Report No: 2500/1
Date: June 2002

GEOENVIRONMENTAL REPORT
for
GOLDTHORPE COLLIERY,
GOLDTHORPE

prepared for
BEN BAILEY HOMES LIMITED

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Project Quality Assurance
Information Sheet

Geoenvironmental Report
GOLDTHORPE COLLIERY

Report Number: 2500/1

Report Status: Final

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FOREWORD

The following notes outline the general procedures adopted in geotechnical site investigation contracts and should be read in conjunction with the report. The text of the report draws specific attention to any modification to these procedures and to any other special techniques employed.

SOFT GROUND BORING

The shell and auger or percussive technique, as developed in the UK is generally employed for the boring of overburden materials. Whilst this method allows the maximum data to be obtained on the strata present, both as regards their nature and geotechnical properties, a degree of mixing of some thinly layered cohesionless soils is inevitable (e.g. seams of fine and coarse granular material). Any evidence of such a condition is given in the text of the report. Since the penetration of hard materials requires percussion methods, it is rarely possible to distinguish bedrock from layers of boulders when using this technique. The existence of bedrock should be confirmed by rotary core drilling.

ROCK DRILLING

Where "open hole" drilling techniques are employed, the nature of the materials penetrated can only be obtained from an examination of arisings in the circulation fluid and from the rate of progress attained. Strata descriptions given from these data are subject to amendment from the results of any subsequent rotary core drilling of these materials.

GROUNDWATER

The groundwater conditions entered on the borehole records are those observed at the time of the investigation. The rate of boring does not usually permit the recording of equilibrium water levels. The installation of standpipe piezometers is recommended for obtaining true water levels and for the long term observation of any seasonal fluctuations. Similarly, the ground water conditions in a rotary drilled borehole are generally masked by the circulation fluid.

ROUTINE SAMPLING

Undisturbed (U) samples of predominantly cohesive soils are obtained by a 100 mm. diameter open - drive sampler complying with the recommendations of the British Standard Code of Practice BS 5930 "Site Investigations". Bulk disturbed (B) samples of granular soils, or of materials in which undisturbed sampling is impracticable, are taken from the boring tools and sealed into polythene bags. Small disturbed (D) samples of each stratum and at regular intervals of depth in a thick stratum are sealed into suitable containers for subsequent visual classification. Where encountered in sufficient quantity, groundwater (W) samples are also obtained. It should be noted that disturbed samples may not be at their natural water content.

STANDARD PENETRATION TESTS

The standard penetration resistance "N" given on the Borehole Records is obtained using the procedure outlined in the British Standard No 1377:1990 "Method tests for Soils for Civil Engineering Purposes". A cone point is used in place of the usual drive shoe in coarse granular soils or hard materials. Where additional penetration is limited by hard material, an assessment of the penetration resistance "N" may be given on the Boring Record.

GENERAL

Any recommendations made or opinion expressed in the Report are based on the Borehole/Trial Pit Records, an examination of samples and the results of the site and laboratory tests. No liability can be accepted for conditions not revealed by the boreholes/trial pits, particularly between positions. Whilst every effort is made to ensure accuracy of data supplied any opinion expressed as to the possible configuration of strata between or below boreholes is for guidance only and no responsibility is accepted as to its accuracy.

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EXECUTIVE SUMMARY

The site is situated approximately 11km west of Barnsley town centre, South Yorkshire. The National Grid Reference of the site is SE 470 043.

The whole site covers an area of approximately 24 hectares and can be divided in to two main areas:

- *Area 1: The former main colliery site, owned by the Ogden Group, with outline planning for residential development (c. 10 ha)*
- *Area 2: The former main colliery spoil tip, owned by the Ogden Group, (c. 14 ha)*

This report is concerned wholly with the proposed development area (Area 1). The remainder of the site including the main colliery spoil tip will be address within the Addendum Report 2500/2.

Historical plans indicate that the site was open field until development of the colliery around 1910. The colliery closed in 1995 at which time the buildings were demolished.

AIGC have undertaken a ground investigation at the site that comprised sixty-six trial pits, five cable percussion boreholes and ten rotary probeholes.

Hazardous gas monitoring is being carried out to determine risks associated with migrating mine gas and potential gas production within the spoil tip. A comprehensive risk assessment will be issued on completion.

Within Area 1 some inorganic contamination has been identified which is considered to pose negligible risk to the environment and only a slight risk to the proposed development. However, the made ground is composed of colliery spoil, materials that are generally considered undesirable as a near-surface material in garden areas.

All but six of the colliery spoil samples tested yielded elevated calorific values necessitating a 1,000mm cover of inert material in gardens and landscaped areas. This cover should include a 500mm thick layer of "clean" subsoil/topsoil.

Only localised significant organic contamination was identified in TP116. However, localised areas of more onerous contamination than that identified to date may be present on site. It would be prudent to make an allowance for the removal/ treatment of a nominal volume of soil following consideration with a specialist brownfield contractor.

Rotary probing at the site has proven that coal exists at shallow depth below the site as intermittent thin layers. However, no voids, broken ground or loss of flush were recorded in any of the probeholes. It is therefore considered that past underground coal mining will not affect the surface stability of the site.

The exact location and mode of treatment of Goldthorpe Shafts 1 and 2 are documented by the Coal Authority, as is that of Bella Drift (the adit). A further shaft is believed to be located below a section of the main colliery tip in Area 2. Its exact location and mode of backfilling is unknown; however, it is not considered to pose a risk to the proposed development.

Further, unrecorded mine entries could exist in this area. If any are discovered they should be accurately surveyed-in and then be capped off at rockhead.

Construction of dwellings is not generally recommended within an angle of 45° from the intersection of a shaft with rockhead, unless special and suitable engineering precautions are taken.

Ground conditions at the site generally comprise a variable cover of made ground over firm and stiff clay or dense sand and gravel, over Middle Coal Measures and Ackworth Rock bedrock.

Soakaways are generally practical for the areas of the site underlain by Ackworth Rock, principally the northern section of Area 1 (approximately 2ha).

Made ground is not considered a suitable foundation material and foundations should therefore be taken through these materials into underlying strata of adequate bearing capacity. The clay and granular soils are considered to have a safe bearing capacity of at least 100kN/m^2.

The natural cohesive soils are of medium shrinkability and therefore a minimum founding depth of 900mm is recommended. For granular soils a minimum founding depth of 600mm is recommended.

Class 2 sulphate conditions can be assumed for concrete in contact with made ground and Class 1 in natural ground.

A combination of strip footings and piles/rafts are considered likely to be the preferred foundation solutions for single or two storey residential properties constructed on this site

This report provides technically feasible options, subject to regulatory approvals, with respect to site remediation, foundation solutions, etc.

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Landmark Information Group	AIGC	27/03/2002	Envirocheck Report
British Geological Survey	AIGC	03/04/2002	Radon Site Report
Coal Authority	AIGC	12/04/2002	Coal Mining Report
Barnsley Metropolitan Borough Council - Environmental Health & Trading Standards	AIGC	25/04/2002	Environmental Report
Coal Authority	AIGC	30/04/2002	Mine Entry Report
Barnsley Metropolitan Borough Council - South Yorkshire Mining Advisory Service	AIGC	03/05/2002	Mining Report
South Yorkshire Fire and Rescue Service	AIGC	05/05/2002	Petroleum Licences

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GEOENVIRONMENTAL REPORT
for
GOLDTHORPE COLLIERY

1 INTRODUCTION

1.1 AIG Consultants Ltd (AIGC) were commissioned by Ben Bailey Homes Limited to undertake a Geoenvironmental Appraisal of land at the former Goldthorpe Colliery. It is understood that consideration is being given to redevelopment of the site with housing and industrial units.

