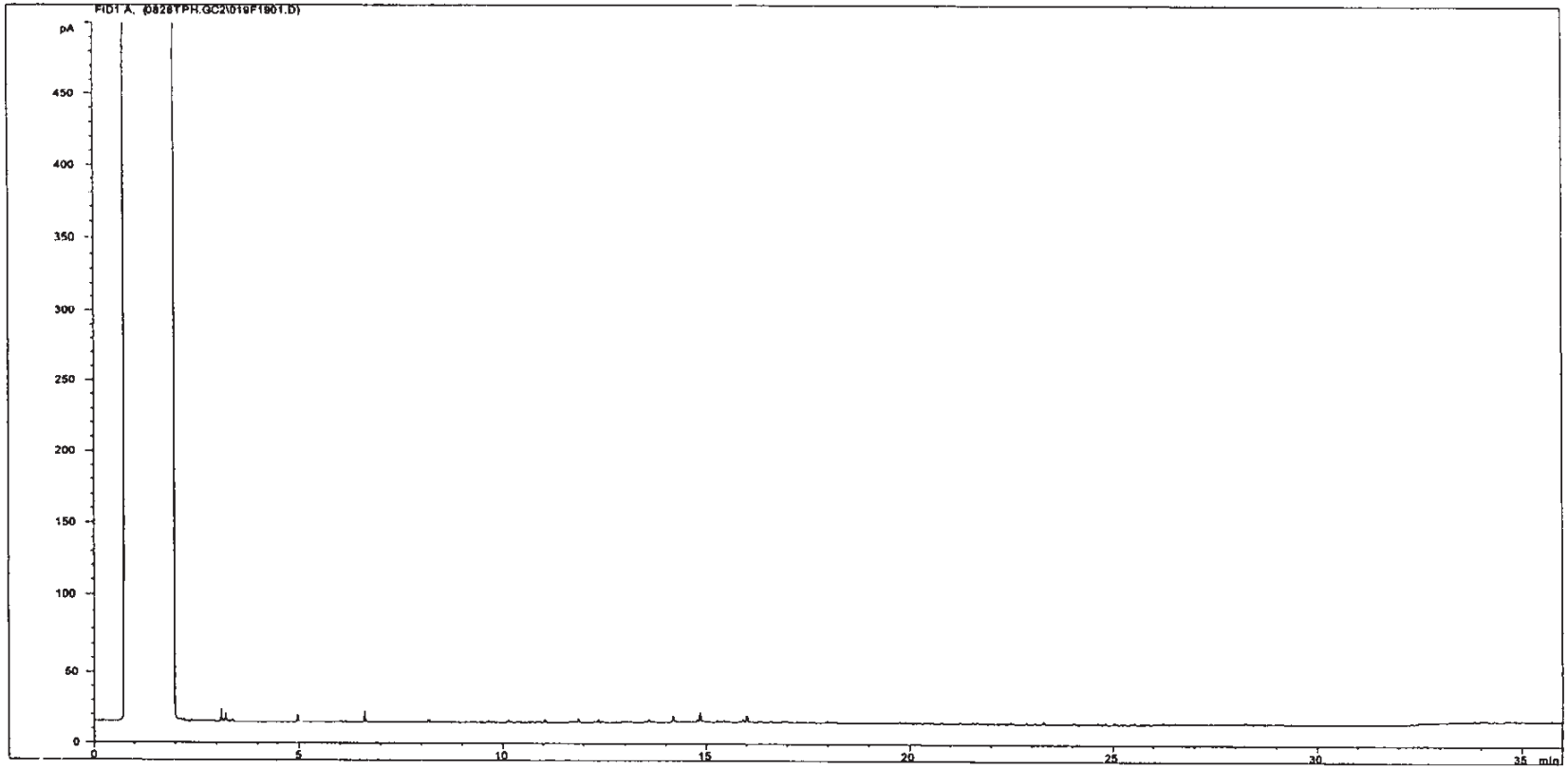
Separation: Silica gel
Eluents: Pentane, DCM

Matrix: Water
Date Booked In 08/11/2003
Date Extracted 14/08/2003
Date Analysed: 21/08/2003

This sample data is not UKAS accredited.

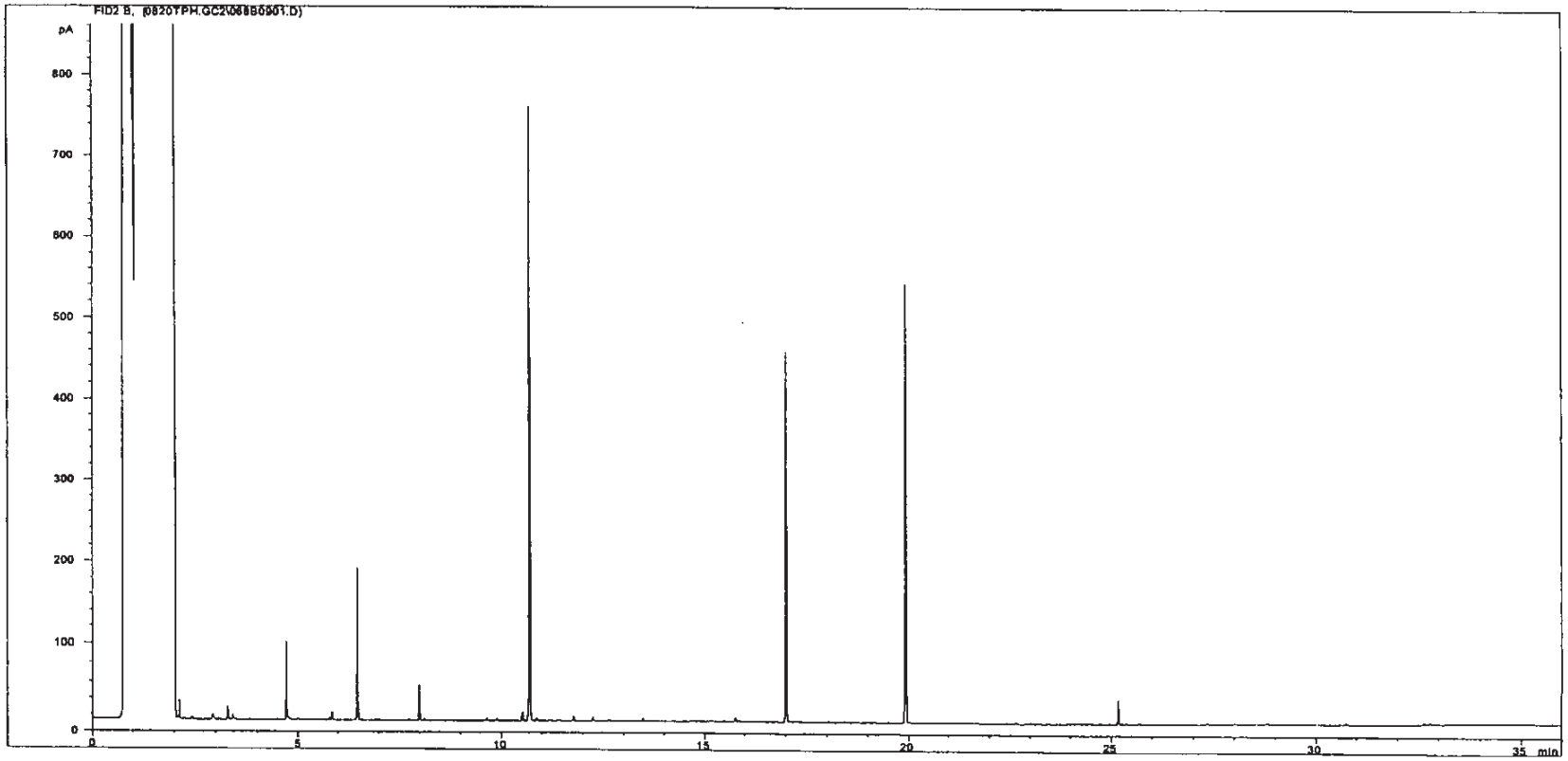
		Concentration, (mg/l)									
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35	
Sample ID	**Client ID**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**
EX0318772	BH108 5.0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aliphatics Fraction.



Sample ID:	EX0318772ALI	**Job Number:**	W03_4243
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH108 5.0
Acquisition Date/Time:	27/08/2003 01:39:18		
Datafile:	L:\DATA\0826TPH.GC2\019F1901.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aromatics Fraction.



Sample ID:	EX0318772ARO	**Job Number:**	W03_4243
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH108 5.0
Acquisition Date/Time:	21/08/2003 18:37:12		
Datafile:	L:\DATA\0820TPH.GC2\068B0901.D		

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3@ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

TEST REPORT
LEACHATE SAMPLE ANALYSIS

UKAS TESTING 1252

TES Report No. EXR/034460

Soil Mechanics
Unit 18
Deeside Industrial Estate
Deeside
Flintshire
CH5 2LR

Site: Cronton Colliery

The 1 sample described in this report were scheduled for analysis by TES Bretby on 22-Aug-2003.
The analysis was completed by: 11-Sep-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of GRO Results (Page 4)
Table of PAH HPLC(VL) Results (Page 5)
Table of TPH (Si) banding (Page 6)
GC-FID Chromatograms (Pages 7 to 8)
Table of Report Notes (Page 9)

On behalf of
TES Bretby :
J Hannah

J Hannah

Project Co-ordinator

Date of Issue: 11-Sep-2003

Tests marked 'not UKAS accredited' in this report are not included in the UKAS Accreditation Schedule for our laboratory.
Tests marked '^' have been subcontracted to another laboratory.

TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

Units :			mg/l		mg/l	mg/l	mg/l	mg/l	mg/l	r		mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :		WSLM3	CPWATE	SW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICF		CPWATE	ICPMSW	ICPMSW	SCNCR6	SCNCR6	ISESW24	GROHSA
Detection Limits :			0.06	0.001	0.001	0.0001	0.001	0.001	0.002	0.001		0.05	0.0001	0.001	0.1	0.01	0.2	0.1
UKAS Accredited :		yes	yes	yes	yes	yes	yes	yes	yes	yes		yes	yes	yes	yes	yes	yes	yes
TES ID Number EX/	Client Sample Description	pH units	Total Sulphur as SO4 (Dissolved)	Nickel as Ni (Dissolved)	Chromium as Cr (Dissolved)	Cadmium as Cd (Dissolved)	Copper as Cu (Dissolved)	Lead as Pb (Dissolved)	Zinc as Zn (Dissolved)	Arsenic as As (Dissolved)		Boron as B (Dissolved)	Mercury as Hg (Dissolved)	Selenium as Se (Dissolved)	Thiocyanate as SCN	Chromium VI as Cr	Sulphide (Free) as S	GRO-HSA (AA)
0319647	BH 123 @ 0.3 m	6.6	4.33	<0.001	0.001	<0.0001	0.003	0.002	0.036	<0.001		<0.05	<0.0001	<0.001	0.2	0.02	<0.2	Req

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Leachate Analysis

Date Printed	11 September 2003
Report Number	EXR/034460
Table Number	1

TES Bretby

Units :		mg/l	mg/l	mg/l	ug/l	mg/l	mg/l	mg/l	mg/l									
Method Codes :		CNWFREE	ICTSCN28	TPHFID	PAHHPLC_V	PHEHPLC	PHEHPLC	PHEHPLC	PHEHPLC									
Detection Limits :		0.05	0.05	0.05	0.003	0.0005	0.0005	0.0005	0.0005									
UKAS Accredited :		no	no	no	no	yes	yes	yes	yes									
TES ID Number EX/	Client Sample Description	Cyanide (Free) as CN	Cyanide (Total) as CN	TPH GC (AA)	PAH HPLC	Phenol	Cresols	Dimethylphenols	Trimethylphenols									
0319647	BH 123 @ 0.3 m	<0.05	<0.05	Req	Req	<0.0005	<0.0005	<0.0005	<0.0005									

TES Bretby

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Leachate Analysis

Date Printed	11 September 2003
Report Number	EXR/034460
Table Number	1

TES Bretby

Gasoline Range Organics
(BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: Soil Mecahnics: Cronton Colliery
Job Number: W034460
Directory: 0829HSA.GC6
Method: Headspace GCFID

Matrix: Leachate
Date Booked in: 22-Aug-03
Date extracted: 29-Aug-03
Date Analysed: 01-Sep-03

*** Sample data with an asterisk are not UKAS accredited.**

		Concentration, (mg/l)					Aliphatics			
Sample ID	**Client ID**	**Benzene**	**Toluene**	**Ethyl benzene**	**m/p-Xylene**	**o-Xylene**	**C5 - C6**	**>C6 - C7**	**>C7 - C8**	**>C8 - C10**
EX0319647*	BH123 0.3m	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1

Note: Benzene elutes between C6 and C7, toluene elutes between C7 and C8, ethyl benzene and the xylenes elute between C8 and C9.

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH123 0.3	**Job Number:**	W03_4460
LIMS ID Number:	EX0319647	**Date Booked in:**	22-Aug-03
QC Batch Number:	335	**Date Extracted:**	04-Sep-03
Directory:	0904PAH.LC2	**Date Analysed:**	04-Sep-03
Dilution (fluorescence):	1.0	**Matrix:**	Leachate
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	850		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	< 0.071	Fluorescence
Acenaphthylene	208-96-8	< 0.118	UV
Acenaphthene	83-32-9	< 0.007	Fluorescence
Fluorene	86-73-7	0.191	Fluorescence
Phenanthrene	85-01-8	< 0.007	Fluorescence
Anthracene	120-12-7	< 0.007	Fluorescence
Fluoranthene	206-44-0	< 0.007	Fluorescence
Pyrene	129-00-0	< 0.007	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.118	UV
Benzo[a]anthracene	56-55-3	< 0.007	Fluorescence
Chrysene	218-01-9	< 0.007	Fluorescence
* Benzo-e-pyrene	192-97-2	< 0.007	Fluorescence
Benzo[b]fluoranthene	205-99-2	< 0.007	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.007	Fluorescence
Benzo[a]pyrene	50-32-8	< 0.007	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	< 0.007	Fluorescence
Benzo[g,h,i]perylene	191-24-2	< 0.007	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	< 0.007	Fluorescence
* Anthanthrene	191-26-4	< 0.007	Fluorescence
Total PAHs (USEPA 16)	-	< 0.471	-

Surrogate Recovery (%) =	59	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Soil Mechanics : Cronton Colliery
Job Number: W03_4460
QC Batch Number: 1616
Directory: L:\DATA\0908TPH.GC2\065B1701.D
Method: Separating Funnel

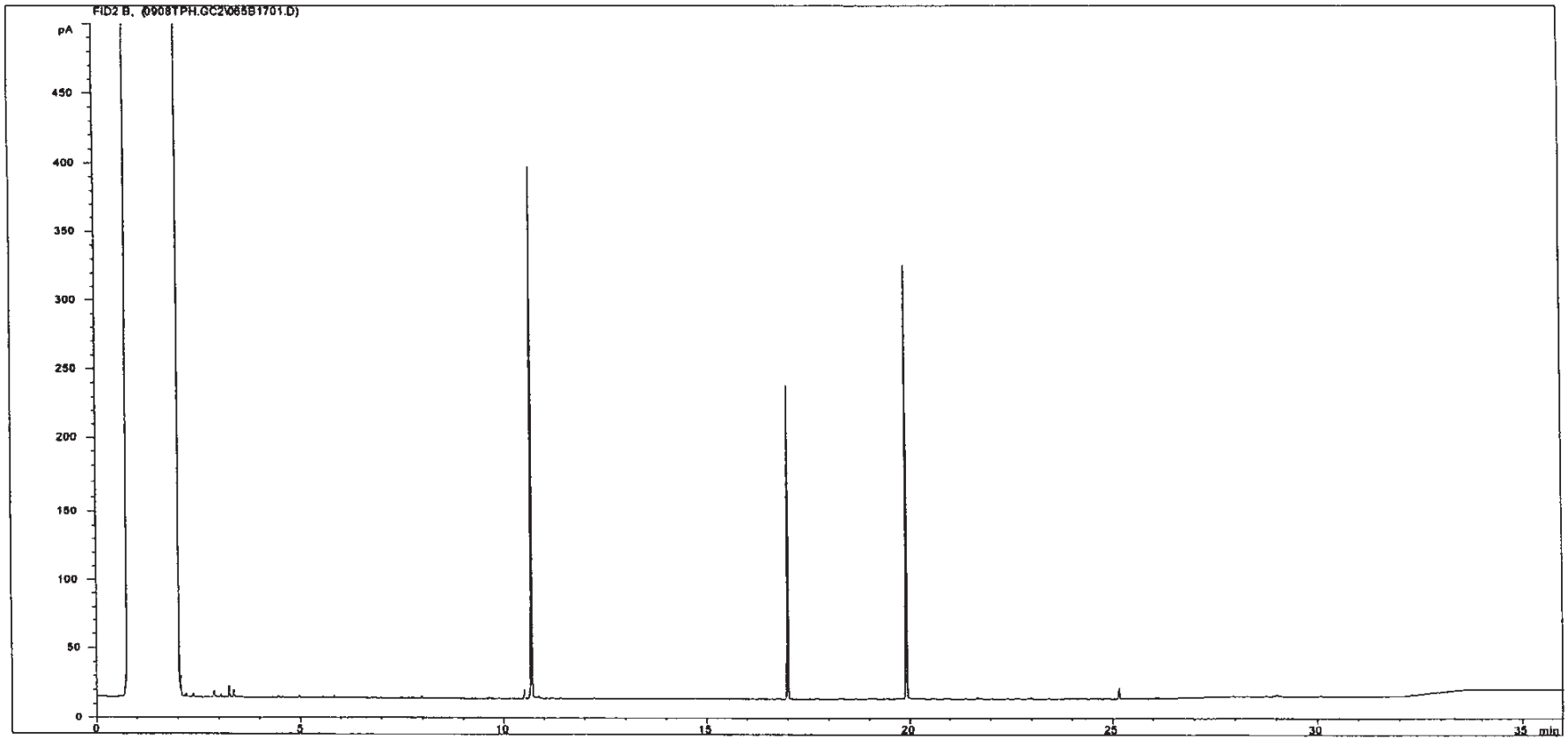
Separation: Silica gel
Eluents: Pentane, DCM

Matrix: Water
Date Booked I 22/08/2003
Date Extracted 03/09/2003
Date Analysed 08/09/2003

This sample data is not UKAS accredited.

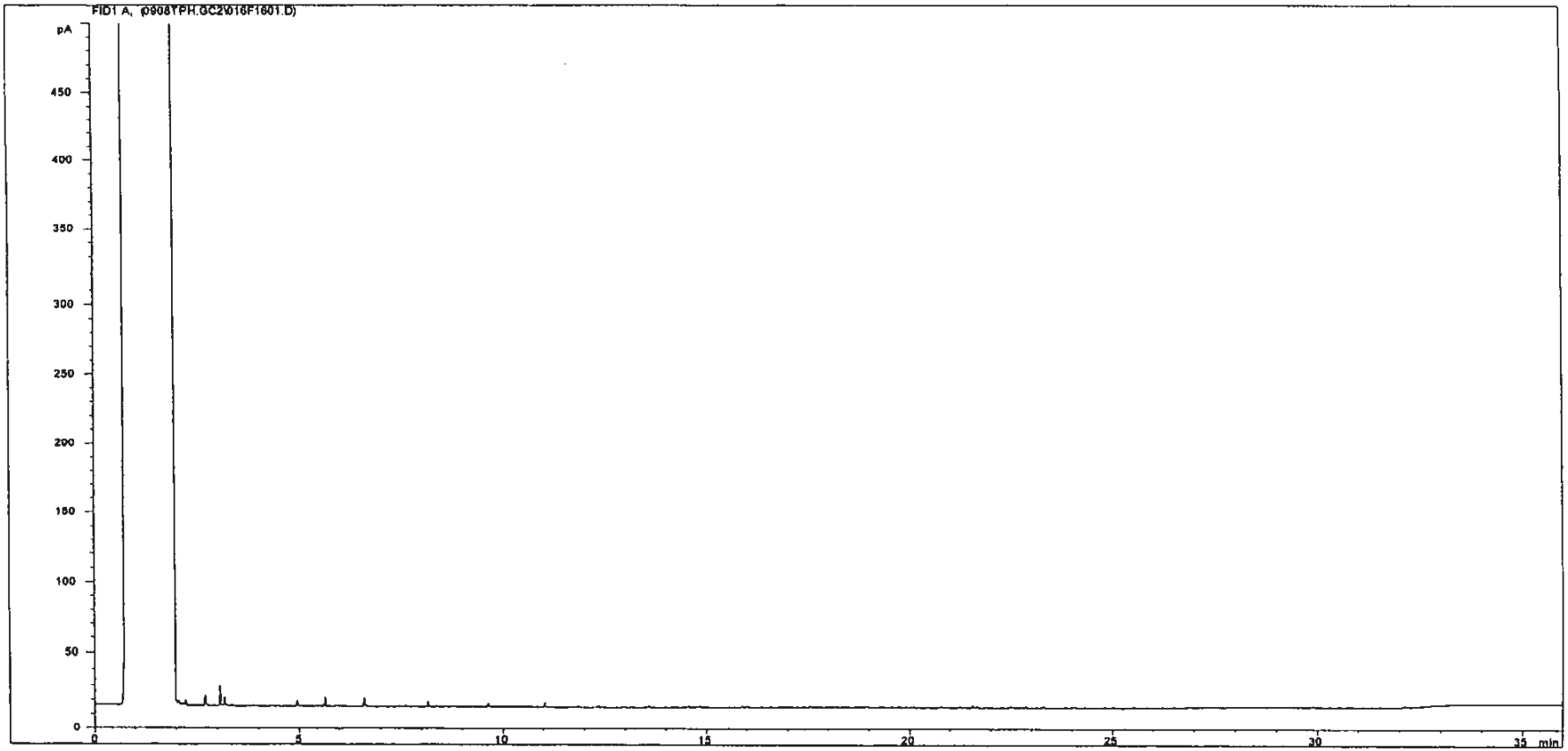
		Concentration, (mg/l)									
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35	
Sample ID	Client ID	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics
EX0319647	BH123 0.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aromatics Fraction.



Sample ID:	EX0319647ALI	**Job Number:**	W03_4460
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH123 0.3
Acquisition Date/Time:	09/08/2003 22:08		
Datafile:	L:\DATA\0908TPH.GC2\065B1701.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aliphatics Fraction.



Sample ID:	EX0319647ARO	**Job Number:**	W03_4460
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH123 0.3
Acquisition Date/Time:	09/08/2003 21:22		
Datafile:	L:\DATA\0908TPH.GC2\016F1601.D		

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3@ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

TEST REPORT
LEACHATE SAMPLE ANALYSIS

1252

TES Report No. EXR/034461

Soil Mechanics
Unit 18
Deeside Industrial Estate
Deeside
Flintshire
CH5 2LR

Site: Cronton Colliery

The 1 sample described in this report were scheduled for analysis by TES Bretby on 22-Aug-2003.
The analysis was completed by: 11-Sep-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of GRO Results (Page 4)
Table of PAH HPLC(VL) Results (Page 5)
Table of TPH (Si) banding (Page 6)
GC-FID Chromatograms (Pages 7 to 8)
Table of Report Notes (Page 9)

On behalf of
TES Bretby :
J Hannah

J Hannah
Project Co-ordinator

Date of Issue: 11-Sep-2003

Tests marked 'not UKAS accredited' in this report are not included in the UKAS Accreditation Schedule for our laboratory.
Tests marked '^' have been subcontracted to another laboratory.

TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :		WSLM3	ICPWATER	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATER	ICPMSW	ICPMSW	SCNCR6	SCNCR6	ISESW24	GROHSA
Detection Limits :			0.06	0.001	0.001	0.0001	0.001	0.001	0.002	0.001	0.05	0.0001	0.001	0.1	0.01	0.2	0.1
UKAS Accredited :		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
TES ID Number EXV	Client Sample Description	pH units	Total Sulphur as SO4 (Dissolved)	Nickel as Ni (Dissolved)	Chromium as Cr (Dissolved)	Cadmium as Cd (Dissolved)	Copper as Cu (Dissolved)	Lead as Pb (Dissolved)	Zinc as Zn (Dissolved)	Arsenic as As (Dissolved)	Boron as B (Dissolved)	Mercury as Hg (Dissolved)	Selenium as Se (Dissolved)	Thiocyanate as SCN	Chromium VI as Cr	Sulphide (Free) as S	GRO-HSA (AA)
0319648	BH 110 @ 1 m	6.8	5.25	0.002	0.001	0.0002	0.002	0.001	0.053	<0.001	<0.05	<0.0001	<0.001	0.4	0.03	<0.2	Req

TES Bretby

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Leachate Analysis

Date Printed	11 September 2003
Report Number	EXR/034461
Table Number	1

TES Bretby

Units :		mg/l	mg/l	mg/l	ug/l	mg/l	mg/l	mg/l	mg/l									
Method Codes :		CNWFREE	ICTSCN28	TPHFID	PAHHPLC_V	PHEHPLC	PHEHPLC	PHEHPLC	PHEHPLC									
Detection Limits :		0.05	0.05	0.05	0.003	0.0005	0.0005	0.0005	0.0005									
UKAS Accredited :		no	no	no	no	yes	yes	yes	yes									
TES ID Number EXV	Client Sample Description	Cyanide (Free) as CN	Cyanide (Total) as CN	TPH GC (AA)	PAH HPLC	Phenol	Cresols	Dimethylphenols	Trimethylphenols									
0319648	BH 110 @ 1 m	<0.05	<0.05	Req	Req	<0.0005	<0.0005	<0.0005	<0.0005									

TES Bretby PO Box 100, Bretby Business Park, Burton-on-Trent, Staffordshire, DE15 0XD Tel +44 (0) 1283 554400 Fax +44 (0) 1283 554422	**Client Name**	**Soil Mechanics**	**Leachate Analysis**
	Contact	Mr J Northeast	
	Cronton Colliery		**Date Printed** 11 September 2003 **Report Number** EXR/034461 **Table Number** 1

Gasoline Range Organics
(BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: Soil Mecahnics: Cronton Colliery
Job Number: W034461
Directory: 0829HSA.GC6
Method: Headspace GCFID

Matrix: Leachate
Date Booked in: 22-Aug-03
Date extracted: 29-Aug-03
Date Analysed: 01-Sep-03

*** Sample data with an asterisk are not UKAS accredited.**

		Concentration, (mg/l)					Aliphatics			
Sample ID	Client ID	Benzene	Toluene	Ethyl benzene	m/p-Xylene	o-Xylene	C5 - C6	>C6 - C7	>C7 - C8	>C8 - C10
EX0319648*	BH110 1.0m	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1

Note: Benzene elutes between C6 and C7, toluene elutes between C7 and C8, ethyl benzene and the xylenes elute between C8 and C9.

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH110 1.0	**Job Number:**	W03_4461
LIMS ID Number:	EX0319648	**Date Booked in:**	22-Aug-03
QC Batch Number:	335	**Date Extracted:**	04-Sep-03
Directory:	0904PAH.LC2	**Date Analysed:**	04-Sep-03
Dilution (fluorescence):	1.0	**Matrix:**	Leachate
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	950		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	< 0.063	Fluorescence
Acenaphthylene	208-96-8	< 0.105	UV
Acenaphthene	83-32-9	< 0.006	Fluorescence
Fluorene	86-73-7	0.351	UV
Phenanthrene	85-01-8	0.009	Fluorescence
Anthracene	120-12-7	< 0.006	Fluorescence
Fluoranthene	206-44-0	< 0.006	Fluorescence
Pyrene	129-00-0	< 0.006	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.105	UV
Benzo[a]anthracene	56-55-3	< 0.006	Fluorescence
Chrysene	218-01-9	< 0.006	Fluorescence
* Benzo-e-pyrene	192-97-2	< 0.006	Fluorescence
Benzo[b]fluoranthene	205-99-2	< 0.006	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.006	Fluorescence
Benzo[a]pyrene	50-32-8	< 0.006	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	< 0.006	Fluorescence
Benzo[g,h,i]perylene	191-24-2	< 0.006	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	< 0.006	Fluorescence
* Anthanthrene	191-26-4	< 0.006	Fluorescence
Total PAHs (USEPA 16)	-	< 0.604	-

Surrogate Recovery (%) =	69	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Soil Mechanics : Cronton Colliery
Job Number: W03_4461
QC Batch Number: 1616
Directory: L:\DATA\0908TPH.GC2\066B1801.D
Method: Separating Funnel

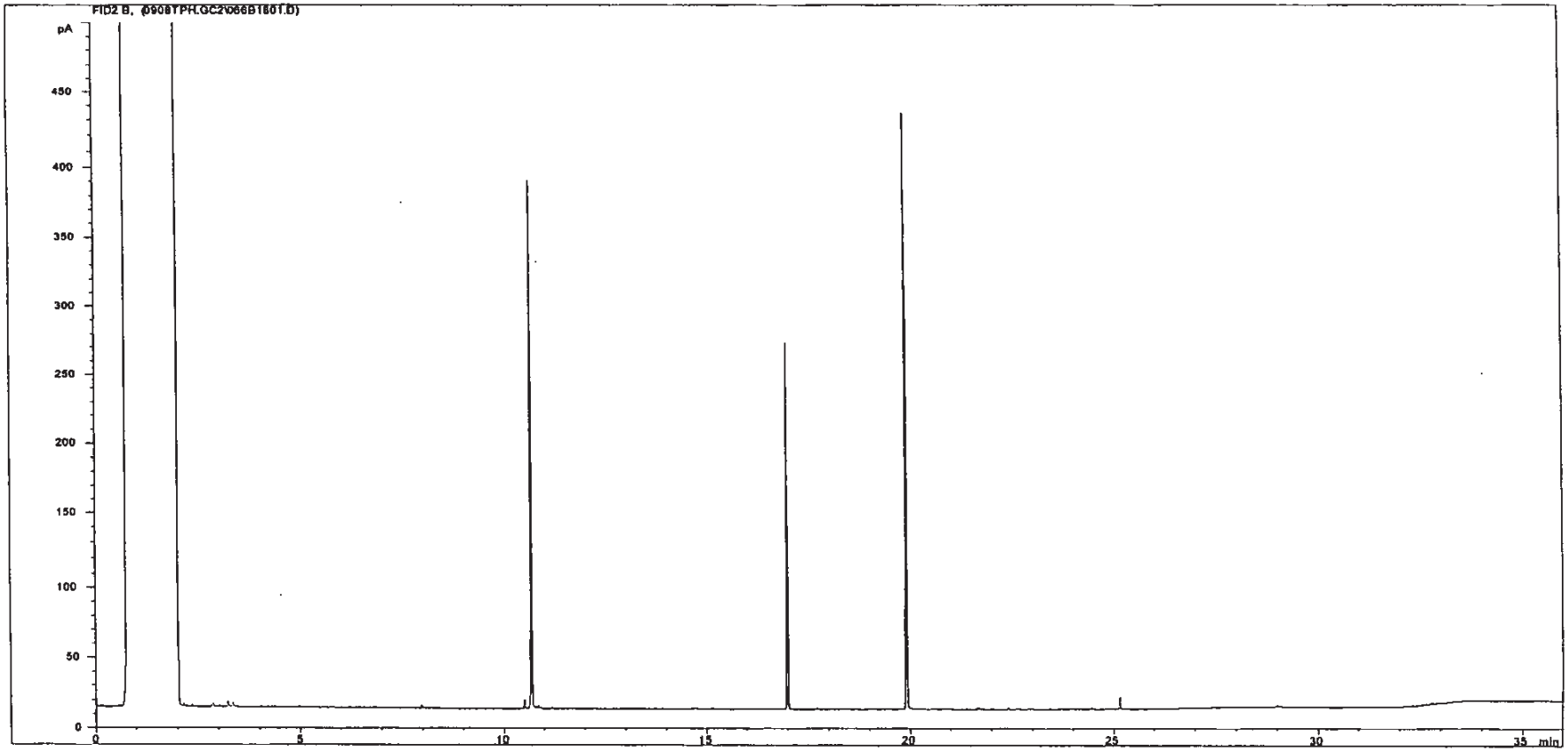
Separation: Silica gel
Eluents: Pentane, DCM

Matrix: Water
Date Booked i 22/08/2003
Date Extracted 03/09/2003
Date Analysed 08/09/2003

This sample data is not UKAS accredited.

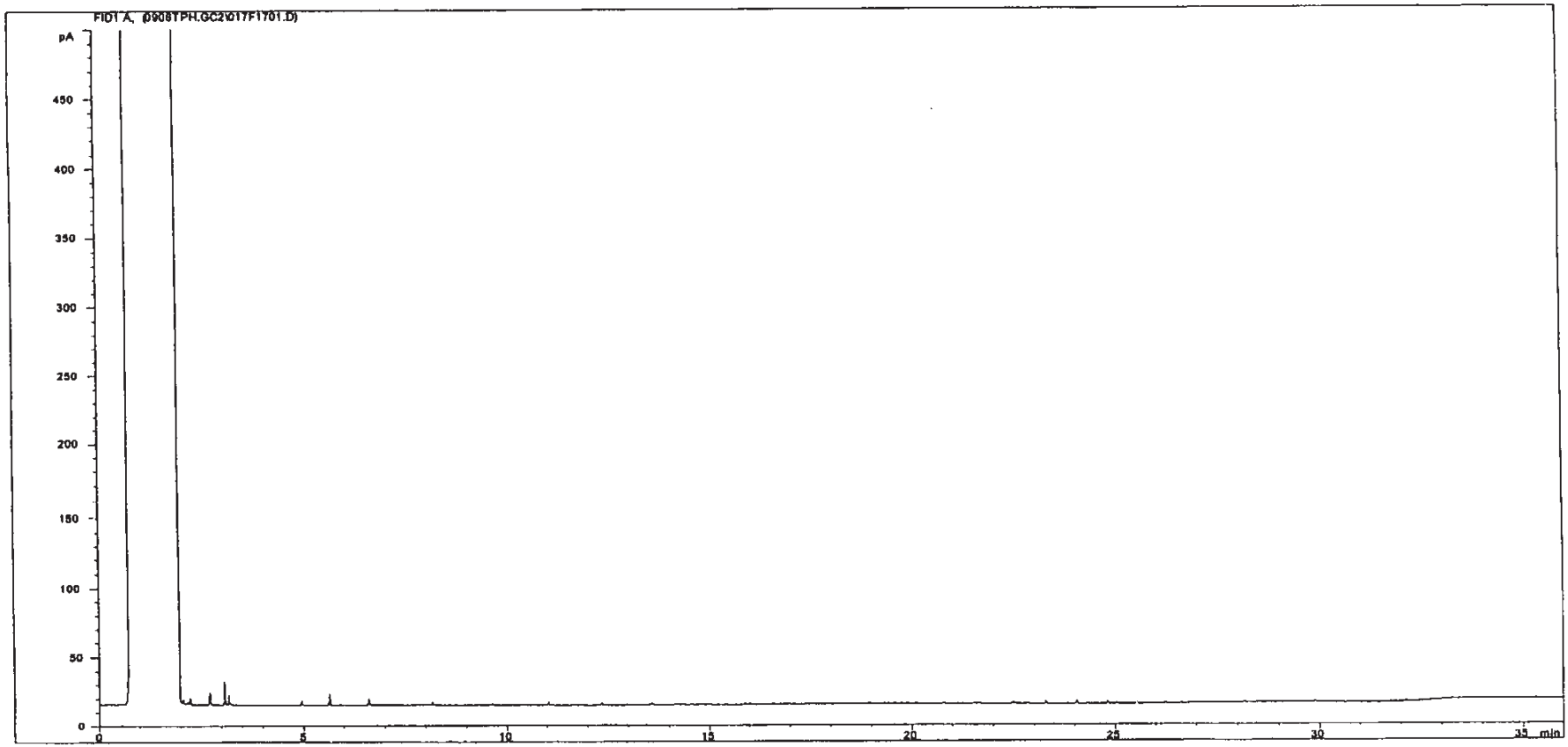
		Concentration, (mg/l)									
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35	
Sample ID	Client ID	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics
EX0319648	BH110 1.0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aromatics Fraction.



Sample ID:	EX0319648ALI	**Job Number:**	W03_4461
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH110 1.0
Acquisition Date/Time:	09/08/2003 22:56		
Datafile:	L:\DATA\0908TPH.GC2\066B1801.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aliphatics Fraction.



Sample ID:	EX0319648ARO	**Job Number:**	W03_4461
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH110 1.0
Acquisition Date/Time:	09/08/2003 22:08		
Datafile:	L:\DATA\0908TPH.GC2\017F1701.D		

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3@ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

TES Bretby

TEST REPORT
LEACHATE SAMPLE ANALYSIS

UKAS TESTING 1252

TES Report No. EXR/034462

Soil Mechanics
Unit 18
Deeside Industrial Estate
Deeside
Flintshire
CH5 2LR

Site: Cronton Colliery

The 1 sample described in this report were scheduled for analysis by TES Bretby on 22-Aug-2003.
The analysis was completed by: 11-Sep-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of GRO Results (Page 4)
Table of PAH HPLC(VL) Results (Page 5)
Table of TPH (Si) banding (Page 6)
GC-FID Chromatograms (Pages 7 to 8)
Table of Report Notes (Page 9)

On behalf of
TES Bretby :
J Hannah

J Hannah
Project Co-ordinator

Date of Issue: 11-Sep-2003

Tests marked 'not UKAS accredited' in this report are not included in the UKAS Accreditation Schedule for our laboratory.
Tests marked '^' have been subcontracted to another laboratory.

TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

Units :			mg/l		mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	
Method Codes :		WSLM3	CPWATE	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	CPWATE	ICPMSW	ICPMSW	SCNCR6	SCNCR6	ISESW24	GROHSA
Detection Limits :			0.06	0.001	0.001	0.0001	0.001	0.001	0.002	0.001	0.05	0.0001	0.001	0.1	0.01	0.2	0.1
UKAS Accredited :		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
TES ID Number EX/	Client Sample Description	pH units	Total Sulphur as SO4 (Dissolved)	Nickel as Ni (Dissolved)	Chromium as Cr (Dissolved)	Cadmium as Cd (Dissolved)	Copper as Cu (Dissolved)	Lead as Pb (Dissolved)	Zinc as Zn (Dissolved)	Arsenic as As (Dissolved)	Boron as B (Dissolved)	Mercury as Hg (Dissolved)	Selenium as Se (Dissolved)	Thiocyanate as SCN	Chromium VI as Cr	Sulphide (Free) as S	GRO-HSA (AA)
031964	BH 129 @ 2 m	6.9	55.9	<0.001	<0.001	0.0003	0.009	0.003	0.036	0.005	<0.05	<0.0001	0.001	0.2	0.01	<0.2	Req

TES Bretby
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Burton-on-Trent, Staffordshire, DE15 0XD
Tel +44 (0) 1283 554400
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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Leachate Analysis

Date Printed	11 September 2003
Report Number	EXR/034462
Table Number	1

TES Bretby

Units :		mg/l	mg/l	mg/l	ug/l	mg/l	mg/l	mg/l	mg/l								
Method Codes :		CNWFREE	ICTSCN28	TPHFID	PAHHPLC_V	PHEHPLC	PHEHPLC	PHEHPLC	PHEHPLC								
Detection Limits :		0.05	0.05	0.05	0.003	0.0005	0.0005	0.0005	0.0005								
UKAS Accredited :		no	no	no	no	yes	yes	yes	yes								
TES ID Number EXV	Client Sample Description	Cyanide (Free) as CN	Cyanide (Total) as CN	TPH GC (AA)	PAH HPLC	Phenol	Cresols	Dimethylphenols	Trimethylphenols								
0319649	BH 129 @ 2 m	<0.05	<0.05	Req	Req	<0.0005	<0.0005	<0.0005	<0.0005								

TES Bretby
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Fax +44 (0) 1283 554422

Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Leachate Analysis

Date Printed	11 September 2003
Report Number	EXR/034462
Table Number	1

TES Bretby

Gasoline Range Organics
(BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: Soil Mecahnics: Cronton Colliery
Job Number: W034462
Directory: 0829HSA.GC6
Method: Headspace GCFID

Matrix: Leachate
Date Booked in: 22-Aug-03
Date extracted: 29-Aug-03
Date Analysed: 01-Sep-03

*** Sample data with an asterisk are not UKAS accredited.**

		Concentration, (mg/l)					Aliphatics			
Sample ID	**Client ID**	**Benzene**	**Toluene**	**Ethyl benzene**	**m/p-Xylene**	**o-Xylene**	**C5 - C6**	**>C6 - C7**	**>C7 - C8**	**>C8 - C10**
EX0319649*	BH129 2.0m	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1

Note: Benzene elutes between C6 and C7, toluene elutes between C7 and C8, ethyl benzene and the xylenes elute between C8 and C9.

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH129 2.0	**Job Number:**	W03_4462
LIMS ID Number:	EX0319649	**Date Booked in:**	22-Aug-03
QC Batch Number:	335	**Date Extracted:**	04-Sep-03
Directory:	0904PAH.LC2	**Date Analysed:**	04-Sep-03
Dilution (fluorescence):	1.0	**Matrix:**	Leachate
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	950		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	< 0.063	Fluorescence
Acenaphthylene	208-96-8	< 0.105	UV
Acenaphthene	83-32-9	< 0.006	Fluorescence
Fluorene	86-73-7	0.123	Fluorescence
Phenanthrene	85-01-8	0.007	Fluorescence
Anthracene	120-12-7	< 0.006	Fluorescence
Fluoranthene	206-44-0	< 0.006	Fluorescence
Pyrene	129-00-0	< 0.006	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.105	UV
Benzo[a]anthracene	56-55-3	< 0.006	Fluorescence
Chrysene	218-01-9	< 0.006	Fluorescence
* Benzo-e-pyrene	192-97-2	< 0.006	Fluorescence
Benzo[b]fluoranthene	205-99-2	< 0.006	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.006	Fluorescence
Benzo[a]pyrene	50-32-8	< 0.006	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	< 0.006	Fluorescence
Benzo[g,h,i]perylene	191-24-2	< 0.006	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	< 0.006	Fluorescence
* Anthanthrene	191-26-4	< 0.006	Fluorescence
Total PAHs (USEPA 16)	-	< 0.374	-
Surrogate Recovery (%) =		64	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Soil Mechanics : Cronton Colliery
Job Number: W03_4462
QC Batch Number: 1616
Directory: L:\DATA\0908TPH.GC2\067B1901.D
Method: Separating Funnel

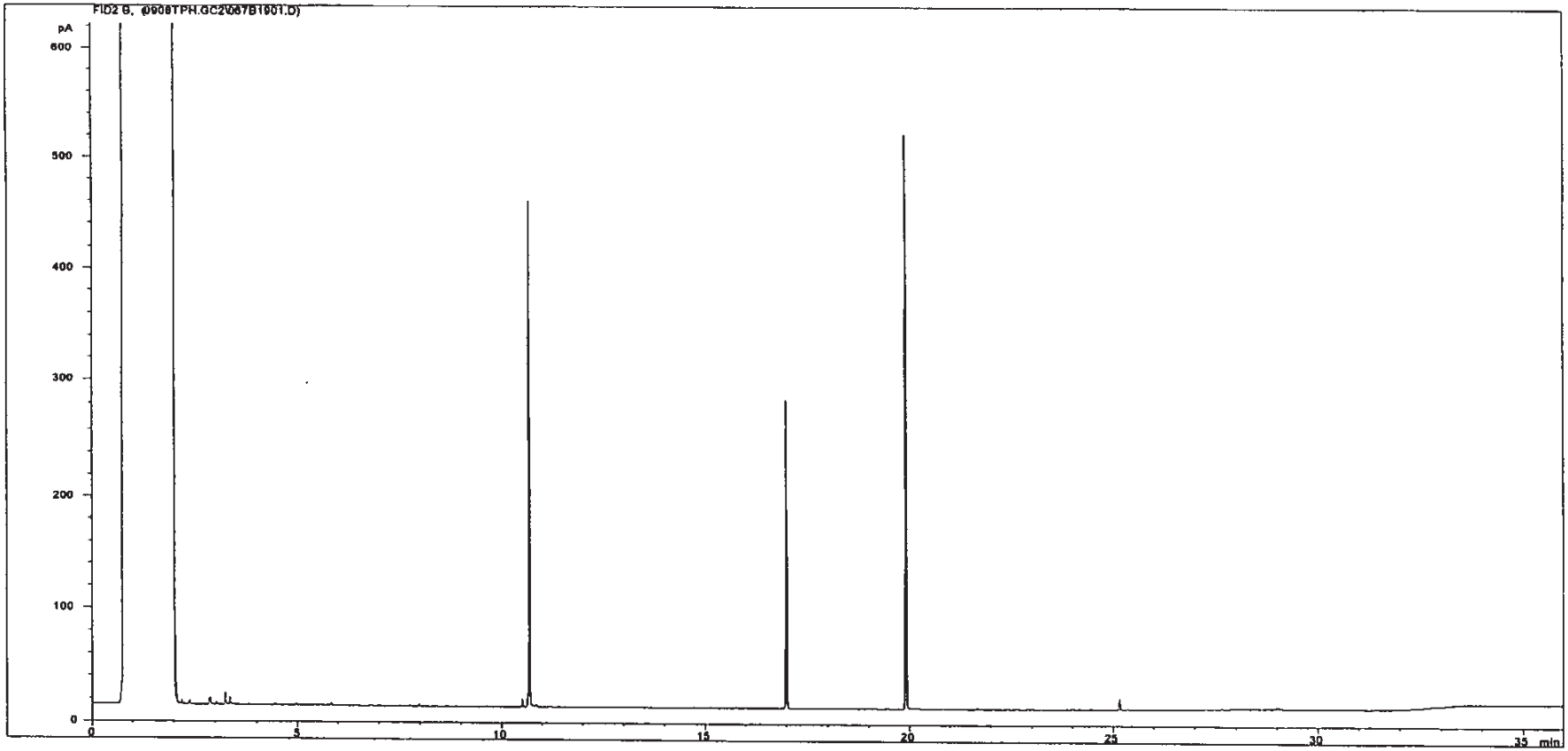
Separation: Silica gel
Eluents: Pentane, DCM

Matrix: Water
Date Booked I: 22/08/2003
Date Extracted 03/09/2003
Date Analysed 08/09/2003

This sample data is not UKAS accredited.