1.2 A provisional development masterplan has been provided by A Ogden and Sons Limited (Drawing No. 90.1838:02A, presented as Drawing No.2500/3 in Appendix A of this report) to which reference has been made. This layout indicates that residential development will be restricted to about 10ha of land to the west with an area of industrial units (3ha) to the east. A small colliery spoil tip in the east of the site and a noise alleviation bund to the north are proposed to be relocated to the main colliery spoil tip. The remainder of the main colliery tip is to be landscaped and revegetated as public open space. Any revision of this layout may necessitate modification to this report.

1.3 The brief for this investigation is detailed in AIGC's letter of 6th November 2001, reference 2500/REG and a subsequent fax of 11th April 2002, reference 2500 presented in Appendix N and included:

- review of previous investigation reports
- past and current land use of the site
- proximity of the site to past and current landfill operations
- geological setting of the site with reference to published sources
- mining conditions relating the site
- nature, distribution and geotechnical properties of the near surface deposits
- assessment of risks to relevant targets in line with current legislation and best practice.
- specification of foundations required for residential development
- development of a remediation/reclamation strategy
- feasibility of soakaway drains for surface and highway drainage.
- suitability of colliery spoil materials for sustaining revegetation.

1.4 Ground investigation has been undertaken by AIGC and comprised sixty-six trial pits (TP101 to TP167, TP169 to TP172, TP174 to TP176 and TP179), five light cable percussion boreholes (BH101 to BH105) and ten rotary probe holes (PH101 and PH110). The investigation was carried out between the 9th April and 2nd May 2002. Soakaway tests were carried out in an additional ten trial pits (SW101 to SW110).

1.5 This report is concerned wholly with the proposed development area (Area 1). The remainder of the site including the main colliery spoil tip will be address within the Addendum Report 2500/2.

1.6 Further search data has also been obtained by AIGC from the Landmark Information Group (LIG), Environment Agency (EA), British Geological Survey (BGS), the local petroleum licensing officer and Barnsley Metropolitan District Council (BMDC). Details of past and future coal mining activities at the site were obtained from the Coal Authority (CA) and South Yorkshire Mines Advisory Service (SYMAS).

1.7 This report incorporates the factual data obtained during the site investigation and provides an interpretation and assessment of this data with respect to the proposed development of the site.

1.8 It has been assumed in the production of this report that the ground levels across much of the site will not change significantly from those existing at present.

1.9 The conclusions and recommendations made in this report are limited to these that can be based on the findings of this study that was carried out in terms of the agreed brief. AIGC reserve the right to alter their conclusions and recommendations in the light of further or more detailed information that may become available.

2 SITE DESCRIPTION

2.1 General

2.1.1 The site is situated immediately to the west of Goldthorpe town centre, approximately 11km west of Barnsley town centre, South Yorkshire. The National Grid Reference of the site is SE 470 043.

2.1.2 The site is bounded to the north by a mixture of greenfields and sports fields. To the south, the boundary is formed by a now disused and dismantled railway with agricultural fields and residential properties beyond. To the east of the main colliery tip is mature deciduous woodland and arable land. West of the site is a mixture of residential, terraced housing and light industrial units.

2.1.3 The site covers an area of approximately 24 hectares and can be divided in to two main areas:

- **Area 1:** The former main colliery site, owned by the Ogden Group, with outline planning for residential development (c. 10 ha)
- **Area 2:** The former main colliery spoil tip, owned by the Ogden Group, (c. 14 ha)

2.1.4 This report only deals with Area 1 that comprises the former, main colliery site. Approximately 60% of the area is currently covered by hardstand, predominantly concrete. These areas of hardstanding correspond to demolished building floor slabs and car parking areas. To the south-east corner lies a lobe of the main colliery tip that has been restored. Located in the north-west is a generally level, black, unvegetated area, formerly used for coal stocking.

2.1.5 Along the north-east boundary of Area 1 runs a noise alleviation bund standing approximately 6m in height and 200m in length. To the west adjoining Beaver Street and the Yorkshire Forward land is a restored colliery spoil tip covering a plan area of approximately 1 hectare and up to about 10m in height.

2.2 Proposed Development

2.2.1 The site has been granted initial planning consent for development with residential dwellings and light industrial units; a provisional masterplan drawing has been produced for A Ogden and Sons Limited and is reproduced as Drawing No. 2500/3 in Appendix A.

3 SITE HISTORY

3.1 In order to investigate the development history of the site and immediate surrounding land, extracts from Ordnance Survey (OS) plans were examined, as obtained from the Landmark Information Group. Additional information was sourced from previous investigation reports, the Coal Authority and South Yorkshire Mines Advisory Service.

3.2 Below is a summary of the salient points relating to the history of the site with respect to the proposed end use and planning reclassification. It is not the intention of this report to describe in detail all the changes that have occurred on or adjacent to the site.

3.3 The earliest Ordnance Survey (OS) plan of 1851/54 shows the main site to consist of several open fields. To the north of the site is an unnamed road (in line with the current Doncaster Road). Approximately 250m to the south-west lies the village of Goldthorpe. Springs are denoted at the eastern boundary of the site.

3.4 The 1892 OS plan shows little alteration to the site with the exception of small areas of plantation and hedgerows.

3.5 No significant changes occur to the site until 1906/07 when the LMS railway is shown to be under construction along the sites southern boundary. To the north, the cricket/ football ground and allotments gardens are shown roughly in their current locations. To the west, terrace housing has been constructed along Beaver Street and Victoria Street.

3.6 Shafts 1 and 2 of Goldthorpe Colliery were sunk in 1910. Construction of the small spoil tip in the west of Area 1 commenced during the late 1920's.

3.7 By 1930 Goldthorpe Colliery has been constructed and comprises a shaft, engine house and chimney along with several isolated buildings. The LMS Dearne Valley railway and its sidings are shown in the south of the site. A linear spoil heap lay to the north of the sidings and to the south of the shafts. The colliery offices, engine house, chimney and fitting shops lay to the north of the shafts.

3.8 No significant changes occur to the site until 1956 with the exception of a possible spoil tip running parallel with the railway in the south-central section of Area 1.

3.9 The 1956 OS plan shows a large spoil tip to the north of the railway in the west of the site, covering a slightly larger area than the existing tip.

3.10 The 1962 OS plans shows significant growth of the colliery with the addition of several buildings with rail/ tramways running between. A long, thin structure (conveyor) links from the adit to the railway (rapid loading bunker). The spoil tip in the west appears to have partially removed. Two sections of embankment have been constructed along Area 1's northern boundary.

3.11 By 1988, little significant alteration has occurred to Area 1. The main spoil tip in Area 2 has developed to cover approximately its existing footprint and West Moor Dyke appears to have, in part, been culverted.

4 PREVIOUS INVESTIGATION FINDINGS

4.1 General

4.1.1 The Ogden Group of Companies have provided AIGC with copies of the following three reports specifically related to the areas of proposed residential/ industrial development and tip reclamation (Areas 1 and 2):-

- Goldthorpe Colliery, Level II Appraisal. *RPS Group Plc for British Coal Property*. October 1996.
- Goldthorpe Colliery, Level III Site Investigation. *RPS Group Plc for British Coal Property*. October 1996.
- Interim Report on the Proposed Reclamation of Goldthorpe Mine Site to "Soft-End" Use (Moynihan). *IMC Environmental Consultants for British Coal Property*. December 1996.

4.1.2 Symonds, Travers, Morgan (STM) report dealt wholly with the greenfield land to the north west that is currently in the ownership of Yorkshire Forward. The report appended a desk study carried out by William Saunders Partnership that included information on the sites history, geology, mining/quarrying, landfills, hydrogeology, hydrology, planning, services and drainage.

4.1.3 STM supplemented this preliminary investigation with the drilling of nine cable percussion boreholes, three of which were continued into bedrock using rotary open hole techniques. Three gas wells were installed and subsequently monitored. Laboratory geotechnical and contamination tests were carried out.

4.1.4 RPS Group Plc reports dealt with the former main colliery site and main tip currently owned by the Ogden Group of Companies. The two reports included a desk study that included information on the sites history, geology, mining/quarrying, landfills, hydrogeology and hydrology. Additional information was sourced through a review of British Coal documents. The second report assessed the results of water samples taken from West Moor Dyke.

4.1.5 IMC's Moynihan report includes a detailed desk study and the excavation of fifty-two trial pits over both the former main colliery site and the main spoil tip area. The report was aimed at assessing the suitability of the site for reclamation to a "soft-end" use.

4.1.6 All reasonable skill, care and diligence has been applied whilst examining the various reports detailed above. However, AIGC accept no responsibility for inaccuracies in the data supplied or for opinions based on any such inaccurate data.

4.2 RPS Group Plc, Level II and III Reports

4.2.1 These two reports were presented as one volume and dealt predominately with Area 1, the former main colliery site, and comprised a desk study, collection of surface water samples from West Moor Dyke and laboratory testing. The main findings of the report were:

- The area was a colliery from 1932 with a railway forming the southern boundary. Small spoil tips were located in west and centre of the site. Two shafts located in the south central section of the site extended to approximately 60m depth.
- No significant changes occurred to the site until 1966 when the two shafts were capped. The colliery remained in existence with the opening of Bella drift entrance. An additional spoil tip appeared in the south of the site.
- In 1973, the two shafts were permanently sealed. Up to 1991, the only significant alteration to the site was the enlargement of the main colliery tip in the east.
- Additional information was sourced from a review of British Coal documents. An informal agreement was entered into with the Environment Agency with regards to the discharge of suspended solids, iron and oils into West Moor Dyke. Settling ponds were used to treat water before discharge, but agreed levels were regularly exceeded. No groundwater contamination was identified at the site. Negligible concentrations of hazardous gas were recorded from the two treated shafts. Soils below electricity sub-stations on site were tested for PCB's; no concentrations in excess of 50ppm were recorded. Coal production ceased at the site in 1994 at which time the buildings were demolished.

4.3 IMC Environmental Consultants Report

4.3.1 This report dealt with Areas 1 and 2. The report comprised a detailed desk study, excavation of fifty-two trial pits and laboratory testing. The location of trial pits from this investigation are shown on Drawing No. 2500/5 in Appendix A. A summary of the ground conditions identified is presented as a table in Appendix L of this report. The main findings of the report were:

- The site has been subjected to intensive mining activities over a sixty year period until the collieries closure in 1994.
- Where the full thickness of made ground was penetrated the deposits varied in thickness from 0.02m (TP35) to in excess of 4.9m (TP29). Generally below the proposed residential development area made ground was less than 1.5m in thickness and composed of colliery spoil and rubble. Clay, sand or rock was identified underlying the made ground.
- Laboratory testing of samples for a range of determinands showed elevated concentrations of arsenic, sulphate and calorific value principally within specimens of colliery spoil. A summary table of this contamination testing is presented in Appendix M of this report.
- Chemical testing for potentially phytotoxic determinands was also carried out to determine the feasibility and treatments that would be required to restore the entire site to vegetated land.

5 ENVIRONMENTAL SETTING

5.1 Geology

5.1.1 The 1:10,000 geological plan[1] shows the site to be underlain in part by made ground. The underlying solid geology is shown to be Ackworth Rock in the northern section of the site with undifferentiated Middle Coal Measures in the south. Notes on exposed outcrops in the railway cutting along the sites southern boundary indicate the Middle Coal Measures to comprise an alternating sequence of black mudstone and sandstone. The Emsall Coal outcrops immediately east of the site.

5.1.2 Shaft records for Goldthorpe Colliery Shaft 1 and 2 indicate an alternating sequence of clay shale, bind and clunch and hard sandstone to approximately 30m depth where the 0.45m thick Highgate Coal seam was encountered. Below this, the records indicate a further alternating sequence down to approximately 60m depth where the Shafton Coal seam was encountered with a thickness of 1.57m.

[1] 1:10,000 scale Sheet SE 40 SE (Solid and Drift Edition), British Geological Survey, 2001.

5.1.3 Information sourced from the British Coal Corporation (BCC)[2] states that the Middle Coal Measures below the spoil tip in Area 1 comprise shale/mudstone and siltstone underlain by a thin bedded sandstone. The Ackworth Rock is noted as a thin bedded micaceous sandstone. The gradient of these strata were established in the Shafton seam at about 1:20 north-east.

5.1.4 A laterally persistent north-east to south-west trending fault crosses the site beneath the main colliery tip in the east of the site. This fault down-throws 24m to the south-east and faults upper Coal Measures against Middle Coal Measures. Information from the BCC[2] also indicates a second east to west trending fault north of the drift.

5.1.5 A summary plan detailing the solid geology below the site is provided as Drawing No. 2500/7 in Appendix A of this report.

5.2 Mining – Information from the Coal Authority

5.2.1 As part of the investigation, AIGC commissioned coal mining and mine entry reports from the Coal Authority (CA). These reports state that:-

"*the property is within the zone of likely physical influence on the surface from workings in five seams of coal at 50m to 760m depth, the last date of working being 1989.*"

5.2.2 The CA also state that "*the site is not within the zone of likely physical influence on the surface from any present underground coal workings*". However, "*reserves of coal exist in the locality which could be worked at some time in the future, subject to feasibility, licenses and planning consents*".

5.2.3 As stated in section 5.1 both the Highgate Coal and Shafton Coal seams are located directly beneath the site. According to the records of the British Geological Survey[1] the shallowest seam below the site is an un-named thin coal located approximately 25m above the Highgate Coal.

5.2.4 The CA state that the site is not known to be affected by subsidence or faults.

5.2.5 The CA report notes that "*the property is within 800m of the geographical site boundary of the Furlong prospective opencast site for which a licence to extract coal by opencast methods was granted in October 1994*". It is recommended that further information be sort with regards to the current planning situation for this opencast.

[2] Goldthorpe Colliery, Regulation 18 Report, British Coal Corporation, Non-operational Collieries Group. Dated February 1995.

5.2.6 There are four mine entries recorded on the site. The mine entry report details the location of an adit and three shafts. The exact location of Bella Drift adit and Goldthorpe Colliery Shafts 1 and 2 are known; they are also known to have been treated and capped. However, the exact location, depth and treatment of a third shaft shown on a plan showing the interests of THL Brinckman in the Parish of Goldthorpe is not known. The CA have subsequently indicated that they do not hold this source data. The mine entry details are summarised in Table 1, below.

Table 1
Summary of Mine Entries

Entry	Location	Details	Treatment
Goldthorpe Shaft 1 (CA ref 446404-001)	South-central Area 1 E. 446839 N. 404140	63.1m deep 4.27m diameter Worked Shafton	Filled April 1973. Vented concrete cap 1977.
Goldthorpe Shaft 2 (CA ref 446404-002)	South-central Area 1 E. 446885 N. 404127	66.7m deep 3.66m diameter Worked Shafton	Filled April 1973. Vented concrete cap 1977.
Bella Adit (CA ref 447404-001)	North-east Area 2 E. 447322 N. 404160	Gradient of 1:9m to north-west. 3.7m x 4.9m diameter tunnel	Backfilled to a stopping at 420m in 1995. Capped an vented.
Un-named Shaft 3 (CA ref 447404-002)	South of Area 2 (exact location unknown)	unknown	unknown

5.2.7 Copies of the Coal Authority reports including mine entry records and treatment specifications are included in Appendix B to this report.

5.3 Mining – Information Supplied by the South Yorkshire Mines Advisory Service

5.3.1 As part of the investigation current AIGC commissioned a coal mining report from the South Yorkshire Mines Advisory Service (SYMAS). Their report included information from several sources that is summarised below.