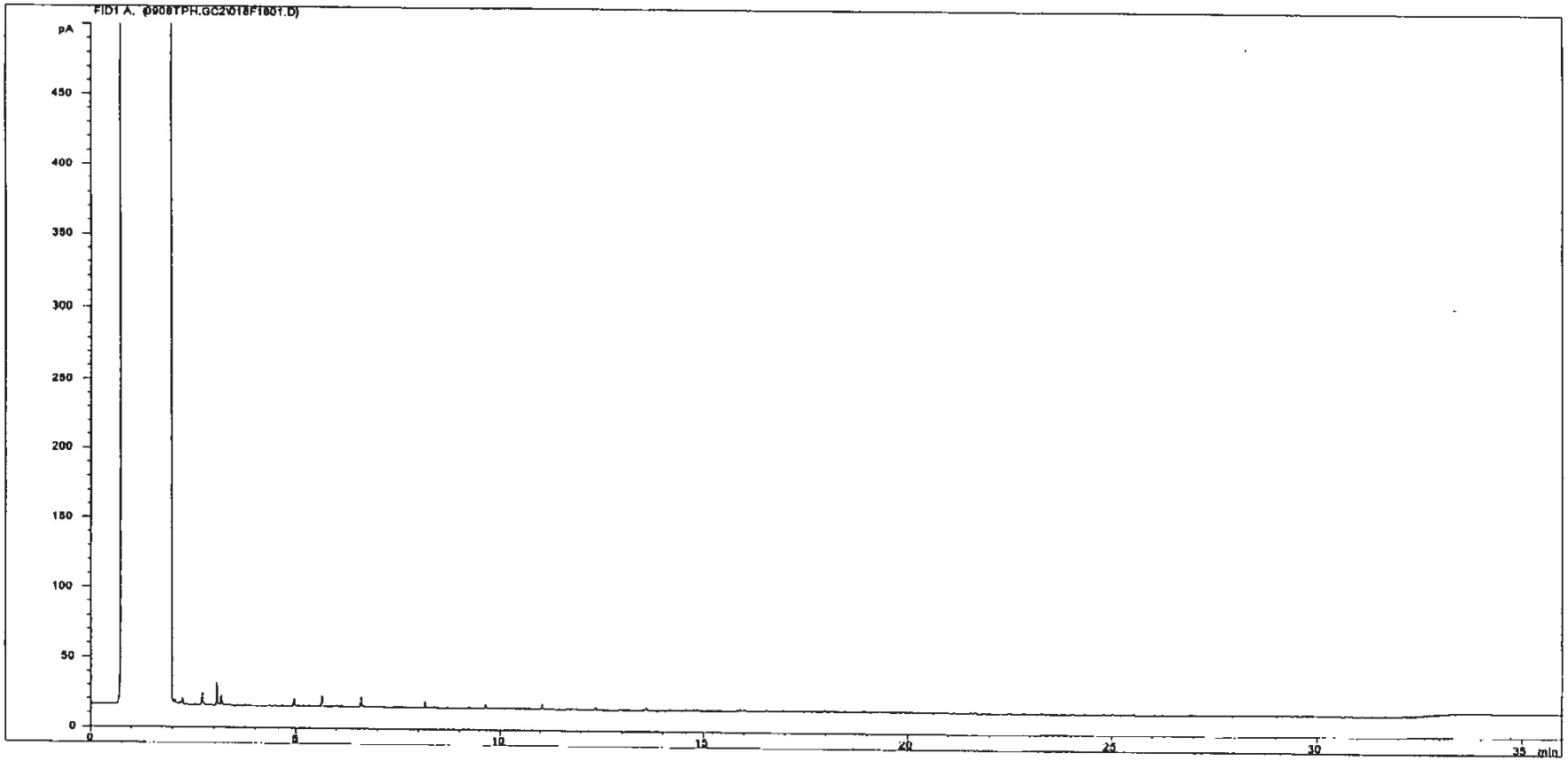
		Concentration, (mg/l)									
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35	
Sample ID	Client ID	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics
EX0319649	BH129 2.0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aromatics Fraction.



Sample ID:	EX0319649ALI	**Job Number:**	W03_4462
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH129 2.0
Acquisition Date/Time:	09/08/2003 23:42		
Datafile:	L:\DATA\0908TPH.GC2\067B1901.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aliphatics Fraction.



Sample ID:	EX0319649ARO	**Job Number:**	W03_4462
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH129 2.0
Acquisition Date/Time:	09/08/2003 22:56		
Datafile:	L:\DATA\0908TPH.GC2\018F1801.D		

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3@ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

TEST REPORT
WATER SAMPLE ANALYSIS

1252

TES Report No. EXR/034835

Soil Mechanics
Unit 18
Deeside Industrial Estate
Deeside
Flintshire
CH5 2LR

Site: Cronton Colliery

The 21 samples described in this report were logged for analysis by TES Bretby on 15-Sep-2003.
The analysis was completed by: 30-Sep-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 5)
Table of PAH HPLC(VL) Results (Pages 6 to 25)
Table of TPH Texas banding (Page 26)
GC-FID Chromatograms (Pages 27 to 30)
Sample Chain of Custody Record (Pages 31 to 32)
Table of Report Notes (Page 33)

On behalf of
TES Bretby :
J Elstub

Date of Issue: 30-Sep-2003

Tests marked 'not UKAS accredited' in this report are not included in the UKAS Accreditation Schedule for our laboratory.
Tests marked '^' have been subcontracted to another laboratory.

TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

Units :				mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :			WSLM3	Calc	ICPWATER	ICPWATER	ICPWATER	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATER	ICPMSW	ICPMSW	SCNCR6
Detection Limits :					0.06	0.01	0.03	0.001	0.001	0.0001	0.001	0.001	0.002	0.001	0.05	0.0001	0.001	0.1
UKAS Accredited :			yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
TES ID Number EXV	Client Sample Description	Sample Date	pH units	Total Hardness as CaCO3	Total Sulphur as SO4 (Dissolved)	Calcium as Ca (Dissolved)	Magnesium as Mg (Dissolved)	Nickel as Ni (Dissolved)	Chromium as Cr (Dissolved)	Cadmium as Cd (Dissolved)	Copper as Cu (Dissolved)	Lead as Pb (Dissolved)	Zinc as Zn (Dissolved)	Arsenic as As (Dissolved)	Boron as B (Dissolved)	Mercury as Hg (Dissolved)	Selenium as Se (Dissolved)	Thiocyanate as SCN
0321197	BH131	10-Sep-03	7.4	555	121	145	46.8	0.005	0.012	0.0001	0.022	<0.001	0.066	0.007	0.09	<0.0001	<0.001	<0.1
0321198	BH124	10-Sep-03	7.4	470	146	122	40.0	0.003	0.010	<0.0001	0.007	0.002	0.057	0.001	0.06	<0.0001	<0.001	<0.1
0321199	BH124R	10-Sep-03	7.6	427	122	108	38.1	0.002	0.004	<0.0001	0.003	<0.001	0.031	0.001	0.07	<0.0001	0.001	<0.1
0321200	BH126	10-Sep-03	7.9	265	118	60.5	27.7	0.004	0.007	<0.0001	0.002	<0.001	0.033	0.002	0.06	<0.0001	0.002	0.1
0321201	BH130	10-Sep-03	7.6	323	58.5	79.1	30.5	0.003	0.011	<0.0001	0.002	<0.001	0.058	0.002	0.13	<0.0001	0.003	<0.1
0321202	BH129	10-Sep-03	I.S	I.S	I.S	I.S	I.S	I.S	I.S	I.S	I.S	I.S	I.S	I.S	I.S	I.S	I.S	I.S
0321203	BH121	10-Sep-03	7.4	401	68.3	108	31.7	0.003	0.010	0.0002	0.002	<0.001	0.057	0.001	0.08	<0.0001	<0.001	<0.1
0321204	BH120	10-Sep-03	6.8	734	446	185	65.8	0.006	0.005	<0.0001	0.002	<0.001	0.028	<0.001	0.19	<0.0001	<0.001	<0.1
0321205	BH002	10-Sep-03	6.8	903	704	190	104	0.007	0.011	0.0002	0.005	<0.001	0.093	<0.001	0.25	<0.0001	0.001	<0.1
0321206	BH122	10-Sep-03	6.8	788	707	158	95.4	0.009	0.008	0.0003	0.002	<0.001	0.034	<0.001	0.15	<0.0001	<0.001	<0.1
0321207	P2/12	10-Sep-03	6.8	618	444	150	59.0	0.003	0.008	0.0006	0.001	<0.001	0.040	<0.001	0.13	<0.0001	<0.001	<0.1
0321208	BH113	11-Sep-03	7.0		1170			0.008	0.011	0.0005	0.004	<0.001	0.056	<0.001	0.17	<0.0001	0.009	<0.1
0321209	BH112	11-Sep-03	7.0		279			0.013	<0.001	0.0004	0.006	<0.001	0.030	0.003	13.2	<0.0001	0.003	0.2
0321210	BH115	11-Sep-03	6.9		3660			0.010	0.001	0.0009	0.008	<0.001	0.058	0.002	0.57	<0.0001	0.005	<0.1
0321211	BH020	11-Sep-03	6.6		3060			0.009	0.001	0.0008	0.005	<0.001	0.046	0.002	0.23	<0.0001	0.003	0.2
0321212	BH003	11-Sep-03	6.8		3850			0.033	<0.001	0.0015	0.008	<0.001	0.073	0.001	0.31	<0.0001	0.004	<0.1
0321213	BH007	11-Sep-03	6.8		2300			0.012	<0.001	0.0005	0.004	<0.001	0.087	0.008	0.35	<0.0001	0.003	<0.1
0321214	BH006	11-Sep-03	7.1		587			0.003	<0.001	0.0002	0.002	<0.001	0.025	0.001	0.25	<0.0001	0.002	<0.1
0321215	BH009	11-Sep-03	7.0		1660			0.007	<0.001	<0.0001	0.005	<0.001	0.058	0.002	0.33	<0.0001	0.003	0.1
0321216	BH110R	11-Sep-03	7.0		64.6			0.012	<0.001	0.0001	0.002	<0.001	0.027	0.013	0.09	<0.0001	0.001	0.3

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Contact	Mr J Northeast

Cronton Colliery

Water Sample Analysis

Date Printed	30 September 2003
Report Number	EXR/034835
Table Number	1

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			Units :	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l	mg/l	mg/l					
			Method Codes :	SCNCR6	ISESW24	GROHSA	CNWFREE	ICTSCN28	TPHFID	PAHHPLC_VI	PHEHPLC	PHEHPLC	PHEHPLC	PHEHPLC					
			Detection Limits :	0.01	0.2	0.1	0.05	0.05	0.05	0.003	0.0005	0.0005	0.0005	0.0005					
			UKAS Accredited :	yes	yes	yes	no	no	no	no	yes	yes	yes	yes					
TES ID Number EXI	Client Sample Description	Sample Date		Chromium VI as Cr	Sulphide (Free) as S	Gasoline Range Organics	Cyanide (Free) as CN	Cyanide (Total) as CN	TPH GC	PAH HPLC	Phenol	Cresols	Dimethylphenols	Trimethylphenols					
0321197	BH131	10-Sep-03		<0.01	<0.2		<0.05	<0.05		Req	<0.0005	<0.0005	<0.0005	<0.0005					
0321198	BH124	10-Sep-03		<0.01	<0.2		<0.05	<0.05		Req	0.0011	<0.0005	<0.0005	<0.0005					
0321199	BH124R	10-Sep-03		<0.01	<0.2		<0.05	<0.05		Req	0.0006	<0.0005	<0.0005	<0.0005					
0321200	BH126	10-Sep-03		<0.01	<0.2		<0.05	<0.05		Req	<0.0005	<0.0005	<0.0005	<0.0005					
0321201	BH130	10-Sep-03		<0.01	<0.2		<0.05	<0.05		Req	0.0007	<0.0005	<0.0005	<0.0005					
0321202	BH129	10-Sep-03		I.S	I.S	<0.1	I.S	I.S	0.10	I.S	<0.0005	<0.0005	<0.0005	<0.0005					
0321203	BH121	10-Sep-03		<0.01	<0.2		<0.05	<0.05		Req	<0.0005	<0.0005	<0.0005	<0.0005					
0321204	BH120	10-Sep-03		<0.01	<0.2	<0.1	<0.05	<0.05	0.05	Req	0.0007	<0.0005	<0.0005	<0.0005					
0321205	BH002	10-Sep-03		<0.01	0.9		<0.05	<0.05		Req	<0.0005	<0.0005	<0.0005	<0.0005					
0321206	BH122	10-Sep-03		<0.01	1.9		<0.05	<0.05		Req	<0.0005	<0.0005	<0.0005	<0.0005					
0321207	P2/12	10-Sep-03		<0.01	<0.2		<0.05	<0.05		Req	<0.0005	<0.0005	<0.0005	<0.0005					
0321208	BH113	11-Sep-03		<0.01	0.2		<0.05	<0.05		Req	<0.0005	<0.0005	<0.0005	<0.0005					
0321209	BH112	11-Sep-03		<0.01	7.7	<0.1	<0.05	<0.05	0.16	Req	0.0010	<0.0005	<0.0005	<0.0005					
0321210	BH115	11-Sep-03		<0.01	0.7		<0.05	<0.05		Req	<0.0005	<0.0005	<0.0005	<0.0005					
0321211	BH020	11-Sep-03		0.02	0.9		<0.05	<0.05		Req	<0.0005	<0.0005	<0.0005	<0.0005					
0321212	BH003	11-Sep-03		<0.01	0.4		<0.05	<0.05		Req	<0.0005	<0.0005	<0.0005	<0.0005					
0321213	BH007	11-Sep-03		<0.01	<0.2		<0.05	<0.05		Req	<0.0005	<0.0005	<0.0005	<0.0005					
0321214	BH006	11-Sep-03		<0.01	<0.2		<0.05	<0.05		Req	0.0016	<0.0005	<0.0005	<0.0005					
0321215	BH009	11-Sep-03		<0.01	1.1	0.17	<0.05	<0.05	4.90	Req	<0.0005	<0.0005	<0.0005	<0.0005					
0321216	BH110R	11-Sep-03		<0.01	<0.2		<0.05	<0.05		Req	0.0129	<0.0005	<0.0005	<0.0005					

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Contact Mr J Northeast

Cronton Colliery

Water Sample Analysis

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Units :				mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :			WSLM3	Calc	ICPWATER	ICPWATER	ICPWATER	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATER	ICPMSW	ICPMSW	SCNCR6
Detection Limits :					0.06	0.01	0.03	0.001	0.001	0.0001	0.001	0.001	0.002	0.001	0.05	0.0001	0.001	0.1
UKAS Accredited :			yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
TES ID Number EXJ	Client Sample Description	Sample Date	pH units	Total Hardness as CaCO3	Total Sulphur as SO4 (Dissolved)	Calcium as Ca (Dissolved)	Magnesium as Mg (Dissolved)	Nickel as Ni (Dissolved)	Chromium as Cr (Dissolved)	Cadmium as Cd (Dissolved)	Copper as Cu (Dissolved)	Lead as Pb (Dissolved)	Zinc as Zn (Dissolved)	Arsenic as As (Dissolved)	Boron as B (Dissolved)	Mercury as Hg (Dissolved)	Selenium as Se (Dissolved)	Thiocyanate as SCN
0321217	BH014	11-Sep-03	6.8		4140			0.024	<0.001	0.0006	0.008	<0.001	0.055	0.002	0.35	<0.0001	0.003	<0.1

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Cronton Colliery

Water Sample Analysis

Date Printed	30 September 2003
Report Number	EXR/034835
Table Number	1

TES Bretby

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l	mg/l	mg/l							
Method Codes :			SCNCR6	ISESW24	GROHSA	CNWFREE	ICTSCN28	TPHFID	PAHHPLC_VI	PHEHPLC	PHEHPLC	PHEHPLC	PHEHPLC							
Detection Limits :			0.01	0.2	0.1	0.05	0.05	0.05	0.003	0.0005	0.0005	0.0005	0.0005							
UKAS Accredited :			yes	yes	yes	no	no	no	no	yes	yes	yes	yes							
TES ID Number EXV	Client Sample Description	Sample Date	Chromium VI as Cr	Sulphide (Free) as S	Gasoline Range Organics	Cyanide (Free) as CN	Cyanide (Total) as CN	TPH GC	PAH HPLC	Phenol	Cresols	Dimethylphenols	Trimethylphenols							
0321217	BH014	11-Sep-03	<0.01	1.8		<0.05	<0.05		Req	<0.0005	<0.0005	<0.0005	<0.0005							

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Cronton Colliery

Water Sample Analysis

Date Printed	30 September 2003
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Table Number	1

TES Bretby

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH131	**Job Number:**	W03_4835
LIMS ID Number:	EX0321197	**Date Booked in:**	15-Sep-03
QC Batch Number:	359	**Date Extracted:**	22-Sep-03
Directory:	0923PAH.LC2	**Date Analysed:**	24-Sep-03
Dilution (fluorescence):	1.0	**Matrix:**	Water
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	600		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	0.127	Fluorescence
Acenaphthylene	208-96-8	< 0.167	UV
Acenaphthene	83-32-9	0.110	Fluorescence
Fluorene	86-73-7	0.120	Fluorescence
Phenanthrene	85-01-8	0.712	UV
Anthracene	120-12-7	0.067	Fluorescence
Fluoranthene	206-44-0	0.205	Fluorescence
Pyrene	129-00-0	< 0.010	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.167	UV
Benzo[a]anthracene	56-55-3	< 0.010	Fluorescence
Chrysene	218-01-9	0.205	Fluorescence
* Benzo-e-pyrene	192-97-2	0.335	Fluorescence
Benzo[b]fluoranthene	205-99-2	< 0.010	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.010	Fluorescence
Benzo[a]pyrene	50-32-8	0.065	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	0.130	Fluorescence
Benzo[g,h,i]perylene	191-24-2	0.023	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	0.125	Fluorescence
* Anthanthrene	191-26-4	< 0.010	Fluorescence
Total PAHs (USEPA 16)	-	< 2.10	-

Surrogate Recovery (%) =	77	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH124	**Job Number:**	W03_4835
LIMS ID Number:	EX0321198	**Date Booked in:**	15-Sep-03
QC Batch Number:	359	**Date Extracted:**	22-Sep-03
Directory:	0923PAH.LC2	**Date Analysed:**	24-Sep-03
Dilution (fluorescence):	1.0	**Matrix:**	Water
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	1000		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	< 0.060	Fluorescence
Acenaphthylene	208-96-8	< 0.100	UV
Acenaphthene	83-32-9	< 0.006	Fluorescence
Fluorene	86-73-7	< 0.006	Fluorescence
Phenanthrene	85-01-8	< 0.006	Fluorescence
Anthracene	120-12-7	< 0.006	Fluorescence
Fluoranthene	206-44-0	0.007	Fluorescence
Pyrene	129-00-0	0.036	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.100	UV
Benzo[a]anthracene	56-55-3	< 0.006	Fluorescence
Chrysene	218-01-9	0.006	Fluorescence
* Benzo-e-pyrene	192-97-2	< 0.006	Fluorescence
Benzo[b]fluoranthene	205-99-2	0.017	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.006	Fluorescence
Benzo[a]pyrene	50-32-8	< 0.006	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	< 0.006	Fluorescence
Benzo[g,h,i]perylene	191-24-2	< 0.006	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	0.007	Fluorescence
* Anthanthrene	191-26-4	< 0.006	Fluorescence
Total PAHs (USEPA 16)	-	< 0.287	-

Surrogate Recovery (%) =	68	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH124R	**Job Number:**	W03_4835
LIMS ID Number:	EX0321199	**Date Booked in:**	15-Sep-03
QC Batch Number:	359	**Date Extracted:**	22-Sep-03
Directory:	0923PAH.LC2	**Date Analysed:**	24-Sep-03
Dilution (fluorescence):	1.0	**Matrix:**	Water
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	1000		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	< 0.060	Fluorescence
Acenaphthylene	208-96-8	< 0.100	UV
Acenaphthene	83-32-9	< 0.006	Fluorescence
Fluorene	86-73-7	< 0.006	Fluorescence
Phenanthrene	85-01-8	< 0.006	Fluorescence
Anthracene	120-12-7	< 0.006	Fluorescence
Fluoranthene	206-44-0	0.006	Fluorescence
Pyrene	129-00-0	0.042	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.100	UV
Benzo[a]anthracene	56-55-3	< 0.006	Fluorescence
Chrysene	218-01-9	< 0.006	Fluorescence
* Benzo-e-pyrene	192-97-2	< 0.006	Fluorescence
Benzo[b]fluoranthene	205-99-2	0.012	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.006	Fluorescence
Benzo[a]pyrene	50-32-8	< 0.006	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	0.008	Fluorescence
Benzo[g,h,i]perylene	191-24-2	< 0.006	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	0.006	Fluorescence
* Anthanthrene	191-26-4	< 0.006	Fluorescence
Total PAHs (USEPA 16)	-	< 0.288	-

Surrogate Recovery (%) =	66	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH126	**Job Number:**	W03_4835
LIMS ID Number:	EX0321200	**Date Booked In:**	15-Sep-03
QC Batch Number:	359	**Date Extracted:**	22-Sep-03
Directory:	0923PAH.LC2	**Date Analysed:**	24-Sep-03
Dilution (fluorescence):	1.0	**Matrix:**	Water
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	690		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	0.126	Fluorescence
Acenaphthylene	208-96-8	< 0.145	UV
Acenaphthene	83-32-9	0.065	Fluorescence
Fluorene	86-73-7	0.045	Fluorescence
Phenanthrene	85-01-8	0.335	Fluorescence
Anthracene	120-12-7	0.036	Fluorescence
Fluoranthene	206-44-0	0.151	Fluorescence
Pyrene	129-00-0	0.167	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.145	UV
Benzo[a]anthracene	56-55-3	0.167	Fluorescence
Chrysene	218-01-9	0.119	Fluorescence
* Benzo-e-pyrene	192-97-2	0.077	Fluorescence
Benzo[b]fluoranthene	205-99-2	0.226	Fluorescence
Benzo[k]fluoranthene	207-08-9	0.075	Fluorescence
Benzo[a]pyrene	50-32-8	0.081	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	0.030	Fluorescence
Benzo[g,h,i]perylene	191-24-2	0.110	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	0.158	Fluorescence
* Anthanthrene	191-26-4	0.019	Fluorescence
Total PAHs (USEPA 16)	-	< 2.04	-

Surrogate Recovery (%) =	66	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH130	**Job Number:**	W03_4835
LIMS ID Number:	EX0321201	**Date Booked in:**	15-Sep-03
QC Batch Number:	359	**Date Extracted:**	22-Sep-03
Directory:	0923PAH.LC2	**Date Analysed:**	24-Sep-03
Dilution (fluorescence):	1.0	**Matrix:**	Water
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	1000		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	< 0.060	Fluorescence
Acenaphthylene	208-96-8	< 0.100	UV
Acenaphthene	83-32-9	< 0.006	Fluorescence
Fluorene	86-73-7	< 0.006	Fluorescence
Phenanthrene	85-01-8	0.011	Fluorescence
Anthracene	120-12-7	< 0.006	Fluorescence
Fluoranthene	206-44-0	< 0.006	Fluorescence
Pyrene	129-00-0	0.010	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.100	UV
Benzo[a]anthracene	56-55-3	< 0.006	Fluorescence
Chrysene	218-01-9	< 0.006	Fluorescence
* Benzo-e-pyrene	192-97-2	< 0.006	Fluorescence
Benzo[b]fluoranthene	205-99-2	< 0.006	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.006	Fluorescence
Benzo[a]pyrene	50-32-8	< 0.006	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	0.007	Fluorescence
Benzo[g,h,i]perylene	191-24-2	< 0.006	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	< 0.006	Fluorescence
* Anthanthrene	191-26-4	< 0.006	Fluorescence
Total PAHs (USEPA 16)	-	< 0.254	-

Surrogate Recovery (%) =	70	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH121	**Job Number:**	W03_4835
LIMS ID Number:	EX0321203	**Date Booked In:**	15-Sep-03
QC Batch Number:	359	**Date Extracted:**	22-Sep-03
Directory:	0923PAH.LC2	**Date Analysed:**	24-Sep-03
Dilution (fluorescence):	1.0	**Matrix:**	Water
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	1000		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	< 0.060	Fluorescence
Acenaphthylene	208-96-8	< 0.100	UV
Acenaphthene	83-32-9	< 0.006	Fluorescence
Fluorene	86-73-7	< 0.006	Fluorescence
Phenanthrene	85-01-8	0.013	Fluorescence
Anthracene	120-12-7	< 0.006	Fluorescence
Fluoranthene	206-44-0	< 0.006	Fluorescence
Pyrene	129-00-0	0.013	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.100	UV
Benzo[a]anthracene	56-55-3	< 0.006	Fluorescence
Chrysene	218-01-9	< 0.006	Fluorescence
* Benzo-e-pyrene	192-97-2	< 0.006	Fluorescence
Benzo[b]fluoranthene	205-99-2	< 0.006	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.006	Fluorescence
Benzo[a]pyrene	50-32-8	< 0.006	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	< 0.006	Fluorescence
Benzo[g,h,i]perylene	191-24-2	< 0.006	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	< 0.006	Fluorescence
* Anthanthrene	191-26-4	< 0.006	Fluorescence
Total PAHs (USEPA 16)	-	< 0.258	-

Surrogate Recovery (%) =	65	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH120	**Job Number:**	W03_4835
LIMS ID Number:	EX0321204	**Date Booked in:**	15-Sep-03
QC Batch Number:	359	**Date Extracted:**	22-Sep-03
Directory:	0923PAH.LC2	**Date Analysed:**	24-Sep-03
Dilution (fluorescence):	1.0	**Matrix:**	Water
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	1000		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	< 0.060	Fluorescence
Acenaphthylene	208-96-8	< 0.100	UV
Acenaphthene	83-32-9	0.007	Fluorescence
Fluorene	86-73-7	< 0.006	Fluorescence
Phenanthrene	85-01-8	0.020	Fluorescence
Anthracene	120-12-7	< 0.006	Fluorescence
Fluoranthene	206-44-0	0.007	Fluorescence
Pyrene	129-00-0	0.012	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.100	UV
Benzo[a]anthracene	56-55-3	< 0.006	Fluorescence
Chrysene	218-01-9	0.009	Fluorescence
* Benzo-e-pyrene	192-97-2	< 0.006	Fluorescence
Benzo[b]fluoranthene	205-99-2	0.012	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.006	Fluorescence
Benzo[a]pyrene	50-32-8	< 0.006	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	< 0.006	Fluorescence
Benzo[g,h,i]perylene	191-24-2	< 0.006	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	0.010	Fluorescence
* Anthanthrene	191-26-4	< 0.006	Fluorescence
Total PAHs (USEPA 16)	-	< 0.279	-

Surrogate Recovery (%) =	69	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH002	**Job Number:**	W03_4835
LIMS ID Number:	EX0321205	**Date Booked in:**	15-Sep-03
QC Batch Number:	359	**Date Extracted:**	22-Sep-03
Directory:	0926PAH.LC2	**Date Analysed:**	29-Sep-03
Dilution (fluorescence):	1.0	**Matrix:**	Water
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	1000		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	0.170	Fluorescence
Acenaphthylene	208-96-8	0.257	UV
Acenaphthene	83-32-9	0.027	Fluorescence
Fluorene	86-73-7	0.057	Fluorescence
Phenanthrene	85-01-8	0.253	UV
Anthracene	120-12-7	0.060	Fluorescence
Fluoranthene	206-44-0	0.067	Fluorescence
Pyrene	129-00-0	0.079	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	0.247	UV
Benzo[a]anthracene	56-55-3	0.078	Fluorescence
Chrysene	218-01-9	0.142	Fluorescence
* Benzo-e-pyrene	192-97-2	< 0.006	Fluorescence
Benzo[b]fluoranthene	205-99-2	0.223	Fluorescence
Benzo[k]fluoranthene	207-08-9	0.031	Fluorescence
Benzo[a]pyrene	50-32-8	0.063	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	< 0.006	Fluorescence
Benzo[g,h,i]perylene	191-24-2	0.089	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	0.098	Fluorescence
* Anthanthrene	191-26-4	0.016	Fluorescence
Total PAHs (USEPA 16)	-	< 1.70	-

Surrogate Recovery (%) =	81	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH122	**Job Number:**	W03_4835
LIMS ID Number:	EX0321206	**Date Booked In:**	15-Sep-03
QC Batch Number:	359	**Date Extracted:**	22-Sep-03
Directory:	0926PAH.LC2	**Date Analysed:**	29-Sep-03
Dilution (fluorescence):	1.0	**Matrix:**	Water
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	1000		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	2.33	UV
Acenaphthylene	208-96-8	3.06	UV
Acenaphthene	83-32-9	0.038	Fluorescence
Fluorene	86-73-7	0.080	Fluorescence
Phenanthrene	85-01-8	1.29	UV
Anthracene	120-12-7	0.078	Fluorescence
Fluoranthene	206-44-0	0.077	Fluorescence
Pyrene	129-00-0	0.107	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.100	UV
Benzo[a]anthracene	56-55-3	0.264	UV
Chrysene	218-01-9	0.678	UV
* Benzo-e-pyrene	192-97-2	0.196	Fluorescence
Benzo[b]fluoranthene	205-99-2	< 0.006	Fluorescence
Benzo[k]fluoranthene	207-08-9	0.019	Fluorescence
Benzo[a]pyrene	50-32-8	0.026	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	0.070	Fluorescence
Benzo[g,h,i]perylene	191-24-2	< 0.006	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	< 0.006	Fluorescence
* Anthanthrene	191-26-4	< 0.006	Fluorescence
Total PAHs (USEPA 16)	-	< 8.14	-

Surrogate Recovery (%) =	70	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	P2/12	**Job Number:**	W03_4835
LIMS ID Number:	EX0321207	**Date Booked in:**	15-Sep-03
QC Batch Number:	359	**Date Extracted:**	22-Sep-03
Directory:	0926PAH.LC2	**Date Analysed:**	29-Sep-03
Dilution (fluorescence):	1.0	**Matrix:**	Water
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	1000		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	< 0.060	Fluorescence
Acenaphthylene	208-96-8	< 0.100	UV
Acenaphthene	83-32-9	< 0.006	Fluorescence
Fluorene	86-73-7	0.012	Fluorescence
Phenanthrene	85-01-8	0.075	Fluorescence
Anthracene	120-12-7	0.009	Fluorescence
Fluoranthene	206-44-0	0.013	Fluorescence
Pyrene	129-00-0	0.015	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.100	UV
Benzo[a]anthracene	56-55-3	0.016	Fluorescence
Chrysene	218-01-9	0.030	Fluorescence
* Benzo-e-pyrene	192-97-2	< 0.006	Fluorescence
Benzo[b]fluoranthene	205-99-2	0.035	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.006	Fluorescence
Benzo[a]pyrene	50-32-8	< 0.006	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	< 0.006	Fluorescence
Benzo[g,h,i]perylene	191-24-2	0.017	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	0.048	Fluorescence
* Anthanthrene	191-26-4	< 0.006	Fluorescence
Total PAHs (USEPA 16)	-	< 0.454	-

Surrogate Recovery (%) =	70	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH113	**Job Number:**	W03_4835
LIMS ID Number:	EX0321208	**Date Booked in:**	15-Sep-03
QC Batch Number:	359	**Date Extracted:**	22-Sep-03
Directory:	0926PAH_LC2	**Date Analysed:**	29-Sep-03
Dilution (fluorescence):	1.0	**Matrix:**	Water
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	1000		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	0.117	Fluorescence
Acenaphthylene	208-96-8	< 0.100	UV
Acenaphthene	83-32-9	0.050	Fluorescence
Fluorene	86-73-7	0.040	Fluorescence
Phenanthrene	85-01-8	0.340	UV
Anthracene	120-12-7	0.187	Fluorescence
Fluoranthene	206-44-0	0.650	UV
Pyrene	129-00-0	0.734	UV
* Cyclopenta-cd-pyrene	27208-37-3	< 0.100	UV
Benzo[a]anthracene	56-55-3	0.208	Fluorescence
Chrysene	218-01-9	0.224	Fluorescence
* Benzo-e-pyrene	192-97-2	0.142	Fluorescence
Benzo[b]fluoranthene	205-99-2	0.150	Fluorescence
Benzo[k]fluoranthene	207-08-9	0.194	Fluorescence
Benzo[a]pyrene	50-32-8	0.238	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	0.079	Fluorescence
Benzo[g,h,i]perylene	191-24-2	0.157	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	0.209	UV
* Anthanthrene	191-26-4	0.048	Fluorescence
Total PAHs (USEPA 16)	-	< 3.68	-

Surrogate Recovery (%) =	75	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH112	**Job Number:**	W03_4835
LIMS ID Number:	EX0321209	**Date Booked in:**	15-Sep-03
QC Batch Number:	359	**Date Extracted:**	22-Sep-03
Directory:	0926PAH.LC2	**Date Analysed:**	29-Sep-03
Dilution (fluorescence):	1.0	**Matrix:**	Water
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	1000		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	0.090	Fluorescence
Acenaphthylene	208-96-8	< 0.100	UV
Acenaphthene	83-32-9	0.024	Fluorescence
Fluorene	86-73-7	0.020	Fluorescence
Phenanthrene	85-01-8	0.111	Fluorescence
Anthracene	120-12-7	0.021	Fluorescence
Fluoranthene	206-44-0	0.056	Fluorescence
Pyrene	129-00-0	0.045	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.100	UV
Benzo[a]anthracene	56-55-3	0.015	Fluorescence
Chrysene	218-01-9	0.013	Fluorescence
* Benzo-e-pyrene	192-97-2	< 0.006	Fluorescence
Benzo[b]fluoranthene	205-99-2	0.016	Fluorescence
Benzo[k]fluoranthene	207-08-9	0.006	Fluorescence
Benzo[a]pyrene	50-32-8	0.016	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	0.007	Fluorescence
Benzo[g,h,i]perylene	191-24-2	< 0.006	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	0.022	Fluorescence
* Anthanthrene	191-26-4	< 0.006	Fluorescence
Total PAHs (USEPA 16)	-	< 0.568	-

Surrogate Recovery (%) =	52	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH115	**Job Number:**	W03_4835
LIMS ID Number:	EX0321210	**Date Booked in:**	15-Sep-03
QC Batch Number:	360	**Date Extracted:**	23-Sep-03
Directory:	0925PAH.LC6	**Date Analysed:**	26-Sep-03
Dilution (fluorescence):	1.0	**Matrix:**	Water
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	1000		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	< 0.060	Fluorescence
Acenaphthylene	208-96-8	< 0.100	UV
Acenaphthene	83-32-9	0.009	Fluorescence
Fluorene	86-73-7	0.012	Fluorescence
Phenanthrene	85-01-8	0.066	Fluorescence
Anthracene	120-12-7	0.010	Fluorescence
Fluoranthene	206-44-0	0.030	Fluorescence
Pyrene	129-00-0	0.035	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.100	UV
Benzo[a]anthracene	56-55-3	0.022	Fluorescence
Chrysene	218-01-9	0.039	Fluorescence
* Benzo-e-pyrene	192-97-2	0.037	Fluorescence
Benzo[b]fluoranthene	205-99-2	< 0.006	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.006	Fluorescence
Benzo[a]pyrene	50-32-8	0.013	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	< 0.006	Fluorescence
Benzo[g,h,i]perylene	191-24-2	0.038	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	0.007	Fluorescence
* Anthanthrene	191-26-4	< 0.006	Fluorescence
Total PAHs (USEPA 16)	-	< 0.459	-

Surrogate Recovery (%) =	72	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH020	**Job Number:**	W03_4835
LIMS ID Number:	EX0321211	**Date Booked in:**	15-Sep-03
QC Batch Number:	360	**Date Extracted:**	23-Sep-03
Directory:	0925PAH.LC6	**Date Analysed:**	26-Sep-03
Dilution (fluorescence):	1.0	**Matrix:**	Water
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	1000		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	< 0.060	Fluorescence
Acenaphthylene	208-96-8	< 0.100	UV
Acenaphthene	83-32-9	0.008	Fluorescence
Fluorene	86-73-7	0.010	Fluorescence
Phenanthrene	85-01-8	0.035	Fluorescence
Anthracene	120-12-7	< 0.006	Fluorescence
Fluoranthene	206-44-0	0.012	Fluorescence
Pyrene	129-00-0	0.014	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.100	UV
Benzo[a]anthracene	56-55-3	0.007	Fluorescence
Chrysene	218-01-9	0.022	Fluorescence
* Benzo-e-pyrene	192-97-2	0.009	Fluorescence
Benzo[b]fluoranthene	205-99-2	0.011	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.006	Fluorescence
Benzo[a]pyrene	50-32-8	< 0.006	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	< 0.006	Fluorescence
Benzo[g,h,i]perylene	191-24-2	0.008	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	< 0.006	Fluorescence
* Anthanthrene	191-26-4	< 0.006	Fluorescence
Total PAHs (USEPA 16)	-	< 0.317	-

Surrogate Recovery (%) =	65	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH003	**Job Number:**	W03_4835
LIMS ID Number:	EX0321212	**Date Booked in:**	15-Sep-03
QC Batch Number:	360	**Date Extracted:**	23-Sep-03
Directory:	0925PAH.LC6	**Date Analysed:**	26-Sep-03
Dilution (fluorescence):	1.0	**Matrix:**	Water
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	1000		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	< 0.060	Fluorescence
Acenaphthylene	208-96-8	< 0.100	UV
Acenaphthene	83-32-9	< 0.006	Fluorescence
Fluorene	86-73-7	< 0.006	Fluorescence
Phenanthrene	85-01-8	0.018	Fluorescence
Anthracene	120-12-7	< 0.006	Fluorescence
Fluoranthene	206-44-0	0.008	Fluorescence
Pyrene	129-00-0	0.009	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.100	UV
Benzo[a]anthracene	56-55-3	< 0.006	Fluorescence
Chrysene	218-01-9	0.007	Fluorescence
* Benzo-e-pyrene	192-97-2	0.008	Fluorescence
Benzo[b]fluoranthene	205-99-2	< 0.006	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.006	Fluorescence
Benzo[a]pyrene	50-32-8	< 0.006	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	< 0.006	Fluorescence
Benzo[g,h,i]perylene	191-24-2	0.008	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	< 0.006	Fluorescence
* Anthanthrene	191-26-4	< 0.006	Fluorescence
Total PAHs (USEPA 16)	-	< 0.264	-

Surrogate Recovery (%) =	52	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH007	**Job Number:**	W03_4835
LIMS ID Number:	EX0321213	**Date Booked in:**	15-Sep-03
QC Batch Number:	360	**Date Extracted:**	23-Sep-03
Directory:	0925PAH.LC6	**Date Analysed:**	26-Sep-03
Dilution (fluorescence):	1.0	**Matrix:**	Water
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	1000		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	1.35	UV
Acenaphthylene	208-96-8	0.170	UV
Acenaphthene	83-32-9	0.060	Fluorescence
Fluorene	86-73-7	0.121	Fluorescence
Phenanthrene	85-01-8	0.918	UV
Anthracene	120-12-7	0.140	Fluorescence
Fluoranthene	206-44-0	0.303	UV
Pyrene	129-00-0	0.812	UV
* Cyclopenta-cd-pyrene	27208-37-3	0.606	UV
Benzo[a]anthracene	56-55-3	0.188	UV
Chrysene	218-01-9	0.207	UV
* Benzo-e-pyrene	192-97-2	0.190	UV
Benzo[b]fluoranthene	205-99-2	0.230	Fluorescence
Benzo[k]fluoranthene	207-08-9	0.176	Fluorescence
Benzo[a]pyrene	50-32-8	0.247	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	0.055	Fluorescence
Benzo[g,h,i]perylene	191-24-2	0.452	UV
Indeno[1,2,3-cd]pyrene	193-39-5	0.201	UV
* Anthanthrene	191-26-4	0.062	Fluorescence
Total PAHs (USEPA 16)	-	5.63	-

Surrogate Recovery (%) =	55	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH006	**Job Number:**	W03_4835
LIMS ID Number:	EX0321214	**Date Booked in:**	15-Sep-03
QC Batch Number:	360	**Date Extracted:**	23-Sep-03
Directory:	0925PAH.LC6	**Date Analysed:**	26-Sep-03
Dilution (fluorescence):	1.0	**Matrix:**	Water
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	1000		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	< 0.060	Fluorescence
Acenaphthylene	208-96-8	< 0.100	UV
Acenaphthene	83-32-9	< 0.006	Fluorescence
Fluorene	86-73-7	< 0.006	Fluorescence
Phenanthrene	85-01-8	0.013	Fluorescence
Anthracene	120-12-7	< 0.006	Fluorescence
Fluoranthene	206-44-0	< 0.006	Fluorescence
Pyrene	129-00-0	< 0.006	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.100	UV
Benzo[a]anthracene	56-55-3	0.007	Fluorescence
Chrysene	218-01-9	0.024	Fluorescence
* Benzo-e-pyrene	192-97-2	< 0.006	Fluorescence
Benzo[b]fluoranthene	205-99-2	0.006	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.006	Fluorescence
Benzo[a]pyrene	50-32-8	< 0.006	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	< 0.006	Fluorescence
Benzo[g,h,i]perylene	191-24-2	0.008	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	< 0.006	Fluorescence
* Anthanthrene	191-26-4	< 0.006	Fluorescence
Total PAHs (USEPA 16)	-	< 0.272	-

Surrogate Recovery (%) =	50	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH009	**Job Number:**	W03_4835
LIMS ID Number:	EX0321215	**Date Booked in:**	15-Sep-03
QC Batch Number:	360	**Date Extracted:**	23-Sep-03
Directory:	0925PAH.LC6	**Date Analysed:**	26-Sep-03
Dilution (fluorescence):	1.0	**Matrix:**	Water
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	1000		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	0.081	Fluorescence
Acenaphthylene	208-96-8	< 0.100	UV
Acenaphthene	83-32-9	< 0.006	Fluorescence
Fluorene	86-73-7	0.006	Fluorescence
Phenanthrene	85-01-8	0.037	Fluorescence
Anthracene	120-12-7	0.007	Fluorescence
Fluoranthene	206-44-0	0.064	Fluorescence
Pyrene	129-00-0	0.074	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.100	UV
Benzo[a]anthracene	56-55-3	0.067	Fluorescence
Chrysene	218-01-9	0.150	Fluorescence
* Benzo-e-pyrene	192-97-2	0.110	Fluorescence
Benzo[b]fluoranthene	205-99-2	< 0.006	Fluorescence
Benzo[k]fluoranthene	207-08-9	0.034	Fluorescence
Benzo[a]pyrene	50-32-8	0.050	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	< 0.006	Fluorescence
Benzo[g,h,i]perylene	191-24-2	< 0.006	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	0.034	Fluorescence
* Anthanthrene	191-26-4	0.015	Fluorescence
Total PAHs (USEPA 16)	-	< 0.728	-

Surrogate Recovery (%) =	75	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH110R	**Job Number:**	W03_4835
LIMS ID Number:	EX0321216	**Date Booked in:**	15-Sep-03
QC Batch Number:	360	**Date Extracted:**	23-Sep-03
Directory:	0925PAH.LC6	**Date Analysed:**	26-Sep-03
Dilution (fluorescence):	1.0	**Matrix:**	Water
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	1000		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	0.103	Fluorescence
Acenaphthylene	208-96-8	< 0.100	UV
Acenaphthene	83-32-9	< 0.006	Fluorescence
Fluorene	86-73-7	0.009	Fluorescence
Phenanthrene	85-01-8	0.035	Fluorescence
Anthracene	120-12-7	0.008	Fluorescence
Fluoranthene	206-44-0	0.009	Fluorescence
Pyrene	129-00-0	0.022	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.100	UV
Benzo[a]anthracene	56-55-3	0.010	Fluorescence
Chrysene	218-01-9	0.008	Fluorescence
* Benzo-e-pyrene	192-97-2	0.010	Fluorescence
Benzo[b]fluoranthene	205-99-2	< 0.006	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.006	Fluorescence
Benzo[a]pyrene	50-32-8	0.009	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	< 0.006	Fluorescence
Benzo[g,h,i]perylene	191-24-2	0.036	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	< 0.006	Fluorescence
* Anthanthrene	191-26-4	< 0.006	Fluorescence
Total PAHs (USEPA 16)	-	< 0.379	-

Surrogate Recovery (%) =	70	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

Polycyclic Aromatic Hydrocarbons
HPLC (VL)

Customer and Site Details:	Soil Mechanics : Cronton Colliery		
Sample Details:	BH014	**Job Number:**	W03_4835
LIMS ID Number:	EX0321217	**Date Booked in:**	15-Sep-03
QC Batch Number:	360	**Date Extracted:**	23-Sep-03
Directory:	0925PAH.LC6	**Date Analysed:**	26-Sep-03
Dilution (fluorescence):	1.0	**Matrix:**	Water
Dilution (UV):	1.0	**Ext Method:**	Sep Funnel
Volume Taken:	1000		
	UKAS accredited?: No		

Target Compounds	CAS #	Concentration µg/l	Fluorescence / UV
Naphthalene	91-20-3	< 0.060	Fluorescence
Acenaphthylene	208-96-8	< 0.100	UV
Acenaphthene	83-32-9	0.007	Fluorescence
Fluorene	86-73-7	0.006	Fluorescence
Phenanthrene	85-01-8	0.052	Fluorescence
Anthracene	120-12-7	0.007	Fluorescence
Fluoranthene	206-44-0	0.015	Fluorescence
Pyrene	129-00-0	0.022	Fluorescence
* Cyclopenta-cd-pyrene	27208-37-3	< 0.100	UV
Benzo[a]anthracene	56-55-3	0.014	Fluorescence
Chrysene	218-01-9	0.014	Fluorescence
* Benzo-e-pyrene	192-97-2	0.012	Fluorescence
Benzo[b]fluoranthene	205-99-2	< 0.006	Fluorescence
Benzo[k]fluoranthene	207-08-9	< 0.006	Fluorescence
Benzo[a]pyrene	50-32-8	0.009	Fluorescence
Dibenzo[a,h]anthracene	53-70-3	< 0.006	Fluorescence
Benzo[g,h,i]perylene	191-24-2	0.012	Fluorescence
Indeno[1,2,3-cd]pyrene	193-39-5	< 0.006	Fluorescence
* Anthanthrene	191-26-4	< 0.006	Fluorescence
Total PAHs (USEPA 16)	-	< 0.342	-

Surrogate Recovery (%) =		55	Fluorescence

Data may be obtained from either the fluorescence detector or when the response is very high a less sensitive UV detector (this is indicated for each compound). Any dilutions necessary during analysis have been included in the calculations.