5.3.2 The SYMAS information concurs with the CA information with regards to the various mine entries. It states that Goldthorpe Shafts 1 and 2 were sunk between 1909 and 1910 to 64 yards (59m) depth into the Shafton seam. Shaft 1 is 14' (4.3m) diameter and Shaft 2 12' (3.7m) diameter. Both shafts were backfilled during the late 1960's when Goldthorpe Colliery combined with Highgate Mine.

5.3.3 Bella Drift was driven at a gradient of approximately 1:9 to the north-west between 1954 and 1957. Cross-sectional drawings supplied by SYMAS detail the geology of the drive that includes sandstone and mudstone with two faults. The drift mine comprised a 12' (3.7m) high by 16' (4.9m) wide tunnel supported by 5" (127mm) by 4½" (114mm) arched girders set at 3 foot (0.9m) centres.

5.3.4 The tip in Area 1 (referred to in the report as Tip Number 2) was reported to possess side slopes of between 1:2 and 1:4½ that had been restored with grass. Tipping was commenced in the late 1920's following the sinking of the shafts in 1910. The tip was constructed by hauling spoil in tubs drawn by ponies that were then tipped by hand: tipping continued until 1954. The tip was landscaped to its current dome shape in 1971 and restored with sub-soil sourced from stripping to create Tip Number 1. No instability was noticed or envisaged on this tip.

5.3.5 The SYMAS report indicated the depth and timing of works coal seams below the site. This information is summarised in Table 2, below.

Table 2
Summary of Worked Coal Seams Below Goldthorpe Colliery

Seam	Depth (m)	Thickness (m)	Timing
Shafton	60	1.55	Over 50 years
Newhill	280	1.52	1970's to south
Meltonfield	305	1.15	1960's to south-west
Barnsley	450	1.7	1904 to 1933
Parkgate	700	1.45	Over 50 years

5.4 Quarrying

5.4.1 The historical plans of the area do not indicate the location of any quarries on or within 500m of the site.

5.4.2 The BGS 1:10,000 geological map indicates the position of a small former sandstone quarry approximately 300m north-east of the site in Bella Wood. The same map indicates a lobe of worked and made ground running east to west away from close to the sites western boundary. This area probably represents opencasting of the Elmsall Coal.

5.4.3 As indicated in the CA report a licence has been granted to extract coal by opencast methods at Furlong. At the present time this site has not commenced operations.

5.5 Hydrogeology

5.5.1 AIGC have obtained information sourced from the Environment Agency (EA) and the Landmark Information Group with respect to:

- Groundwater quality
- Recorded pollution incidents
- Licensed abstractions

5.5.2 In accordance with the EA Policy and Practice for the Protection of Groundwater (1988), the soils and rocks underlying the site are classified as minor aquifers with variable permeability. Although these aquifers will seldom produce large quantities of water for abstraction, they are important for both local supplies and in supplying base flow to rivers. Major aquifers may occur below minor ones.

5.5.3 Sheet 12 of the EA Groundwater Vulnerability map (Vale of York) has been consulted with regards to the vulnerability classification of soils and rocks beneath the site. The western section of the site has been classified as "U" (U=Urban/mineral assumed to be high) due to the presence of soils with little ability to attenuate and diffuse source pollutants. Soil beneath the eastern section of the site have been classified as low due to the presence of soils in which pollutants are unlikely to penetrate the soil layer or they have the ability to attenuate and diffuse source pollutants.

5.5.4 The site is not located within a Groundwater Protection Zone.

5.5.5 There are no known groundwater abstractions within a 1km radius of the site.

5.5.6 A copy of the information obtained from the EA and Landmark Information Group is presented in Appendices B and C to this report.

5.5.7 It is not considered that the hydrogeological conditions will adversely affect the proposed development.

5.6 Hydrology

5.6.1 The nearest watercourse to the site is West Moor Dyke that crosses through the site. The dyke arises from a 300mm diameter field drain outside the north-east boundary of the site. The watercourse flows east to west in an open ditch along the boundary of the site before turning south and entering a culvert that crosses beneath the site before re-emerging as an open channel south of the site.

5.6.2 Neither the structural condition nor the exact location of the culvert have been assessed within the brief of this report.

5.6.3 AIGC have obtained information sourced from the EA and the Landmark Information Group relating to:

- Surface water quality
- Recorded pollution incidents
- Licensed abstractions
- Flooding

5.6.4 The EA state that they have records of only one pollution incident to controlled waters, within 1km of the site. The report refers to a category 3 (minor) incident involving the discharge of mine water from the site into West Moor Dyke near to the B6098.

5.6.5 There are two known surface water abstractions within a 1km radius of the site. They are situated 361m and 364m to the south-east. Both these licences were operated by Thomas Black Limited have either lapsed or been revoked.

5.6.6 There are two discharge consents within a 1km radius of the site. They both relate to discharge of trade effluent and are operated by British Coal. They are located approximately 300m to the east and 400m to the south and probably relate to the discharge of mine water from the site itself.

5.6.7 The EA have indicated that the site is outside any risk of river flooding.

5.6.8 A copy of the information obtained from the EA and Landmark Information Group is presented in Appendices B and C to this report.

5.6.9 It is not considered that the hydrological conditions reviewed, as part of this study will adversely affect the proposed development.

5.7 Landfill Search

5.7.1 Barnsley Metropolitan Borough Council (BMBC), Environment Agency (EA) and the Landmark Information Group (LIG) were contacted with regard to known areas of landfilling within 500m of the site boundary.

5.7.2 BMBC hold no record of any landfilling operations within 250m of the site. They do, however, highlight the presence of colliery waste tips on the site.

5.7.3 The information supplied by the LIG, sourced from the EA and BGS, substantiates the information supplied by BMBC.

5.7.4 Copies of the information obtained from the LIG, EA and BMBC is presented in Appendices B and C to this report.

5.8 Radon

5.8.1 A new two-tiered approach to radon gas risk assessment advocates a consideration of radon risk related to the underlying solid geology. To ascertain whether the site is within a radon-affected area as designated by the BRE, reference has been made to their report BR211: "Radon: guidance on protective measures for new dwellings", 1999.

5.8.2 The above referenced report showed the site to be located in an area where a geological assessment should be carried out. Therefore, a request for a Stage 2 Protective Measures Site Report was sent to the National Geological Protective Measures Centre.

5.8.3 Their report states that on the basis of radon measurements in dwellings and on their geological interpretation, **no** radon protective measures are required within new dwellings at the site. The report is presented in Appendix B of this report.

6 FIELDWORK

6.1 Objectives

6.1.1 To determine the general nature of soils underlying Area 1 of the site, in particular the nature, distribution and thickness of made ground including the:

- nature, degree and extent of contamination, including approximate quantities which require treatment\removal
- proportion of undesirable elements e.g. biodegradable matter, foundations etc
- risk of combustion
- suitability of the ground for founding structures, highway pavement, etc
- feasibility of treatment of colliery spoil for re-vegetation

6.1.2 To assess the strength of any natural soils on the site to enable recommendations to be made with respect to suitable foundation types.

6.1.3 To recover soil samples from the site for laboratory analysis.

6.1.4 To recover samples of colliery spoil in order to determine its suitability for re-depositing elsewhere on site.

6.1.5 To install monitoring wells to enable assessment of the risks to the proposed development from hazardous gases in the near surface strata.

6.1.6 To investigate the possibility of unrecorded shallow coal workings.

6.1.7 To assess the feasibility of soakaway drains for highway and surface water drainage.

6.2 Scope of Works

6.2.1 Trial pitting, light cable percussion boring and rotary drilling operations were carried out between 9th April and 2nd May 2002 in Area 1.