The total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

* - Non-USEPA 16 PAH

Total Petroleum Hydrocarbons (TPH) Carbon Ranges

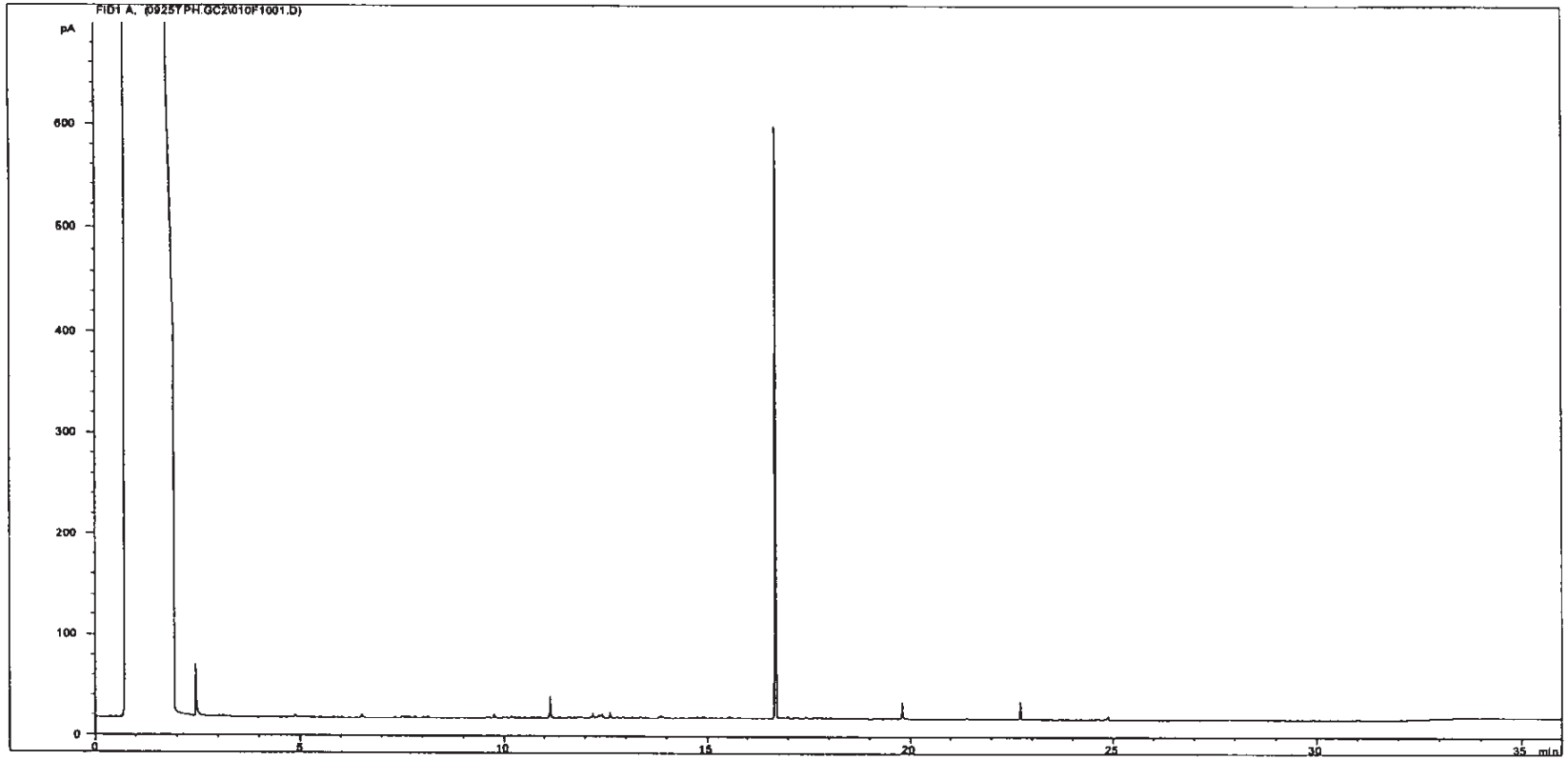
Customer and Site Details: Soil Mechanics : Cronton Colliery
Job Number: W03_4835
QC Batch Number: 1754
Directory: L:\DATA\0925TPH.GC2\009F0901.D
Method: Separating Funnel

Matrix: Water
Date Booked In: 15/09/2003
Date Extracted: 24/09/2003
Date Analysed: 25/09/2003

*** Sample data with an asterisk are not UKAS accredited.**

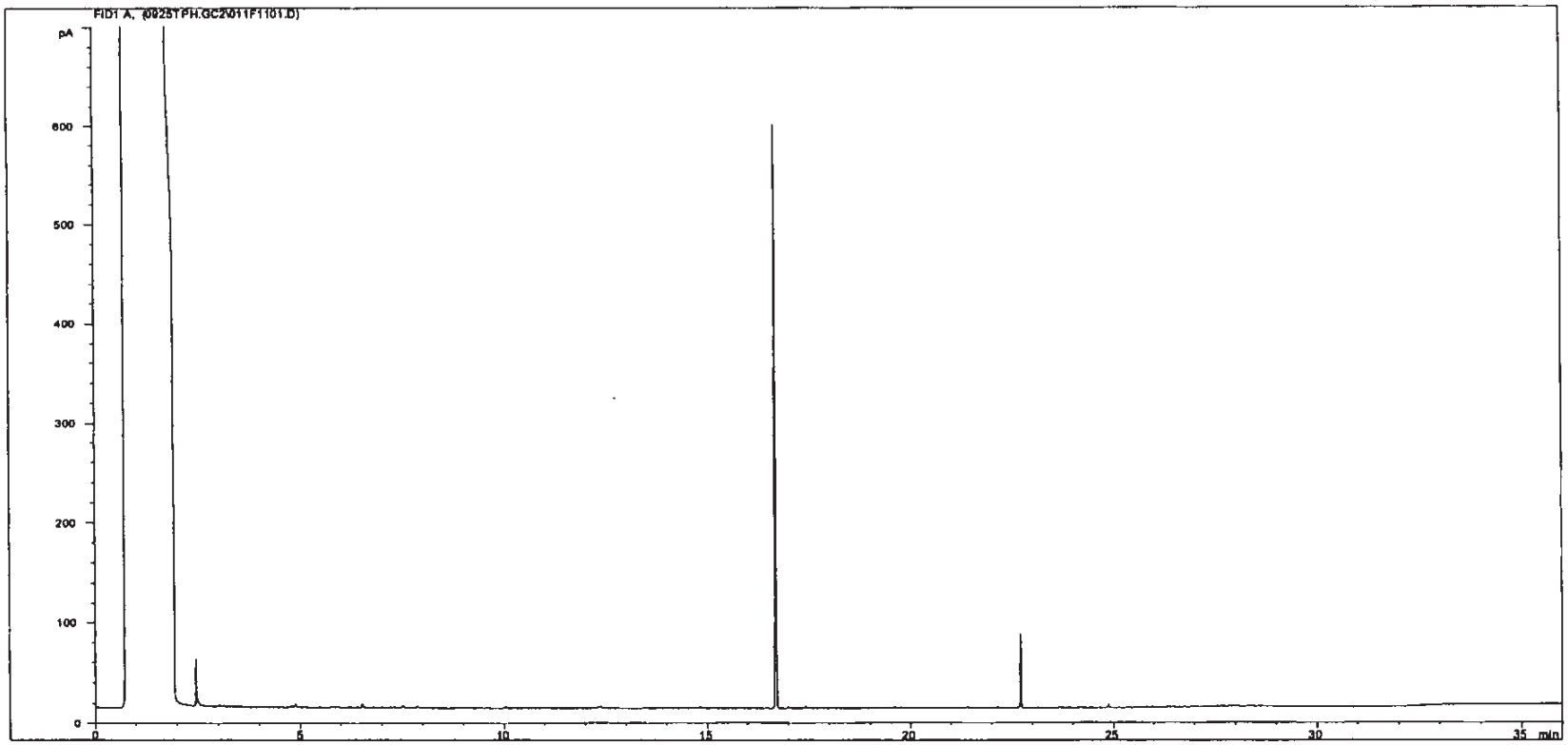
		Concentration, (mg/l)				
Sample ID	Client ID	>C8 - C10	>C10 - C12	>C12 - C16	>C16 - C21	>C21 - C35
EX0321202	BH129	<0.15	<0.15	<0.15	<0.15	<0.15
EX0321204	BH120	<0.1	<0.1	<0.1	<0.1	<0.1
EX0321209	BH112	<0.1	<0.1	<0.1	<0.1	<0.1
EX0321215	BH009	<0.1	<0.1	<0.1	0.11	3.66

Petroleum Hydrocarbons (C8 to C37) by GC/FID



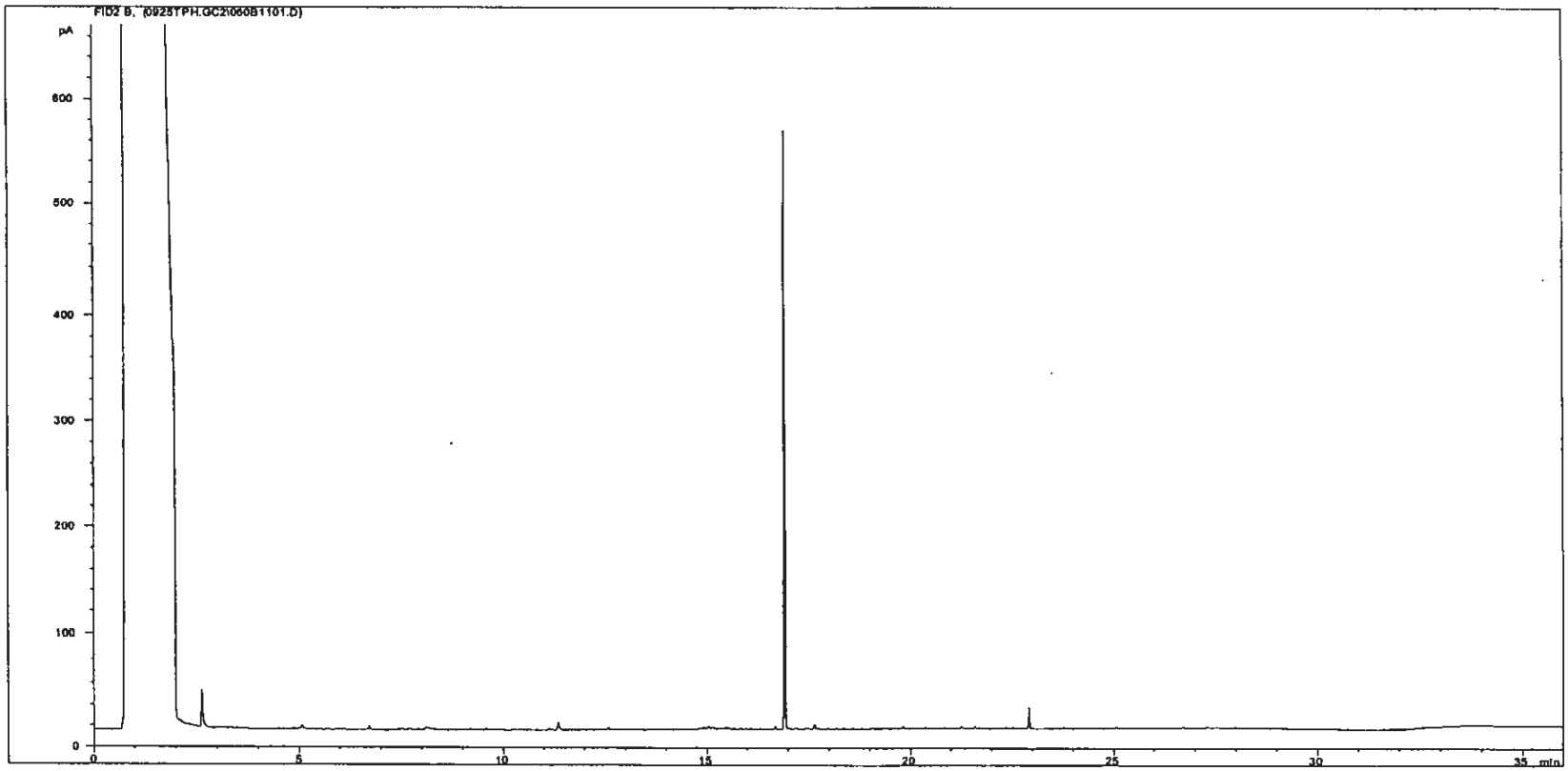
Sample ID:	EX0321202	**Job Number:**	W03_4835
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1.538	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH129
Acquisition Date/Time:	25/09/2003 17:27:01		
Datafile:	L:\DATA\0925TPH.GC2\010F1001.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID



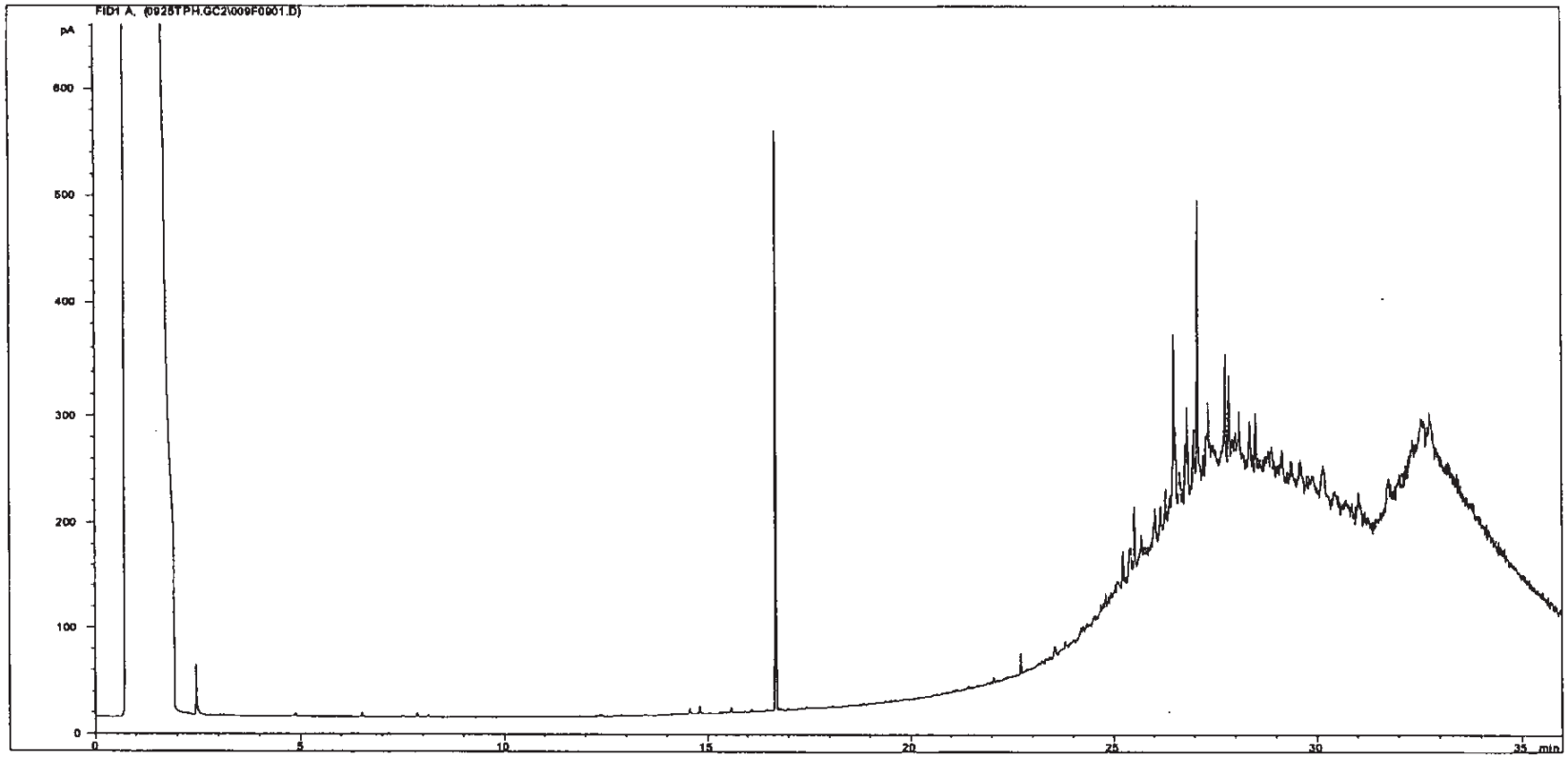
Sample ID:	EX0321204	**Job Number:**	W03_4835
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1.042	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH120
Acquisition Date/Time:	25/09/2003 18:13:37		
Datafile:	L:\DATA\0925TPH.GC2\011F1101.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID



Sample ID:	EX0321209	**Job Number:**	W03_4835
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH112
Acquisition Date/Time:	25/09/2003 18:13:37		
Datafile:	L:\DATA\0925TPH.GC2\060B1101.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID



Sample ID:	EX0321215	**Job Number:**	W03_4835
Multiplier:	0.001	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH009
Acquisition Date/Time:	25/09/2003 15:40:05		
Datafile:	L:\DATA\0925TPH.GC2\009F0901.D		

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3 @ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

TEST REPORT
SOIL SAMPLE ANALYSIS

1252

Amended Report
TES Report No. EFS/033127

Soil Mechanics
Geotechnical House
Unit 18
Deeside Industrial Estate
Deeside
Clwyd
CH5 2LR

Site: Cronton Colliery

The 4 samples described in this report were scheduled for analysis by TES Bretby on 30-Jul-2003.This is an amended report that replaces the report issued on 19 August 2003.
The analysis was completed by: 30-Aug-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of Report Notes (Page 4)

On behalf of
TES Bretby :
J Hannah

J Hannah
Project Co-ordinator

Date of Issue: 30-Aug-2003

Tests marked 'not UKAS accredited' in this report are not included
in the UKAS Accreditation Schedule for our laboratory.
TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

Units :		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/l	mg/kg	mg/kg
Method Codes :		BGCN22	GROHSA	ICPACIDS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	ICPWSS	ICTSCN28	ICTSCN28
Detection Limits :		1	0.1	10	0.5	0.1	0.5	0.5	0.5	0.10	0.5	0.5	3.0	6	0.1	1	5
UKAS Accredited :		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
TES ID Number CL/	Client Sample Description	Cyanide (Free)	GRO	SO4- (acid sol)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Zinc (MS)	Iron	SO4- (H2O sol) mg/l	CN- (total)	Sulphide
0322392	BH105 0.2	<1	<0.2*	4220	29.4	0.40	8.50	49.7	41	0.13	28.6	1.44	82.5	49500	407	2	<5
0322393	BH105 6.0	<1	<0.2*	7060	28.5	0.24	8.20	37.4	76.5	0.16	29.5	1.99	54.8	23900	2270	<1	<5
0322394	BH109 0.3	<1	<0.2*	4990	52.8	0.33	4.90	39.7	67.7	0.16	29.9	1.80	97.6	36800	1350	<1	<5
0322395	BH109 2.3	<1	<0.2*	2080	36.4	0.18	6.20	31.4	29.6	<0.10	23.9	1.58	31.2	35500	798	<1	<5

TES Bretby

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Client Name Soil Mechanics

Contact Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Amended Report

Date Printed	30 August 2003
Report Number	EFS/033127
Table Number	1

TES Bretby

Units :		mg/kg	mg/kg	mg/kg	mg/kg	pH Units	mg/kg	mg/kg		%								
Method Codes :		SCNCR6	SCNCR6	SVOCSW	TPHFID	WSLM3	WSLM4	ICPBOR	SEN9	TSBRE1								
Detection Limits :		0.1	0.5	0.2-10.0	10.0		0.5	0.5		0.001								
UKAS Accredited :		yes	yes	yes	yes	yes	yes	no	no	no								
TES ID Number CL/	Client Sample Description	Chromium vi.	Thiocyanate.	PAH by MS	TPH GCFID (AR)	pH units	Phenol Index	Boron.	Asbestos (screening)	Total Sulphur.								
0322392	BH105 0.2	<0.1	1.5	Req	1124	7.6	<0.5	0.8	NBFO	0.710								
0322393	BH105 6.0	<0.1	<0.5	Req	923	6.8	1.6	1.1		0.833								
0322394	BH109 0.3	<0.1	<0.5	Req	480	6.6	<0.5	1.0	NBFO	2.706								
0322395	BH109 2.3	<0.1	<0.5	Req	452	7.5	0.5	1.1		1.805								

TES Bretby

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Amended Report

Date Printed	30 August 2003
Report Number	EFS/033127
Table Number	1

TES Bretby

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3@ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

TEST REPORT
SOIL SAMPLE ANALYSIS

1252

Amended Report
TES Report No. EFS/033174

Soil Mechanics
Geotechnical House
Unit 18
Deeside Industrial Estate
Deeside
Clwyd
CH5 2LR

Site: Cronton Colliery

The 7 samples described in this report were scheduled for analysis by TES Bretby on 01-Aug-2003.This is an amended report that replaces the report issued on 19 August 2003.
The analysis was completed by: 30-Aug-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of Report Notes (Page 4)

On behalf of
TES Bretby :
J Hannah

J Hannah
Project Co-ordinator

Date of Issue: 30-Aug-2003

Tests marked 'not UKAS accredited' in this report are not included
in the UKAS Accreditation Schedule for our laboratory.
TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

TES Bretby

TEST REPORT
SOIL SAMPLE ANALYSIS

UKAS TESTING
1252

TES Report No. EFS/033174

Soil Mechanics
Geotechnical House
Unit 18
Deeside Industrial Estate
Deeside
Clwyd
CH5 2LR

Site: Cronton Colliery

The 7 samples described in this report were scheduled for analysis by TES Bretby on 01-Aug-2003.
The analysis was completed by: 19-Aug-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of GRO Results (Page 4)
Table of PAH (MS) Results (Pages 5 to 11)
Table of TPH (Si) banding (Page 12)
GC-FID Chromatograms (Pages 13 to 14)
Table of Report Notes (Page 15)

On behalf of
TES Bretby :
J Hannah

J Hannah
Project Co-ordinator

Date of Issue: 19-Aug-2003

Tests marked 'not UKAS accredited' in this report are not included
in the UKAS Accreditation Schedule for our laboratory.
TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

Units :		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/l	mg/kg
Method Codes :		BGCN22	GROHSA	ICPACIDS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	ICPSOIL	ICPWSS	ICTSCN28
Detection Limits :		1	0.1	10	0.5	0.1	0.5	0.5	0.5	0.10	0.5	0.5	3.0	6	0.5	0.1	1
UKAS Accredited :		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
TES ID Number CU	Client Sample Description	Cyanide (Free)	GRO (AA)	SO4-- (acid sol)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Zinc (MS)	Iron	Mercury	SO4-- (H2O sol) mg/l	CN- (total)
0322661	BH101 0.2	<1		3180	17.5	0.26	17.8	24.2	37.5	0.17	19.6	0.75	91.3	23900		1040	<1
0322662	BH101 2.0	<1		7450	23.2	0.66	14.20	90.6	111.4	0.27	22.1	1.25	305.2	27800		1700	<1
0322663	BH104 0.2	<1		1760	18.5	0.33	16.3	175.2	21.4	<0.10	42.4	1.48	71.8	93800		262	<1
0322664	BH104 1.4	<1	Req	816	9.10	<0.10	8.50	20.7	7.50	<0.10	10.10	<0.50	19.2	16400		275	<1
0322667	BH111A 6.3	<1		2350	13.80	0.27	12.90	35.7	25.9	<0.10	30.7	1.39	43.5	51000		830	<1
0322665	BH117 0.3	<1		3460	16.6	0.58	14.30	28.4	31.3	0.19	25.7	1.26	104.4		<0.5	1140	<1
0322666	BH117 3.3	<1		3650	16.9	1.79	10.40	34.2	23.1	0.22	23.3	0.70	69.1		<0.5	968	<1

TES Bretby

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Amended Report

Date Printed	30 August 2003
Report Number	EFS/033174
Table Number	1

TES Bretby

Units :		mg/kg	mg/kg	mg/kg	mg/kg	pH Units	mg/kg	mg/kg	mg/kg	%								
Method Codes :		ICTSCN28	SCNCR6	SCNCR6	SVOCSW	WSLM3	WSLM4	ICPBOR	TPHFID	TSBRE1								
Detection Limits :		5	0.1	0.5	0.2-10.0		0.5	0.5	10.0	0.001								
UKAS Accredited :		yes	yes	yes	yes	yes	yes	no	no	no								
TES ID Number CL/	Client Sample Description	Sulphide	Chromium vi.	Thiocyanate.	PAH by MS	pH units	Phenol Index	Boron.	TPH GCFID (AR) (SI)	Total Sulphur.								
0322661	BH101 0.2	<5	<0.1	0.8	Req	8.7	0.8	<0.5		1.122								
0322662	BH101 2.0	80	<0.1	1.6	Req	10.1	0.6	<0.5		0.720								
0322663	BH104 0.2	<5	<0.1	<0.5	Req	8.2	<0.5	<0.5		0.332								
0322664	BH104 1.4	<5	<0.1	0.5	Req	6.8	<0.5	<0.5	Req	0.094								
0322667	BH111A 6.3	<5	<0.1	<0.5	Req	8.5	<0.5	0.9		0.504								
0322665	BH117 0.3	<5	<0.1	<0.5	Req	8.0	0.5	0.8		0.634								
0322666	BH117 3.3	<5	<0.1	<0.5	Req	7.9	<0.5	0.7		0.495								

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Amended Report

Date Printed	30 August 2003
Report Number	EFS/033174
Table Number	1

TES Bretby

Gasoline Range Organics
(BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: Soil Mechanics: Cronton Colliery
Job Number: S033174
Directory: 08127HSA.GC6
Method: Headspace GCFID

Matrix: Soil
Date Booked in: 01-Aug-03
Date extracted: 12-Aug-03
Date Analysed: 14-Aug-03

*** Sample data with an asterisk are not UKAS accredited.**

		Concentration, (mg/kg) - as wet weight					Aliphatics			
Sample ID	**Client ID**	**Benzene**	**Toluene**	**Ethyl benzene**	**m/p-Xylene**	**o-Xylene**	**C5 - C6**	**>C6 - C7**	**>C7 - C8**	**>C8 - C10**
CL0322664	BH104 1.4m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.2	<0.2	<0.2	<0.2

Note: Benzene elutes between C6 and C7, toluene elutes between C7 and C8, ethyl benzene and the xylenes elute between C8 and C9.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH101 0.2	**Job Number:**	S03_3174
LIMS ID Number:	CL0322661	**Date Booked in:**	01-Aug-03
QC Batch Number:	1504	**Date Extracted:**	12-Aug-03
Quantitation File:	0813CCC2.D	**Date Analysed:**	13-Aug-03
Directory:	0813ABN.MS6	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	12.81	0.9	100
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	22.40	3.0	99
Anthracene	120-12-7	22.55	2.0	98
Fluoranthene	206-44-0	25.96	3.7	92
Pyrene	129-00-0	26.62	3.7	94
Benzo[a]anthracene	56-55-3	30.23	2.1	94
Chrysene	218-01-9	30.34	2.6	95
Benzo[b]fluoranthene	205-99-2	33.58	2.1	96
Benzo[k]fluoranthene	207-08-9	33.66	0.7	59
Benzo[a]pyrene	50-32-8	34.82	1.8	92
Indeno[1,2,3-cd]pyrene	193-39-5	39.57	1.3	74
Dibenzo[a,h]anthracene	53-70-3	39.68	0.2	79
Benzo[g,h,i]perylene	191-24-2	40.60	1.1	78
Total (USEPA16) PAHs	-	-	< 25.9	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	66
Naphthalene-d8	59
Acenaphthene-d10	60
Phenanthrene-d10	61
Chrysene-d12	56
Perylene-d12	68

Surrogates	% Rec
Nitrobenzene-d5	82
2-Fluorobiphenyl	92
Terphenyl-d14	94

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH101 2.0	**Job Number:**	S03_3174
LIMS ID Number:	CL0322662	**Date Booked In:**	01-Aug-03
QC Batch Number:	1504	**Date Extracted:**	12-Aug-03
Quantitation File:	0813CCC2.D	**Date Analysed:**	14-Aug-03
Directory:	0813ABN.MS6	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	12.81	0.9	98
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	19.55	0.3	86
Phenanthrene	85-01-8	22.40	1.7	98
Anthracene	120-12-7	22.55	0.4	90
Fluoranthene	206-44-0	25.96	1.1	94
Pyrene	129-00-0	26.61	1.1	97
Benzo[a]anthracene	56-55-3	30.23	0.6	96
Chrysene	218-01-9	30.33	0.7	97
Benzo[b]fluoranthene	205-99-2	33.57	0.6	99
Benzo[k]fluoranthene	207-08-9	33.61	0.3	m
Benzo[a]pyrene	50-32-8	34.81	0.4	92
Indeno[1,2,3-cd]pyrene	193-39-5	39.56	0.3	69
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	40.58	0.3	78
Total (USEPA16) PAHs	-	-	< 9.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	84
Naphthalene-d8	74
Acenaphthene-d10	75
Phenanthrene-d10	76
Chrysene-d12	73
Perylene-d12	85

Surrogates	% Rec
Nitrobenzene-d5	74
2-Fluorobiphenyl	88
Terphenyl-d14	96

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH104 0.2	**Job Number:**	S03_3174
LIMS ID Number:	CL0322663	**Date Booked In:**	01-Aug-03
QC Batch Number:	1504	**Date Extracted:**	12-Aug-03
Quantitation File:	0813CCC2.D	**Date Analysed:**	14-Aug-03
Directory:	0813ABN.MS6	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	12.81	1.1	99
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	22.41	1.3	98
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	25.97	0.2	99
Pyrene	129-00-0	26.62	0.2	99
Benzo[a]anthracene	56-55-3	30.23	0.2	81
Chrysene	218-01-9	30.33	0.3	79
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 5.4	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	90
Naphthalene-d8	83
Acenaphthene-d10	86
Phenanthrene-d10	91
Chrysene-d12	92
Perylene-d12	95

Surrogates	% Rec
Nitrobenzene-d5	71
2-Fluorobiphenyl	86
Terphenyl-d14	91

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH104 1.4	**Job Number:**	S03_3174
LIMS ID Number:	CL0322664	**Date Booked in:**	01-Aug-03
QC Batch Number:	1504	**Date Extracted:**	12-Aug-03
Quantitation File:	0813CCC2.D	**Date Analysed:**	13-Aug-03
Directory:	0813ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	-	< 0.2	-
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	103
Naphthalene-d8	101
Acenaphthene-d10	96
Phenanthrene-d10	99
Chrysene-d12	107
Perylene-d12	127

Surrogates	% Rec
Nitrobenzene-d5	79
2-Fluorobiphenyl	86
Terphenyl-d14	87

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH117 0.3	**Job Number:**	S03_3174
LIMS ID Number:	CL0322665	**Date Booked in:**	01-Aug-03
QC Batch Number:	1504	**Date Extracted:**	12-Aug-03
Quantitation File:	0813CCC2.D	**Date Analysed:**	14-Aug-03
Directory:	0813ABN.MS6	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	12.81	0.7	100
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	22.39	0.6	96
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 4.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	71
Naphthalene-d8	62
Acenaphthene-d10	67
Phenanthrene-d10	69
Chrysene-d12	76
Perylene-d12	99

Surrogates	% Rec
Nitrobenzene-d5	71
2-Fluorobiphenyl	82
Terphenyl-d14	87

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH117 3.3	**Job Number:**	S03_3174
LIMS ID Number:	CL0322666	**Date Booked in:**	01-Aug-03
QC Batch Number:	1504	**Date Extracted:**	12-Aug-03
Quantitation File:	0813CCC1.D	**Date Analysed:**	13-Aug-03
Directory:	0813ABN.MS2	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	13.05	0.8	99
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	22.57	0.8	99
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 4.3	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	93
Naphthalene-d8	92
Acenaphthene-d10	89
Phenanthrene-d10	91
Chrysene-d12	94
Perylene-d12	118

Surrogates	% Rec
Nitrobenzene-d5	76
2-Fluorobiphenyl	85
Terphenyl-d14	88

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH111A 6.3	**Job Number:**	S03_3174
LIMS ID Number:	CL0322667	**Date Booked in:**	01-Aug-03
QC Batch Number:	1504	**Date Extracted:**	12-Aug-03
Quantitation File:	0813CCC2.D	**Date Analysed:**	14-Aug-03
Directory:	0813ABN.MS2	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	13.05	1.1	99
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	19.77	0.2	78
Phenanthrene	85-01-8	22.59	1.9	99
Anthracene	120-12-7	22.71	0.3	98
Fluoranthene	206-44-0	26.14	0.3	72
Pyrene	129-00-0	26.77	0.4	81
Benzo[a]anthracene	56-55-3	30.38	0.4	95
Chrysene	218-01-9	30.50	0.5	91
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	35.00	0.2	61
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	40.66	0.3	71
Total (USEPA16) PAHs	-	-	< 6.8	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	93
Naphthalene-d8	92
Acenaphthene-d10	92
Phenanthrene-d10	93
Chrysene-d12	96
Perylene-d12	93

Surrogates	% Rec
Nitrobenzene-d5	72
2-Fluorobiphenyl	81
Terphenyl-d14	85

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Soil Mechanics : Cronton Colliery
Job Number: S03_3174
QC Batch Number: 1498
Directory: C:\TES\DATA\0813THP.GC7\077B2101.D
Method: ASE

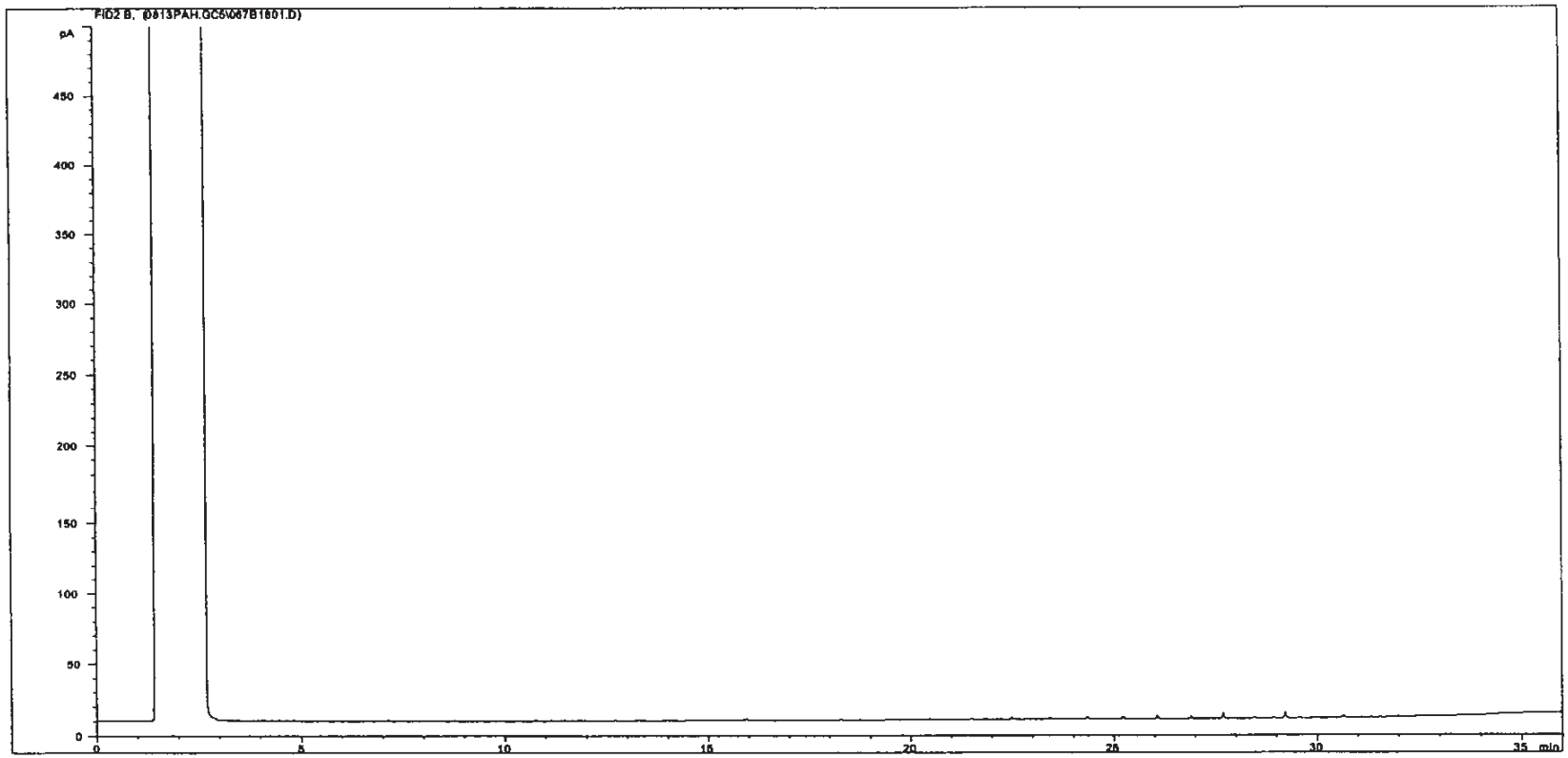
Separation: Silica gel
Eluents: Pentane, DCM

Matrix: Soil
Date Booked in 08/01/2003
Date Extracted 08/12/2003
Date Analysed: 15/08/2003

This sample data is not UKAS accredited.

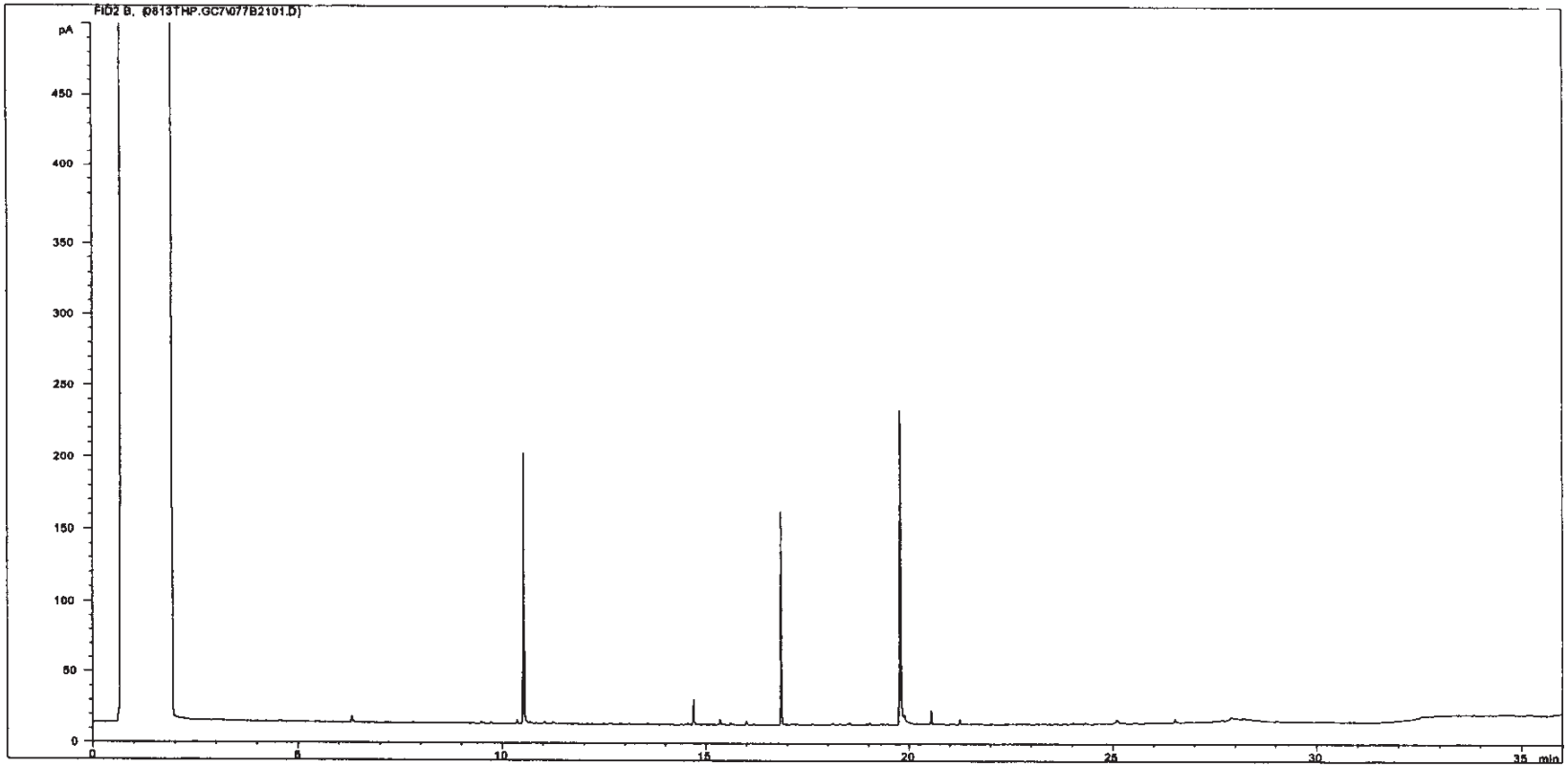
		Concentration, (mg/kg) - as wet weight									
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35	
Sample ID	**Client ID**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**	**Aliphatics**	**Aromatics**
CL0322664	BH104 1.4	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aliphatics Fraction.



Sample ID:	CL0322664ALI	**Job Number:**	S03_3174
Multiplier:	0.1	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNB.M	**Client Sample Ref:**	BH104 1.4
Acquisition Date/Time:	14/08/2003 06:23:44		
Datafile:	D:\TES\DATA\0813PAH.GC5\067B1801.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID Aromatics Fraction.



Sample ID:	CL0322664ARO	**Job Number:**	S03_3174
Multiplier:	0.1	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH104 1.4
Acquisition Date/Time:	15/08/2003 00:25:10		
Datafile:	C:\TES\DATA\0813THP.GC7\077B2101.D		

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3@ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

TEST REPORT
SOIL SAMPLE ANALYSIS

1252

TES Report No. EFS/033198

Soil Mechanics
Geotechnical House
Unit 18
Deeside Industrial Estate
Deeside
Clwyd
CH5 2LR

Site: Cronton Colliery

The 10 samples described in this report were scheduled for analysis by TES Bretby on 04-Aug-2003.
The analysis was completed by: 27-Aug-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of PAH (MS) Results (Pages 4 to 11)
Table of TPH Texas banding (Page 12)
GC-FID Chromatograms (Pages 13 to 14)
Table of Report Notes (Page 15)

On behalf of
TES Bretby :
J Hannah

J Hannah
Project Co-ordinator

Date of Issue: 27-Aug-2003

Tests marked 'not UKAS accredited' in this report are not included
in the UKAS Accreditation Schedule for our laboratory.
TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

Units :		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/l	mg/kg	mg/kg
Method Codes :		BGCN22	GROHSA	ICPACIDS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	ICPWSS	ICTSCN28	ICTSCN28
Detection Limits :		1	0.1	10	0.5	0.1	0.5	0.5	0.5	0.10	0.5	0.5	3.0	6	0.1	1	5
UKAS Accredited :		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
TES ID Number CL/	Client Sample Description	Cyanide (Free)	GRO	SO4-- (acid sol)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Zinc (MS)	Iron	SO4-- (H2O sol) mg/l	CN- (total)	Sulphide
0322780	BH106 0.1	<1		2170	6.60	0.19	10.80	19.9	45.2	<0.10	13.90	0.82	74.9	16500	800	<1	16
0322781	BH106 1.0	<1		403	1.60	<0.10	9.50	1.30	2.30	<0.10	11.60	0.55	14.00	11100		<1	<5
0322777	BH111 0.3	<1		9940	29.7	0.88	8.00	34.1	37.9	0.14	24.4	1.73	220.1	41000	2000	<1	<5
0322778	BH113 0.3	<1		671	4.20	0.51	8.60	11.00	66.4	<0.10	8.80	1.81	77.9	8490	55.4	<1	42
0322779	BH113 3.0																
0322783	BH116 0.3	<1	<0.2*	8460	14.20	<0.10	4.20	34.5	30.8	<0.10	20.5	1.37	23.7	12600	2030	<1	<5
0322784	BH116 1.3	<1		2110	18.9	0.55	16.6	47.3	74.8	0.13	19.6	1.17	116.5	36200	848	<1	<5
0322785	BH120 0.3	<1	<0.2*	7470	17.1	0.22	4.70	43.2	33.8	0.11	23.4	1.46	36.3	23000	2020	<1	<5
0322787	BH120 2.0	<1		935	9.70	0.10	8.00	25.8	11.30	0.42	26.9	0.64	70.7	39300	324	<1	<5

TES Bretby
PO Box 100, Bretby Business Park,
Burton-on-Trent, Staffordshire, DE15 0XD
Tel +44 (0) 1283 554400
Fax +44 (0) 1283 554422

Client Name Soil Mechanics

Contact Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Date Printed	27 August 2003
Report Number	EFS/033198
Table Number	1

TES Bretby

Units :		mg/kg	mg/kg	mg/kg	mg/kg	pH Units	mg/kg	mg/kg		%	% M/M							
Method Codes :		SCNCR6	SCNCR6	SVOCSW	TPHFID	WSLM3	WSLM4	ICPBOR	SEN9	TSBRE1	WSLM59							
Detection Limits :		0.1	0.5	0.2-10.0	10.0		0.5	0.5		0.001	0.02							
UKAS Accredited :		yes	yes	yes	yes	yes	yes	no	no	no	no							
TES ID Number CL/	Client Sample Description	Chromium vi.	Thiocyanate.	PAH by MS	TPH GCFID (AR)	pH units	Phenol Index	Boron.	Asbestos (screening)	Total Sulphur.	F.O.C. %							
0322780	BH106 0.1	<0.1	0.6	Req		8.3	<0.5	0.8		0.182								
0322781	BH106 1.0	0.3	1.3	Req		8.8	<0.5	0.5		0.028								
0322777	BH111 0.3	<0.1	<0.5	Req		7.4	<0.5	0.5		1.582								
0322778	BH113 0.3	<0.1	0.5	Req		10.1	<0.5	<0.5		0.398								
0322779	BH113 3.0										1.07							
0322783	BH116 0.3	<0.1	<0.5	Req	1890	7.2	<0.5	1.1	NBFO	1.541								
0322784	BH116 1.3	<0.1	0.6	Req		7.0	<0.5	0.9		0.466								
0322785	BH120 0.3	<0.1	<0.5	Req	1602	7.1	<0.5	0.9	NBFO	1.607								
0322787	BH120 2.0	<0.1	<0.5	Req		8.3	<0.5	1.4		1.262								
0322786	BH120 5.0										1.41							

TES Bretby

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Date Printed	27 August 2003
Report Number	EFS/033198
Table Number	1

TES Bretby

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH111 0.3	**Job Number:**	S03_3198
LIMS ID Number:	CL0322777	**Date Booked in:**	04-Aug-03
QC Batch Number:	1522	**Date Extracted:**	14-Aug-03
Quantitation File:	0818CCC2.D	**Date Analysed:**	18-Aug-03
Directory:	0818ABN.MS2	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	12.83	1.8	99
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	19.59	0.3	75
Phenanthrene	85-01-8	22.40	2.1	99
Anthracene	120-12-7	22.53	0.3	97
Fluoranthene	206-44-0	25.95	1.0	78
Pyrene	129-00-0	26.59	1.1	77
Benzo[a]anthracene	56-55-3	30.20	0.7	88
Chrysene	218-01-9	30.31	0.9	87
Benzo[b]fluoranthene	205-99-2	33.53	0.7	96
Benzo[k]fluoranthene	207-08-9	33.59	0.6	m
Benzo[a]pyrene	50-32-8	34.71	0.8	93
Indeno[1,2,3-cd]pyrene	193-39-5	39.40	0.3	95
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	40.33	0.3	95
Total (USEPA16) PAHs	-	-	< 11.4	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	86
Naphthalene-d8	84
Acenaphthene-d10	83
Phenanthrene-d10	81
Chrysene-d12	80
Perylene-d12	67

Surrogates	% Rec
Nitrobenzene-d5	71
2-Fluorobiphenyl	86
Terphenyl-d14	92

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH113 0.3	**Job Number:**	S03_3198
LIMS ID Number:	CL0322778	**Date Booked in:**	04-Aug-03
QC Batch Number:	1522	**Date Extracted:**	14-Aug-03
Quantitation File:	0818CCC2.D	**Date Analysed:**	19-Aug-03
Directory:	0818ABN.MS2	**Matrix:**	Soil
Dilution:	20.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 4.0	-
Acenaphthylene	208-96-8	-	< 4.0	-
Acenaphthene	83-32-9	-	< 4.0	-
Fluorene	86-73-7	-	< 4.0	-
Phenanthrene	85-01-8	-	< 4.0	-
Anthracene	120-12-7	-	< 4.0	-
Fluoranthene	206-44-0	-	< 4.0	-
Pyrene	129-00-0	-	< 4.0	-
Benzo[a]anthracene	56-55-3	-	< 4.0	-
Chrysene	218-01-9	-	< 4.0	-
Benzo[b]fluoranthene	205-99-2	-	< 4.0	-
Benzo[k]fluoranthene	207-08-9	-	< 4.0	-
Benzo[a]pyrene	50-32-8	-	< 4.0	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 4.0	-
Dibenzo[a,h]anthracene	53-70-3	-	< 4.0	-
Benzo[g,h,i]perylene	191-24-2	-	< 4.0	-
Total (USEPA16) PAHs	-	-	< 64.0	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	92
Naphthalene-d8	86
Acenaphthene-d10	87
Phenanthrene-d10	84
Chrysene-d12	73
Perylene-d12	54

Surrogates	% Rec
Nitrobenzene-d5	94
2-Fluorobiphenyl	101
Terphenyl-d14	106

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH106 0.1	**Job Number:**	S03_3198
LIMS ID Number:	CL0322780	**Date Booked in:**	04-Aug-03
QC Batch Number:	1522	**Date Extracted:**	14-Aug-03
Quantitation File:	0818CCC2.D	**Date Analysed:**	19-Aug-03
Directory:	0818ABN.MS2	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	12.83	0.5	99
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	22.40	0.6	99
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	25.95	0.5	80
Pyrene	129-00-0	26.58	0.6	80
Benzo[a]anthracene	56-55-3	30.19	0.3	90
Chrysene	218-01-9	30.31	0.4	98
Benzo[b]fluoranthene	205-99-2	33.52	0.5	93
Benzo[k]fluoranthene	207-08-9	33.58	0.3	m
Benzo[a]pyrene	50-32-8	34.68	0.4	91
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 5.4	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	86
Naphthalene-d8	85
Acenaphthene-d10	86
Phenanthrene-d10	82
Chrysene-d12	75
Perylene-d12	51

Surrogates	% Rec
Nitrobenzene-d5	77
2-Fluorobiphenyl	87
Terphenyl-d14	100

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH106 1.0	**Job Number:**	S03_3198
LIMS ID Number:	CL0322781	**Date Booked in:**	04-Aug-03
QC Batch Number:	1522	**Date Extracted:**	14-Aug-03
Quantitation File:	0815CCC1.D	**Date Analysed:**	15-Aug-03
Directory:	0815ABN.MS2	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	-	< 0.2	-
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	93
Naphthalene-d8	90
Acenaphthene-d10	90
Phenanthrene-d10	83
Chrysene-d12	74
Perylene-d12	78