6.2.2 Sixty-six trial pits (TP101 to TP167, TP169 to TP172, TP174 to TP176 and TP179) were excavated to assess the nature and distribution of near surface deposits and determine the degree of groundwater ingress, if any, and to assess the stability of the excavations.

6.2.3 Five light cable percussion (shell and auger) boreholes (BH101 to BH105) were advanced using 150mm diameter tools and casing. The boreholes BH101 and BH102 were scheduled to assess the nature of the colliery spoil contained within the tip in the west of the site. Boreholes BH103 to BH105 were used to assess the depth, nature and density of both man made and nature soils in the south-east of Area 1.

6.2.4 Standard Penetration Tests (SPTs) were carried out at varying intervals in these boreholes. Where full penetration of the main test (450mm) was not possible, the N values reported indicate the length of drive achieved for 50 blows (e.g. 50/225mm).

6.2.5 Ten rotary open hole probeholes (PH101 to PH110) were drilled across the former colliery site (Area 1) to determine the presence of unrecorded shallow underground mine workings.

6.2.6 Groundwater and gas monitoring installations were placed in each of the rotary probeholes.

6.2.7 Soakaway tests were carried out in ten additional trial pits (SW101 to SW110) to assess the feasibility of soakaway drains at the site for surface water and highway drainage.

6.3 Soil Description and Sampling

6.3.1 The soils and made ground encountered have been investigated and logged in accordance with BS5930:1999 "*Code of practice for site investigation*". The description and depth of strata encountered are presented in the various exploratory hole logs in Appendices D, E, F and G of this report.

6.3.2 Representative soil/fill samples were taken by AIGC at regular intervals from the trial pits and boreholes to assist in the identification of the ground and allow selected laboratory testing to be performed. The distribution of samples taken across the site is recorded on the exploratory logs.

6.3.3 Samples of soil for chemical testing were placed into 1 litre plastic tubs. Selected samples were also placed into glass vials. Samples for organic analysis were collected in glass jars and kept in cool boxes at a temperature of approximately $4^{O}C$ until delivery to the selected laboratory.

6.3.4 Relative densities from the cable percussion boreholes are based on the results of in-situ standard penetration testing (SPT).

6.3.5 This ground investigation was undertaken in general accordance with Contaminated Land Research Report No. 4 "*Sampling strategies for contaminated land*" and the new Code of Practice BS10175:2001 "*Code of practice for the identification of potentially contaminated sites*".

6.4 Exploratory Hole Locations

6.4.1 Exploratory hole locations were selected by AIGC in order to provide a representative view of the strata beneath the site and supplement the previous site investigations.

6.4.2 Constraints associated with live services and the steep slopes of the colliery spoil tips rendered certain areas of the site inaccessible to both a mechanical excavator and conventional boring plant.

7 GROUND CONDITIONS

7.1 General

7.1.1 A complete record of strata encountered beneath the proposed development site is given on the various exploratory hole records, presented in Appendices D to G. However, a summary of the ground conditions is provided below.

7.2 Made Ground

7.2.1 Made ground was encountered in all exploratory locations, with the exception of TP121 and TP163. A summary of the occurrence depths of each material type is given in Table 5, pages 17 to 19.

7.2.2 Within the **former main colliery site (Area 1)** made ground is typically less than about 3.0m thick. Only in the extreme south and south-east corner of the site was the made ground found to depths in excess of 3.0m. Broadly, the made ground thickens from north to south across Area 1; this is illustrated on Drawing Number 2500/6 in Appendix A of this report.

7.2.3 The made ground on site is a heterogeneous mixture of materials and it is unlikely that it could be accurately characterised even with extensive sampling. Nonetheless, the bulk of the made ground can be placed into one of four broad types:

i. **Concrete / Tarmac**: Concrete was found covering approximately 60% of Area 1 as a reinforced floor slab (of demolished buildings) or hardstanding car park areas between 0.1m and 0.45m in thickness. Locally, tarmac has been laid as a thin covering over concrete in the main colliery site roadways.

ii. **Colliery Spoil – Coal / Coal Carpet**: Generally located in the eastern section of Area 1 and the western section of Area 2 where historically coal stocking took place. The material is generally less than 1.0m thick and comprising predominately gravel sized coal and carbonaceous mudstone fragments locally with some mudstone, red shale and sandstone fragments. Within BH101 this material was identified to a depth of 3.0m.

iii. **Colliery Spoil - Mixed**: Comprising a mixture of gravel and cobble sized mudstone, red shale, siltstone and coal fragments generally less than 2.0m in thickness. In the extreme south-east of the site this material was found over the full depth of the trial pits and in excess of 3m. This classification has also been applied to the thin horizons of brick and concrete rubble located locally beneath the concrete slab.

iv. **Colliery Spoil – Red Shale**: Found predominately in the south and south-east sections of Area 1. The material generally comprises gravel and cobble sized red shale fragments locally with occasional gravel sized mudstone fragments.

7.3 Natural Ground

7.3.1 Natural ground was encountered within each of the exploratory holes in Area 1 with the exceptions of those in the extreme south-east corner where the trial pits terminated in made ground.

7.3.2 Drawing Number 2500/7 shows the underlying geology below the site as determined from the BGS maps, SYMAS records and exploratory holes constructed on site on site. Natural ground comprises Ackworth Rock (sandstone) or Middle Coal Measures (mudstone or sandstone) bedrock and / or residual soils derived from the underlying bedrock.

7.3.3 A summary of the occurrence depths of each of the strata is given in Table 5 pages 17 to 19.

7.3.4 **Residual/weathered Middle Coal Measures** generally comprise firm to very stiff mottled clay. Gravel sized mudstone lithorelicts (residual mudstone fragments) were locally noted in the less highly weathered clays.

7.3.5 The **Middle Coal Measures** are generally characterised as a very weak, fissured mudstone. Locally, within the south-western section of Area 1 the measures consist of a weak to moderately weak, black or iron stained, fine and medium grained sandstone. Upper Coal Measure are indicated close to but outside the sites boundary.

7.3.6 The **weathered Ackworth Rock** is identified as probably dense, light brown or orange brown fine to coarse sand with varying proportions of angular sandstone gravel.

7.3.7 The **Ackworth Rock** itself comprises fractured, orange brown fine to coarse grained sandstone.

7.4 Groundwater

7.4.1 Groundwater was encountered in thirteen of the trial pits as detailed in Table 3, page 16. Groundwater was not apparent during excavation of any other trial pits.

7.4.2 It should be borne in mind that the rapid excavation rates used during a trial pitting investigation might not allow establishment of equilibrium water levels. Equilibrium levels are likely to fluctuate with season/rainfall and could be substantially higher at wetter times of year than those found during this investigation.

7.4.3 Monitoring wells were installed in all ten of the rotary probe holes. Relevant details are summarised in Table 4, page 16 together with typical standing water levels.

7.5 Stability

7.5.1 The stability of all the trial pit excavations was generally good. Slight sidewall collapses occurred in the loose colliery spoil deposits.

Table 3
Groundwater Occurrences in Trial Pits

Exploratory Hole	Site Area	Stratigraphic Location	Groundwater Occurrence	Depth Encountered
TP101	1	Perched at made ground / natural ground interface	Seepage	2.6
TP102	1	Perched at made ground / natural ground interface	Seepage	2.3
TP104	1	Perched at made ground / natural ground interface	Seepage	2.3
TP107	1	Perched within made ground	Seepage	1.5
TP124	1	Within Weathered Middle Coal Measures	Seepage	1.1
TP130	1	Within Weathered Ackworth Rock	Inflow - Slow	2.5
TP145	1	Perched within made ground	Seepage	0.5
TP146	1	Perched at made ground / natural ground interface	Seepage	0.6
TP151	1	Within Ackworth Rock	Inflow - Rapid	2.5
TP152	1	Within Ackworth Rock	Inflow - Rapid	2.8
TP153	1	Perched at base of Weathered Ackworth Rock	Inflow - Rapid	2.5
TP154	1	Perched at base of Weathered Ackworth Rock	Inflow - Rapid	3
TP164	1	Within Weathered Ackworth Rock	Inflow - Rapid	2.3
TP176	1	Perched at made ground / natural ground interface	Seepage	3.7
TP179	1	Within Weathered Ackworth Rock	Inflow	2.7

Table 4
Groundwater levels in Probehole Installations

Exploratory Location	Response Zone		Typical standing water level (m bgl)
	Depth	Strata	
PH101	2.0 to 10.0	Ackworth Rock	Not Recorded
PH102	1.0 to 10.0	Ackworth Rock	4.41
PH103	2.0 to 10.0	Ackworth Rock	3.89
PH104	3.0 to 10.0	Ackworth Rock	9.53
PH105	6.0 to 10.0	Middle Coal Measures	9.0
PH106	4.0 to 10.0	Middle Coal Measures	9.68
PH107	4.0 to 10.0	Middle Coal Measures	4.26
PH108	3.0 to 10.0	Middle Coal Measures	6.56
PH109	3.0 to 10.0	Middle Coal Measures	4.83
PH110	4.0 to 10.0	Ackworth Rock	2.74

Table 5
Summary of Ground Conditions

Site Area	Hole	Final Depth of Hole	MG Depth Area	Depth to Base of Made Ground	MADE GROUND						NATURAL					ROCK HEAD	
					Topsoil	Concrete / Tarmac	Colliery Spoil - Red Shale	Colliery Spoil - Coal	Colliery Spoil - Mixed	Colliery Spoil - Red Shale	Relict Topsoil	Weathered Ackworth Rock	Ackworth Rock	Weathered Middle Coal Measures	Middle Coal Measures	Depth	Type
1	TP121	2.2	A		0.1							1	2.2			1	SANDSTONE
1	TP163	2.1	A		0.1							1.2	2.1			1.2	SANDSTONE
1	SW104	1.9	A	0.1					0.1			1.8	1.9			1.8	SANDSTONE
1	TP148	1.2	A	0.1				0.1				1	1.2			1	SANDSTONE
1	TP149	1.2	A	0.15				0.15				1.1	1.2			1.1	SANDSTONE
1	SW103	2	A	0.2					0.2			1.9	2			1.9	SANDSTONE
1	TP153	2.8	A	0.2				0.2				2.5	2.8			2.5	SANDSTONE
1	TP134	2.4	A	0.25		0.12			0.25					2	2.4	2	MUDSTONE
1	TP150	2	A	0.25				0.25				1.8	2			1.8	SANDSTONE
1	SW101	2.4	A	0.3					0.3			2	2.4			2	SANDSTONE
1	TP120	3.1	A	0.3		0.1			0.3					2.9	3.1	2.9	MUDSTONE
1	SW108	1.9	A	0.4		0.2			0.4			1.8	1.9			1.8	SANDSTONE
1	SW109	2.35	A	0.4		0.15			0.4			2	2.35			2	SANDSTONE
1	SW110	2.1	A	0.4		0.2			0.4			2	2.1			2.1	SANDSTONE
1	TP123	3.2	A	0.4					0.4					2.6	3.2	2.6	MUDSTONE
1	TP133	3.4	A	0.4		0.15			0.4			2	2.4		3.4	2	SANDSTONE
1	TP142	3	A	0.4		0.16			0.4			2.6	3			2.6	SANDSTONE
1	SW102	2.3	A	0.5					0.5			2	2.3			2	SANDSTONE
1	SW107	2.15	A	0.5		0.4			0.5			2	2.15			2	SANDSTONE
1	TP125	2.4	A	0.6		0.1			0.6			2	2.4			2	SANDSTONE
1	TP146	2.5	A	0.65	0.3				0.65			2.2	2.5			2.2	SANDSTONE
1	SW105	2.3	A	0.7					0.7			2	2.3			2	SANDSTONE
1	SW106	2.4	A	0.7		0.5			0.7			2.2	2.4			2.4	SANDSTONE
1	TP126	2.4	A	0.7		0.2			0.7			1.6	2.4			1.6	SANDSTONE
1	TP129	2.4	A	0.7		0.25			0.7			2	2.4			2	SANDSTONE
1	TP130	2.6	A	0.7		0.25			0.7			2.2	2.6			2.2	SANDSTONE
1	TP124	3.2	A	0.8		0.1			0.8					2.3	3.2	2.3	MUDSTONE
1	TP128	2.7	A	0.9		0.1			0.9			1.8	2.7			1.8	SANDSTONE
1	TP158	3.2	A	0.9					0.9					3	3.2	3	SANDSTONE
1	TP172	2.3	A	0.9	0.1				0.9					2	2.3	2	SANDSTONE
1	TP174	1.5	A	0.9	0.1				0.9						1.5	0.9	SANDSTONE
1	TP132	2.6	A	1		0.3			1			2.4	2.6			2.4	SANDSTONE

Table 5
Summary of Ground Conditions

Site Area	Hole	Final Depth of Hole	MG Depth Area	Depth to Base of Made Ground	MADE GROUND						NATURAL					ROCK HEAD	
					Topsoil	Concrete / Tarmac	Colliery Spoil - Red Shale	Colliery Spoil - Coal	Colliery Spoil - Mixed	Colliery Spoil - Red Shale	Relict Topsoil	Weathered Ackworth Rock	Ackworth Rock	Weathered Middle Coal Measures	Middle Coal Measures	Depth	Type
1	TP136	3.8	A	1		0.15			1			2.1		3.1	3.8	3.1	MUDSTONE
1	TP131	0.5	A	-		0.5											
1	TP118	2.9	B	1.1		0.2			1.1					2.6	2.9	2.6	SANDSTONE
1	TP127	2.5	B	1.1		0.15			1.1			1.3	2.5			1.3	SANDSTONE
1	TP111	3.2	B	1.2				0.6	1.2					2.8	3.2	2.8	MUDSTONE
1	TP117	2.8	B	1.2		0.2			0.5						0.5	0.5	SANDSTONE
1	TP152	3	B	1.2				1.2				2.8	3			2.8	SANDSTONE
1	TP160	4.4	B	1.2					1.2					4.4			
1	TP171	2.5	B	1.2	0.1				1.2					2.5			
1	TP110	2.6	B	1.3		0.24			1.3					2.6			
1	TP119	3.2	B	1.3		0.3			1.3					2.8	3.2	2.8	MUDSTONE
1	TP145	1.8	B	1.4	0.3				1.4			1.8					
1	TP116	2.6	B	1.5		0.1			1.5					2.6			
1	TP122	3.1	B	1.5		0.19			1.5					2.8	3.1	2.8	SANDSTONE
1	TP144	2.8	B	1.5					1.5			2.6	2.8			2.6	SANDSTONE
1	TP165	3.1	B	1.6		0.3			1.6		1.7			3	3.1	3	SANDSTONE
1	TP103	3.3	B	1.7	0.4				1.1	1.7	1.8			3.2	3.3	3.2	SANDSTONE
1	TP140	3.5	B	1.8		0.17	0.3		1.8			2.2		3.5			
1	TP151	2.7	B	1.8		0.3			1.8			2.7					
1	TP170	2.5	B	1.8	0.2				1.8					2.5			
1	TP179	3.1	B	1.8					1.8			3.1					
1	TP141	3.7	B	2		0.18	0.25		2					3.7			
1	TP143	2.9	B	2		0.4			2			2.9					
1	TP164	3.6	C	2.1					2.1		2.3	3.6					
1	TP104	4.1	C	2.3	0.25				2.3		2.4			4	4.1	4	SANDSTONE
1	TP106	3.1	C	2.3				0.2	2.3					3	3.1	3	SANDSTONE
1	TP169	2.6	C	2.4					2.4					2.6			
1	TP154	3.3	C	2.5					2.5			3	3.3			3	SANDSTONE
1	TP157	3.3	C	2.5						2.5				3.1	3.3	3.1	SANDSTONE
1	TP101	3.9	C	2.6	0.3				0.9	2.6	3.1			3.9		-	
1	TP102	3.8	C	2.6	0.5				0.9	2.3				3.8		-	
1	TP139	4.3	C	3		0.29	0.85		3					4.3			