Surrogates	% Rec
Nitrobenzene-d5	77
2-Fluorobiphenyl	88
Terphenyl-d14	97

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH116 0.3	**Job Number:**	S03_3198
LIMS ID Number:	CL0322783	**Date Booked In:**	04-Aug-03
QC Batch Number:	1522	**Date Extracted:**	14-Aug-03
Quantitation File:	0819CCC3.D	**Date Analysed:**	19-Aug-03
Directory:	0819ABN.MS6	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	12.58	4.1	97
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	17.76	0.4	89
Fluorene	86-73-7	19.31	1.5	86
Phenanthrene	85-01-8	22.19	9.3	96
Anthracene	120-12-7	22.32	1.4	98
Fluoranthene	206-44-0	25.74	0.8	93
Pyrene	129-00-0	26.39	1.3	92
Benzo[a]anthracene	56-55-3	30.02	1.5	88
Chrysene	218-01-9	30.12	1.5	92
Benzo[b]fluoranthene	205-99-2	33.31	0.9	91
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	34.51	0.9	84
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	40.26	0.7	69
Total (USEPA16) PAHs	-	-	< 24.9	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	89
Naphthalene-d8	85
Acenaphthene-d10	81
Phenanthrene-d10	76
Chrysene-d12	75
Perylene-d12	56

Surrogates	% Rec
Nitrobenzene-d5	78
2-Fluorobiphenyl	93
Terphenyl-d14	93

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH116 1.3	**Job Number:**	S03_3198
LIMS ID Number:	CL0322784	**Date Booked In:**	04-Aug-03
QC Batch Number:	1522	**Date Extracted:**	14-Aug-03
Quantitation File:	0819CCC3.D	**Date Analysed:**	20-Aug-03
Directory:	0819ABN.MS6	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	12.57	1.0	97
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	19.30	0.4	80
Phenanthrene	85-01-8	22.16	2.0	95
Anthracene	120-12-7	22.30	0.4	97
Fluoranthene	206-44-0	25.74	0.4	92
Pyrene	129-00-0	26.38	0.4	98
Benzo[a]anthracene	56-55-3	30.00	0.4	87
Chrysene	218-01-9	30.09	0.5	84
Benzo[b]fluoranthene	205-99-2	33.27	0.3	95
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	34.46	0.3	94
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	40.23	0.3	78
Total (USEPA16) PAHs	-	-	< 7.5	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	118
Naphthalene-d8	113
Acenaphthene-d10	107
Phenanthrene-d10	106
Chrysene-d12	105
Perylene-d12	102

Surrogates	% Rec
Nitrobenzene-d5	74
2-Fluorobiphenyl	94
Terphenyl-d14	93

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH120 0.3	**Job Number:**	S03_3198
LIMS ID Number:	CL0322785	**Date Booked In:**	04-Aug-03
QC Batch Number:	1522	**Date Extracted:**	14-Aug-03
Quantitation File:	0819CCC3.D	**Date Analysed:**	20-Aug-03
Directory:	0819ABN.MS6	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	12.58	3.8	98
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	19.31	0.5	80
Phenanthrene	85-01-8	22.18	4.8	96
Anthracene	120-12-7	22.31	1.0	97
Fluoranthene	206-44-0	25.74	0.8	91
Pyrene	129-00-0	26.39	1.1	94
Benzo[a]anthracene	56-55-3	30.01	1.0	92
Chrysene	218-01-9	30.12	1.2	97
Benzo[b]fluoranthene	205-99-2	33.30	0.8	88
Benzo[k]fluoranthene	207-08-9	33.36	0.2	m
Benzo[a]pyrene	50-32-8	34.51	0.6	93
Indeno[1,2,3-cd]pyrene	193-39-5	39.27	0.2	71
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	40.27	0.8	75
Total (USEPA16) PAHs	-	-	< 17.5	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	91
Naphthalene-d8	86
Acenaphthene-d10	84
Phenanthrene-d10	80
Chrysene-d12	82
Perylene-d12	69

Surrogates	% Rec
Nitrobenzene-d5	71
2-Fluorobiphenyl	90
Terphenyl-d14	86

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH120 2.0	**Job Number:**	S03_3198
LIMS ID Number:	CL0322787	**Date Booked in:**	04-Aug-03
QC Batch Number:	1522	**Date Extracted:**	14-Aug-03
Quantitation File:	0819CCC3.D	**Date Analysed:**	19-Aug-03
Directory:	0819ABN.MS6	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	12.57	0.7	99
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	22.14	0.8	97
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	30.07	0.2	86
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	40.16	0.2	70
Total (USEPA16) PAHs	-	-	< 4.4	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	90
Naphthalene-d8	84
Acenaphthene-d10	81
Phenanthrene-d10	74
Chrysene-d12	72
Perylene-d12	88

Surrogates	% Rec
Nitrobenzene-d5	68
2-Fluorobiphenyl	88
Terphenyl-d14	92

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Total Petroleum Hydrocarbons (TPH) Carbon Ranges

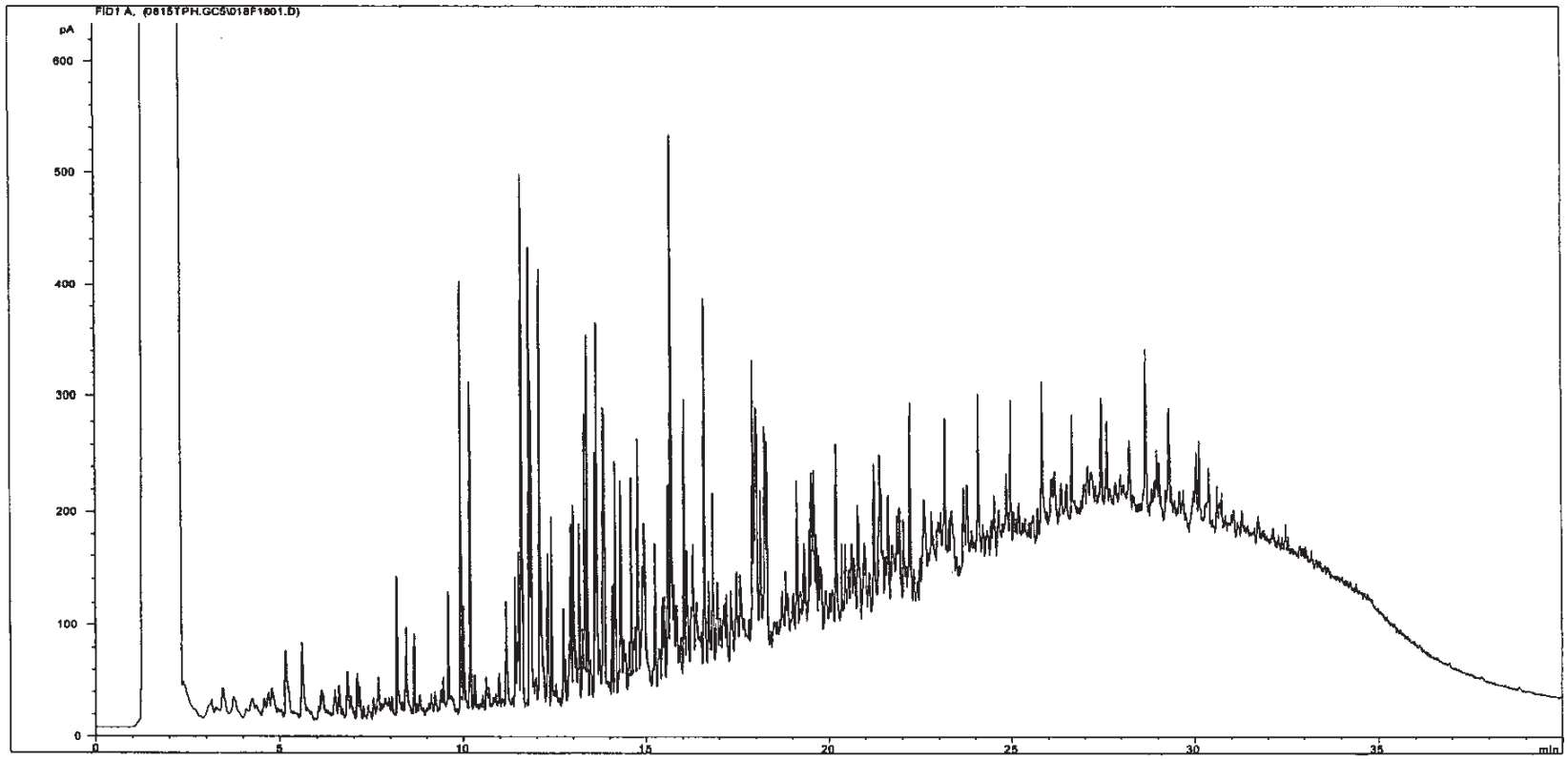
Customer and Site Details: Soil Mechanics : Cronton Colliery
Job Number: S03_3198
QC Batch Number: 1517
Directory: D:\TES\DATA\0815TPH.GC5\019F1901.D
Method: ASE

Matrix: Soil
Date Booked In: 08/04/2003
Date Extracted: 13/08/2003
Date Analysed: 16/08/2003

*** Sample data with an asterisk are not UKAS accredited.**

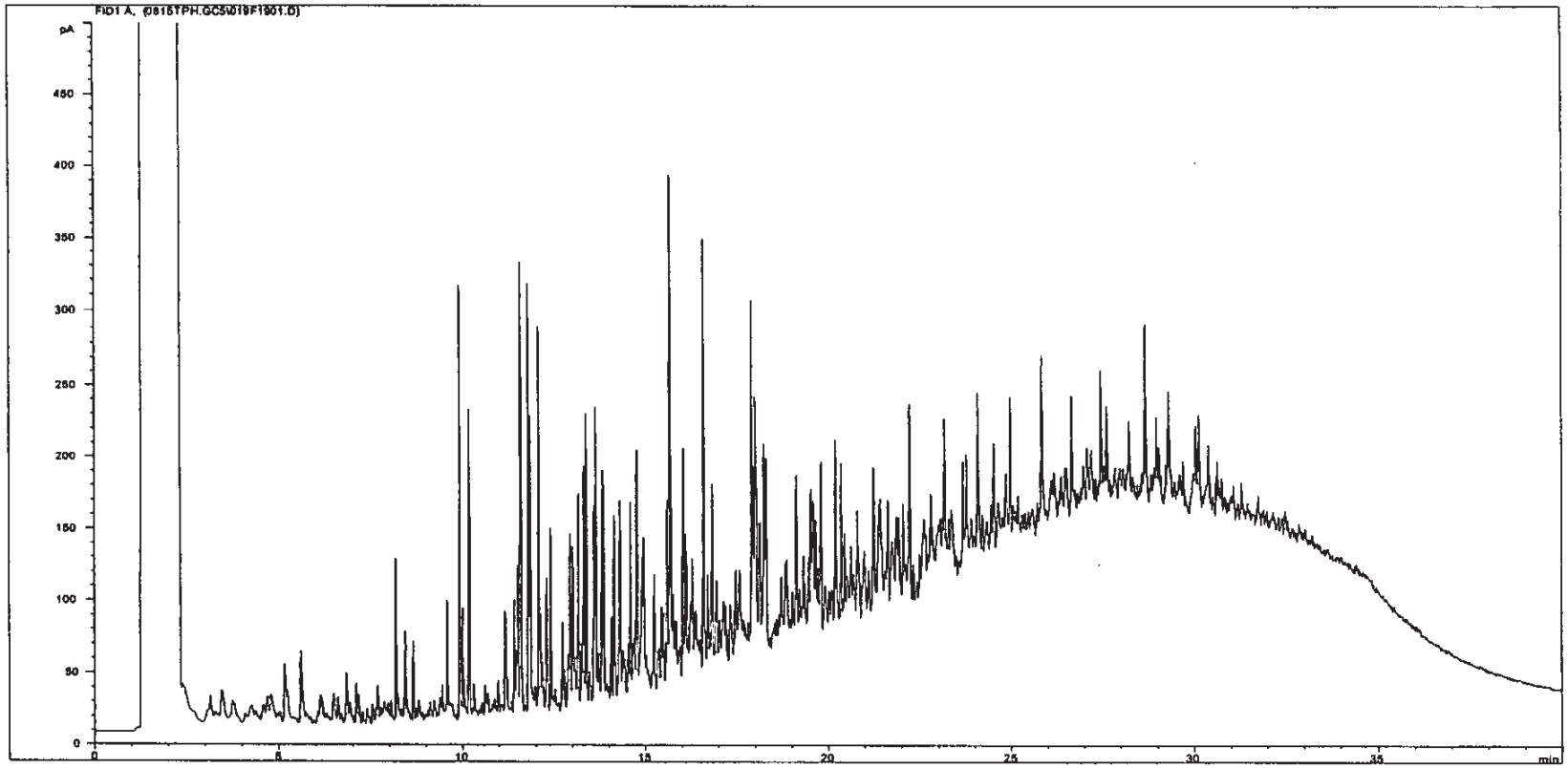
		Concentration, (mg/kg) - as wet weight				
Sample ID	**Client ID**	**>C8 - C10**	**>C10 - C12**	**>C12 - C16**	**>C16 - C21**	**>C21 - C35**
CL0322783	BH116 0.3	18.2	27.9	194	378	1260
CL0322785	BH120 0.3	14.5	21.9	140	304	1070

Petroleum Hydrocarbons (C8 to C37) by GC/FID



Sample ID:	CL0322783	**Job Number:**	S03_3198
Multiplier:	0.1	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH116 0.3
Acquisition Date/Time:	16/08/2003 05:51:57		
Datafile:	D:\TES\DATA\0815TPH.GC5\018F1801.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID



Sample ID:	CL0322785	**Job Number:**	S03_3198
Multiplier:	0.1	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH120 0.3
Acquisition Date/Time:	16/08/2003 06:42:33		
Datafile:	D:\TES\DATA\0815TPH.GC5\019F1901.D		

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3@ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

TEST REPORT
SOIL SAMPLE ANALYSIS

1252

TES Report No. EFS/033199

Soil Mechanics
Geotechnical House
Unit 18
Deeside Industrial Estate
Deeside
Clwyd
CH5 2LR

Site: Cronton Colliery

The 14 samples described in this report were scheduled for analysis by TES Bretby on 04-Aug-2003.
The analysis was completed by: 19-Aug-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of PAH (MS) Results (Pages 4 to 16)
Table of TPH Texas banding (Page 17)
GC-FID Chromatograms (Pages 18 to 22)
Table of Report Notes (Page 23)

On behalf of
TES Bretby :
J Hannah

J Hannah
Project Co-ordinator

Date of Issue: 19-Aug-2003

Tests marked 'not UKAS accredited' in this report are not included
in the UKAS Accreditation Schedule for our laboratory.
TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

TEST REPORT
SOIL SAMPLE ANALYSIS

1252

Amended Report
TES Report No. EFS/033199

Soil Mechanics
Geotechnical House
Unit 18
Deeside Industrial Estate
Deeside
Clwyd
CH5 2LR

Site: Cronton Colliery

The 14 samples described in this report were scheduled for analysis by TES Bretby on 04-Aug-2003.This is an amended report that replaces the report issued on 19 August 2003.
The analysis was completed by: 30-Aug-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of Report Notes (Page 4)

On behalf of
TES Bretby :
J Hannah

J Hannah
Project Co-ordinator

Date of Issue: 30-Aug-2003

Tests marked 'not UKAS accredited' in this report are not included
in the UKAS Accreditation Schedule for our laboratory.
TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

Units :		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/l	mg/kg	mg/kg
Method Codes :		BGCN22	GROHSA	ICPACIDS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	ICPWSS	ICTSCN28	ICTSCN28
Detection Limits :		1	0.1	10	0.5	0.1	0.5	0.5	0.5	0.10	0.5	0.5	3.0	6	0.1	1	5
UKAS Accredited :		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
TES ID Number CL/	Client Sample Description	Cyanide (Free)	GRO	SO4-- (acid sol)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Zinc (MS)	Iron	SO4-- (H2O sol) mg/l	CN- (total)	Sulphide
0322799	BH102A 0.2	<1		16700	22.4	0.26	8.50	47.5	40.8	0.10	36.3	1.55	52	29100		<1	<5
0322800	BH102A 1.7	<1		37500	22.5	<0.10	12.10	42.1	38	<0.10	14.50	1.21	24.6	17000	1930	<1	<5
0322801	BH102A 5.6	<1	<0.2	878	3.10	<0.10	12.30	7.50	9.70	<0.10	9.80	<0.50	19.9	11200		<1	<5
0322790	BH103 0.3	<1	<0.2*	17600	35.7	0.12	5.90	38.4	74.7	0.18	20.6	2.58	50			<1	<5
0322791	BH103 3.0	<1		17000	24.1	0.27	10.30	48.4	42.7	<0.10	26.2	1.57	87.4	31900	2210	<1	<5
0322796	BH103 7.1																
0322792	BH124 0.3	<1		110	5.20	<0.10	23	14.40	6.50	<0.10	25.7	0.71	31.2	19400	28.7	<1	<5
0322788	BH126 0.3	<1	<0.2	100	6.20	0.10	24.4	15.00	9.70	<0.10	22.2	<0.50	32.1	22600		<1	<5
0322789	BH126 1.0	<1		72	6.20	<0.10	27.3	14.70	7.60	<0.10	32.3	0.54	44.2	25000	25.3	<1	<5
0322802	BH127 0.3	<1	<0.2	147	5.70	<0.10	21	14.90	6.70	<0.10	26.3	0.51	35.2	17600		<1	<5
0322797	BH129 0.3	<1		558	15.6	0.30	23.6	32	46.6	<0.10	23.2	0.70	74.3	19800		<1	<5
0322798	BH129 2.0	<1	<0.2	1060	8.10	0.27	18.5	31.6	42.3	<0.10	23	0.84	76.7	17200	215	<1	<5
0322794	BH130 0.3	<1		528	8.30	<0.10	29.1	8.10	30	<0.10	10.20	1.03	34.7	120000	20.6	<1	<5
0322795	BH130 1.0	<1		78	6.40	<0.10	21.9	13.10	6.80	<0.10	27.4	<0.50	33.7	22000		<1	<5

TES Bretby

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Client Name Soil Mechanics

Contact Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Amended Report

Date Printed	30 August 2003
Report Number	EFS/033199
Table Number	1

TES Bretby

	Units :	mg/kg	mg/kg	mg/kg	mg/kg	pH Units	mg/kg	mg/kg		%	% M/M							
	Method Codes :	SCNCR6	SCNCR6	SVOCSW	TPHFID	WSLM3	WSLM4	ICPBOR	SEN9	TSBRE1	WSLM59							
	Detection Limits :	0.1	0.5	0.2-10.0	10.0		0.5	0.5		0.001	0.02							
	UKAS Accredited :	yes	yes	yes	yes	yes	yes	no	no	no	no							
TES ID Number CL/	Client Sample Description	Chromium vi.	Thiocyanate.	PAH by MS	TPH GCFID (AR)	pH units	Phenol Index	Boron.	Asbestos (screening)	Total Sulphur.	F.O.C. %							
0322799	BH102A 0.2	<0.1	<0.5	Req		5.8	<0.5	1.0		1.523								
0322800	BH102A 1.7	<0.1	<0.5	Req		5.6	<0.5	2.0		2.257								
0322801	BH102A 5.6	<0.1	2.2	Req	36	7.9	<0.5	0.9		0.110								
0322790	BH103 0.3	<0.1	<0.5	Req	467	4.3	0.7	0.7		2.096								
0322791	BH103 3.0	<0.1	<0.5	Req		6.5	0.8	1.0	NBFO	1.376								
0322796	BH103 7.1										0.223							
0322792	BH124 0.3	0.9	15.5	Req		8.0	<0.5	<0.5		0.030								
0322788	BH126 0.3	0.2	3.6	Req	44	7.9	<0.5	<0.5	NBFO	0.027								
0322789	BH126 1.0	0.2	4.4	Req		7.9	<0.5	3.0		0.021	0.254							
0322802	BH127 0.3	<0.1	0.8	Req	16	8.6	<0.5	<0.5		0.006								
0322797	BH129 0.3	<0.1	1.1	Req		9.4	<0.5	<0.5		0.070								
0322798	BH129 2.0	<0.1	0.5	Req	101	10.0	<0.5	0.7		0.014								
0322794	BH130 0.3	0.6	11.4	Req		7.4	<0.5	<0.5		0.065								
0322795	BH130 1.0	<0.1	1.1	Req		8.3	<0.5	<0.5		0.019								

TES Bretby

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Amended Report

Date Printed	30 August 2003
Report Number	EFS/033199
Table Number	1

TES Bretby

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH126 0.3	**Job Number:**	S03_3199
LIMS ID Number:	CL0322788	**Date Booked in:**	04-Aug-03
QC Batch Number:	1521	**Date Extracted:**	14-Aug-03
Quantitation File:	0815CCC2.D	**Date Analysed:**	16-Aug-03
Directory:	0815ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	-	< 0.2	-
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	89
Naphthalene-d8	88
Acenaphthene-d10	85
Phenanthrene-d10	86
Chrysene-d12	92
Perylene-d12	89

Surrogates	% Rec
Nitrobenzene-d5	81
2-Fluorobiphenyl	89
Terphenyl-d14	92

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH126 1.0	**Job Number:**	S03_3199
LIMS ID Number:	CL0322789	**Date Booked in:**	04-Aug-03
QC Batch Number:	1521	**Date Extracted:**	14-Aug-03
Quantitation File:	0815CCC2.D	**Date Analysed:**	16-Aug-03
Directory:	0815ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	-	< 0.2	-
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	87
Naphthalene-d8	87
Acenaphthene-d10	83
Phenanthrene-d10	84
Chrysene-d12	92
Perylene-d12	93

Surrogates	% Rec
Nitrobenzene-d5	79
2-Fluorobiphenyl	87
Terphenyl-d14	91

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH103 0.3	**Job Number:**	S03_3199
LIMS ID Number:	CL0322790	**Date Booked In:**	04-Aug-03
QC Batch Number:	1521	**Date Extracted:**	14-Aug-03
Quantitation File:	0815CCC3.D	**Date Analysed:**	16-Aug-03
Directory:	0815ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	12.02	3.0	99
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	18.66	0.4	80
Phenanthrene	85-01-8	21.49	2.9	97
Anthracene	120-12-7	21.63	0.3	91
Fluoranthene	206-44-0	25.02	0.4	95
Pyrene	129-00-0	25.66	0.5	90
Benzo[a]anthracene	56-55-3	29.28	0.5	96
Chrysene	218-01-9	29.37	0.6	96
Benzo[b]fluoranthene	205-99-2	32.30	0.4	94
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	33.24	0.2	72
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	38.76	0.3	60
Total (USEPA16) PAHs	-	-	< 10.5	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	79
Naphthalene-d8	81
Acenaphthene-d10	79
Phenanthrene-d10	75
Chrysene-d12	71
Perylene-d12	57

Surrogates	% Rec
Nitrobenzene-d5	78
2-Fluorobiphenyl	88
Terphenyl-d14	98

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH103 3.0	**Job Number:**	S03_3199
LIMS ID Number:	CL0322791	**Date Booked In:**	04-Aug-03
QC Batch Number:	1521	**Date Extracted:**	14-Aug-03
Quantitation File:	0815CCC3.D	**Date Analysed:**	16-Aug-03
Directory:	0815ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	12.02	2.4	99
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	21.48	2.1	100
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	25.01	0.3	94
Pyrene	129-00-0	25.65	0.3	95
Benzo[a]anthracene	56-55-3	29.26	0.3	98
Chrysene	218-01-9	29.36	0.4	96
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 7.6	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	81
Naphthalene-d8	81
Acenaphthene-d10	78
Phenanthrene-d10	77
Chrysene-d12	78
Perylene-d12	77

Surrogates	% Rec
Nitrobenzene-d5	75
2-Fluorobiphenyl	85
Terphenyl-d14	92

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH124 0.3	**Job Number:**	S03_3199
LIMS ID Number:	CL0322792	**Date Booked in:**	04-Aug-03
QC Batch Number:	1521	**Date Extracted:**	14-Aug-03
Quantitation File:	0815CCC2.D	**Date Analysed:**	16-Aug-03
Directory:	0815ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	-	< 0.2	-
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	89
Naphthalene-d8	88
Acenaphthene-d10	84
Phenanthrene-d10	83
Chrysene-d12	91
Perylene-d12	93

Surrogates	% Rec
Nitrobenzene-d5	75
2-Fluorobiphenyl	82
Terphenyl-d14	90

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH130 0.3	**Job Number:**	S03_3199
LIMS ID Number:	CL0322794	**Date Booked in:**	04-Aug-03
QC Batch Number:	1521	**Date Extracted:**	14-Aug-03
Quantitation File:	0815CCC2.D	**Date Analysed:**	16-Aug-03
Directory:	0815ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	-	< 0.2	-
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	82
Naphthalene-d8	82
Acenaphthene-d10	78
Phenanthrene-d10	78
Chrysene-d12	85
Perylene-d12	85

Surrogates	% Rec
Nitrobenzene-d5	81
2-Fluorobiphenyl	90
Terphenyl-d14	90

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH130 1.0	**Job Number:**	S03_3199
LIMS ID Number:	CL0322795	**Date Booked in:**	04-Aug-03
QC Batch Number:	1521	**Date Extracted:**	14-Aug-03
Quantitation File:	0815CCC2.D	**Date Analysed:**	16-Aug-03
Directory:	0815ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	-	< 0.2	-
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	86
Naphthalene-d8	85
Acenaphthene-d10	81
Phenanthrene-d10	81
Chrysene-d12	86
Perylene-d12	85

Surrogates	% Rec
Nitrobenzene-d5	69
2-Fluorobiphenyl	75
Terphenyl-d14	80

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH129 0.3	**Job Number:**	S03_3199
LIMS ID Number:	CL0322797	**Date Booked in:**	04-Aug-03
QC Batch Number:	1521	**Date Extracted:**	14-Aug-03
Quantitation File:	0815CCC2.D	**Date Analysed:**	15-Aug-03
Directory:	0815ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	-	< 0.2	-
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	90
Naphthalene-d8	89
Acenaphthene-d10	85
Phenanthrene-d10	84
Chrysene-d12	93
Perylene-d12	94

Surrogates	% Rec
Nitrobenzene-d5	79
2-Fluorobiphenyl	87
Terphenyl-d14	88

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH129 2.0	**Job Number:**	S03_3199
LIMS ID Number:	CL0322798	**Date Booked in:**	04-Aug-03
QC Batch Number:	1521	**Date Extracted:**	14-Aug-03
Quantitation File:	0815CCC3.D	**Date Analysed:**	16-Aug-03
Directory:	0815ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	12.01	0.3	98
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	17.13	0.2	96
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	21.48	1.3	99
Anthracene	120-12-7	21.62	0.3	91
Fluoranthene	206-44-0	25.00	1.5	96
Pyrene	129-00-0	25.64	1.2	100
Benzo[a]anthracene	56-55-3	29.25	0.6	94
Chrysene	218-01-9	29.36	0.7	97
Benzo[b]fluoranthene	205-99-2	32.27	0.6	98
Benzo[k]fluoranthene	207-08-9	32.34	0.3	99
Benzo[a]pyrene	50-32-8	33.21	0.6	97
Indeno[1,2,3-cd]pyrene	193-39-5	37.60	0.3	80
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	38.71	0.4	90
Total (USEPA16) PAHs	-	-	< 8.9	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	83
Naphthalene-d8	82
Acenaphthene-d10	80
Phenanthrene-d10	82
Chrysene-d12	91
Perylene-d12	94

Surrogates	% Rec
Nitrobenzene-d5	82
2-Fluorobiphenyl	89
Terphenyl-d14	87

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH102A 0.2	**Job Number:**	S03_3199
LIMS ID Number:	CL0322799	**Date Booked in:**	04-Aug-03
QC Batch Number:	1521	**Date Extracted:**	14-Aug-03
Quantitation File:	0815CCC3.D	**Date Analysed:**	16-Aug-03
Directory:	0815ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	12.02	2.5	99
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	21.50	2.9	99
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	25.02	0.5	94
Pyrene	129-00-0	25.66	0.5	95
Benzo[a]anthracene	56-55-3	29.28	0.5	98
Chrysene	218-01-9	29.37	0.6	99
Benzo[b]fluoranthene	205-99-2	32.30	0.4	96
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	33.24	0.3	80
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	38.75	0.4	77
Total (USEPA16) PAHs	-	-	< 10.0	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	82
Naphthalene-d8	83
Acenaphthene-d10	79
Phenanthrene-d10	76
Chrysene-d12	73
Perylene-d12	57

Surrogates	% Rec
Nitrobenzene-d5	78
2-Fluorobiphenyl	89
Terphenyl-d14	96

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH102A 1.7	**Job Number:**	S03_3199
LIMS ID Number:	CL0322800	**Date Booked in:**	04-Aug-03
QC Batch Number:	1521	**Date Extracted:**	14-Aug-03
Quantitation File:	0815CCC2.D	**Date Analysed:**	15-Aug-03
Directory:	0815ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	-	< 0.2	-
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	90
Naphthalene-d8	89
Acenaphthene-d10	84
Phenanthrene-d10	85
Chrysene-d12	93
Perylene-d12	91

Surrogates	% Rec
Nitrobenzene-d5	75
2-Fluorobiphenyl	83
Terphenyl-d14	87

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH102A 5.6	**Job Number:**	S03_3199
LIMS ID Number:	CL0322801	**Date Booked in:**	04-Aug-03
QC Batch Number:	1521	**Date Extracted:**	14-Aug-03
Quantitation File:	0815CCC1.D	**Date Analysed:**	15-Aug-03
Directory:	0815ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	-	< 0.2	-
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	91
Naphthalene-d8	91
Acenaphthene-d10	89
Phenanthrene-d10	90
Chrysene-d12	95
Perylene-d12	92

Surrogates	% Rec
Nitrobenzene-d5	62
2-Fluorobiphenyl	76
Terphenyl-d14	90

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH127 0.3	**Job Number:**	S03_3199
LIMS ID Number:	CL0322802	**Date Booked in:**	04-Aug-03
QC Batch Number:	1521	**Date Extracted:**	14-Aug-03
Quantitation File:	0815CCC1.D	**Date Analysed:**	15-Aug-03
Directory:	0815ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	-	< 0.2	-
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	86
Naphthalene-d8	85
Acenaphthene-d10	80
Phenanthrene-d10	78
Chrysene-d12	70
Perylene-d12	62

Surrogates	% Rec
Nitrobenzene-d5	66
2-Fluorobiphenyl	79
Terphenyl-d14	99

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

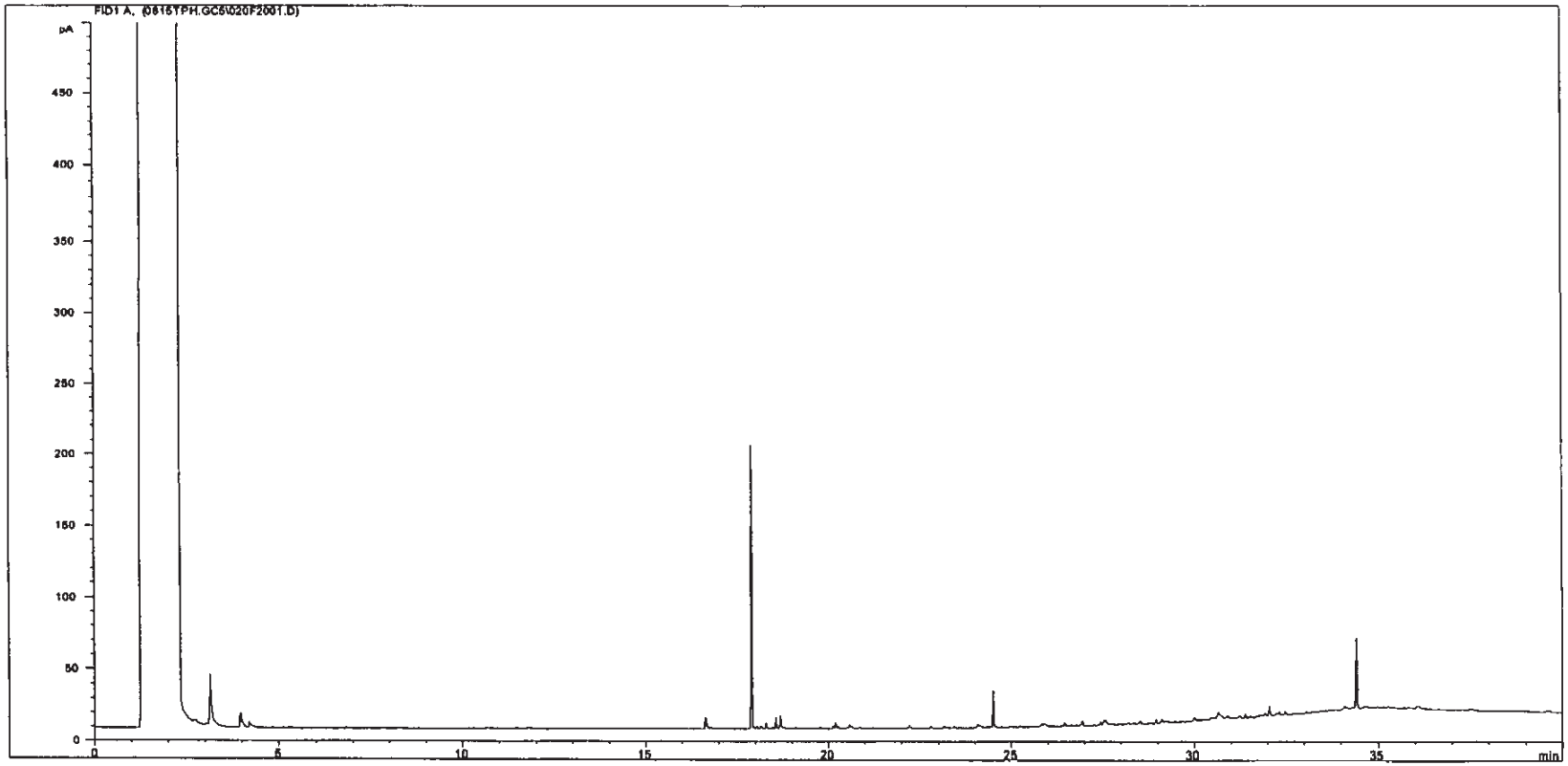
Total Petroleum Hydrocarbons (TPH) Carbon Ranges

Customer and Site Details:	Soil Mechanics : Cronton Colliery	**Matrix:**	Soil
Job Number:	S03_3199	**Date Booked In:**	08/04/2003
QC Batch Number:	1517	**Date Extracted:**	13/08/2003
Directory:	D:\TES\DATA\0815TPH.GC5\024F2401.D	**Date Analysed:**	16/08/2003
Method:	ASE		

*** Sample data with an asterisk are not UKAS accredited.**

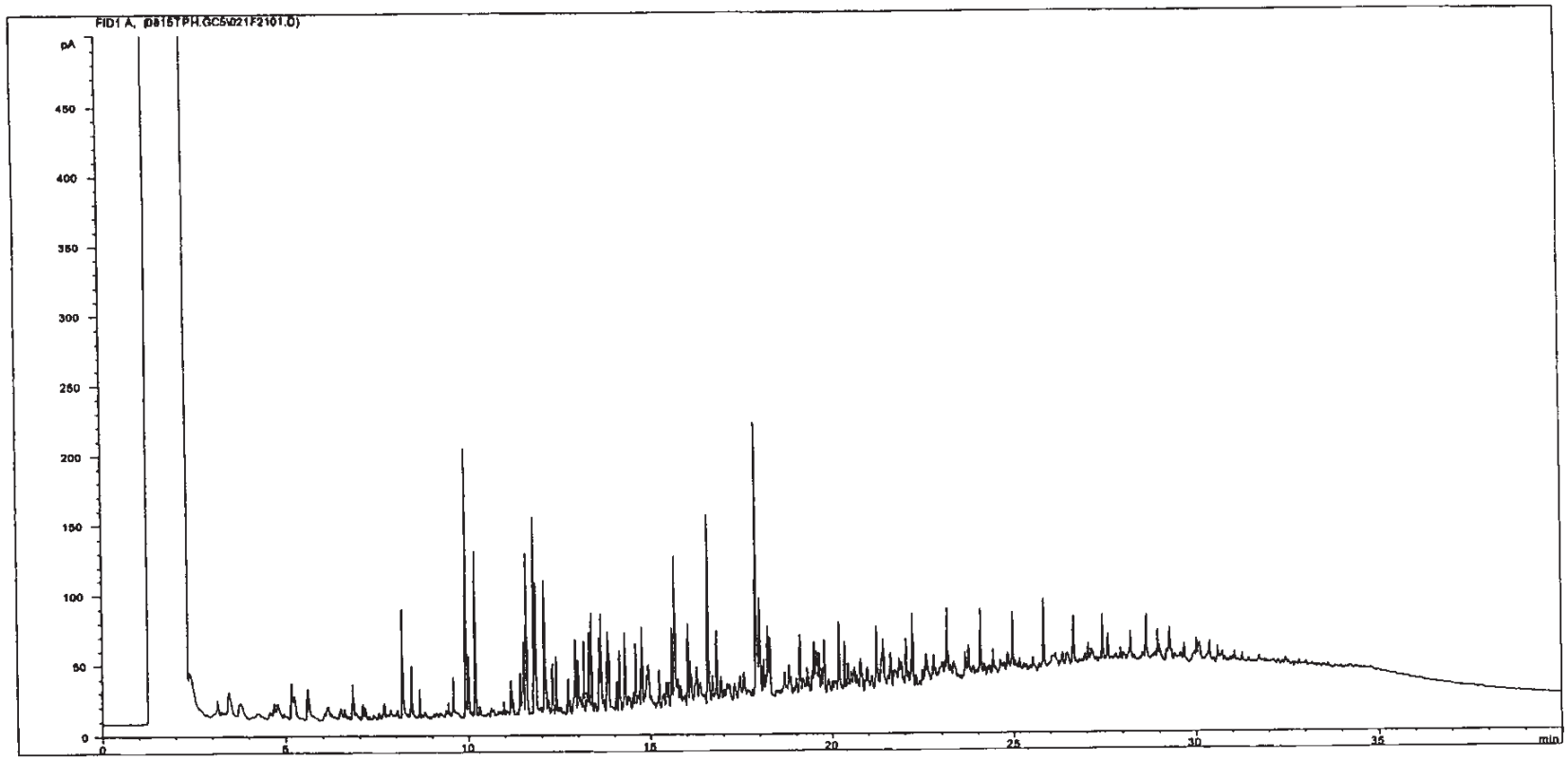
		Concentration, (mg/kg) - as wet weight				
Sample ID	**Client ID**	**>C8 - C10**	**>C10 - C12**	**>C12 - C16**	**>C16 - C21**	**>C21 - C35**
CL0322788	BH126 0.3	<10	<10	<10	<10	26.1
CL0322790	BH103 0.3	<10	10.1	53.5	93.4	281
CL0322798	BH129 2.0	<10	<10	<10	17	66.7
CL0322801	BH102A 5.6	<10	<10	<10	<10	23.4
CL0322802	BH127 0.3	<10	<10	<10	<10	<10

Petroleum Hydrocarbons (C8 to C37) by GC/FID



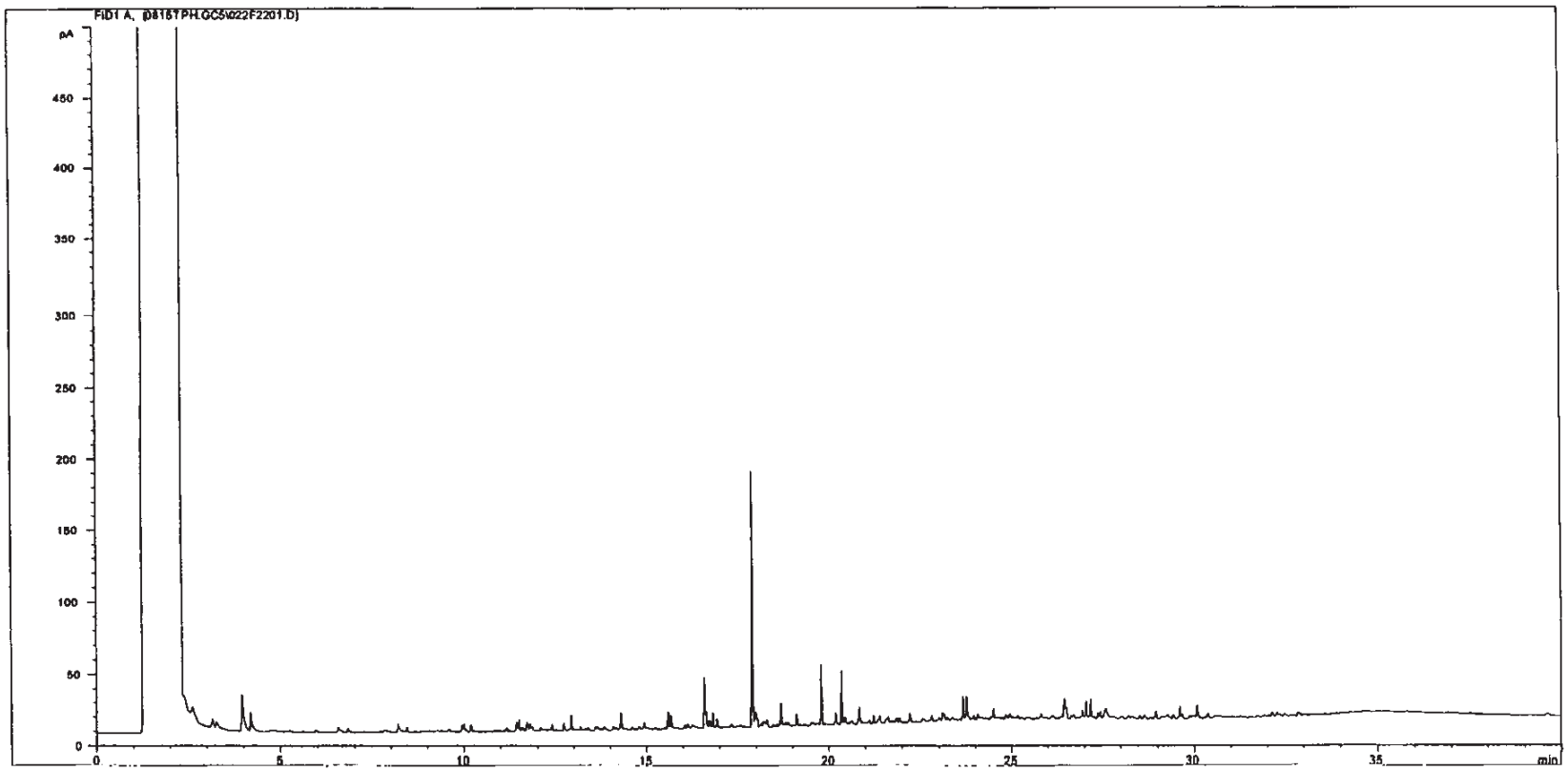
Sample ID:	CL0322788	**Job Number:**	S03_3199
Multiplier:	0.1	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH126 0.3
Acquisition Date/Time:	16/08/2003 07:33:39		
Datafile:	D:\TES\DATA\0815TPH.GC5\020F2001.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID



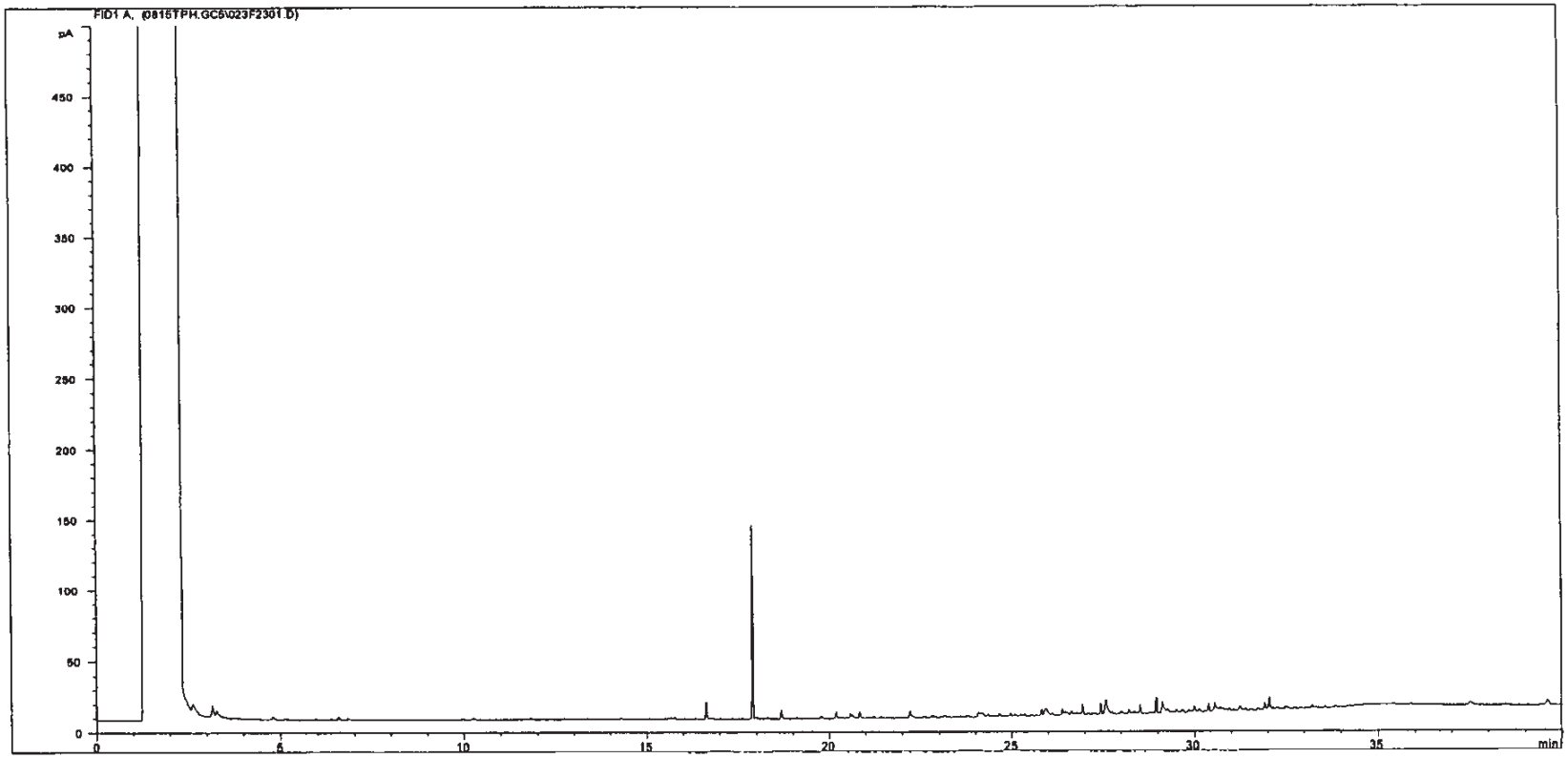
Sample ID:	CL0322790	**Job Number:**	S03_3199
Multiplier:	0.1	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH103 0.3
Acquisition Date/Time:	16/08/2003 08:24:11		
Datafile:	D:\TES\DATA\0815TPH.GC5\021F2101.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID



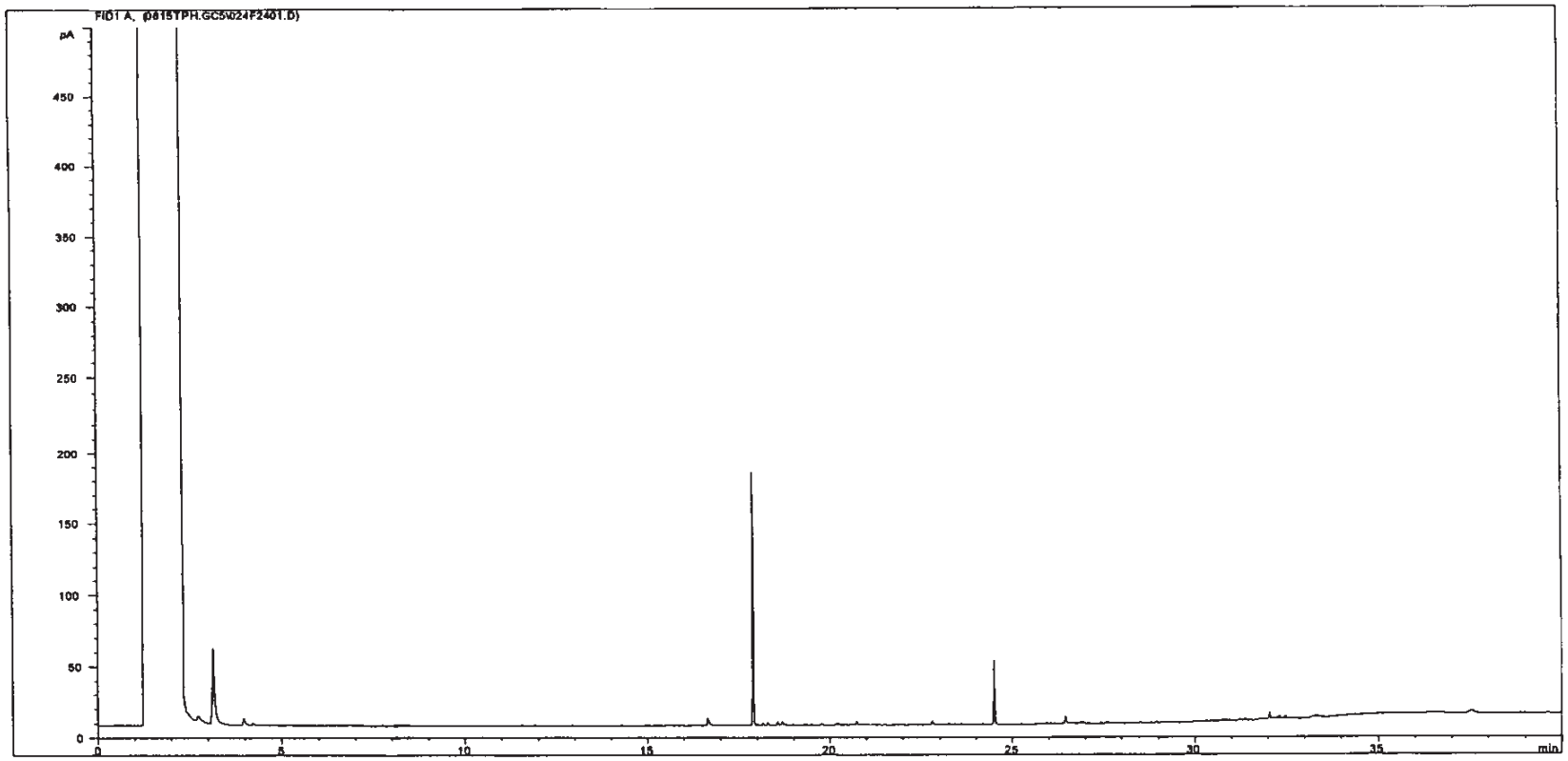
Sample ID:	CL0322798	**Job Number:**	S03_3199
Multiplier:	0.1	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH129 2.0
Acquisition Date/Time:	16/08/2003 09:14:53		
Datafile:	D:\TES\DATA\0815TPH.GC5\022F2201.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID



Sample ID:	CL0322801	**Job Number:**	S03_3199
Multiplier:	0.1	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH102A 5.6
Acquisition Date/Time:	16/08/2003 10:05:35		
Datafile:	D:\TES\DATA\0815TPH.GC5\023F2301.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID



Sample ID:	CL0322802	**Job Number:**	S03_3199
Multiplier:	0.1	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH127 0.3
Acquisition Date/Time:	16/08/2003 10:56:36		
Datafile:	D:\TES\DATA\0815TPH.GC5\024F2401.D		

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3@ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

TEST REPORT
SOIL SAMPLE ANALYSIS

1252

TES Report No. EFS/033215

Soil Mechanics
Geotechnical House
Unit 18
Deeside Industrial Estate
Deeside
Clwyd
CH5 2LR

Site: Cronton Colliery

The 4 samples described in this report were scheduled for analysis by TES Bretby on 05-Aug-2003.
The analysis was completed by: 27-Aug-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of PAH (MS) Results (Pages 4 to 7)
Table of TPH Texas banding (Page 8)
GC-FID Chromatograms (Page 9)
Table of Report Notes (Page 10)

On behalf of
TES Bretby :
J Hannah

J Hannah
Project Co-ordinator

Date of Issue: 27-Aug-2003

Tests marked 'not UKAS accredited' in this report are not included
in the UKAS Accreditation Schedule for our laboratory.
TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

	Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/l	mg/kg	mg/kg
	Method Codes :	BGCN22	GROHSA	ICPACIDS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	ICPWSS	ICTSCN28	ICTSCN28
	Detection Limits :	1	0.1	10	0.5	0.1	0.5	0.5	0.5	0.10	0.5	0.5	3.0	6	0.1	1	5
	UKAS Accredited :	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
TES ID Number CL/	Client Sample Description	Cyanide (Free)	GRO	SO4-- (acid sol)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Zinc (MS)	Iron	SO4-- (H2O sol) mg/l	CN- (total)	Sulphide
0322906	BH108 2.1	<1		1820	6.60	0.18	4.30	18.9	24.5	<0.10	15.8	1.30	14.00	10300		<1	7
0322907	BH108 5.0	<1	<0.2*	2870	20.9	0.17	2.90	31.7	56.9	0.17	23.6	1.52	28.6	18600	1430	<1	<5
0322904	BH122 0.3	<1		7260	12.70	0.13	4.20	37.9	42.5	0.11	19.7	1.54	30.2	12400		<1	<5
0322905	BH122 4.3	<1		3820	19.9	0.19	3.50	32	36.3	0.16	22.6	1.89	47.3	53400	1320	<1	<5

TES Bretby

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Date Printed	27 August 2003
Report Number	EFS/033215
Table Number	1

TES Bretby

Units :		mg/kg	mg/kg	mg/kg	mg/kg	pH Units	mg/kg	mg/kg	%									
Method Codes :		SCNCR6	SCNCR6	SVOCSW	TPHFID	WSLM3	WSLM4	ICPBOR	TSBRE1									
Detection Limits :		0.1	0.5	0.2-10.0	10.0		0.5	0.5	0.001									
UKAS Accredited :		yes	yes	yes	yes	yes	yes	no	no									
TES ID Number CL/	Client Sample Description	Chromium vi.	Thiocyanate.	PAH by MS	TPH GCFID (AR)	pH units	Phenol Index	Boron.	Total Sulphur.									
0322906	BH108 2.1	<0.1	<0.5	Req		8.5	4.7	1.2	1.101									
0322907	BH108 5.0	<0.1	<0.5	Req	872	7.0	1.1	1.2	2.383									
0322904	BH122 0.3	<0.1	<0.5	Req		7.4	2.3	1.6	1.689									
0322905	BH122 4.3	<0.1	<0.5	Req		7.8	1.5	1.3	2.416									

TES Bretby

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Client Name Soil Mechanics

Contact Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Date Printed	27 August 2003
Report Number	EFS/033215
Table Number	1

TES Bretby

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH122 0.3	**Job Number:**	S03_3215
LIMS ID Number:	CL0322904	**Date Booked in:**	05-Aug-03
QC Batch Number:	1522	**Date Extracted:**	14-Aug-03
Quantitation File:	0819CCC2.D	**Date Analysed:**	19-Aug-03
Directory:	0819ABN.MS6	**Matrix:**	Soil
Dilution:	5.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	12.57	6.5	99
Acenaphthylene	208-96-8	-	< 1.0	-
Acenaphthene	83-32-9	-	< 1.0	-
Fluorene	86-73-7	19.29	1.4	75
Phenanthrene	85-01-8	22.15	8.3	94
Anthracene	120-12-7	22.29	1.6	96
Fluoranthene	206-44-0	25.71	1.0	93
Pyrene	129-00-0	26.36	1.6	94
Benzo[a]anthracene	56-55-3	29.98	1.7	75
Chrysene	218-01-9	30.08	1.8	77
Benzo[b]fluoranthene	205-99-2	33.24	1.1	91
Benzo[k]fluoranthene	207-08-9	-	< 1.0	-
Benzo[a]pyrene	50-32-8	-	< 1.0	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 1.0	-
Dibenzo[a,h]anthracene	53-70-3	-	< 1.0	-
Benzo[g,h,i]perylene	191-24-2	-	< 1.0	-
Total (USEPA16) PAHs	-	-	< 31.9	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	87
Naphthalene-d8	85
Acenaphthene-d10	82
Phenanthrene-d10	77
Chrysene-d12	72
Perylene-d12	84

Surrogates	% Rec
Nitrobenzene-d5	67
2-Fluorobiphenyl	92
Terphenyl-d14	94

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH122 4.3	**Job Number:**	S03_3215
LIMS ID Number:	CL0322905	**Date Booked in:**	05-Aug-03
QC Batch Number:	1522	**Date Extracted:**	14-Aug-03
Quantitation File:	0819CCC2.D	**Date Analysed:**	19-Aug-03
Directory:	0819ABN.MS6	**Matrix:**	Soil
Dilution:	5.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	12.57	6.0	98
Acenaphthylene	208-96-8	-	< 1.0	-
Acenaphthene	83-32-9	-	< 1.0	-
Fluorene	86-73-7	-	< 1.0	-
Phenanthrene	85-01-8	22.15	4.7	95
Anthracene	120-12-7	-	< 1.0	-
Fluoranthene	206-44-0	-	< 1.0	-
Pyrene	129-00-0	-	< 1.0	-
Benzo[a]anthracene	56-55-3	-	< 1.0	-
Chrysene	218-01-9	-	< 1.0	-
Benzo[b]fluoranthene	205-99-2	-	< 1.0	-
Benzo[k]fluoranthene	207-08-9	-	< 1.0	-
Benzo[a]pyrene	50-32-8	-	< 1.0	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 1.0	-
Dibenzo[a,h]anthracene	53-70-3	-	< 1.0	-
Benzo[g,h,i]perylene	191-24-2	-	< 1.0	-
Total (USEPA16) PAHs	-	-	< 24.7	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	95
Naphthalene-d8	92
Acenaphthene-d10	88
Phenanthrene-d10	84
Chrysene-d12	83
Perylene-d12	101

Surrogates	% Rec
Nitrobenzene-d5	63
2-Fluorobiphenyl	89
Terphenyl-d14	89

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH108 2.1	**Job Number:**	S03_3215
LIMS ID Number:	CL0322906	**Date Booked in:**	05-Aug-03
QC Batch Number:	1522	**Date Extracted:**	14-Aug-03
Quantitation File:	0819CCC2.D	**Date Analysed:**	19-Aug-03
Directory:	0819ABN.MS6	**Matrix:**	Soil
Dilution:	5.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	12.58	20.5	100
Acenaphthylene	208-96-8	-	< 1.0	-
Acenaphthene	83-32-9	-	< 1.0	-
Fluorene	86-73-7	-	< 1.0	-
Phenanthrene	85-01-8	22.14	5.1	96
Anthracene	120-12-7	-	< 1.0	-
Fluoranthene	206-44-0	-	< 1.0	-
Pyrene	129-00-0	-	< 1.0	-
Benzo[a]anthracene	56-55-3	-	< 1.0	-
Chrysene	218-01-9	30.07	1.0	70
Benzo[b]fluoranthene	205-99-2	-	< 1.0	-
Benzo[k]fluoranthene	207-08-9	-	< 1.0	-
Benzo[a]pyrene	50-32-8	-	< 1.0	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 1.0	-
Dibenzo[a,h]anthracene	53-70-3	-	< 1.0	-
Benzo[g,h,i]perylene	191-24-2	-	< 1.0	-
Total (USEPA16) PAHs	-	-	< 39.6	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	86
Naphthalene-d8	86
Acenaphthene-d10	84
Phenanthrene-d10	77
Chrysene-d12	72
Perylene-d12	83

Surrogates	% Rec
Nitrobenzene-d5	65
2-Fluorobiphenyl	88
Terphenyl-d14	93

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH108 5.0	**Job Number:**	S03_3215
LIMS ID Number:	CL0322907	**Date Booked In:**	05-Aug-03
QC Batch Number:	1522	**Date Extracted:**	14-Aug-03
Quantitation File:	0815CCC1.D	**Date Analysed:**	18-Aug-03
Directory:	0818ABN.MS6	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	12.68	3.7	99
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	17.86	0.7	97
Fluorene	86-73-7	19.41	0.9	92
Phenanthrene	85-01-8	22.27	3.2	95
Anthracene	120-12-7	22.41	0.5	92
Fluoranthene	206-44-0	25.83	0.3	96
Pyrene	129-00-0	26.49	0.4	100
Benzo[a]anthracene	56-55-3	30.10	0.4	85
Chrysene	218-01-9	30.21	0.4	80
Benzo[b]fluoranthene	205-99-2	33.42	0.3	95
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	34.64	0.2	97
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	40.42	0.2	76
Total (USEPA16) PAHs	-	-	< 12.0	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	58
Naphthalene-d8	56
Acenaphthene-d10	57
Phenanthrene-d10	54
Chrysene-d12	60
Perylene-d12	51

Surrogates	% Rec
Nitrobenzene-d5	68
2-Fluorobiphenyl	94
Terphenyl-d14	81

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Total Petroleum Hydrocarbons (TPH) Carbon Ranges

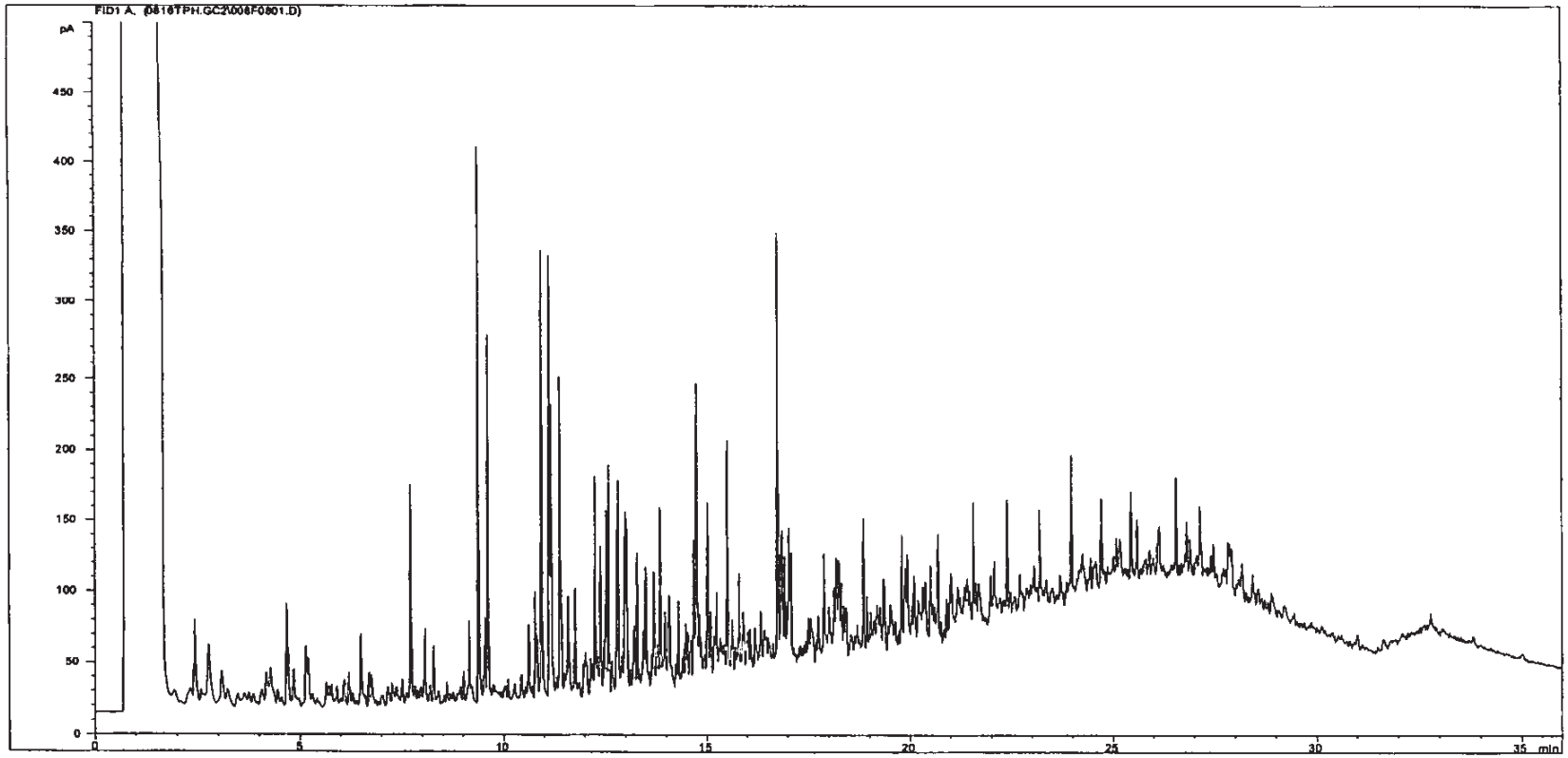
Customer and Site Details: Soil Mechanics : Cronton Colliery
Job Number: S03_3215
QC Batch Number: 1525
Directory: L:\DATA\0816TPH.GC2\008F0801.D
Method: ASE

Matrix: Soil
Date Booked In: 08/05/2003
Date Extracted: 14/08/2003
Date Analysed: 16/08/2003

*** Sample data with an asterisk are not UKAS accredited.**

		Concentration, (mg/kg) - as wet weight				
Sample ID	**Client ID**	**>C8 - C10**	**>C10 - C12**	**>C12 - C16**	**>C16 - C21**	**>C21 - C35**
CL0322907	BH108 5.0	17.1	19.9	103	156	524

Petroleum Hydrocarbons (C8 to C37) by GC/FID



Sample ID:	CL0322907	**Job Number:**	S03_3215
Multiplier:	0.1	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH108 5.0
Acquisition Date/Time:	16/08/2003 19:57:30		
Datafile:	L:\DATA\0816TPH.GC2\008F0801.D		

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3@ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

TEST REPORT
SOIL SAMPLE ANALYSIS

1252

TES Report No. EFS/033264

Soil Mechanics
Geotechnical House
Unit 18
Deeside Industrial Estate
Deeside
Clwyd
CH5 2LR

Site: Cronton Colliery

The 12 samples described in this report were scheduled for analysis by TES Bretby on 07-Aug-2003.
The analysis was completed by: 27-Aug-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of PAH (MS) Results (Pages 4 to 12)
Table of TPH Texas banding (Page 13)
GC-FID Chromatograms (Page 14)
Table of Report Notes (Page 15)

On behalf of
TES Bretby :
J Hannah

J Hannah
Project Co-ordinator

Date of Issue: 27-Aug-2003

Tests marked 'not UKAS accredited' in this report are not included
in the UKAS Accreditation Schedule for our laboratory.
TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

	Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/l	mg/kg	mg/kg
	Method Codes :	BGCN22	GROHSA	ICPACIDS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	ICPWSS	ICTSCN28	ICTSCN28
	Detection Limits :	1	0.1	10	0.5	0.1	0.5	0.5	0.5	0.10	0.5	0.5	3.0	6	0.1	1	5
	UKAS Accredited :	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
TES ID Number CL/	Client Sample Description	Cyanide (Free)	GRO	SO4-- (acid sol)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Zinc (MS)	Iron	SO4-- (H2O sol) mg/l	CN- (total)	Sulphide
0323078	BH107 0.2	<1		35200	76.1	0.11	7.00	53.8	137	0.26	22.3	2.06	70.3	51900	2430	<1	<5
0323079	BH107 1.0	<1		20300	28.8	0.48	12.00	43	52	0.15	30.4	1.50	128.9	33700	2220	<1	<5
0323080	BH112 0.3	<1		3920	34.8	1.77	28.3	126.2	202.5	0.41	76.3	1.88	321.9	42800	1070	<1	<5
0323081	BH112 1.3	<1	<0.2	4600	32.8	4.09	51.7	238.1	282.3	0.64	162.7	1.89	614.4	51400	1730	<1	14
0323082	BH114 0.3	<1		426	13.10	0.36	22	27.9	41.5	0.12	18.3	<0.50	62.8	30800	25.6	1	<5
0323083	BH114 1.0	<1		357	13.30	0.17	25	20.5	11.10	<0.10	30.3	0.57	127.4	39300		<1	<5
0323086	BH115 0.3	<1		190	7.90	0.12	31.2	15.4	14.20	<0.10	23.2	<0.50	36.6	31600		<1	<5
0323085	BH118 0.3	<1		336	9.60	0.20	19.8	25.2	34.9	0.12	16.6	<0.50	51.1	20700		<1	<5
0323084	BH123 0.3	<1		191	9.00	0.10	29.9	15.4	18.3	<0.10	30.3	<0.50	44.1	28400	43.5	<1	<5
0323089	TP036 0.9	<1		114	7.40	<0.10	26.5	13.00	10.70	<0.10	24	<0.50	28.5			<1	<5
0323087	TP039 0.5	<1		172	6.90	1.46	31.9	17.1	15.00	<0.10	30	<0.50	41.2			<1	<5
0323088	TP039 2.0	<1		117	5.70	0.23	27.8	19.8	8.90	<0.10	31.2	<0.50	41.6			<1	<5

TES Bretby

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Client Name Soil Mechanics

Contact Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Date Printed	27 August 2003
Report Number	EFS/033264
Table Number	1

TES Bretby

Units :		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	pH Units	mg/kg	mg/kg		%	% M/M						
Method Codes :		PAHSCUV	SCNCR6	SCNCR6	SVOCSW	TPHFID	WSLM3	WSLM4	ICPBOR	SEN9	TSBRE1	WSLM59						
Detection Limits :		10	0.1	0.5	0.2-10.0	10.0		0.5	0.5		0.001	0.02						
UKAS Accredited :		yes	yes	yes	yes	yes	yes	yes	no	no	no	no						
TES ID Number CL/	Client Sample Description	PAH (screening)	Chromium vi.	Thiocyanate.	PAH by MS	TPH GCFID (AR)	pH units	Phenol Index	Boron.	Asbestos (screening)	Total Sulphur.	F.O.C. %						
0323078	BH107 0.2		<0.1	<0.5	Req		4.0	0.6	0.6		3.602							
0323079	BH107 1.0		<0.1	0.5	Req		7.1	<0.5	1.3		1.196							
0323080	BH112 0.3		<0.1	2.7	Req		7.9	1.2	19		1.009							
0323081	BH112 1.3		<0.1	7.6	Req	632	7.8	2.2	20.5	NBFO	1.814							
0323082	BH114 0.3		0.2	5.8	Req		6.6	<0.5	2.7		0.077							
0323083	BH114 1.0		<0.1	0.6	Req		5.7	1.7	1.4		0.044	0.538						
0323086	BH115 0.3		0.2	4.0	Req		7.4	<0.5	<0.5		0.028							
0323085	BH116 0.3		0.9	8.3	Req		7.2	<0.5	2.1		0.030							
0323084	BH123 0.3		0.1	1.2	Req		7.9	1.3	3.0		0.031							
0323089	TP036 0.9	12	0.2	3.4			7.4	<0.5	0.8		0.023							
0323087	TP039 0.5	12	0.4	6.8			7.6	<0.5	2.9		0.023							
0323088	TP039 2.0	12	<0.1	1.4			8.1	<0.5	1.0		0.016							

TES Bretby

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Date Printed	27 August 2003
Report Number	EFS/033264
Table Number	1

TES Bretby

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH107 0.2	**Job Number:**	S03_3264
LIMS ID Number:	CL0323078	**Date Booked in:**	07-Aug-03
QC Batch Number:	1529	**Date Extracted:**	15-Aug-03
Quantitation File:	0820CCC1.D	**Date Analysed:**	20-Aug-03
Directory:	0820ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	11.80	3.2	99
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	16.90	0.4	53
Fluorene	86-73-7	18.45	0.6	80
Phenanthrene	85-01-8	21.29	5.2	98
Anthracene	120-12-7	21.42	0.6	83
Fluoranthene	206-44-0	24.83	1.1	92
Pyrene	129-00-0	25.46	1.2	94
Benzo[a]anthracene	56-55-3	29.07	1.1	94
Chrysene	218-01-9	29.18	1.3	97
Benzo[b]fluoranthene	205-99-2	32.10	0.8	94
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	33.01	0.6	96
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	38.43	0.6	81
Total (USEPA16) PAHs	-	-	< 17.5	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	88
Naphthalene-d8	91
Acenaphthene-d10	88
Phenanthrene-d10	82
Chrysene-d12	78
Perylene-d12	69

Surrogates	% Rec
Nitrobenzene-d5	75
2-Fluorobiphenyl	86
Terphenyl-d14	94

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH107 1.0	**Job Number:**	S03_3264
LIMS ID Number:	CL0323079	**Date Booked in:**	07-Aug-03
QC Batch Number:	1529	**Date Extracted:**	15-Aug-03
Quantitation File:	0820CCC1.D	**Date Analysed:**	20-Aug-03
Directory:	0820ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	11.79	1.8	99
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	16.90	0.3	83
Fluorene	86-73-7	18.43	0.3	83
Phenanthrene	85-01-8	21.26	2.8	98
Anthracene	120-12-7	21.40	0.4	85
Fluoranthene	206-44-0	24.79	0.8	95
Pyrene	129-00-0	25.43	0.8	96
Benzo[a]anthracene	56-55-3	29.04	0.6	92
Chrysene	218-01-9	29.14	0.8	98
Benzo[b]fluoranthene	205-99-2	32.06	0.6	98
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	32.96	0.4	97
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	38.37	0.4	74
Total (USEPA16) PAHs	-	-	< 10.8	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	87
Naphthalene-d8	88
Acenaphthene-d10	84
Phenanthrene-d10	78
Chrysene-d12	76
Perylene-d12	66

Surrogates	% Rec
Nitrobenzene-d5	76
2-Fluorobiphenyl	90
Terphenyl-d14	94

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH112 0.3	**Job Number:**	S03_3264
LIMS ID Number:	CL0323080	**Date Booked In:**	07-Aug-03
QC Batch Number:	1529	**Date Extracted:**	15-Aug-03
Quantitation File:	0819CCC3.D	**Date Analysed:**	20-Aug-03
Directory:	0819ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: No

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	11.79	0.6	99
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	21.25	0.6	98
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	24.80	0.5	97
Pyrene	129-00-0	25.43	0.4	96
Benzo[a]anthracene	56-55-3	29.04	0.2	93
Chrysene	218-01-9	29.14	0.3	95
Benzo[b]fluoranthene	205-99-2	32.06	0.3	98
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	32.95	0.2	92
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 4.9	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	61
Naphthalene-d8	61
Acenaphthene-d10	60
Phenanthrene-d10	56
Chrysene-d12	54
Perylene-d12	48

Surrogates	% Rec
Nitrobenzene-d5	64
2-Fluorobiphenyl	81
Terphenyl-d14	89

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH112 1.3	**Job Number:**	S03_3264
LIMS ID Number:	CL0323081	**Date Booked in:**	07-Aug-03
QC Batch Number:	1529	**Date Extracted:**	15-Aug-03
Quantitation File:	0821CCC2.D	**Date Analysed:**	21-Aug-03
Directory:	0821ABN.MS4	**Matrix:**	Soil
Dilution:	5.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 1.0	-
Acenaphthylene	208-96-8	-	< 1.0	-
Acenaphthene	83-32-9	-	< 1.0	-
Fluorene	86-73-7	-	< 1.0	-
Phenanthrene	85-01-8	-	< 1.0	-
Anthracene	120-12-7	-	< 1.0	-
Fluoranthene	206-44-0	-	< 1.0	-
Pyrene	129-00-0	-	< 1.0	-
Benzo[a]anthracene	56-55-3	-	< 1.0	-
Chrysene	218-01-9	-	< 1.0	-
Benzo[b]fluoranthene	205-99-2	-	< 1.0	-
Benzo[k]fluoranthene	207-08-9	-	< 1.0	-
Benzo[a]pyrene	50-32-8	-	< 1.0	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 1.0	-
Dibenzo[a,h]anthracene	53-70-3	-	< 1.0	-
Benzo[g,h,i]perylene	191-24-2	-	< 1.0	-
Total (USEPA16) PAHs	-	-	< 16.0	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	98
Naphthalene-d8	98
Acenaphthene-d10	95
Phenanthrene-d10	95
Chrysene-d12	88
Perylene-d12	89

Surrogates	% Rec
Nitrobenzene-d5	70
2-Fluorobiphenyl	92
Terphenyl-d14	105

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH114 0.3	**Job Number:**	S03_3264
LIMS ID Number:	CL0323082	**Date Booked in:**	07-Aug-03
QC Batch Number:	1529	**Date Extracted:**	15-Aug-03
Quantitation File:	0818CCC1.D	**Date Analysed:**	18-Aug-03
Directory:	0818ABN.MS2	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	-	< 0.2	-
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	88
Naphthalene-d8	83
Acenaphthene-d10	85
Phenanthrene-d10	77
Chrysene-d12	82
Perylene-d12	83

Surrogates	% Rec
Nitrobenzene-d5	73
2-Fluorobiphenyl	86
Terphenyl-d14	86

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH114 1.0	**Job Number:**	S03_3264
LIMS ID Number:	CL0323083	**Date Booked in:**	07-Aug-03
QC Batch Number:	1529	**Date Extracted:**	15-Aug-03
Quantitation File:	0818CCC1.D	**Date Analysed:**	18-Aug-03
Directory:	0818ABN.MS2	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	-	< 0.2	-
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	90
Naphthalene-d8	85
Acenaphthene-d10	87
Phenanthrene-d10	79
Chrysene-d12	81
Perylene-d12	78

Surrogates	% Rec
Nitrobenzene-d5	78
2-Fluorobiphenyl	88
Terphenyl-d14	89

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH123 0.3	**Job Number:**	S03_3264
LIMS ID Number:	CL0323084	**Date Booked in:**	07-Aug-03
QC Batch Number:	1529	**Date Extracted:**	15-Aug-03
Quantitation File:	0819CCC2.D	**Date Analysed:**	20-Aug-03
Directory:	0819ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	21.23	0.2	100
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	77
Naphthalene-d8	75
Acenaphthene-d10	72
Phenanthrene-d10	73
Chrysene-d12	81
Perylene-d12	74

Surrogates	% Rec
Nitrobenzene-d5	74
2-Fluorobiphenyl	88
Terphenyl-d14	84

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH118 0.3	**Job Number:**	S03_3264
LIMS ID Number:	CL0323085	**Date Booked in:**	07-Aug-03
QC Batch Number:	1529	**Date Extracted:**	15-Aug-03
Quantitation File:	0819CCC2.D	**Date Analysed:**	19-Aug-03
Directory:	0819ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	-	< 0.2	-
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	84
Naphthalene-d8	82
Acenaphthene-d10	79
Phenanthrene-d10	80
Chrysene-d12	87
Perylene-d12	78

Surrogates	% Rec
Nitrobenzene-d5	78
2-Fluorobiphenyl	86
Terphenyl-d14	89

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH115 0.3	**Job Number:**	S03_3264
LIMS ID Number:	CL0323086	**Date Booked in:**	07-Aug-03
QC Batch Number:	1529	**Date Extracted:**	15-Aug-03
Quantitation File:	0819CCC2.D	**Date Analysed:**	19-Aug-03
Directory:	0819ABN.MS6	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	-	< 0.2	-
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	87
Naphthalene-d8	84
Acenaphthene-d10	87
Phenanthrene-d10	85
Chrysene-d12	83
Perylene-d12	81

Surrogates	% Rec
Nitrobenzene-d5	67
2-Fluorobiphenyl	73
Terphenyl-d14	101

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Total Petroleum Hydrocarbons (TPH) Carbon Ranges

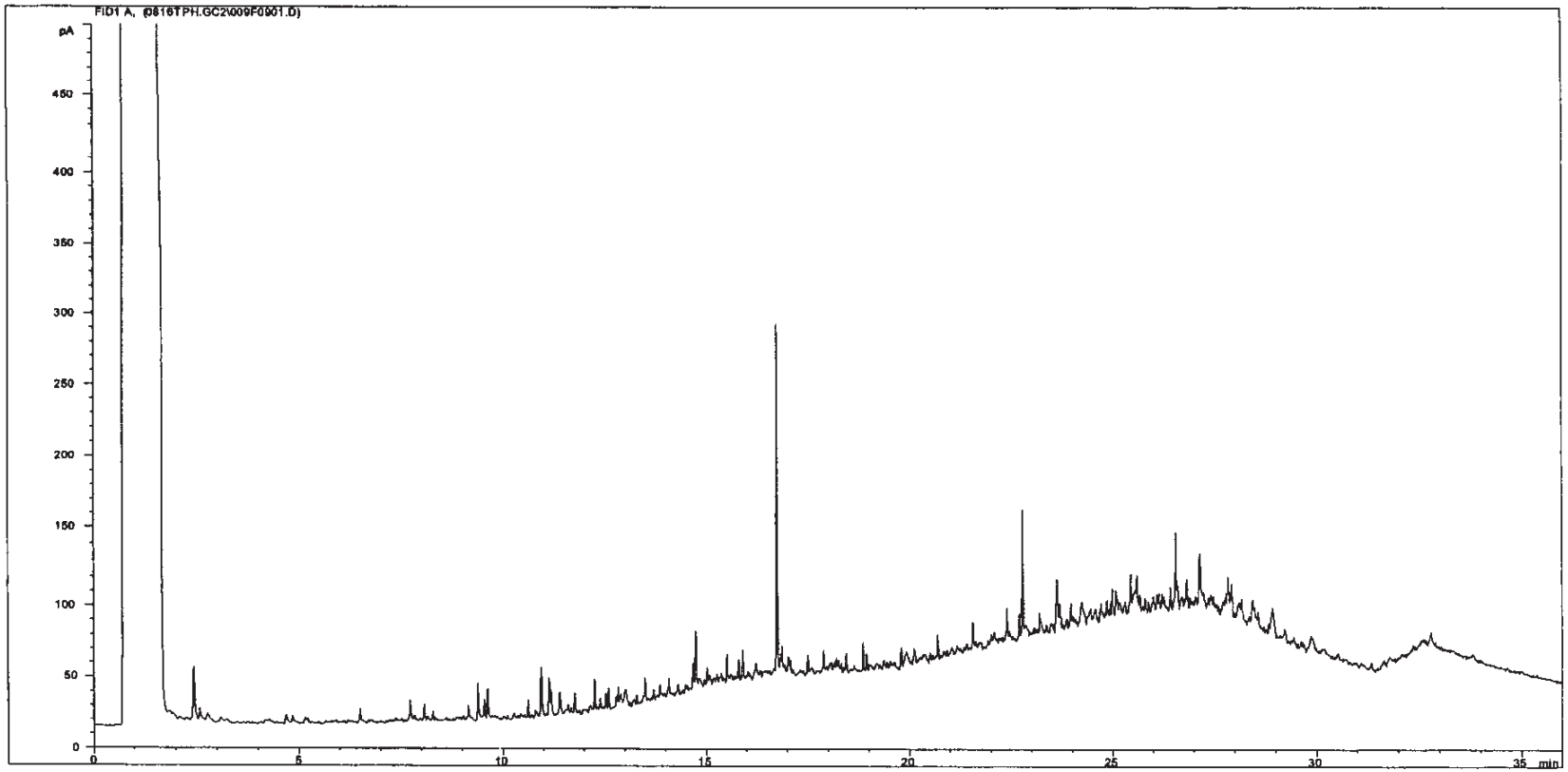
Customer and Site Details: Soil Mechanics : Cronton Colliery
Job Number: S03_3264
QC Batch Number: 1525
Directory: L:\DATA\0816TPH.GC2\009F0901.D
Method: ASE

Matrix: Soil
Date Booked in: 08/07/2003
Date Extracted: 14/08/2003
Date Analysed: 16/08/2003

*** Sample data with an asterisk are not UKAS accredited.**

		Concentration, (mg/kg) - as wet weight				
Sample ID	**Client ID**	**>C8 - C10**	**>C10 - C12**	**>C12 - C16**	**>C16 - C21**	**>C21 - C35**
CL0323081	BH112 1.3	<10	<10	30.4	106	437

Petroleum Hydrocarbons (C8 to C37) by GC/FID



Sample ID:	CL0323081	**Job Number:**	S03_3264
Multiplier:	0.1	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH112 1.3
Acquisition Date/Time:	16/08/2003 20:44:08		
Datafile:	L:\DATA\0816TPH.GC2\009F0901.D		

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3@ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

TEST REPORT
SOIL SAMPLE ANALYSIS

1252

TES Report No. EFS/033265

Soil Mechanics
Geotechnical House
Unit 18
Deeside Industrial Estate
Deeside
Clwyd
CH5 2LR

Site: Cronton Colliery

The 14 samples described in this report were scheduled for analysis by TES Bretby on 07-Aug-2003.
The analysis was completed by: 27-Aug-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of PAH (MS) Results (Pages 4 to 8)
Table of TPH Texas banding (Page 9)
GC-FID Chromatograms (Pages 10 to 11)
Table of Report Notes (Page 12)

On behalf of
TES Bretby :
J Hannah

J Hannah
Project Co-ordinator

Date of Issue: 27-Aug-2003

Tests marked 'not UKAS accredited' in this report are not included
in the UKAS Accreditation Schedule for our laboratory.
TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

Units :		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/l	mg/kg	mg/kg
Method Codes :		BGCN22	GROHSA	ICPACIDS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	ICPWSS	ICTSCN28	ICTSCN28
Detection Limits :		1	0.1	10	0.5	0.1	0.5	0.5	0.5	0.10	0.5	0.5	3.0	6	0.1	1	5
UKAS Accredited :		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
TES ID Number CLI	Client Sample Description	Cyanide (Free)	GRO	SO4-- (acid sol)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Zinc (MS)	Iron	SO4-- (H2O sol) mg/l	CN- (total)	Sulphide
0323090	BH110 0.3	<1		233	5.40	<0.10	8.20	34.1	19.3	0.12	11.30	<0.50	23.8	7640		<1	<5
0323091	BH110 1.0	<1	<0.2	92	7.30	<0.10	6.10	3.60	12.30	0.14	17.9	1.07	11.80	1490	36.6	<1	<5
0323092	BH125 0.2	<1	<0.2	334	4.70	0.23	20.2	16.6	12.40	<0.10	14.30	<0.50	51.2	16700	23.4	<1	<5
0323093	BH125 2.0	<1		177	7.80	<0.10	27	12.30	6.90	<0.10	28	<0.50	44.2	23100		<1	<5
0323094	BH131 0.2	<1		483	6.40	0.10	21.9	29.1	40.5	0.11	15.5	<0.50	45.9	18900	39.8	<1	<5
0323096	TP033 0.5	<1		1900	10.30	0.29	17	45.6	44.3	<0.10	18.2	<0.50	483.4			3	59
0323097	TP035 0.5	<1		532	13.50	0.25	18.1	32.2	40.2	<0.10	15.6	<0.50	56.1			<1	<5
0323101	TP037 0.5	<1		337	12.40	0.29	17.5	21.1	37.6	<0.10	14.70	<0.50	51.5			<1	<5
0323102	TP037 2.0	<1		167	5.90	<0.10	24.3	13.80	6.10	<0.10	28	<0.50	38.7		10.6	<1	<5
0323095	TP040 0.5	<1		618	10.20	0.42	20.5	27.6	36.1	0.10	19.5	<0.50	62		109	<1	<5
0323099	TP041 0.5	<1		201	7.40	<0.10	30.3	10.30	10.40	<0.10	20.8	<0.50	35.8			<1	<5
0323103	TP043 0.5	<1		298	8.20	0.10	23.5	11.20	14.40	<0.10	16.9	<0.50	44.3			<1	<5
0323098	TP044 0.5	<1		346	7.40	0.14	22.6	15.3	21.4	<0.10	15.4	<0.50	43.2			<1	<5
0323100	TP045 0.5	<1		448	12.50	0.24	19.3	25.7	31.6	<0.10	16.7	<0.50	58.5			<1	<5

TES Bretby

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Date Printed	27 August 2003
Report Number	EFS/033265
Table Number	1

TES Bretby

Units :		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	pH Units	mg/kg	mg/kg		%						
Method Codes :		PAHSCUV	SCNCR6	SCNCR6	SVOCSW	TPHFID	WSLM3	WSLM4	ICPBOR	SEN9	TSBRE1						
Detection Limits :		10	0.1	0.5	0.2-10.0	10.0		0.5	0.5		0.001						
UKAS Accredited :		yes	yes	yes	yes	yes	yes	yes	no	no	no						
TES ID Number CL/	Client Sample Description	PAH (screening)	Chromium vi.	Thiocyanate.	PAH by MS	TPH GCFID (AR)	pH units	Phenol Index	Boron.	Asbestos (screening)	Total Sulphur.						
0323090	BH110 0.3		0.6	9.2	Req		7.1	<0.5	4.2		0.035						
0323091	BH110 1.0	<10	1.2	16.4		48	6.6	<0.5	3.4		0.040						
0323092	BH125 0.2		0.2	3.9	Req	48	5.0	<0.5	2.1		0.024						
0323093	BH125 2.0		<0.1	0.9	Req		8.6	<0.5	1.6		0.016						
0323094	BH131 0.2		<0.1	1.6	Req		4.8	<0.5	1.1		0.030						
0323096	TP033 0.5	81	<0.1	1.5			8.2	<0.5	1.2	NBFO	0.132						
0323097	TP035 0.5	<10	0.3	7.4			5.2	<0.5	1.2		0.041						
0323101	TP037 0.5	<10	<0.1	1.6			7.5	<0.5	2.2		0.033						
0323102	TP037 2.0	<10	<0.1	0.8			8.6	<0.5	0.8		0.020						
0323095	TP040 0.5		0.1	2.0	Req		7.1	<0.5	1.7		0.059						
0323099	TP041 0.5	<10	1.2	24.0			7.5	<0.5	1.1		0.024						
0323103	TP043 0.5	<10	0.4	7.1			7.4	<0.5	1.8		0.023						
0323098	TP044 0.5	<10	0.5	10.5			6.9	0.5	3.2		0.032						
0323100	TP045 0.5	<10	0.6	11.1			6.6	<0.5	3.0		0.043						

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Date Printed	27 August 2003
Report Number	EFS/033265
Table Number	1

TES Bretby

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH110 0.3	**Job Number:**	S03_3265
LIMS ID Number:	CL0323090	**Date Booked in:**	07-Aug-03
QC Batch Number:	1529	**Date Extracted:**	13-Aug-03
Quantitation File:	0819CCC2.D	**Date Analysed:**	19-Aug-03
Directory:	0819ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	-	< 0.2	-
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	74
Naphthalene-d8	71
Acenaphthene-d10	69
Phenanthrene-d10	69
Chrysene-d12	72
Perylene-d12	65

Surrogates	% Rec
Nitrobenzene-d5	59
2-Fluorobiphenyl	80
Terphenyl-d14	94

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH125 0.2	**Job Number:**	S03_3265
LIMS ID Number:	CL0323092	**Date Booked in:**	07-Aug-03
QC Batch Number:	1529	**Date Extracted:**	13-Aug-03
Quantitation File:	0819CCC2.D	**Date Analysed:**	19-Aug-03
Directory:	0819ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	-	< 0.2	-
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	79
Naphthalene-d8	78
Acenaphthene-d10	75
Phenanthrene-d10	74
Chrysene-d12	81
Perylene-d12	75

Surrogates	% Rec
Nitrobenzene-d5	76
2-Fluorobiphenyl	89
Terphenyl-d14	90

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH125 2.0	**Job Number:**	S03_3265
LIMS ID Number:	CL0323093	**Date Booked In:**	07-Aug-03
QC Batch Number:	1529	**Date Extracted:**	13-Aug-03
Quantitation File:	0819CCC2.D	**Date Analysed:**	19-Aug-03
Directory:	0819ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	-	< 0.2	-
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	72
Naphthalene-d8	71
Acenaphthene-d10	68
Phenanthrene-d10	68
Chrysene-d12	73
Perylene-d12	68

Surrogates	% Rec
Nitrobenzene-d5	80
2-Fluorobiphenyl	91
Terphenyl-d14	88

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	BH131 0.2	**Job Number:**	S03_3265
LIMS ID Number:	CL0323094	**Date Booked in:**	07-Aug-03
QC Batch Number:	1529	**Date Extracted:**	13-Aug-03
Quantitation File:	0819CCC2.D	**Date Analysed:**	19-Aug-03
Directory:	0819ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	-	< 0.2	-
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	73
Naphthalene-d8	70
Acenaphthene-d10	67
Phenanthrene-d10	68
Chrysene-d12	70
Perylene-d12	63

Surrogates	% Rec
Nitrobenzene-d5	78
2-Fluorobiphenyl	89
Terphenyl-d14	85

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	TP040 0.5	**Job Number:**	S03_3265
LIMS ID Number:	CL0323095	**Date Booked in:**	07-Aug-03
QC Batch Number:	1529	**Date Extracted:**	13-Aug-03
Quantitation File:	0819CCC2.D	**Date Analysed:**	19-Aug-03
Directory:	0819ABN.MS4	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	-	< 0.2	-
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	80
Naphthalene-d8	78
Acenaphthene-d10	75
Phenanthrene-d10	76
Chrysene-d12	81
Perylene-d12	74

Surrogates	% Rec
Nitrobenzene-d5	79
2-Fluorobiphenyl	91
Terphenyl-d14	90

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Total Petroleum Hydrocarbons (TPH) Carbon Ranges

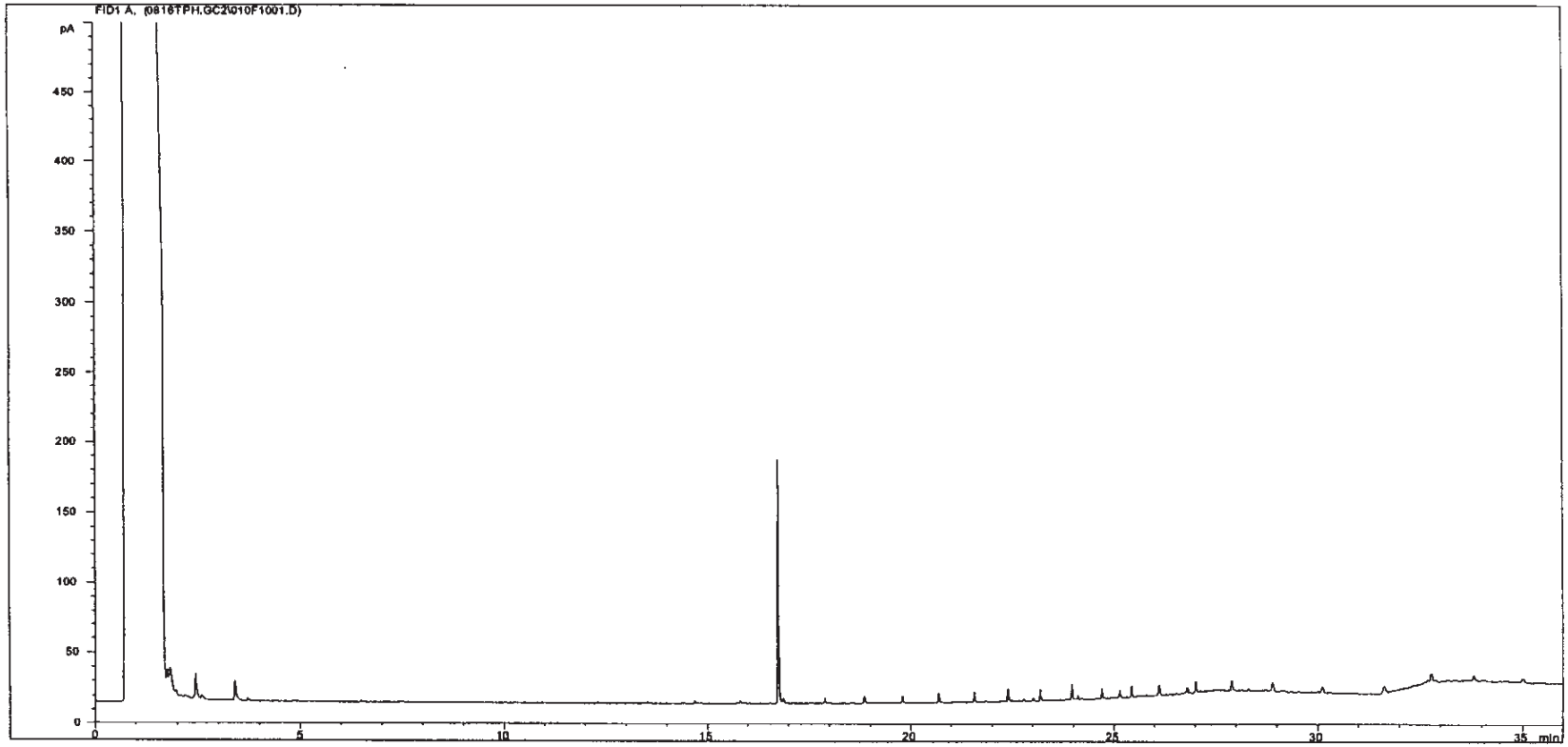
Customer and Site Details: Soil Mechanics : Cronton Colliery
Job Number: S03_3265
QC Batch Number: 1525
Directory: L:\DATA\0816TPH.GC2\011F1101.D
Method: ASE