Table 5
Summary of Ground Conditions

Site Area	Hole	Final Depth of Hole	MG Depth Area	Depth to Base of Made Ground	MADE GROUND						NATURAL					ROCK HEAD	
					Topsoil	Concrete / Tarmac	Colliery Spoil - Red Shale	Colliery Spoil - Coal	Colliery Spoil - Mixed	Colliery Spoil - Red Shale	Relict Topsoil	Weathered Ackworth Rock	Ackworth Rock	Weathered Middle Coal Measures	Middle Coal Measures	Depth	Type
1	TP175	3.2	C	3	0.3				3					3.2			
1	TP156	4.4	D	3.5					3.5		3.7			4.4			
1	TP137	4.3	D	3.6		0.12			0.4	3.6	3.9			4.3			
1	TP135	4.3	D	3.7		0.12			0.3	3.7				4.3			
1	TP159	4.6	D	4					1.5	4				4.6			
1	TP176	4.2	D	4	0.2				4		4.2						
1	BH103	6.4	D	4.5				3.5	4.5					6	6.4	6	MUDSTONE
1	BH105	7.15	D	6.2			3.8		6.2					6.2		6.2	MUDSTONE
1	BH104	8.25	D	6.7	0.35				6.7					8	8.25	8	MUDSTONE
1	TP166	2.1	D	-	0.1				2.1								
1	TP167	2.9	D	-	0.3				2.9								
1	TP138	2.9	D	-		0.7			2.9								
1	TP155	4.1	D	-					0.5	4.1							
1	TP108	4.8	D	-					4.8								
1	TP114	5	D	-	0.15				2.8	5							
Tip No.2	TP173	2.5		1.7	0.1				1.7			2.5					
Tip No.2	TP177	3.3		3	0.2				1.4	3	3.3						
Tip No.2	TP161	4.4		3.9	0.4				2.6	3.9	4			4.4			
Tip No.2	TP162	4.4		3.9	0.3				1	3.9	4			4.4			
Tip No.2	BH101	12.8		11.7			2.3	3		11.7				12.6	1.2.8	12.6	MUDSTONE
Tip No.2	BH102	10.55		9.5	0.4				4	9.5				10.45	10.55	10.45	MUDSTONE

8 MINING

8.1 General

8.1.1 No irregular penetration occurred whilst drilling in rock, suggesting an absence of broken ground/voids, usually associated with collapsed mine workings.

8.1.2 Shaft records for Goldthorpe Colliery Shafts 1 and 2 indicate the 0.45m thick Highgate Coal seam at approximately 30m depth below the site. Below this, at approximately 60m depth the Shafton Coal seam was encountered with a thickness of 1.57m.

8.1.3 SYMAS have indicated that four deeper seams below the site have also been worked in the past. These are detailed in Table 5, page 22. In each case, some form of shaft pillar was left in place.

8.1.4 The exact locations of Bella Drift and Goldthorpe Shafts 1 and 2 are known and are detailed on Drawing Number 2500/3, in Appendix A. The nature and date of backfill and treatment of all three of these mine entries is detailed in the CA report contained within Appendix B to this report.

8.1.5 The third shaft (CA ref 447404-002) at the eastern side of the site has not been located and the nature of its backfill is unknown. At the time of writing AIGC are awaiting primary source data for the shafts location from the CA.

8.2 Probehole Investigation

8.2.1 Probeholes PH101 to PH107 were drilled to determine the presence of shallow mineworkings across the development site (Area 1). The holes encountered a sequence of interbedded mudstones and sandstones with sporadic thin coal seams. Probeholes PH108 to PH110 were drilled to 10.0m depth for the installation of monitoring standpipes only. A summary of the thin coal seams encountered in each of the probeholes is provided in Table 6, page 21.

Table 6
Summary of Coal Seams Encountered During Rotary Drilling

Probehole Number	Depth to Rockhead (m)	Depth to Coal (m)	Thickness of Coal (mm)	Remarks
PH101	2.0	-	-	-
PH102	2.0	-	-	-
PH103	1.7	-	-	-
PH104	3.0	11.5 24.6	0.3 0.2	Unnamed thin coal? Unnamed thin coal?
PH105	5.8	5.8 18.0	0.2 0.3	Unnamed thin coal? Unnamed thin coal?
PH106	3.6	3.6	0.3	Unnamed thin coal?
PH107	3.8	-	-	-
PH108	2.5	-	-	-
PH109	2.0	-	-	-
PH110	4.0	-	-	-

8.3 Conclusions of Mining Investigation

Shallow Mining

8.3.1 Following the probehole drilling it is concluded that Area 1 is not underlain at shallow depth by any workable seams of coal.

8.3.2 Based on the above it is considered unlikely that the site has been affected by shallow mining. Ground stabilisation by drilling and pressure grouting should not be required.

Shafts

8.3.3 The Coal Authority report for the site shows the presence of two mine entries within Area 1. The exact location and treatment of these two shafts is well documented.

8.3.4 It is understood that the owner of a shaft is liable for the cost of any remedial works resulting from shaft collapse under subsidence legislation. It is understood that the Coal Authority owns the two shafts at Goldthorpe Colliery, although Ogden Group currently own the overlying land at ground level.

8.3.5 If development "close" to a shaft were proposed, the Coal Authority would expect the Developer to sign an indemnity and purchase the shaft for a nominal fee. However, the term "close" is not clearly defined and provided no building is sited directly over a shaft, it seems unlikely that the Developer would be obliged to purchase. The Coal Authority may however be able to restrict development during the planning process if they are appointed as a statutory consultee.

8.3.6 It is generally considered prudent not to build over mine shafts or within an area at the surface bound by a line drawn at 45° back from where the shaft intersects rockhead. AIGC consider this to be sound advice, particularly for the two deep shafts that have been backfilled and capped but seemingly not grouted. Consideration should be given to creating sterile no build zones around the shafts. Areas of hardstanding or landscaping could be accommodated within these sterile zones.

8.3.7 Each shaft has an approximately 250mm thick reinforced concrete slab with an inspection chamber at ground level. However, presence of /details of any rockhead-cap are unknown. It would be prudent to allow for the construction of such a cap at both locations.

8.3.8 It is recommended that no construction take place over the mineshaft cap. However, with NHBC approval, construction adjacent to treated shafts may be possible provided that monitoring for mine gas is carried out (see Section 9). The foundations of dwellings in the vicinity of shafts should be taken below a line drawn at 45° from the intersection of a shaft with rockhead.

8.3.9 Exploratory holes adjacent to both Shaft 1 and 2 indicate rockhead at approximately 4m depth; a sterile zone of approximately 12.5m would, therefore, be required around each shaft.

8.3.10 It is possible, although unlikely that further, unrecorded mine shafts and adits exist within Area 1. Any mine shafts found should be suitably stabilised by such methods as drilling and pressure grouting followed by capping.

9 HAZARDOUS GAS

9.1 General

9.1.1 Although the site does not lie within the statutory consultation zone of a former landfill site, there is a potential for coal/mine gas migration into the site from both mine workings and colliery spoil tips on the site.