Matrix: Soil
Date Booked In: 08/07/2003
Date Extracted: 14/08/2003
Date Analysed: 16/08/2003

*** Sample data with an asterisk are not UKAS accredited.**

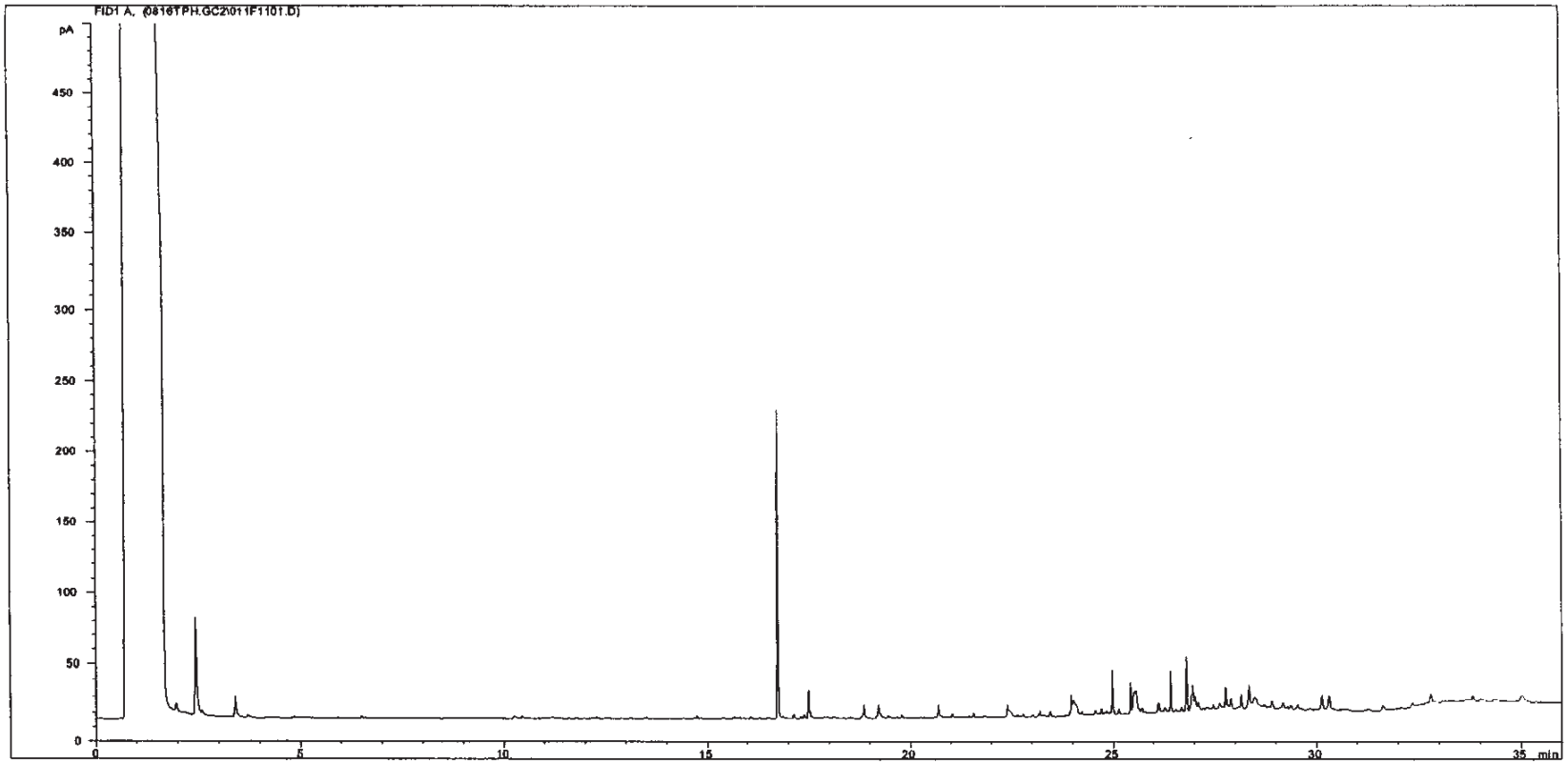
		Concentration, (mg/kg) - as wet weight				
Sample ID	**Client ID**	**>C8 - C10**	**>C10 - C12**	**>C12 - C16**	**>C16 - C21**	**>C21 - C35**
CL0323091	BH110 1.0	<10	<10	<10	<10	35
CL0323092	BH125 0.2	<10	<10	<10	<10	35.1

Petroleum Hydrocarbons (C8 to C37) by GC/FID



Sample ID:	CL0323091	**Job Number:**	S03_3265
Multiplier:	0.1	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH110 1.0
Acquisition Date/Time:	16/08/2003 21:30:43		
Datafile:	L:\DATA\0816TPH.GC2\010F1001.D		

Petroleum Hydrocarbons (C8 to C37) by GC/FID



Sample ID:	CL0323092	**Job Number:**	S03_3265
Multiplier:	0.1	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	BH125 0.2
Acquisition Date/Time:	16/08/2003 22:17:13		
Datafile:	L:\DATA\0816TPH.GC2\011F1101.D		

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3 @ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

TEST REPORT
SOIL SAMPLE ANALYSIS

1252

TES Report No. EFS/033266

Soil Mechanics
Geotechnical House
Unit 18
Deeside Industrial Estate
Deeside
Clwyd
CH5 2LR

Site: Cronton Colliery

The 6 samples described in this report were scheduled for analysis by TES Bretby on 08-Aug-2003.
The analysis was completed by: 30-Aug-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Page 2)
Table of Report Notes (Page 3)

On behalf of
TES Bretby :
J Hannah

J Hannah
Project Co-ordinator

Date of Issue: 30-Aug-2003

Tests marked 'not UKAS accredited' in this report are not included
in the UKAS Accreditation Schedule for our laboratory.
TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

Units :		mg/kg	mg/l	uS/cm	pH Units	%	mg/l	mg/l	mg/l									
Method Codes :		ICPACIDS	ICPWSS	WSLM2	WSLM3	LOI450	SSAL1	SSAL1	WSLM60									
Detection Limits :		10	0.1			0.2	1	1	0.1									
UKAS Accredited :		yes	yes	yes	yes	no	no	no	no									
TES ID Number CL/	Client Sample Description	SO4-- (acid sol)	SO4-- (H2O sol) mg/l	Conductivity uS/cm	pH units	LOI % @ 450oC	Available Magnesium	Available Potassium	Available Phosphorus									
0323104	TP002/02 0.1-0.2			3370	3.1	26.9	536	140	3.7									
0323105	TP002/02 0.5-0.6	15900	2900	2730	5.1	24.0	786	340	2.1									
0323106	TP002/02 1.0-1.2			2450	7.7	31.3												
0323107	TP002/03 0.1-0.2			2790	5.4	21.7	834	248	2.4									
0323108	TP002/03 0.5-0.6	10100	2710	2700	5.8	24.8	634	281	<2.0									
0323109	TP002/03 1.0-1.2			2770	6.5	21.2												

TES Bretby

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Date Printed	30 August 2003
Report Number	EFS/033266
Table Number	1

TES Bretby

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3@ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

TEST REPORT
SOIL SAMPLE ANALYSIS

1252

TES Report No. EFS/033426

Soil Mechanics
Geotechnical House
Unit 18
Deeside Industrial Estate
Deeside
Clwyd
CH5 2LR

Site: Cronton Colliery

The 21 samples described in this report were scheduled for analysis by TES Bretby on 19-Aug-2003.
The analysis was completed by: 05-Sep-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of Report Notes (Page 4)

On behalf of
TES Bretby :
J Hannah

J Hannah
Project Co-ordinator

Date of Issue: 05-Sep-2003

Tests marked 'not UKAS accredited' in this report are not included
in the UKAS Accreditation Schedule for our laboratory.
TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

Units :		mg/kg	mg/l	uS/cm	pH Units	%	mg/l	mg/l	mg/l								
Method Codes :		ICPACIDS	ICPWSS	WSLM2	WSLM3	LOI450	SSAL1	SSAL1	WSLM60								
Detection Limits :		10	0.1			0.2	1	1	0.1								
UKAS Accredited :		yes	yes	yes	yes	no	no	no	no								
TES ID Number CU	Client Sample Description	SO4-- (acid sol)	SO4-- (H2O sol) mg/l	Conductivity uS/cm	pH units	LOI % @ 450oC	Available Magnesium	Available Potassium	Available Phosphorus								
0324153	TP001/01 0.1-0.2			2330	3.8	15.1	136	222	5.2								
0324154	TP001/01 0.5-0.6	2930	1070	2410	7.5	15.5	324	420	<2.0								
0324155	TP001/01 1.0-1.2			2750	8.1	14.6											
0324156	TP001/02 0.1-0.2			2350	6.0	14.0	344	268	3.7								
0324157	TP001/02 0.5-0.6	17700	2040	2580	6.2	20.2	427	238	<2.0								
0324158	TP001/02 1.0-1.2			2560	7.2	21.4											
0324159	TP001/03 0.1-0.2			2210	7.9	15.0	206	117	19.8								
0324160	TP001/03 0.5-0.6	2970	859	2270	7.3	8.2	190	211	20.1								
0324161	TP001/03 1.0-1.2			2580	7.2	23.4											
0324162	TP001/04 0.1-0.2			2190	7.7	10.7	132	176	14.9								
0324163	TP001/04 0.5-0.6	20000	2130	2610	7.1	12.8	572	342	10.0								
0324164	TP001/04 1.0-1.2			2620	7.4	9.2											
0324165	TP001/05 0.1-0.2			2270	8.0	20.2	166	224	96.8								
0324166	TP001/05 0.5-0.6	9930	1860	2340	7.4	13.2	314	281	3.7								
0324167	TP001/05 1.0-1.2			2730	7.5	12.0											
0324168	TP001/06 0.1-0.2			2170	8.3	5.6	166	254	48.1								
0324169	TP001/06 0.5-0.6	2880	482	2320	11.0	4.5	148	304	42.3								
0324170	TP001/06 1.0-1.2			2420	7.8	19.0											
0324171	TP001/07 0.1-0.2			2210	8.0	4.3	216	268	15.2								
0324172	TP001/07 0.5-0.6	10800	2020	2770	6.4	8.2	699	350	<2.0								

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Date Printed	5 September 2003
Report Number	EFS/033426
Table Number	1

TES Bretby

Units :		mg/kg	mg/l	uS/cm	pH Units	%	mg/l	mg/l	mg/l									
Method Codes :		ICPACIDS	ICPWSS	WSLM2	WSLM3	LOI450	SSAL1	SSAL1	WSLM60									
Detection Limits :		10	0.1			0.2	1	1	0.1									
UKAS Accredited :		yes	yes	yes	yes	no	no	no	no									
TES ID Number CLI	Client Sample Description	SO4-- (acid sol)	SO4-- (H2O sol) mg/l	Conductivity uS/cm	pH units	LOI % @ 450oC	Available Magnesium	Available Potassium	Available Phosphorus									
0324173	TP001/07 1.0-1.2			3270	6.7	9.2												

TES Bretby

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Date Printed	5 September 2003
Report Number	EFS/033426
Table Number	1

TES Bretby

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3@ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S Insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

TEST REPORT
SOIL SAMPLE ANALYSIS

1252

TES Report No. EFS/033427

Soil Mechanics
Geotechnical House
Unit 18
Deeside Industrial Estate
Deeside
Clwyd
CH5 2LR

Site: Cronton Colliery

The 27 samples described in this report were scheduled for analysis by TES Bretby on 19-Aug-2003.
The analysis was completed by: 05-Sep-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of Report Notes (Page 4)

On behalf of
TES Bretby :
J Hannah

J Hannah
Project Co-ordinator

Date of Issue: 05-Sep-2003

Tests marked 'not UKAS accredited' in this report are not included
in the UKAS Accreditation Schedule for our laboratory.
TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

Units :		mg/kg	mg/l	uS/cm	pH Units	%	mg/l	mg/l	mg/l								
Method Codes :		ICPACIDS	ICPWSS	WSLM2	WSLM3	LOI450	SSAL1	SSAL1	WSLM60								
Detection Limits :		10	0.1			0.2	1	1	0.1								
UKAS Accredited :		yes	yes	yes	yes	no	no	no	no								
TES ID Number CL/	Client Sample Description	SO4-- (acid sol)	SO4-- (H2O sol) mg/l	Conductivity uS/cm	pH units	LOI % @ 450oC	Available Magnesium	Available Potassium	Available Phosphorus								
0324180	TP002/01 0.1-0.2			2630	7.0	9.6	599	285	<2.0								
0324181	TP002/01 0.5-0.6	8350	2140	2580	7.1	18.5	411	311	<2.0								
0324182	TP002/01 1.0-1.2			2520	6.9	27.9											
0324195	TP002/10 0.1-0.2			2580	7.2	16.7	516	362	<2.0								
0324196	TP002/10 0.5-0.6	10300	1930	2480	7.6	24.5	390	236	<2.0								
0324197	TP002/10 1.0-1.2			2610	7.5	19.2											
0324198	TP002/11 0.1-0.2			2410	6.8	18.6	434	213	<2.0								
0324199	TP002/11 0.5-0.6	16600	1960	2400	4.7	22.5	294	200	<2.0								
0324200	TP002/11 1.0-1.2			2530	7.6	14.2											
0324183	TP002/04 0.1-0.2			2510	4.3	33.7	376	151	<2.0								
0324184	TP002/04 0.5-0.6	23100	1950	2460	5.4	21.8	591	226	<2.0								
0324185	TP002/04 1.0-1.2			2490	5.5	3.9											
0324174	TP002/05 0.1-0.2			3720	5.6	22.6	533	74.5	<2.0								
0324175	TP002/05 0.5-0.6	12700	2650	2920	5.5	17.7	821	279	<2.0								
0324176	TP002/05 1.0-1.2			2800	6.8	19.1											
0324189	TP002/06 0.1-0.2			2990	4.1	19.6	618	186	<2.0								
0324190	TP002/06 0.5-0.6	4860	1740	2810	7.4	20.8	435	357	<2.0								
0324191	TP002/06 1.0-1.2			3080	7.7	18.7											
0324177	TP002/07 0.1-0.2			2210	7.8	4.2	222	202	<2.0								
0324178	TP002/07 0.5-0.6	10600	2010	2450	6.1	20.9	348	254	<2.0								

TES Bretby

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Date Printed	5 September 2003
Report Number	EFS/033427
Table Number	1

TES Bretby

Units :		mg/kg	mg/l	uS/cm	pH Units	%	mg/l	mg/l	mg/l									
Method Codes :		ICPACIDS	ICPWSS	WSLM2	WSLM3	LOI450	SSAL1	SSAL1	WSLM60									
Detection Limits :		10	0.1			0.2	1	1	0.1									
UKAS Accredited :		yes	yes	yes	yes	no	no	no	no									
TES ID Number CU	Client Sample Description	SO4-- (acid sol)	SO4-- (H2O sol) mg/l	Conductivity uS/cm	pH units	LOI % @ 450oC	Available Magnesium	Available Potassium	Available Phosphorus									
0324179	TP002/07 1.0-1.2			2290	7.0	48.7												
0324186	TP002/08 0.1-0.2			2770	6.7	20.8	571	514	<2.0									
0324187	TP002/08 0.5-0.6	5000	1860	2790	7.3	24.2	330	356	<2.0									
0324188	TP002/08 1.0-1.2			2810	7.4	23.3												
0324192	TP002/09 0.1-0.2			2930	6.9	15.4	676	339	<2.0									
0324193	TP002/09 0.5-0.6	8100	2320	2890	6.4	20.5	557	332	<2.0									
0324194	TP002/09 1.0-1.2			2850	6.1	22.4												

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Date Printed	5 September 2003
Report Number	EFS/033427
Table Number	1

TES Bretby

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3@ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

TES Bretby

TEST REPORT
SOIL SAMPLE ANALYSIS

UKAS TESTING
1252

TES Report No. EFS/033428

Soil Mechanics
Geotechnical House
Unit 18
Deeside Industrial Estate
Deeside
Clwyd
CH5 2LR

Site: Cronton Colliery

The 21 samples described in this report were scheduled for analysis by TES Bretby on 20-Aug-2003.
The analysis was completed by: 05-Sep-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of Report Notes (Page 4)

On behalf of
TES Bretby :
J Hannah

J Hannah
Project Co-ordinator

Date of Issue: 05-Sep-2003

Tests marked 'not UKAS accredited' in this report are not included
in the UKAS Accreditation Schedule for our laboratory.
TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

Units :		mg/kg	mg/l	uS/cm	pH Units	%	mg/l	mg/l	mg/l									
Method Codes :		ICPACIDS	tCPWSS	WSLM2	WSLM3	LOI450	SSAL1	SSAL1	WSLM60									
Detection Limits :		10	0.1			0.2	1	1	0.1									
UKAS Accredited :		yes	yes	yes	yes	no	no	no	no									
TES ID Number CU	Client Sample Description	SO4-- (acid sol)	SO4-- (H2O sol) mg/l	Conductivity uS/cm	pH units	LOI % @ 450oC	Available Magnesium	Available Potassium	Available Phosphorus									
0324216	TP003/10 0.1-0.2			2510	7.6	11.9	403	280	6.7									
0324217	TP003/10 0.5-0.6	4080	1610	2510	7.7	20.9	306	354	10.3									
0324218	TP003/10 1.0-1.2			2390	7.6	21.7												
0324219	TP003/11 0.1-0.2			2610	7.3	15.8	783	338	9.4									
0324220	TP003/11 0.5-0.6	8790	1950	2540	6.9	13.3	624	499	10.7									
0324221	TP003/11 1.0-1.2			2550	7.0	11.3												
0324210	TP003/02 0.1-0.2			2440	7.2	21.6	510	266	2.1									
0324211	TP003/02 0.5-0.6	11800	2210	2430	7.2	19.2	516	237	2.4									
0324212	TP003/02 1.0-1.2			2470	7.5	17.3												
0324201	TP003/04 0.1-0.2			2340	7.4	9.0	369	189	2.7									
0324202	TP003/04 0.5-0.6	1530	597	2400	7.5	3.8	386	192	<2.0									
0324203	TP003/04 1.0-1.2			2320	8.2	5.1												
0324204	TP003/06 0.1-0.2			1990	8.6	4.5	366	194	<2.0									
0324205	TP003/06 0.5-0.6	120	15.8	2010	8.8	3.3	599	273	<2.0									
0324206	TP003/06 1.0-1.2			2050	8.8	3.4												
0324207	TP003/07 0.1-0.2			2890	5.6	14.7	855	172	<2.0									
0324208	TP003/07 0.5-0.6	5280	1610	2750	7.0	14.4	595	299	<2.0									
0324209	TP003/07 1.0-1.2			2860	6.8	15.7												
0324213	TP003/09 0.1-0.2			2340	6.4	19.6	193	386	3.7									
0324214	TP003/09 0.5-0.6	2210	702	2250	7.6	13.6	195	247	7.9									

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Date Printed	5 September 2003
Report Number	EFS/033428
Table Number	1

TES Bretby

Units :		mg/kg	mg/l	uS/cm	pH Units	%	mg/l	mg/l	mg/l									
Method Codes :		ICPACIDS	ICPWSS	WSLM2	WSLM3	LOI450	SSAL1	SSAL1	WSLM60									
Detection Limits :		10	0.1			0.2	1	1	0.1									
UKAS Accredited :		yes	yes	yes	yes	no	no	no	no									
TES ID Number CL/	Client Sample Description	SO4-- (acid sol)	SO4-- (H2O sol) mg/l	Conductivity uS/cm	pH units	LOI % @ 450eC	Available Magnesium	Available Potassium	Available Phosphorus									
0324215	TP003/09 1.0-1.2			2150	7.9	30.0												

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Date Printed	5 September 2003
Report Number	EFS/033428
Table Number	1

TES Bretby

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3@ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

TEST REPORT
SOIL SAMPLE ANALYSIS

1252

TES Report No. EFS/033429

Soil Mechanics
Geotechnical House
Unit 18
Deeside Industrial Estate
Deeside
Clwyd
CH5 2LR

Site: Cronton Colliery

The 12 samples described in this report were scheduled for analysis by TES Bretby on 20-Aug-2003.
The analysis was completed by: 05-Sep-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Page 2)
Table of Report Notes (Page 3)

On behalf of
TES Bretby :
J Hannah

J Hannah
Project Co-ordinator

Date of Issue: 05-Sep-2003

Tests marked 'not UKAS accredited' in this report are not included
in the UKAS Accreditation Schedule for our laboratory.
TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

Units :		mg/kg	mg/l	uS/cm	pH Units	%	mg/l	mg/l	mg/l									
Method Codes :		ICPACIDS	ICPWSS	WSLM2	WSLM3	LOI450	SSAL1	SSAL1	WSLM60									
Detection Limits :		10	0.1			0.2	1	1	0.1									
UKAS Accredited :		yes	yes	yes	yes	no	no	no	no									
TES ID Number CL/	Client Sample Description	SO4-- (acid sol)	SO4-- (H2O sol) mg/l	Conductivity uS/cm	pH units	LOI % @ 450eC	Available Magnesium	Available Potassium	Available Phosphorus									
0324222	TP003/01 0.1-0.2			2220	7.9	22.8	152	270	<2.0									
0324223	TP003/01 0.5-0.6	3430	1440	2310	8.1	8.2	294	216	21.0									
0324224	TP003/01 1.0-1.2			2570	7.7	15.5												
0324225	TP003/03 0.1-0.2			2460	8.0	11.9	438	358	<2.0									
0324226	TP003/03 0.5-0.6	5650	1760	2420	8.1	11.4	432	353	<2.0									
0324227	TP003/03 1.0-1.2			2440	8.2	9.2												
0324228	TP003/05 0.1-0.2			2740	7.1	12.9	568	460	<2.0									
0324229	TP003/05 0.5-0.6	12600	2160	2570	7.2	13.4	611	510	<2.0									
0324230	TP003/05 1.0-1.2			2610	7.6	13.0												
0324231	TP003/08 0.1-0.2			2580	7.6	28.4	441	362	2.1									
0324232	TP003/08 0.5-0.6	6070	1150	2580	7.6	22.4	434	407	4.0									
0324233	TP003/08 1.0-1.2			2410	7.4	50.8												

TES Bretby

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Date Printed	5 September 2003
Report Number	EFS/033429
Table Number	1

TES Bretby

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd')pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3@ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

TEST REPORT
SOIL SAMPLE ANALYSIS

1252

TES Report No. EFS/033430

Soil Mechanics
Geotechnical House
Unit 18
Deeside Industrial Estate
Deeside
Clwyd
CH5 2LR

Site: Cronton Colliery

The 10 samples described in this report were scheduled for analysis by TES Bretby on 20-Aug-2003.
The analysis was completed by: 05-Sep-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of PAH (MS) Results (Pages 4 to 9)
Table of PCB Congener Results (Page 10)
Table of TPH Texas banding (Page 11)
GC-FID Chromatograms (Page 12)
Table of Report Notes (Page 13)

On behalf of
TES Bretby :
J Hannah

J Hannah
Project Co-ordinator

Date of Issue: 05-Sep-2003

Tests marked 'not UKAS accredited' in this report are not included
in the UKAS Accreditation Schedule for our laboratory.
TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

Units :		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :		BGCN22	GROHSA	ICPACIDS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICTSCN28	ICTSCN28	PAHSCUV	SCNCR6
Detection Limits :		1	0.1	10	0.5	0.1	0.5	0.5	0.5	0.10	0.5	0.5	3.0	1	5	10	0.1
UKAS Accredited :		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
TES ID Number CL/	Client Sample Description	Cyanide (Free)	GRO	SO4-- (acid sol)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Zinc (MS)	CN- (total)	Sulphide	PAH (screening)	Chromium vi.
0324236	TP031 1.0	<1		41	6.00	<0.10	26.6	8.50	8.00	0.12	13.70	0.76	24.6	<1	<5	<10	1.2
0324237	TP032 1.5	<1		268	7.20	<0.10	19.4	15.00	27.2	0.14	15.3	0.66	35.5	<1	<5	<10	0.7
0324235	TP034 0.5	<1		405	7.00	<0.10	15.5	23	20.1	0.20	24.8	1.50	63	<1	<5	<10	<0.1
0324234	TP038 0.5	<1		2420	5.70	<0.10	25	16.6	8.20	0.14	18.7	1.01	50.8	<1	<5	<10	<0.1
0324240	TP042 0.4	<1		10900	20.5	<0.10	9.40	32.4	56	0.23	15.2	1.70	37.9	<1	<5		<0.1
0324241	TP042 3.0	<1		1410	9.80	0.18	2.90	25.5	32.1	0.14	13.50	1.36	26.9	<1	25		<0.1
0324238	TP046 1.0	<1		2910	14.50	0.19	11.40	45.5	35.4	0.16	21.9	1.19	54.7	<1	15		<0.1
0324239	TP046 2.3	<1		450	2.00	<0.10	11.40	5.60	7.10	0.11	5.00	0.69	10.70	<1	<5		<0.1
0324243	TP047 1.3	<1	<0.2	4380	15.8	0.23	14.30	39.4	24.9	0.11	53.8	1.50	88.9	<1	6		<0.1
0324242	TP047 2.0	<1		392	0.80	<0.10	8.30	0.80	2.70	<0.10	5.40	<0.50	10.30	<1	<5		<0.1

TES Bretby

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Client Name Soil Mechanics

Contact Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Date Printed	5 September 2003
Report Number	EFS/033430
Table Number	1

TES Bretby

Units :		mg/kg	mg/kg	mg/kg	pH Units	mg/kg	mg/kg	ug/kg	%									
Method Codes :		SCNCR6	SVOCSW	TPHFID	WSLM3	WSLM4	ICPBOR	PCBCON	TSBRE1									
Detection Limits :		0.5	0.2-10.0	10.0		0.5	0.5		0.001									
UKAS Accredited :		yes	yes	yes	yes	yes	no	no	no									
TES ID Number CL/	Client Sample Description	Thiocyanate.	PAH by MS	TPH GCFID (AR)	pH units	Phenol Index	Boron.	PCB - 7 Congeners	Total Sulphur.									
0324238	TP031 1.0	23.7			7.6	<0.5	<0.5		0.027									
0324237	TP032 1.5	12.8			7.5	<0.5	1.1		0.034									
0324235	TP034 0.5	0.7			8.2	<0.5	1.4		0.102									
0324234	TP038 0.5	<0.5			5.2	<0.5	0.7		0.091									
0324240	TP042 0.4	<0.5	Req		4.5	0.7	1.2		0.814									
0324241	TP042 3.0	<0.5	Req		8.1	<0.5	1.4		1.932									
0324238	TP046 1.0	<0.5	Req		10.6	<0.5	0.9	Req	0.246									
0324239	TP046 2.3	0.8	Req		7.6	<0.5	1.3	Req	0.045									
0324243	TP047 1.3	<0.5	Req	95	7.5	<0.5	1.3		0.392									
0324242	TP047 2.0	0.5	Req		6.8	<0.5	0.6		0.008									

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Client Name	Soil Mechanics
Contact	Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Date Printed	5 September 2003
Report Number	EFS/033430
Table Number	1

TES Bretby

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	TP046 1.0	**Job Number:**	S03_3430
LIMS ID Number:	CL0324238	**Date Booked In:**	20-Aug-03
QC Batch Number:	1589	**Date Extracted:**	28-Aug-03
Quantitation File:	0901CCC1.D	**Date Analysed:**	01-Sep-03
Directory:	0901ABN.MS6	**Matrix:**	Soil
Dilution:	5.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	12.56	1.0	98
Acenaphthylene	208-96-8	-	< 1.0	-
Acenaphthene	83-32-9	17.75	4.0	100
Fluorene	86-73-7	19.29	2.2	99
Phenanthrene	85-01-8	22.16	23.5	98
Anthracene	120-12-7	22.29	6.5	94
Fluoranthene	206-44-0	25.73	24.2	86
Pyrene	129-00-0	26.38	18.2	88
Benzo[a]anthracene	56-55-3	29.98	7.4	91
Chrysene	218-01-9	30.09	8.5	97
Benzo[b]fluoranthene	205-99-2	33.25	7.9	94
Benzo[k]fluoranthene	207-08-9	33.33	2.5	m
Benzo[a]pyrene	50-32-8	34.44	6.7	93
Indeno[1,2,3-cd]pyrene	193-39-5	39.20	3.8	74
Dibenzo[a,h]anthracene	53-70-3	-	< 1.0	-
Benzo[g,h,i]perylene	191-24-2	40.19	3.6	76
Total (USEPA16) PAHs	-	-	< 122.0	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	74
Naphthalene-d8	76
Acenaphthene-d10	73
Phenanthrene-d10	72
Chrysene-d12	77
Perylene-d12	84

Surrogates	% Rec
Nitrobenzene-d5	78
2-Fluorobiphenyl	91
Terphenyl-d14	84

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	TP046 2.3	**Job Number:**	S03_3430
LIMS ID Number:	CL0324239	**Date Booked in:**	20-Aug-03
QC Batch Number:	1589	**Date Extracted:**	28-Aug-03
Quantitation File:	0901CCC1.D	**Date Analysed:**	01-Sep-03
Directory:	0901ABN.MS6	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	-	< 0.2	-
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	79
Naphthalene-d8	80
Acenaphthene-d10	78
Phenanthrene-d10	85
Chrysene-d12	75
Perylene-d12	81

Surrogates	% Rec
Nitrobenzene-d5	60
2-Fluorobiphenyl	69
Terphenyl-d14	96

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	TP042 0.4	**Job Number:**	S03_3430
LIMS ID Number:	CL0324240	**Date Booked In:**	20-Aug-03
QC Batch Number:	1589	**Date Extracted:**	28-Aug-03
Quantitation File:	0901CCC1.D	**Date Analysed:**	01-Sep-03
Directory:	0901ABN.MS6	**Matrix:**	Soil
Dilution:	5.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	12.57	9.4	99
Acenaphthylene	208-96-8	-	< 1.0	-
Acenaphthene	83-32-9	-	< 1.0	-
Fluorene	86-73-7	19.30	1.1	69
Phenanthrene	85-01-8	22.17	12.1	97
Anthracene	120-12-7	22.30	1.5	92
Fluoranthene	206-44-0	25.72	1.5	92
Pyrene	129-00-0	26.38	1.8	100
Benzo[a]anthracene	56-55-3	30.00	2.3	84
Chrysene	218-01-9	30.10	2.7	90
Benzo[b]fluoranthene	205-99-2	33.29	1.5	92
Benzo[k]fluoranthene	207-08-9	-	< 1.0	-
Benzo[a]pyrene	50-32-8	34.49	1.2	89
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 1.0	-
Dibenzo[a,h]anthracene	53-70-3	-	< 1.0	-
Benzo[g,h,i]perylene	191-24-2	40.30	1.7	70
Total (USEPA16) PAHs	-	-	< 41.7	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	72
Naphthalene-d8	72
Acenaphthene-d10	70
Phenanthrene-d10	71
Chrysene-d12	78
Perylene-d12	82

Surrogates	% Rec
Nitrobenzene-d5	83
2-Fluorobiphenyl	98
Terphenyl-d14	91

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	TP042 3.0	**Job Number:**	S03_3430
LIMS ID Number:	CL0324241	**Date Booked In:**	20-Aug-03
QC Batch Number:	1589	**Date Extracted:**	28-Aug-03
Quantitation File:	0901CCC1.D	**Date Analysed:**	01-Sep-03
Directory:	0901ABN.MS6	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.2	-
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	-	< 0.2	-
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	-	< 0.2	-
Pyrene	129-00-0	-	< 0.2	-
Benzo[a]anthracene	56-55-3	-	< 0.2	-
Chrysene	218-01-9	-	< 0.2	-
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 3.2	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	74
Naphthalene-d8	76
Acenaphthene-d10	78
Phenanthrene-d10	84
Chrysene-d12	76
Perylene-d12	80

Surrogates	% Rec
Nitrobenzene-d5	77
2-Fluorobiphenyl	86
Terphenyl-d14	96

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	TP047 2.0	**Job Number:**	S03_3430
LIMS ID Number:	CL0324242	**Date Booked in:**	20-Aug-03
QC Batch Number:	1589	**Date Extracted:**	28-Aug-03
Quantitation File:	0901CCC1.D	**Date Analysed:**	01-Sep-03
Directory:	0901ABN.MS6	**Matrix:**	Soil
Dilution:	5.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	12.57	2.6	97
Acenaphthylene	208-96-8	-	< 1.0	-
Acenaphthene	83-32-9	-	< 1.0	-
Fluorene	86-73-7	19.30	1.4	82
Phenanthrene	85-01-8	22.15	5.0	90
Anthracene	120-12-7	22.30	1.2	95
Fluoranthene	206-44-0	-	< 1.0	-
Pyrene	129-00-0	-	< 1.0	-
Benzo[a]anthracene	56-55-3	29.99	1.1	89
Chrysene	218-01-9	30.09	1.1	89
Benzo[b]fluoranthene	205-99-2	-	< 1.0	-
Benzo[k]fluoranthene	207-08-9	-	< 1.0	-
Benzo[a]pyrene	50-32-8	-	< 1.0	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 1.0	-
Dibenzo[a,h]anthracene	53-70-3	-	< 1.0	-
Benzo[g,h,i]perylene	191-24-2	-	< 1.0	-
Total (USEPA16) PAHs	-	-	< 22.4	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	69
Naphthalene-d8	68
Acenaphthene-d10	66
Phenanthrene-d10	67
Chrysene-d12	69
Perylene-d12	74

Surrogates	% Rec
Nitrobenzene-d5	71
2-Fluorobiphenyl	92
Terphenyl-d14	89

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS

Customer and Site Details:	Soil Mechanics: Cronton Colliery		
Sample Details:	TP047 1.3	**Job Number:**	S03_3430
LIMS ID Number:	CL0324243	**Date Booked In:**	20-Aug-03
QC Batch Number:	1589	**Date Extracted:**	28-Aug-03
Quantitation File:	0901CCC1.D	**Date Analysed:**	01-Sep-03
Directory:	0901ABN.MS6	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Soxhlet

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	12.57	0.3	95
Acenaphthylene	208-96-8	-	< 0.2	-
Acenaphthene	83-32-9	-	< 0.2	-
Fluorene	86-73-7	-	< 0.2	-
Phenanthrene	85-01-8	22.14	0.9	98
Anthracene	120-12-7	-	< 0.2	-
Fluoranthene	206-44-0	25.74	0.3	88
Pyrene	129-00-0	26.37	0.3	91
Benzo[a]anthracene	56-55-3	29.98	0.2	88
Chrysene	218-01-9	30.07	0.3	92
Benzo[b]fluoranthene	205-99-2	-	< 0.2	-
Benzo[k]fluoranthene	207-08-9	-	< 0.2	-
Benzo[a]pyrene	50-32-8	-	< 0.2	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.2	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.2	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.2	-
Total (USEPA16) PAHs	-	-	< 4.3	-

Internal Standards	% Area
1,4-Dichlorobenzene-d4	71
Naphthalene-d8	71
Acenaphthene-d10	68
Phenanthrene-d10	78
Chrysene-d12	69
Perylene-d12	73

Surrogates	% Rec
Nitrobenzene-d5	69
2-Fluorobiphenyl	83
Terphenyl-d14	96

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polychlorinated Biphenyls (congeners)

Customer and Site Details:	Soil Mechanics: Cronton Colliery	**Matrix:**	Soil
Job Number:	S03_3430	**Date Booked in:**	21-Aug-03
QC Batch Number:	1601	**Date Extracted:**	02-Sep-03
Directory:	0902PCB.GC8	**Date Analysed:**	03-Sep-03
Method:	ASE		

*** This sample data is not UKAS accredited.**

			Concentration, (µg/kg)						
	Sample ID	**Customer ID**	**PCB28**	**PCB52**	**PCB101**	**PCB118**	**PCB153**	**PCB138**	**PCB180**
*	CL0324238	TP046 1.0	<5	<5	<5	<5	<5	<5	<5
*	CL0324239	TP046 2.3	<5	<5	<5	<5	<5	<5	<5

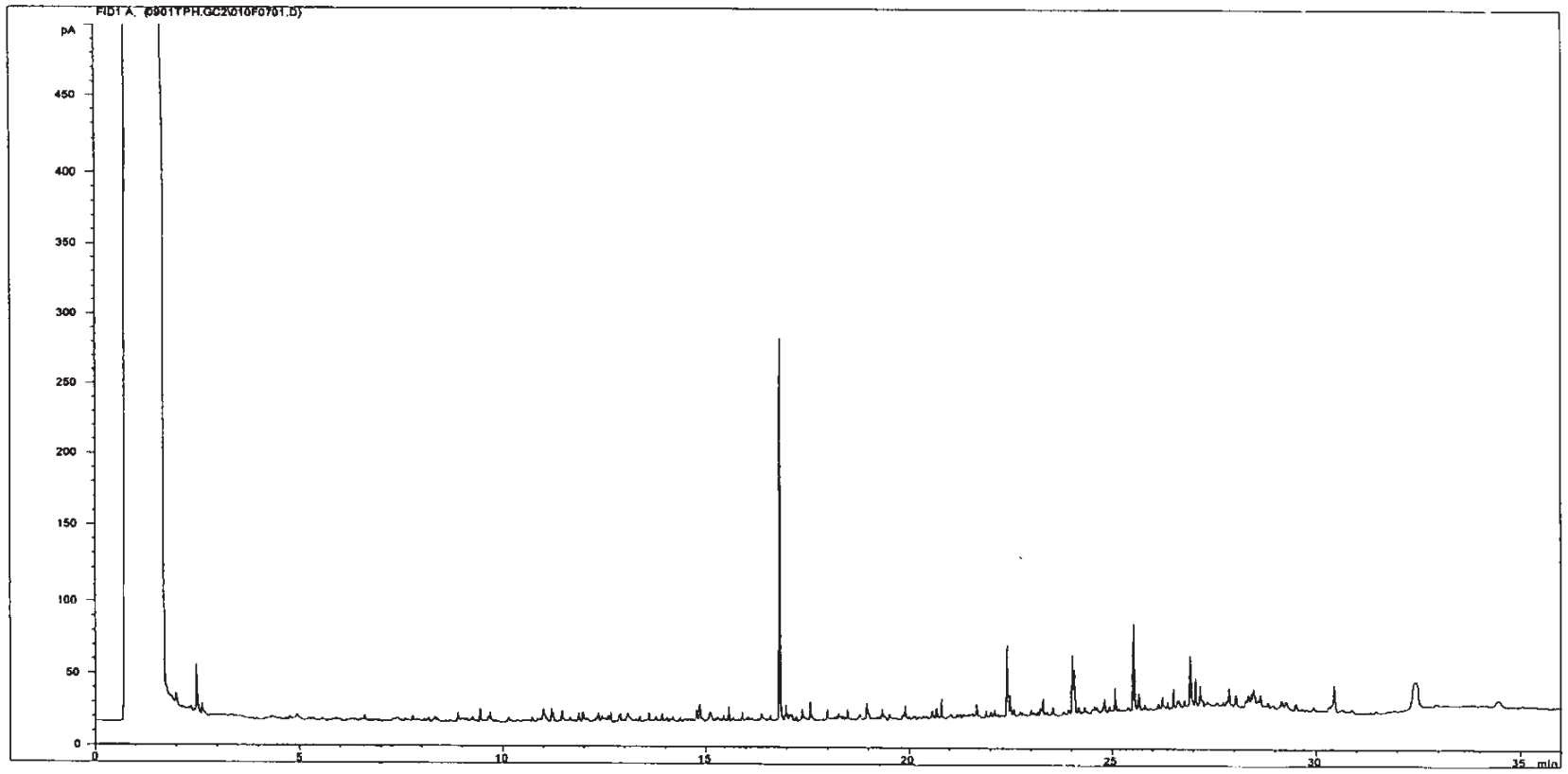
Total Petroleum Hydrocarbons (TPH) Carbon Ranges

Customer and Site Details:	Soil Mechanics : Cronton Colliery	**Matrix:**	Soil
Job Number:	S03_3430	**Date Booked In:**	20/08/2003
QC Batch Number:	1595	**Date Extracted:**	29/08/2003
Directory:	L:\DATA\0901TPH.GC2\010F0701.D	**Date Analysed:**	01/09/2003
Method:	ASE		

*** Sample data with an asterisk are not UKAS accredited.**

		Concentration, (mg/kg) - as wet weight				
Sample ID	**Client ID**	**>C8 - C10**	**>C10 - C12**	**>C12 - C16**	**>C16 - C21**	**>C21 - C35**
CL0324243	TP047 1.3	<10	<10	12.6	<10	63.8

Petroleum Hydrocarbons (C8 to C37) by GC/FID



Sample ID:	CL0324243	**Job Number:**	S03_3430
Multiplier:	0.1	**Client:**	Soil Mechanics
Dilution:	1	**Site:**	Cronton Colliery
Acquisition Method:	WMF_RUNF.M	**Client Sample Ref:**	TP047 1.3
Acquisition Date/Time:	09/01/2003 18:01		
Datafile:	L:\DATA\0901TPH.GC2\010F0701.D		

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg unless stated otherwise
S04 analysis not conducted in accordance with BS1377
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
co-eluted with benzo(b)fluoranthene
co-eluted with Indeno(123-cd)pyrene
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3@ 15°C

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S Insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
***** denotes this result not UKAS accredited on this sample
Þ Raised detection limit due to nature of sample

TEST REPORT
SOIL SAMPLE ANALYSIS

1252

TES Report No. EFS/033761

Soil Mechanics
Geotechnical House
Unit 18
Deeside Industrial Estate
Deeside
Clwyd
CH5 2LR

Site: Cronton Colliery

The 9 samples described in this report were logged for analysis by TES Bretby on 12-Sep-2003.
The analysis was completed by: 23-Sep-2003

Tests marked as 'not UKAS accredited' and any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Page 2)
Sample Chain of Custody Record (Pages 3 to 4)
Table of Report Notes (Page 5)

On behalf of
TES Bretby :
J Hannah

J Hannah
Project Co-ordinator

Date of Issue: 23-Sep-2003

Tests marked 'not UKAS accredited' in this report are not included in the UKAS Accreditation Schedule for our laboratory.
Tests marked '^' have been subcontracted to another laboratory.

TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

Units :		mg/kg	mg/l	uS/cm	pH Units	%	mg/l	mg/l	mg/l								
Method Codes :		ICPACIDS	ICPWSS	WSLM2	WSLM3	LOI450	SSAL1	SSAL1	WSLM60								
Detection Limits :		10	0.1			0.2	1	1	0.1								
UKAS Accredited :		yes	yes	yes	yes	no	no	no	no								
TES ID Number CL/	Client Sample Description	SO4 – (acid sol)	SO4 – (H2O sol) mg/l	Conductivity uS/cm	pH units	LOI % @ 450eC	Available Magnesium	Available Potassium	Available Phosphorus								
0326788	TP004/1 0.1-0.2			2150	8.3	12.2	118	8.60	6.1								
0326789	TP004/1 0.5-0.6	459	196	2110	7.7	1.7	444	176	2.7								
0326790	TP004/1 1.0-1.2			2150	8.3	1.1											
0326791	TP004/2 0.1-0.2			2110	5.9	69.3	46.1	52.5	11.6								
0326792	TP004/2 0.5-0.6	7570	2460	2680	5.7	24.6	615	302	11.0								
0326793	TP004/2 1.0-1.2			2540	8.0	15.7											
0326794	TP004/3 0.1-0.2			2660	4.3	40.9	491	319	14.6								
0326795	TP004/3 0.5-0.6	14400	1860	2220	5.9	56.2	146	64.8	12.8								
0326796	TP004/3 1.0-1.2			2140	6.8	41.1											

TES Bretby

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Burton-on-Trent, Staffordshire, DE15 0XD

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Client Name Soil Mechanics

Contact Mr J Northeast

Cronton Colliery

Soils Sample Analysis

Date Printed	23 September 2003
Report Number	EFS/033761
Table Number	1

TES Bretby

ENCLOSURE F
DRAWINGS

Site Location Plan	F1
Site Plan	F2

Site Location Plan

Soil Mechanics



Reproduced from the 2002 Ordnance Survey 1:50 000 scale Landranger map No 109 with the permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office, © Crown copyright, Environmental Services Group Limited, Licence Number 100004784

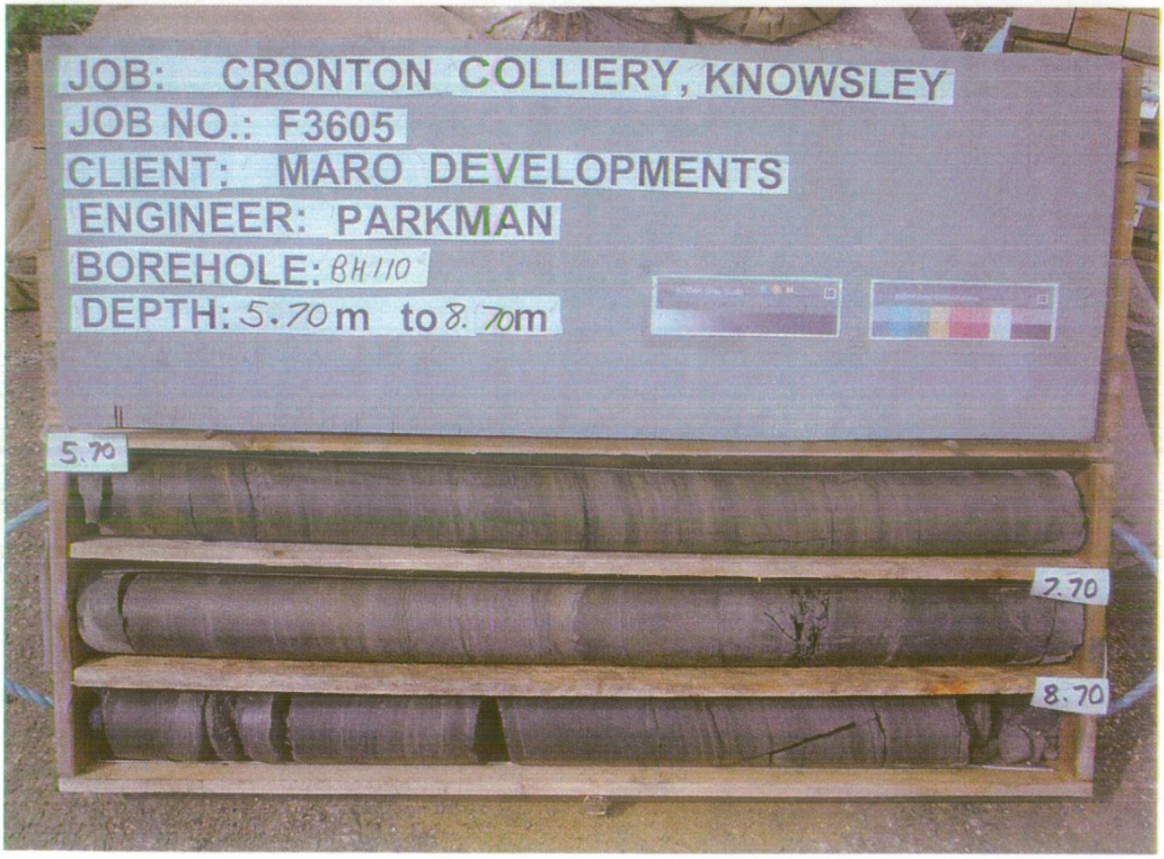
Notes: Scale 1:50 000	Project: Cronton Colliery Project No.: F3605 Carried out for: Maro Developments	Figure: F1

ENCLOSURE G
PHOTOGRAPHS

Trial Pits

Rotary Core

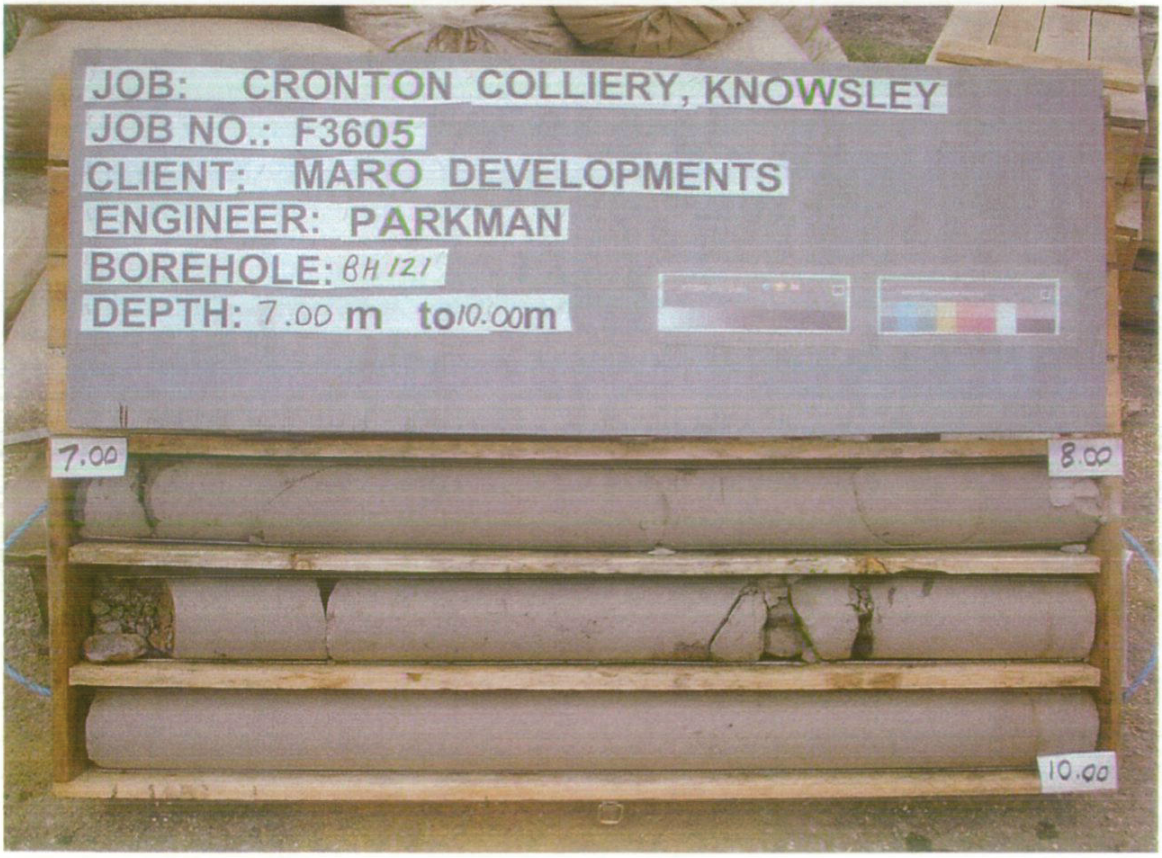

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: BH110
DEPTH: 2.60 m to 5.70m
2.60
4.70
5.70


JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: BH110
DEPTH: 5.70 m to 8.70m
5.70
7.70
8.70


JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: BH110
DEPTH: 8.70 m to 11.70m
8.70
10.70
11.70


JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: BH110
DEPTH: 11.70 m to 13.70m
11.70
13.70


JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: BH 121
DEPTH: 4.00 m to 7.00m
4.00
5.55
7.00


JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: BH 121
DEPTH: 7.00 m to 10.00m
7.00
8.00
10.00

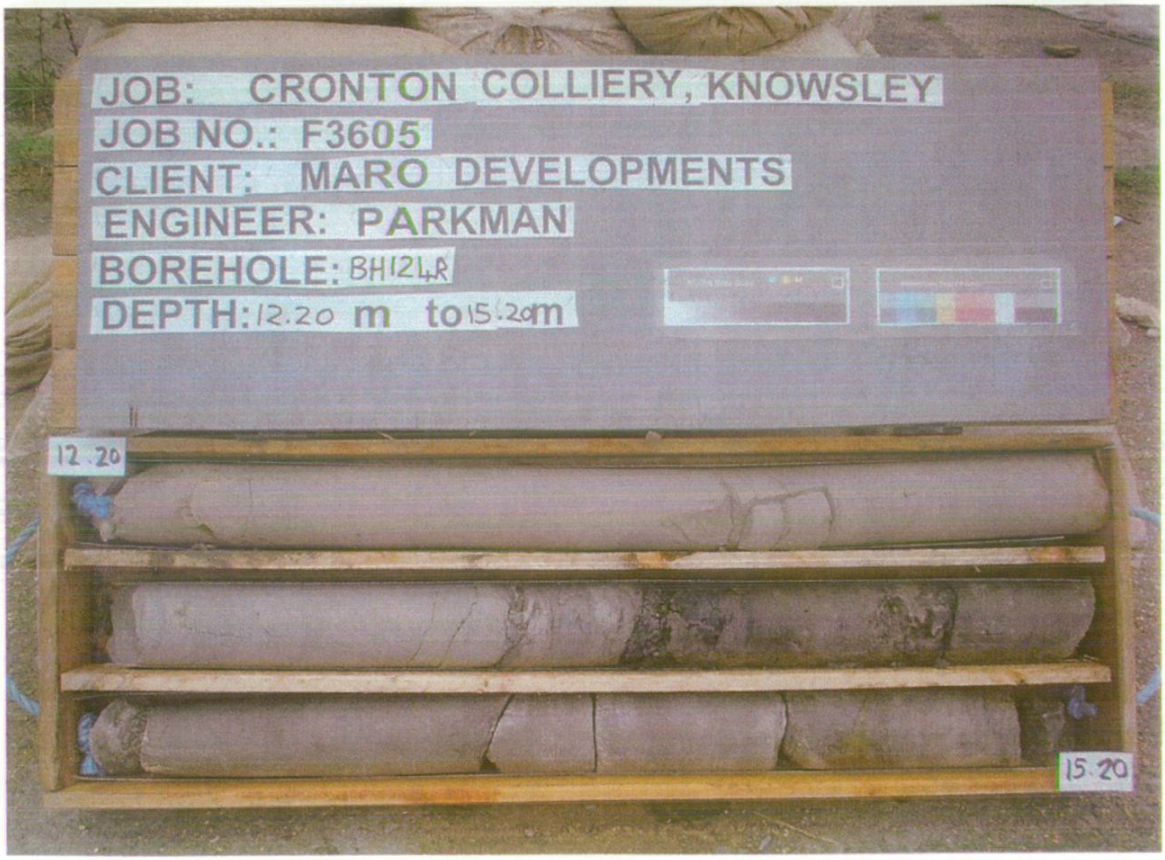

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: BH121
DEPTH: 10.00 m. to 13.00m
10.00
11.00
13.00


JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: BH121
DEPTH: 13.00 m to 16.00m
13.00
13.60
16.00

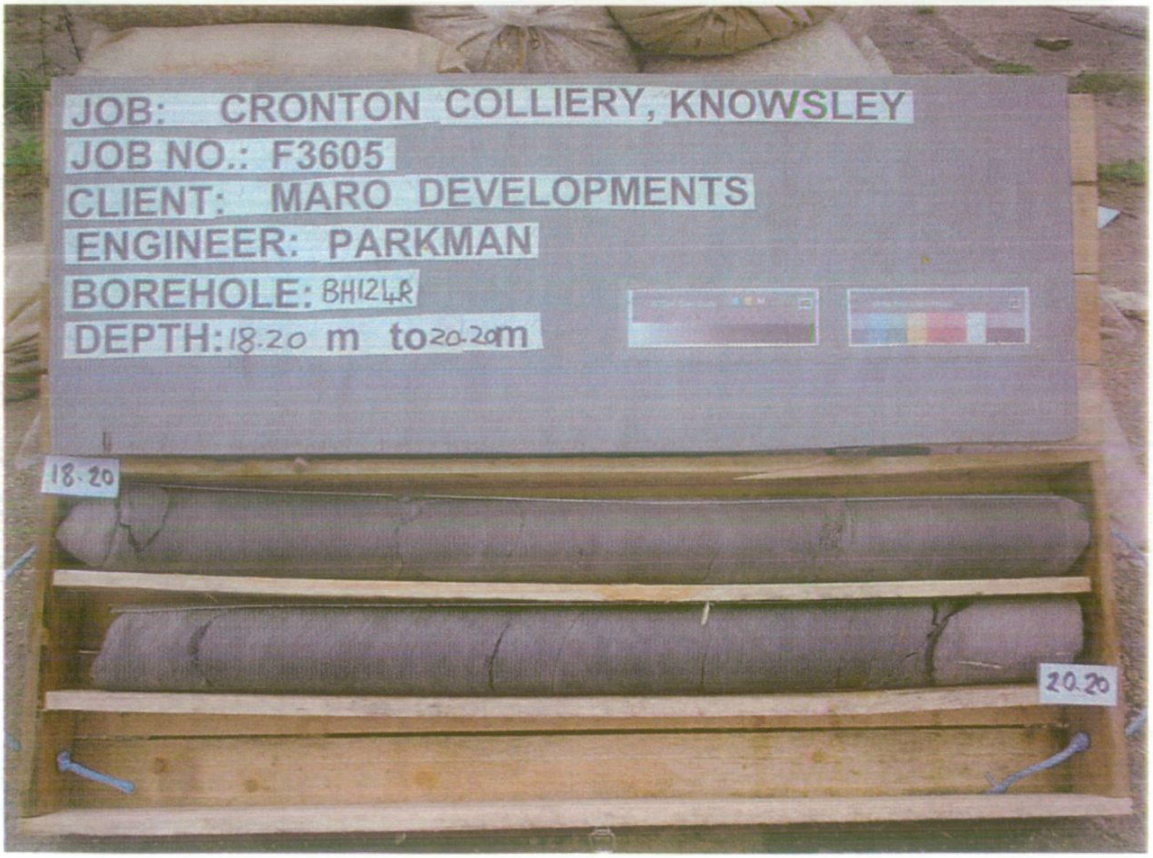

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: BH121
DEPTH: 16.00 m to19.00m
16.00
16.60
19.00


JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: BH121
DEPTH: 19.00 m to19.60m
19.00
19.60


JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: BH124R
DEPTH: 9.20 m to 12.20m
9.20
12.20

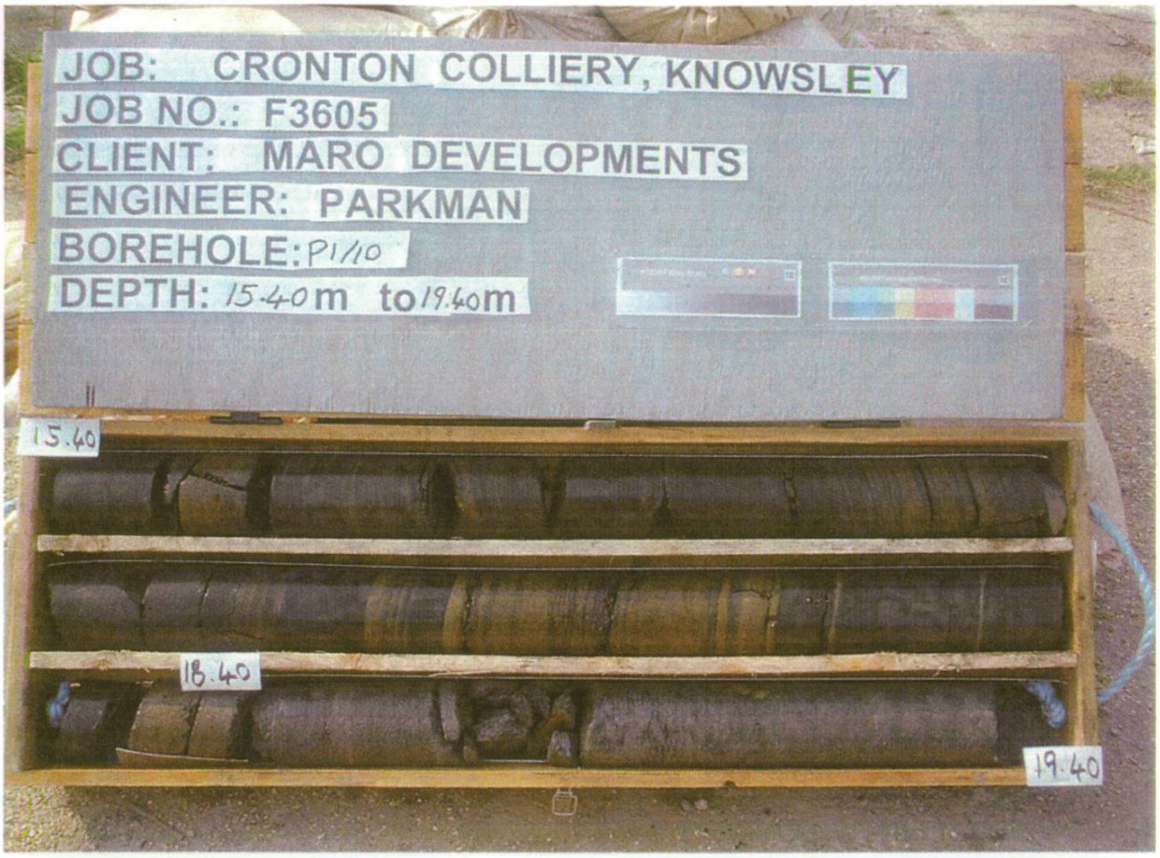

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: BH124R
DEPTH: 12.20 m to 15.20m
12.20
15.20


JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: BH12LR
DEPTH: 15.20 m to 18.20m
15.20
17.20
18.20

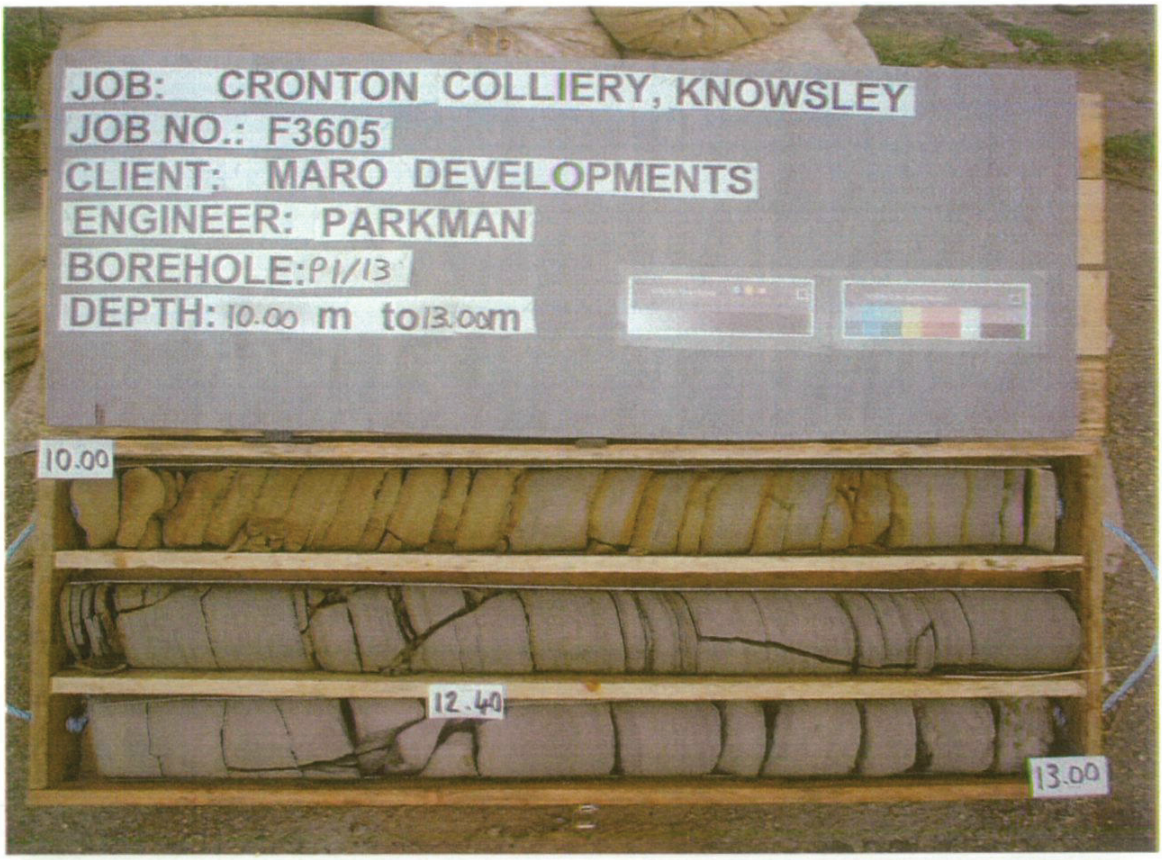

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: BH12LR
DEPTH: 18.20 m to 20.20m
18.20
20.20

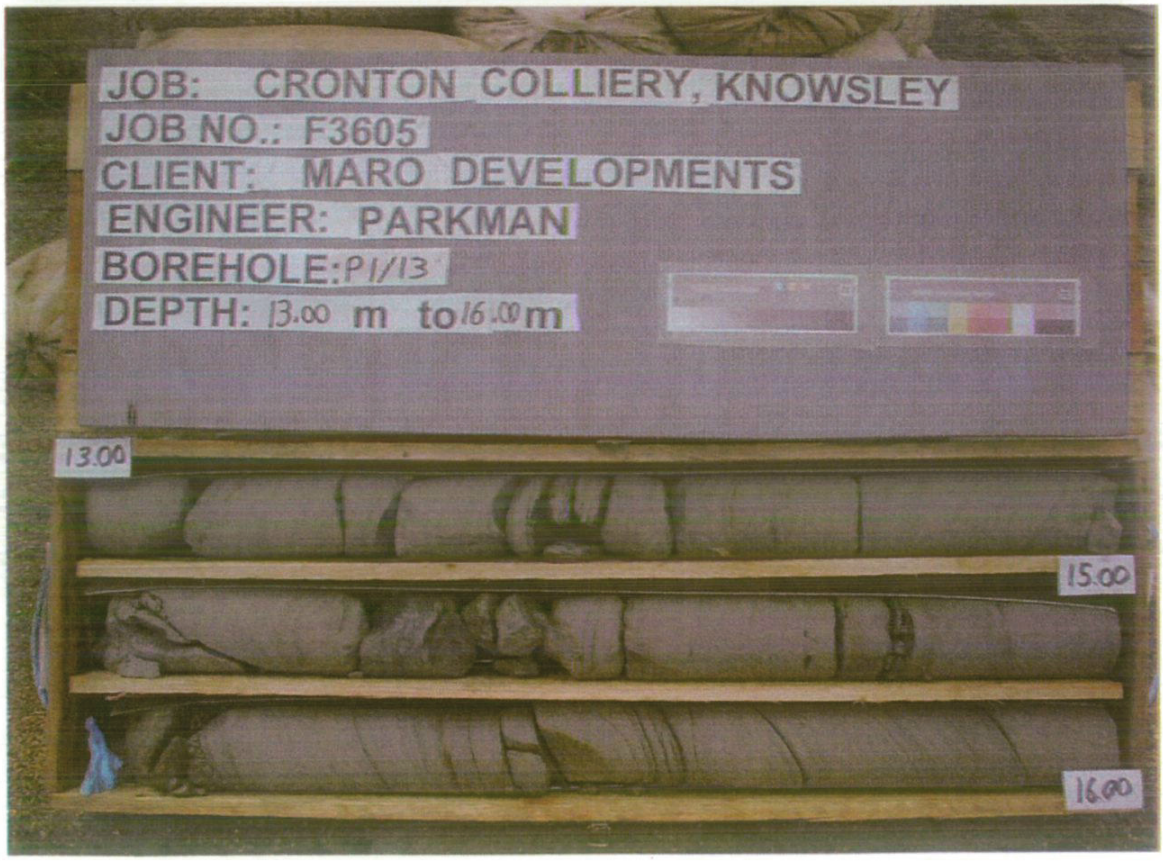

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P1/10
DEPTH: 8.85 m to 12.40m
8.85
10.80
12.40


JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P1/10
DEPTH: 12.40m to 15.40m
12.40
15.40

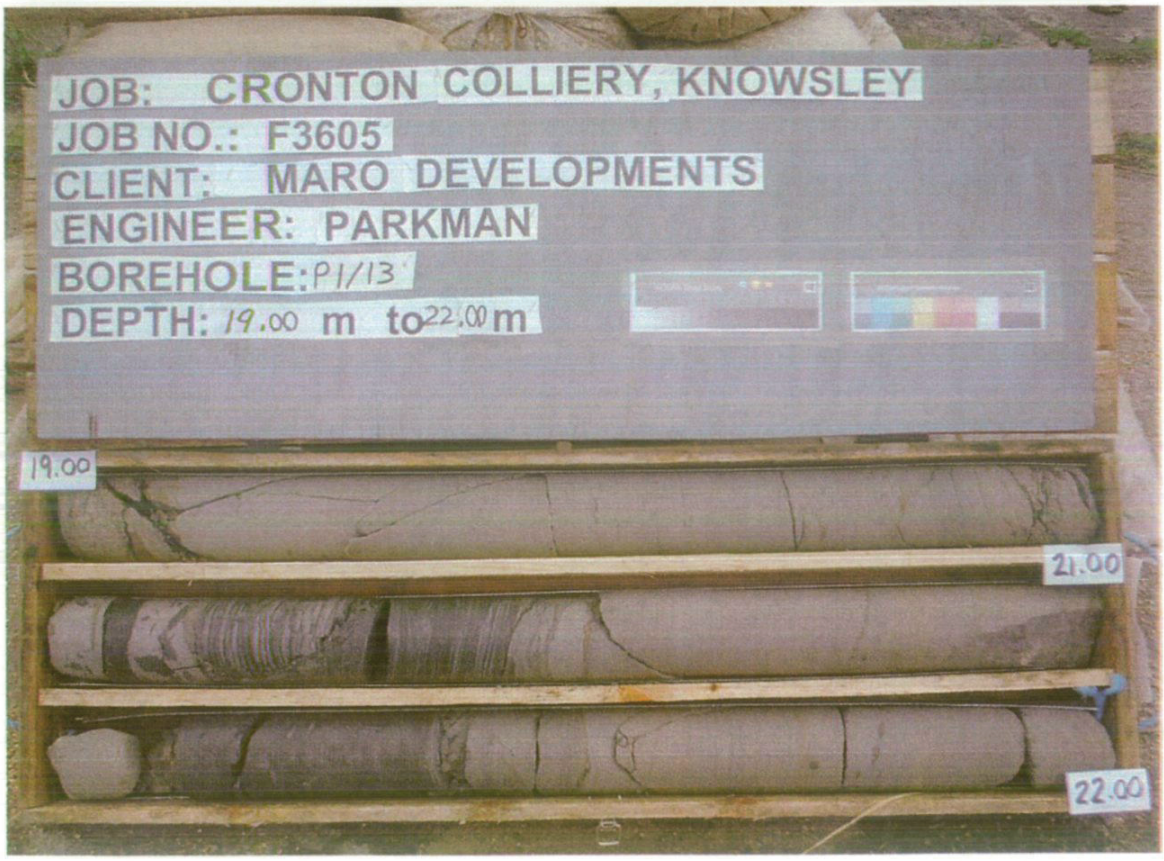

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P1/10
DEPTH: 15.40 m to 19.40 m
15.40
18.40
19.40

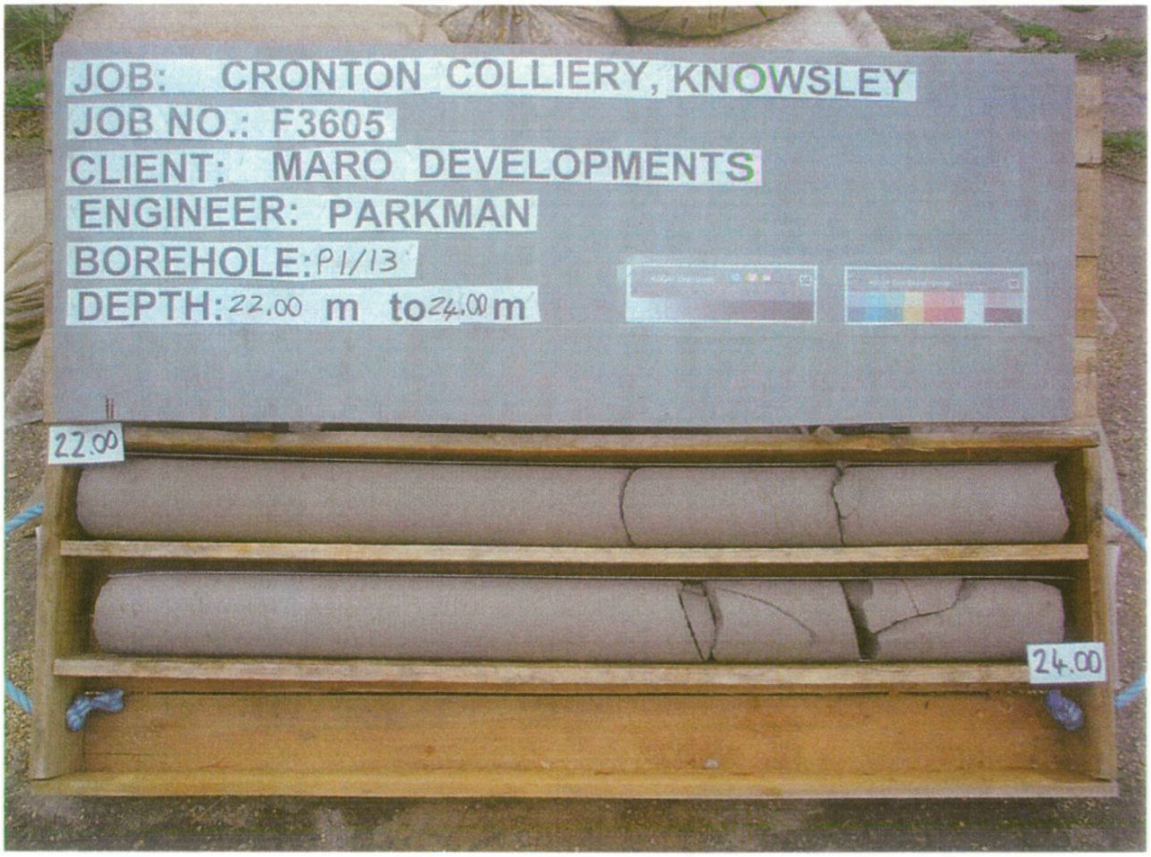

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P1/10
DEPTH: 19.40 m to 19.90 m
19.40
19.90


JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P1/13
DEPTH: 10.00 m to 13.00m
10.00
12.40
13.00

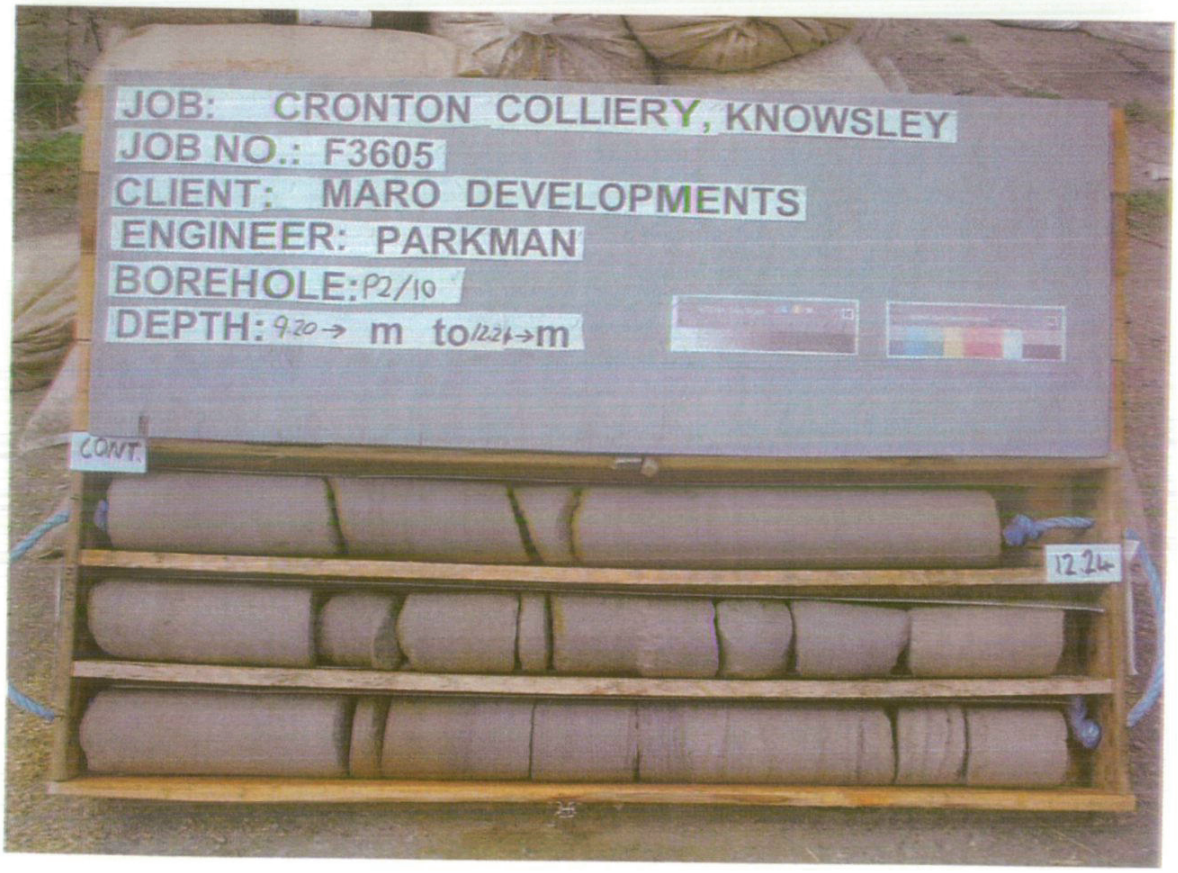

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P1/13
DEPTH: 13.00 m to 16.00m
13.00
15.00
16.00


JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P1/13
DEPTH: 16.00 m to 19.00 m
16.00
18.00
19.00


JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P1/13
DEPTH: 19.00 m to 22.00 m
19.00
21.00
22.00

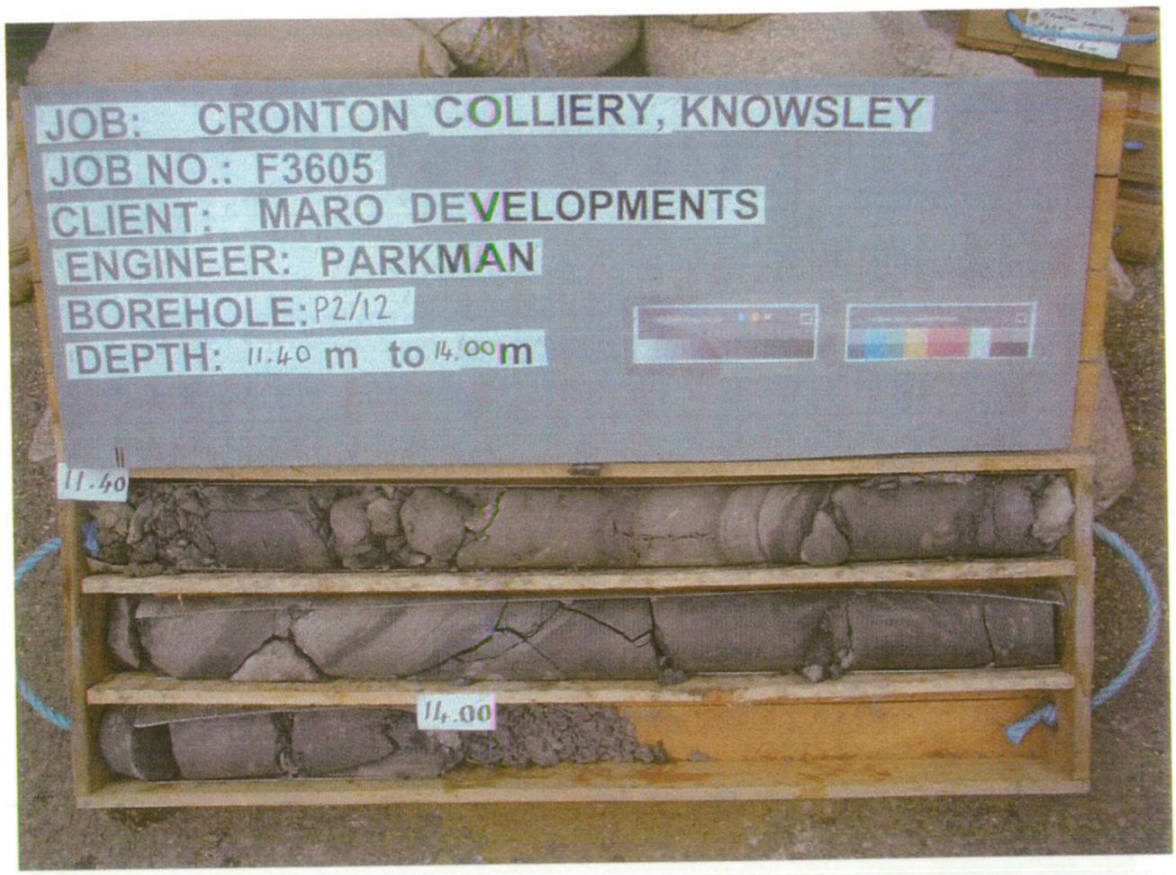

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P1/13
DEPTH: 22.00 m to 24.00 m
22.00
24.00

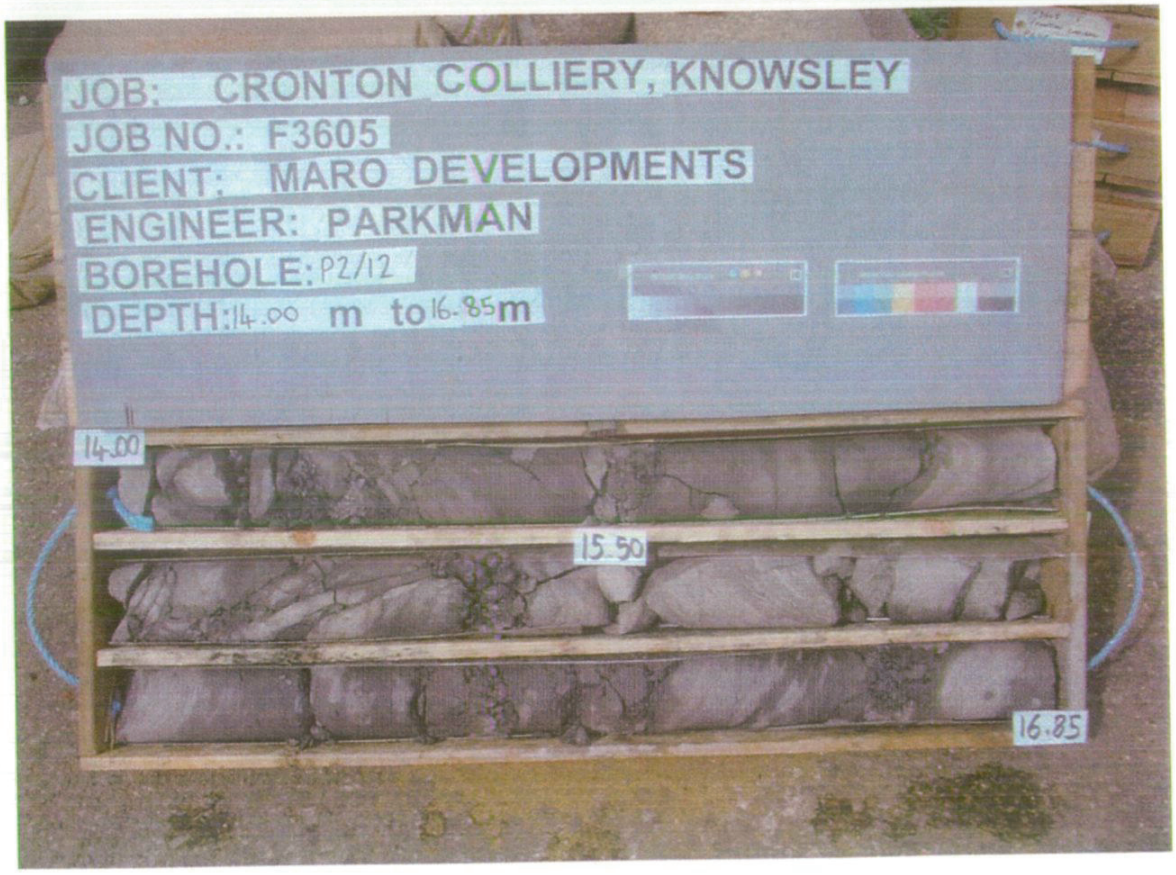

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P2/10
DEPTH: 7.22 m to 9.20 m
7.22
9.20


JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P2/10
DEPTH: 9.20 → m to 12.24 → m
CONT.
12.24

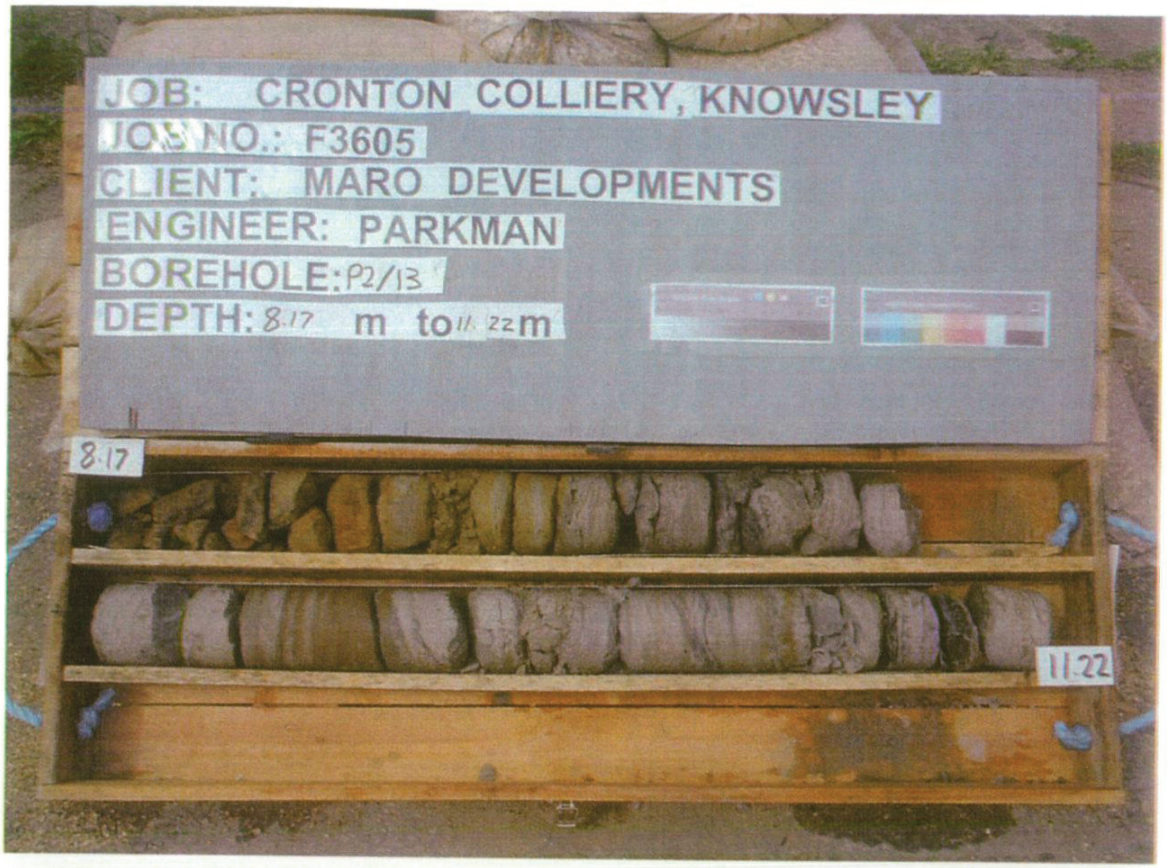

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P2/10
DEPTH: 12.24→ m to 17.22 m
CONT.
17.22

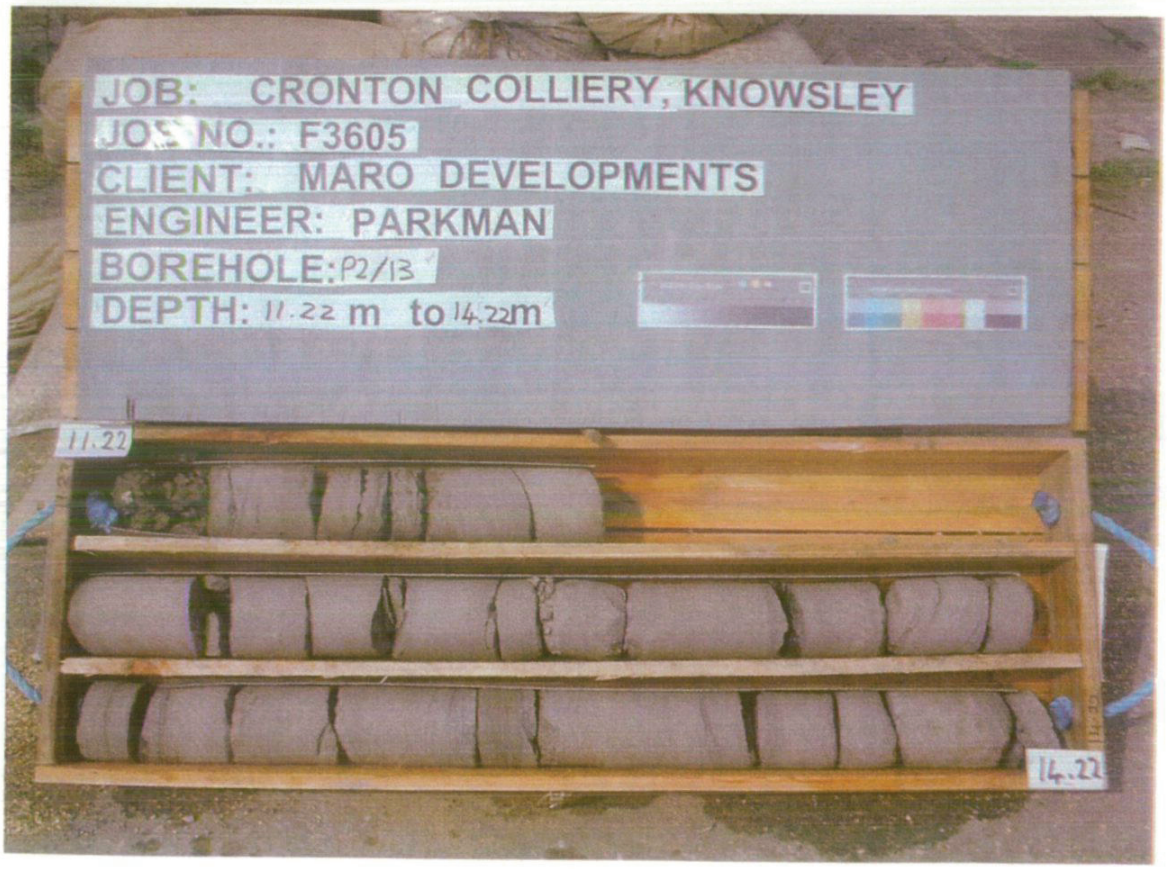

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P2/10
DEPTH: 17.22 m to 20.00 m
17.22
20.00

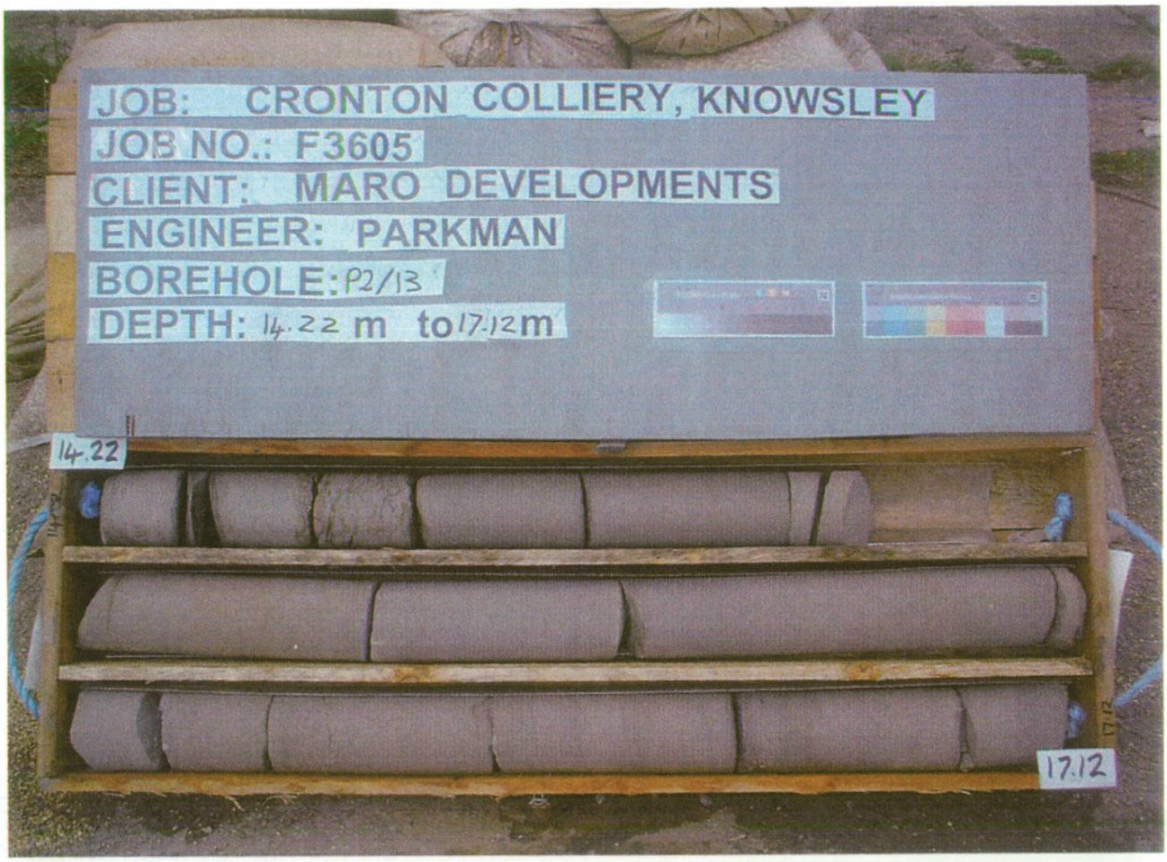

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P2/12
DEPTH: 11.40 m to 14.00 m
11.40
14.00


JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P2/12
DEPTH: 14.00 m to 16.85 m
14.00
15.50
16.85

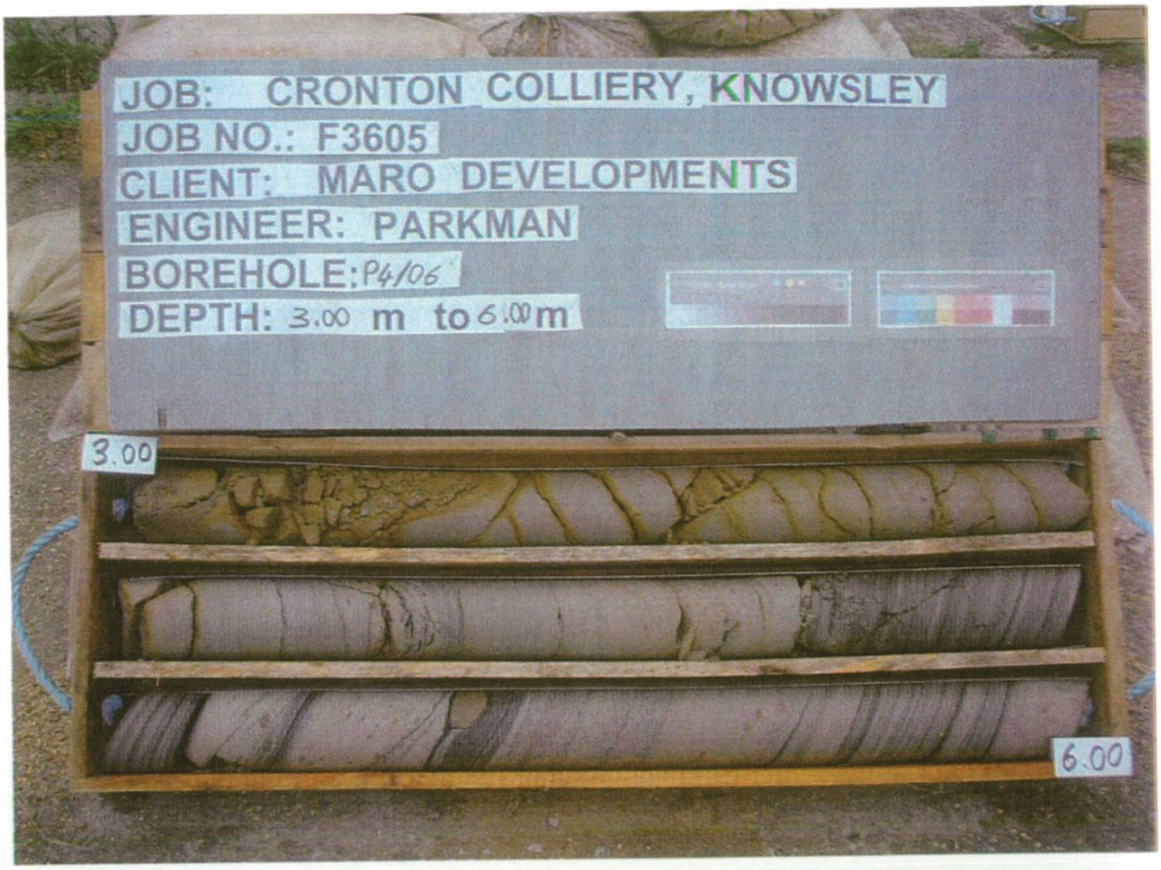

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P2/12
DEPTH: 16.85 m to 20.00 m
16.85
17.85
20.00

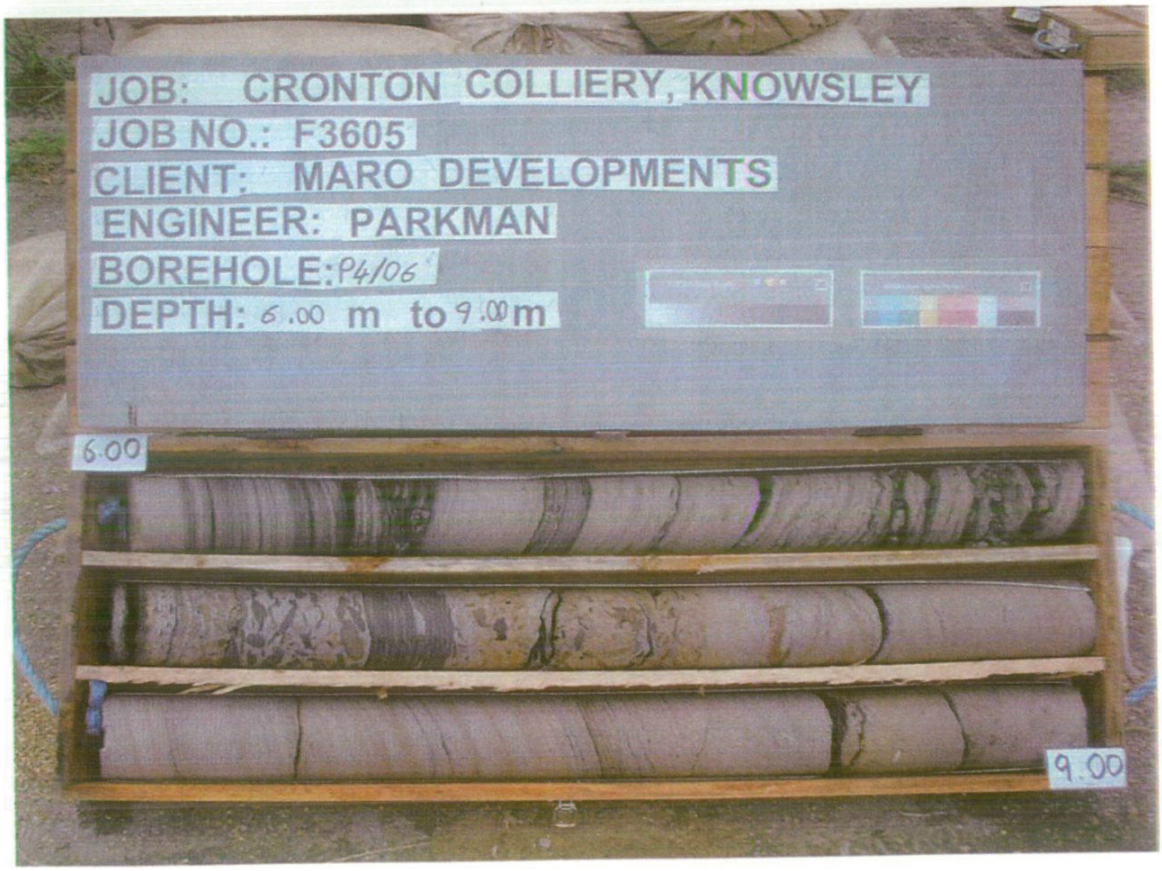

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P2/13
DEPTH: 8.17 m to 11.22m
8.17
11.22

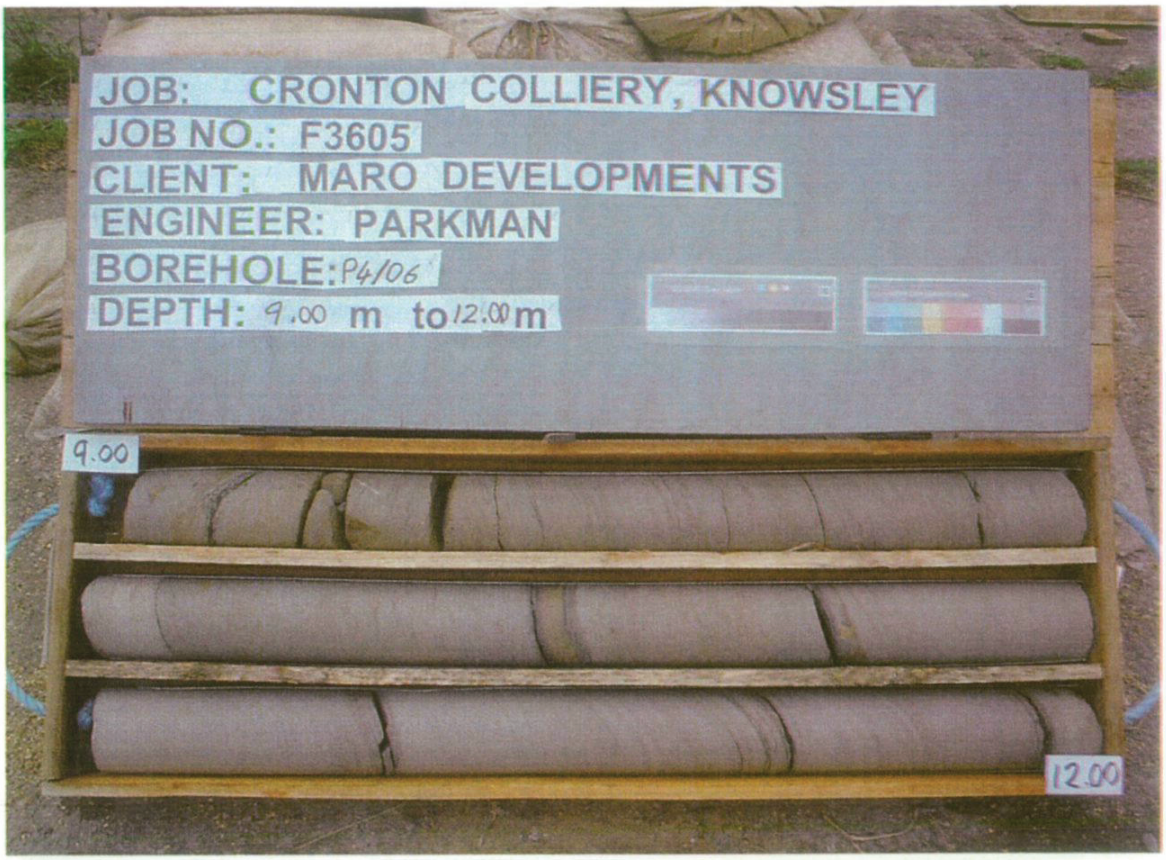

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P2/13
DEPTH: 11.22 m to 14.22m
11.22
14.22

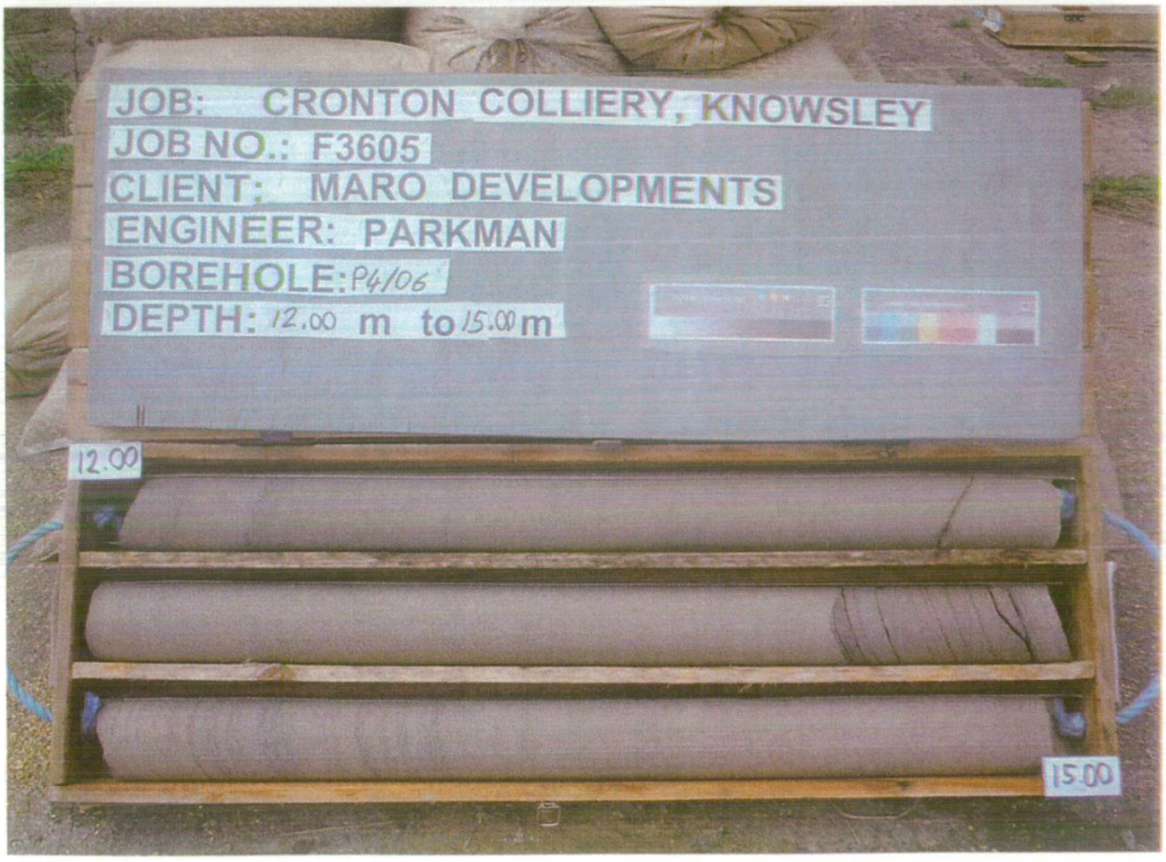

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P2/13
DEPTH: 14.22 m to 17.12 m
14.22
17.12


JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P2/13
DEPTH: 17.12 m to 20.10 m
17.12
20.10

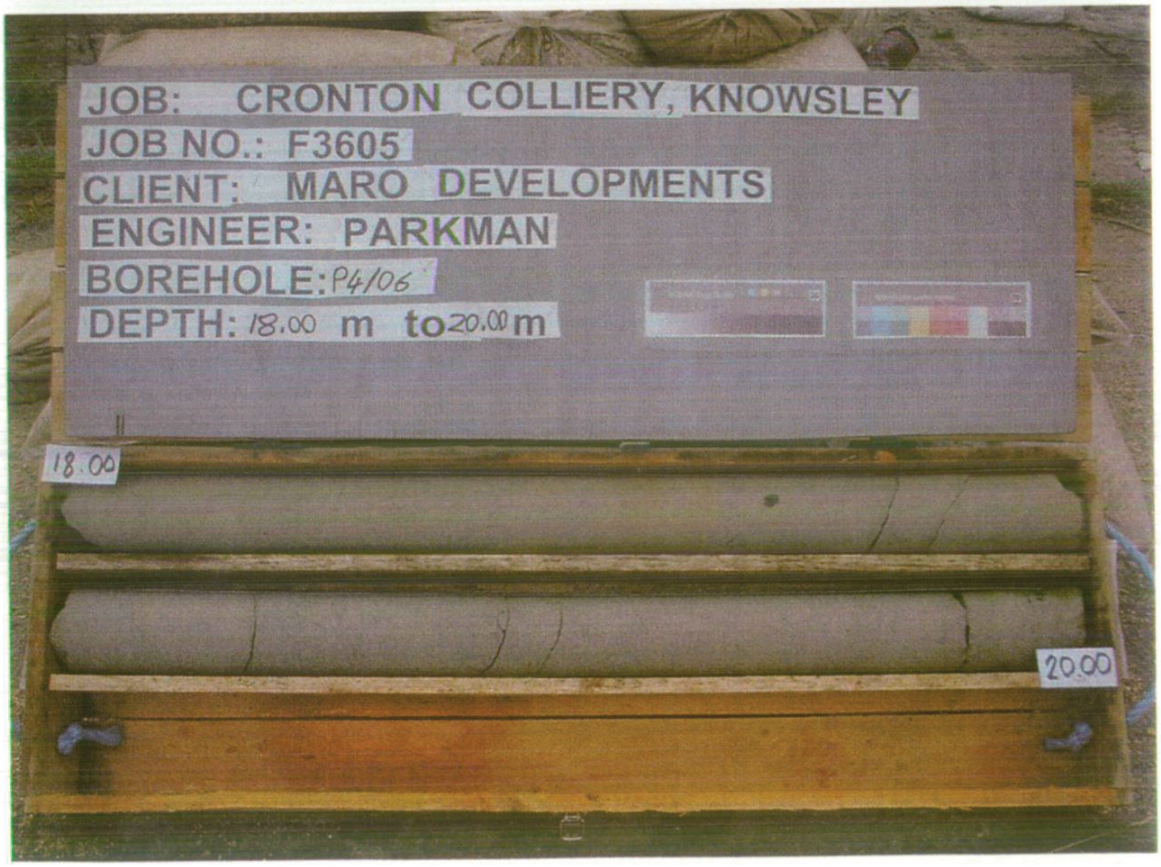

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P4/06
DEPTH: 3.00 m to 6.00 m
3.00
6.00

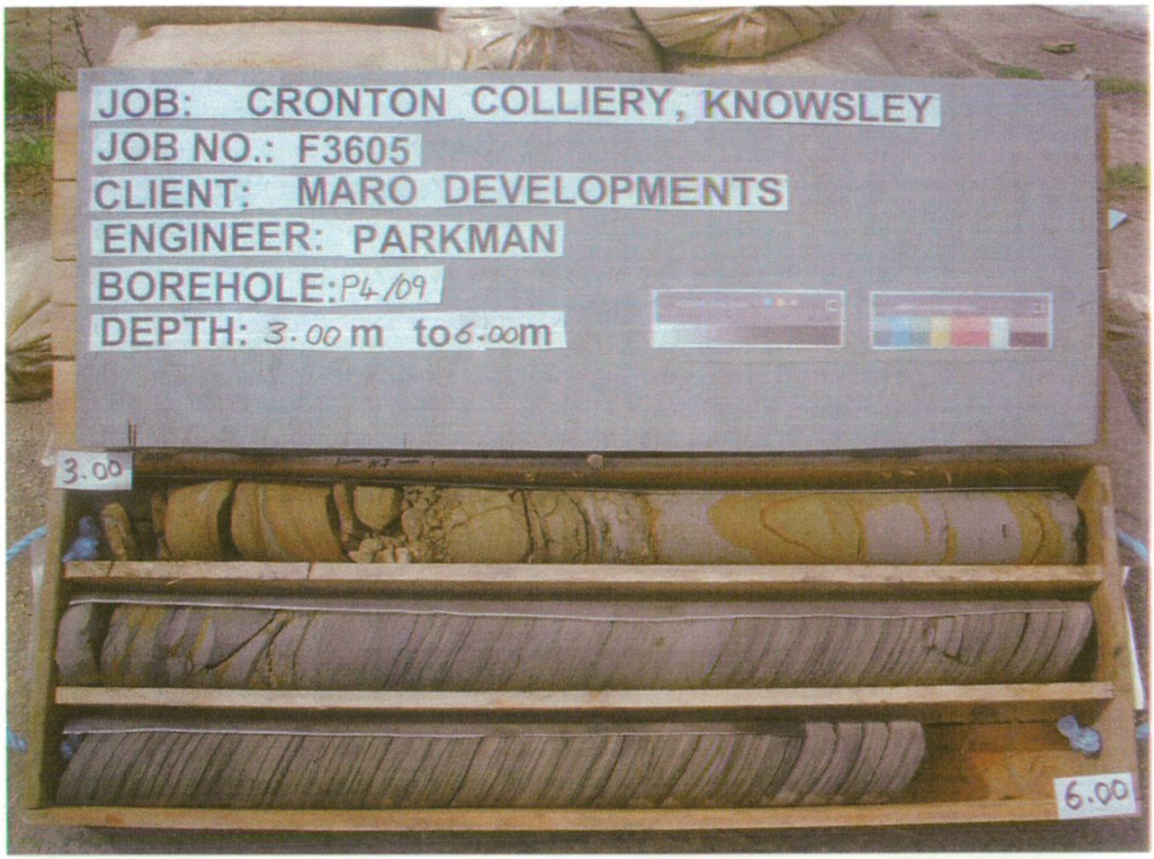

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P4/06
DEPTH: 6.00 m to 9.00 m
6.00
9.00


JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P4/06
DEPTH: 9.00 m to 12.00 m
9.00
12.00

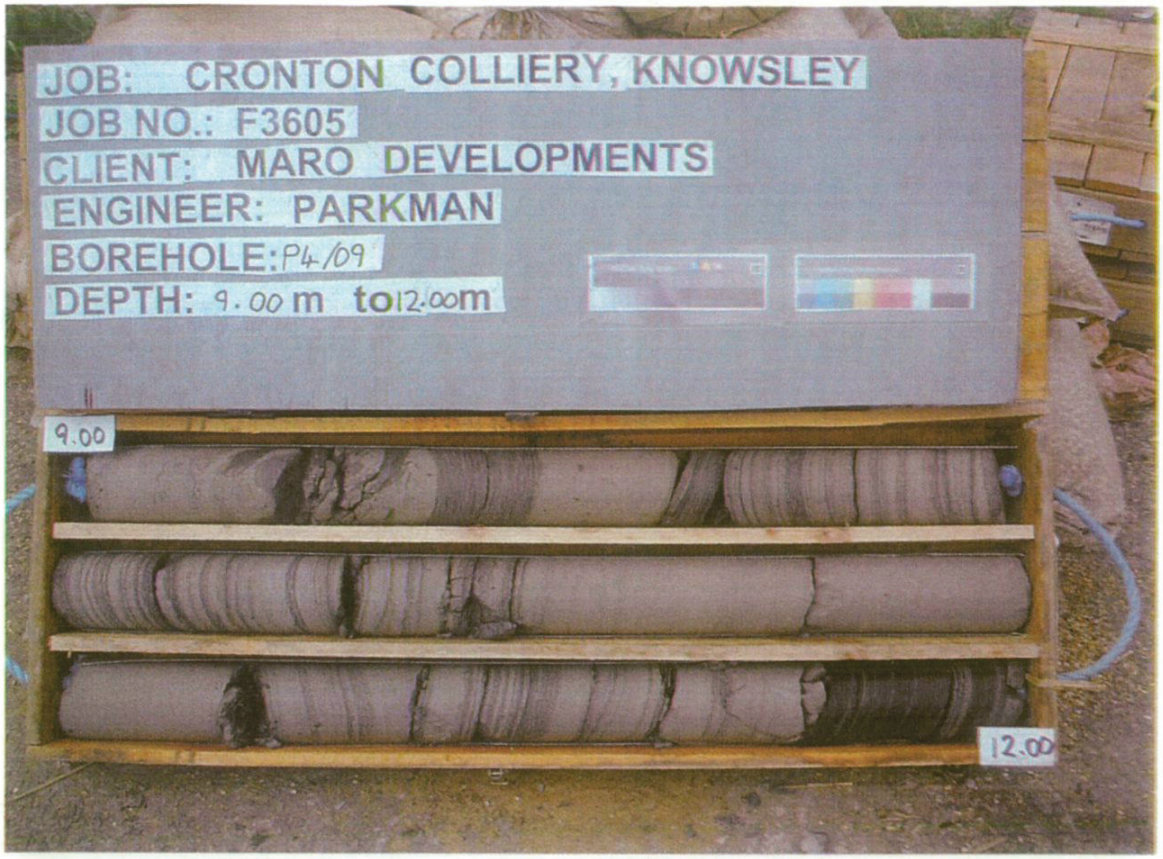

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P4/06
DEPTH: 12.00 m to 15.00 m
12.00
15.00

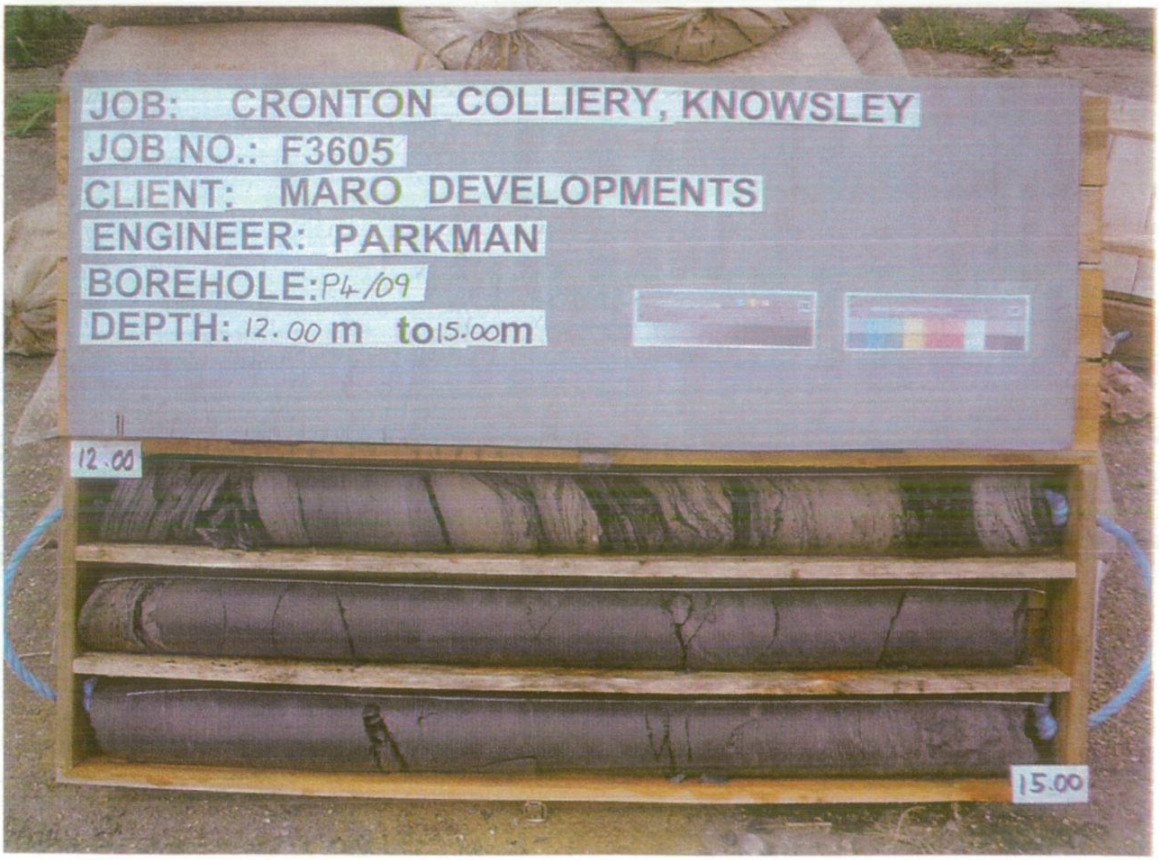

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P4/06
DEPTH: 15.00 m to 18.00 m
15.00
17.00
18.00

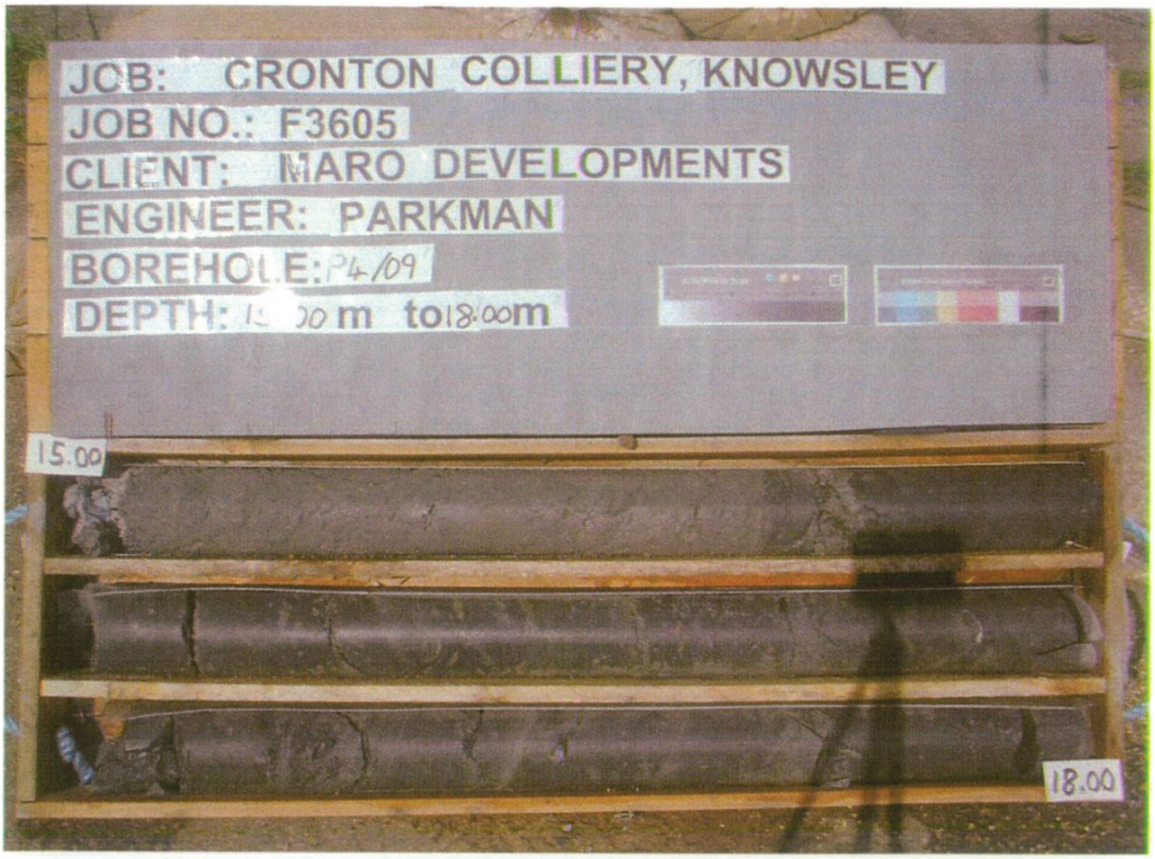

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P4/06
DEPTH: 18.00 m to 20.00 m
18.00
20.00

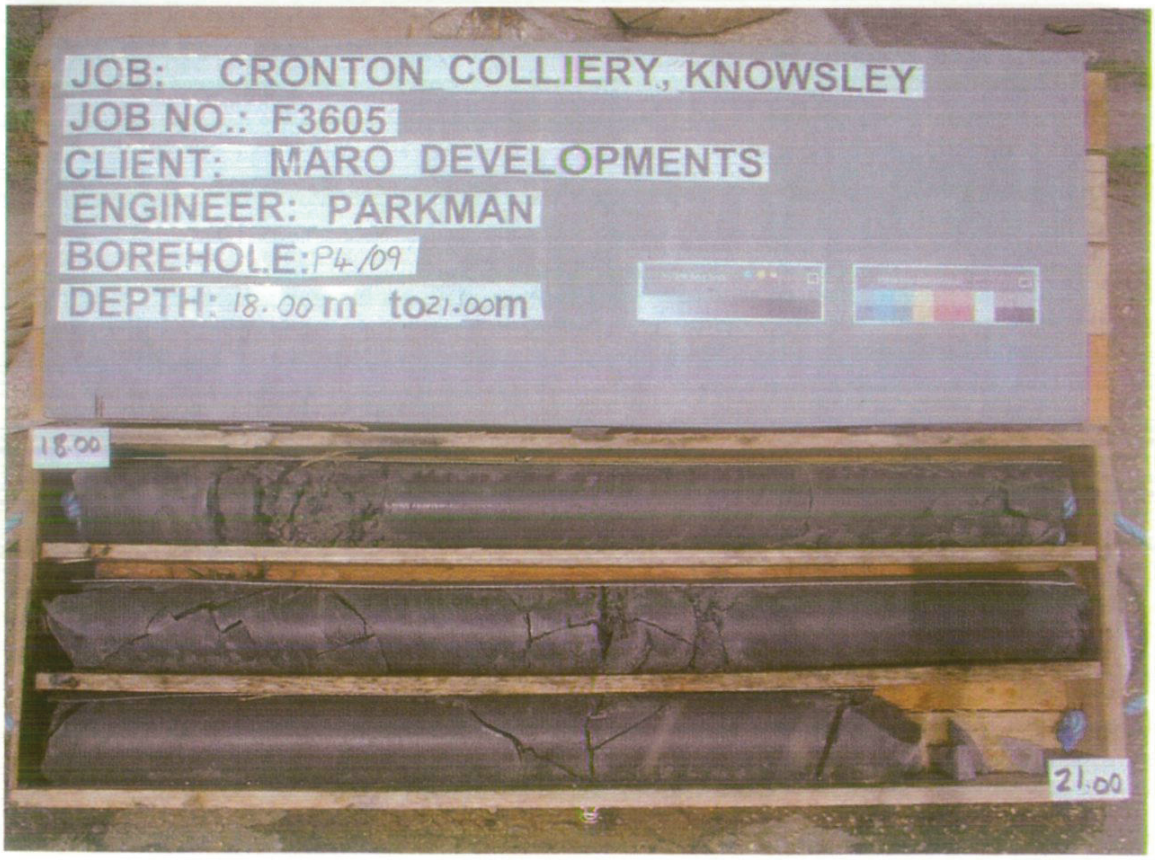

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P4/09
DEPTH: 3.00 m to 6.00m
3.00
6.00

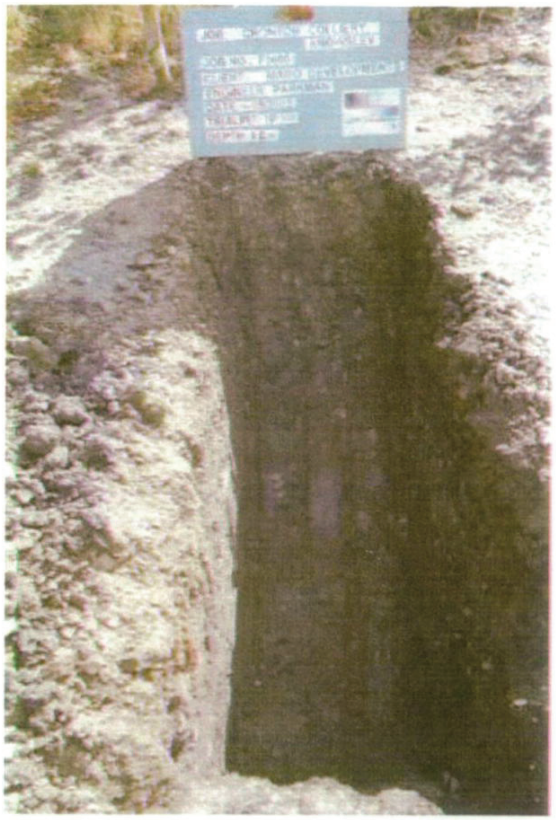

JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P4/09
DEPTH: 6.00 m to 9.00m
6.00
9.00


JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P4/09
DEPTH: 9.00 m to 12.00m
9.00
12.00


JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P4/09
DEPTH: 12.00 m to 15.00m
12.00
15.00


JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P4/09
DEPTH: 15.00m to 18.00m
15.00
18.00


JOB: CRONTON COLLIERY, KNOWSLEY
JOB NO.: F3605
CLIENT: MARO DEVELOPMENTS
ENGINEER: PARKMAN
BOREHOLE: P4/09
DEPTH: 18.00m to 21.00m
18.00
21.00



TP1/1



TP1/1


JOB CRONTON COLLIERY
KNOWSLEY
JOB NO. F3605
CLIENT MARD DEVELOPMENTS
ENGINEER PARKMAN

TP1/2



TP1/2



TP1/3



TP1/3



TP1/4



TP1/4


JOB CRONTON COLLIERY
KNOWSLEY
JOB NO F3605
CLIENT MARO DEVELOPMENTS
ENGINEER PARKMAN
DATE /08/2003
TRIALPIT TP
DEPTH 1.4m

TP1/5



TP1/6



TP1/6



TP1/7



TP1/7



TP2/1



TP2/1



TP2/2



TP2/2



TP2/3



TP2/3



TP2/4



TP2/4



TP2/5



TP2/5


JOB CRONTON COLLIERY
KNOWSLEY
JOB NO F3605
CLIENT MARO DEVELOPMENTS
ENGINEER PARKMAN
TRIALPIT TP
DATE 07/08/2003
DEPTH 1.2 m

TP2/6



TP2/6


JOB CRONTON COLLIERY,
KNOWSLEY
JOB NO F3605
CLIENT MARO DEVELOPMENTS
ENGINEER PARKMAN
TRIALPIT TP
DATE 08/2003
DEPTH

TP2/7



TP2/7


JOB CRONTON COLLIERY
JOB NO F1605 KNOWSLEY
CLIENT MARD DEVELOPMENTS
ENGINEER PARKMAN
TRIALPIT TP2/8
DATE 5/6/2003
DEPTH 1.2 m

TP2/8



TP2/8


JOB CRONTON COLLIERY
KNOWSLEY
JOB NO T3605
CLIENT MARO DEVELOPMENTS
ENGINEER PARKMAN
TRIALPIT TP
DATE
DEPTH

TP2/9



TP2/9


CRONTON COLLIERY
KNOWSLEY
JOB NO F3605
MARO DEVELOPMENTS
ENGINEER PARKMAN

TP2/10



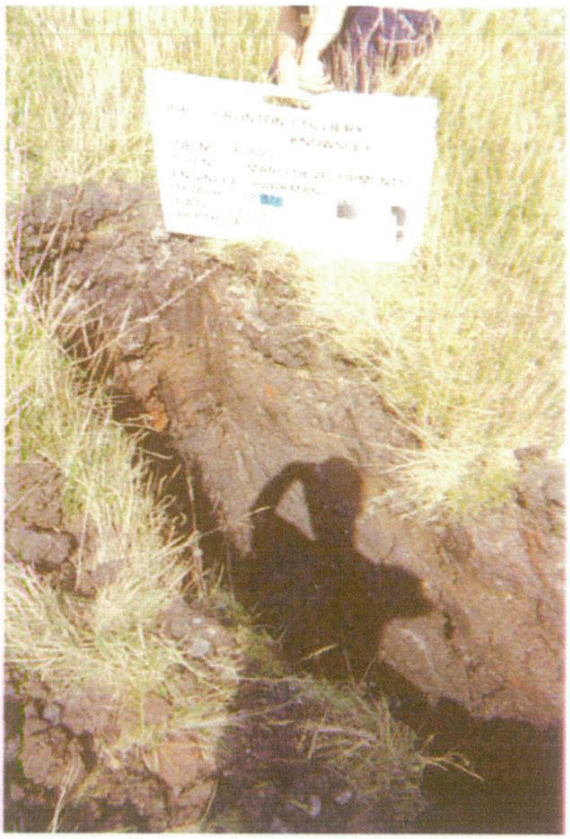
TP2/10


JOB CRONTON COLLIERY
KNOWSLEY
JOB NO F3665
CLIENT MARD DEVELOPMENTS
ENGINEER PARKMAN

TP2/11



TP2/11



TP3/1



TP3/1



TP3/2



TP3/2


JOB CRONTON COLLIERY
KNOWSLEY
JOB NO F 3605
CLIENT MARO DEVELOPMENTS
ENGINEER PARKMAN
TRIAL PIT TP3/3
DATE FEB 2003
DEPTH 2.2 m

TP3/3



TP3/3



TP3/4


JOB CRONTON COLLIERY
KNOWSLEY
JOB NO F3605
CLIENT MARO DEVELOPMENTS
ENGINEER PARKMAN
DATE 08/2003
TRIALPIT TP
DEPTH 1.2m

TP3/4



TP3/5



TP3/5



TP3/6



TP3/6



TP3/7



TP3/7



TP3/8



TP3/8


JOB CRONTON COLLIERY
KNOWSLEY
JOB NO
CLIENT MARCH DEVELOPMENTS
ENGINEER PARKMAN

TP3/9



TP3/9



TP3/10



TP3/10



TP3/11



TP3/11



TP31


JOB CROXTON COLLIERY
KNOWSLEY
JOB NO F1605
CLIENT MARO DEVELOPMENTS
ENGINEER PARKMAN
TRIALPIT TP31
DATE 4/09/2001
DEPTH 3.30m

TP31



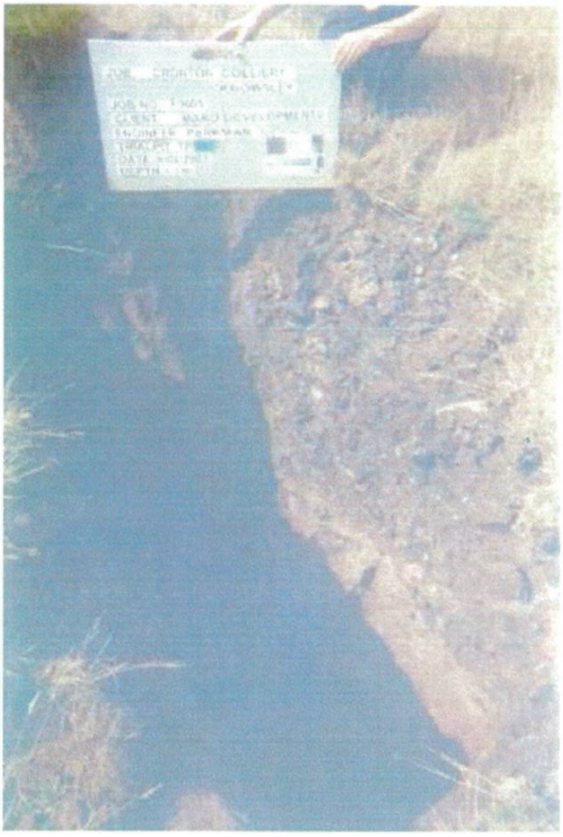
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TP32



TP32



TP33



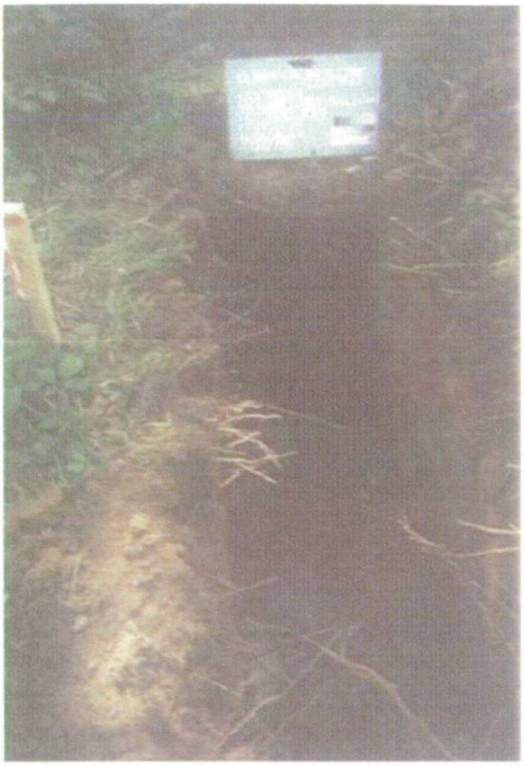
TP33


JOB CRONTON COLLIERY
KNOWSLEY
CLIENT MARD DEVELOPMENTS
ENGINEER PARKMAN

TP34



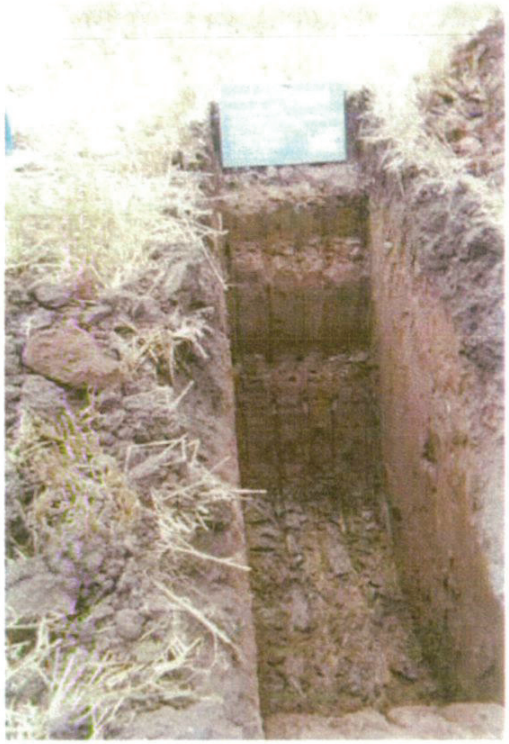
TP34



TP35



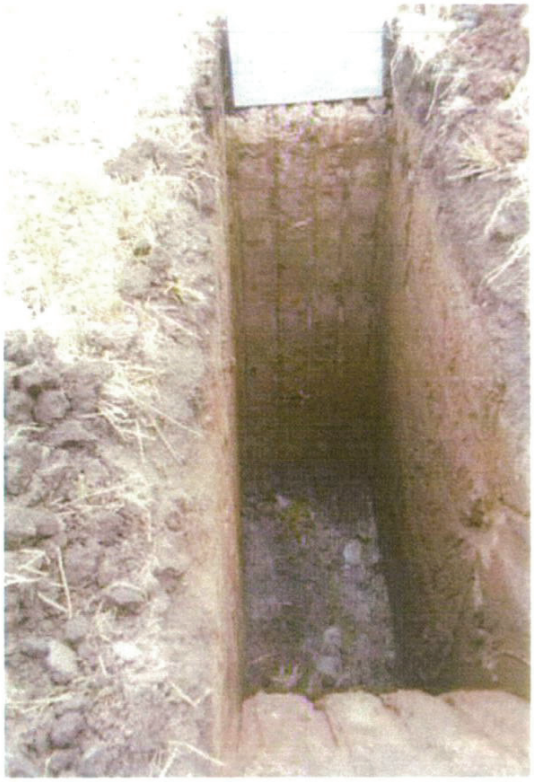
TP35



TP36



TP36



TP37



TP37



TP38



TP38



TP39



TP40



TP40



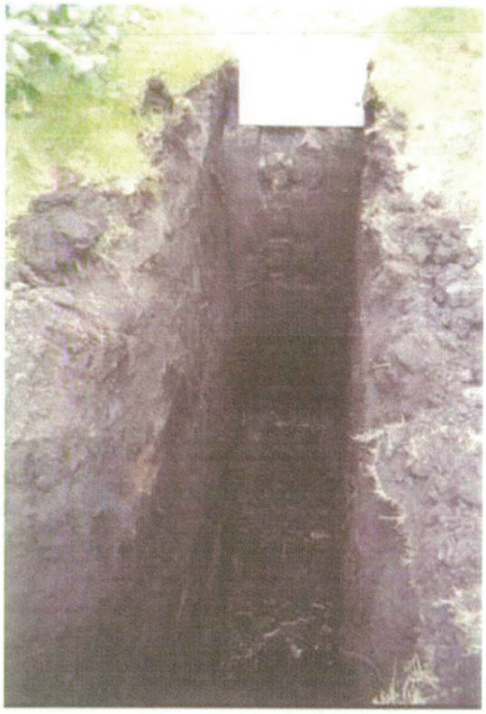
TP40



TP41



TP41



TP42



TP42



TP43



TP43



TP44



TP44



TP45



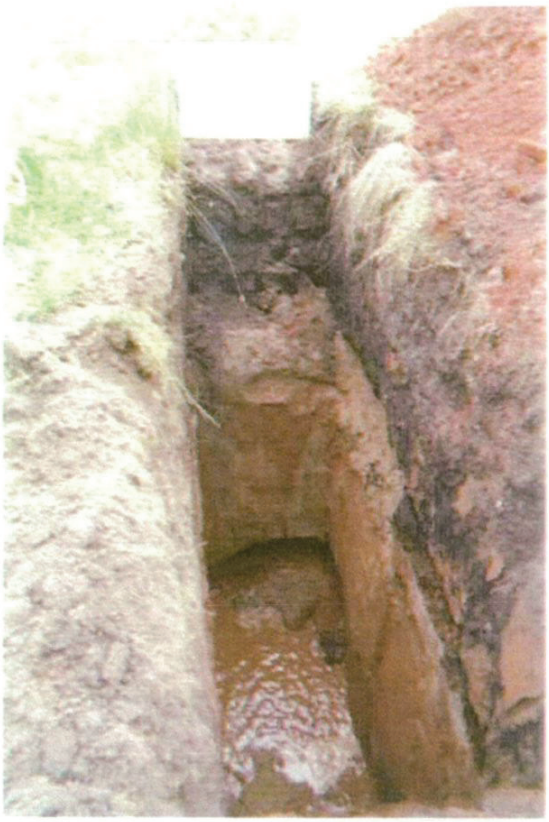
TP45



TP46



TP46



TP47



TP47



TP4/1



TP4/1



TP4/2



TP4/2



TP4/3



TP4/3