9.1.2 Based on the above, it was considered that hazardous gas posed a potential risk to the proposed development. Monitoring wells were therefore installed in all ten probeholes; details of the individual installations are provided in the various exploratory hole records.

9.1.3 At the time of writing only two gas monitoring visits from a proposed six have been carried out. A comprehensive hazardous gas risk assessment will be issued in a supplementary letter report on completion of gas monitoring.

9.2 Scope of Works

9.2.1 The wells will be monitored on six occasions by a suitably qualified technician.

9.2.2 A standard procedure was followed in accordance with CIRIA guidance; this procedure involved measurement, in the following order of:

- Atmospheric temperature, pressure and ambient oxygen concentration on site immediately prior to and on completion of, monitoring.
- Methane, oxygen and carbon dioxide concentrations using an LMS Gas Data infra-red gas analyser.
- Standing water level using a dipmeter.

9.3 Monitoring Results

9.3.1 Results of the monitoring to date are presented in Appendix I.

10 CONTAMINATION ANALYSIS AND DISCUSSION

10.1 General

10.1.1 Historical plans show that the site was formerly a colliery with railway sidings. Furthermore, made ground was encountered in all exploratory locations during the ground investigation.

10.1.2 An assessment of potential contaminants has been undertaken by reference to the following publications:

- DETR Industry Profiles, most notably 'Railway land' and 'Engineering Works' (*railway engineering works).*
- The RPS Manual, most notably: 21-Railway Land.
- Industry profiles included in Appendix 3.1 of CIRIA Report "A guide to safe working practices for contaminated sites" (1993), most notably: Profile 3 - "Mining & Extractive Industries ".

10.1.3 In view of the above, selected samples taken during the ground investigation were analysed to determine whether any significant ground contamination is present.

10.1.4 Ninety-nine samples of natural and made ground were taken by AIGC during their ground investigation and delivered to a UKAS accredited laboratory, together with our chain of custody record and test schedule. The samples were analysed for the following determinands:-

pH, total and water soluble sulphate, total monohydric phenols, total cyanide, water soluble boron an, total metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium and zinc).

10.1.5 Leachability testing was undertaken on forty of these samples to determine the potential mobility of the contaminants present. The samples were analysed for the following determinands

arsenic, cadmium, chromium, copper, lead, mercury, nickel, boron, selenium and zinc.

10.1.6 In addition, the calorific value of twenty-three samples of colliery spoil was determined.

10.1.7 Only very localised visual and olfactory evidence of organic contamination was recorded as pockets of 'tarry' material in TP116 and a slight tar/organic odour in TP109. However, during the desk study several of the former colliery buildings were identified as having previously housed operations that may have required the use of hydrocarbons as either fuel or lubricant (e.g. plant workshops). Samples from these trial pits along with those from TP116 were tested for the following additional determinands:

- Total Petroleum Hydrocarbons (TPH) by GC-FID. This analytical technique detects hydrocarbons in the range C10 to C40 (volatiles, heavy tars, humic material and sulphur are not detected)
- Gasoline Range Organics with BTEX by GC-FID. BTEX is the qualification of Benzene, Toluene, Ethylbenzene and Xylene.

10.1.8 In addition IMC Environmental Consultants tested and reported the results of chemical analysis carried out on thirty-two samples of made ground from across the site.

10.2 Current Guidance and Methodology

10.2.1 In March 2002 DEFRA and the Environment Agency published a series of technical research papers introducing a new approach to the assessment of risk to human health from land contamination. This research includes the development of the new CLEA model and some new Soil Guideline Values (SGV's).

10.2.2 These guidelines only address a few contaminants and development of the model and SGV's is ongoing. Furthermore, at the time of writing it is evident that there is little overall understanding and knowledge of exactly when and how this new approach will be implemented and used. Therefore, we consider it inappropriate to review data obtained during *this* investigation in accordance with the new approach.

10.2.3 The UK approach to the consideration of contaminated land (including CLEA) is based upon the principles of risk assessment. This in turn is founded upon the use of so called source→ pathway→ target principles in order to establish the presence, or potential presence, of a pollutant linkage.

10.2.4 AIGC adopts a tiered approach to risk assessment that is consistent with UK guidance. The initial step (or Tier 1) is the comparison of site data with published guidance levels or remedial targets.

10.2.5 Tier 1 **human health** related assessments are currently based upon ICRCL values which are supplemented as necessary with Dutch Intervention Values or other published guidelines as appropriate.

10.2.6 Tier 1 **groundwater** risk assessments are undertaken by comparing leachate concentrations with the appropriate water quality standard. Depending upon the specific characteristics of the site the appropriate standard may be one of the following.

- Water Supply (Water Quality) Regulations 1989
- Environmental Quality Standards (for Freshwater)
- The Surface Waters (Abstraction for Drinking Water) Regulations
- Leachate Quality Thresholds (Environment Agency)

10.2.7 **Phytotoxic** risks and risk to **building materials** are considered through reference to ICRCL and relevant BRE Digests.

10.2.8 Tier 1 assessment of **landfill gas** risk is undertaken through reference to the following documents:

- Approved Document C, Building Regulations 1991
- CIRIA Report 149 "Protecting Development from Methane", 1995

10.2.9 Should any Tier 1 criteria be exceeded then two courses of action are available. The first is to "break" the pollutant linkage by recommending an appropriate level of remedial action – removal of contaminated material for example. The alternative approach is to carry out more detailed risk assessment in order to determine whether a contamination risk actually exists.

10.2.10 With respect to the interpretation of the **calorific values**, at present there are no accepted methods to assess whether a sample is combustible and under what circumstances it might smoulder. Some guidance is given in ICRCL Note 61/84 "Notes on the fire hazards of contaminated land".

10.2.11 ICRCL state the use of CVs "*seems to have become adopted largely because it is available and not because it is best suited. There is unlikely to be any simple relationship between the quantity of heat measured (in the laboratory) and that released by the same material underground with a limited supply of air. In general, however, it seems likely that materials whose CV's exceed 10MJ/kg are almost certainly combustible, while those with values below 2MJ/kg are unlikely to burn. Within this range of values, there is likely to be a large number of potentially combustible materials*".

10.3 Contamination Test Results

10.3.1 The test result certificates for analysis carried out by AIGC are presented in Appendix K to this report and summarised in Tables 7, 8, 9 and 10 on pages 26 to 32. A results summary of the tests carried out by IMC Environmental is located in Appendix M.

Inorganic Contamination

10.3.2 The results as summarised in Table 7, pages 26 to 28 show that some determinands (most notably phytoxic arsenic, boron, selenium, copper, nickel and zinc) exceed current guidance values in occasional samples of colliery spoil.

10.3.3 Twenty-four samples yielded total sulphate values between 0.2% and 1.9% above ICRCL guidance level of 0.2%. The soluble sulphate guidance value of 1.2g/l was exceeded by four of these twenty-four samples plus one additional sample with values between 0.03 and 2.36g/l.

10.3.4 Leachability test results are summarised on Table 8, pages 29 and 30. The concentrations of all determinands were below the maximum permissible concentrations as defined in the Water Supply (Water Quality) Regulations 1989.

Calorific Value

10.3.5 The calorific values of twenty-three samples from across the site that contained colliery spoil were determined in order to assess potential combustibility. Calorific values for the samples of colliery spoil classed as 'coal' ranged from 2.03MJ/kg to 24.8MJ/kg (average 14.97MJ/kg). Values of mixed colliery spoil ranged from 0.99MJ/kg to 21.1MJ/kg (average 8.72MJ/kg).

Table 7 - Summary of Degree of Ground Contamination

Sample Location & Depth (m)	Material	Area of Site	Contaminant Concentration in mg/kg															
			Residential End Use Trigger Level Concentrations are Shown in Brackets															
			pH	As	Cd	Cr	Pb	Hg	Se	B	Cu	Ni	Zn	Phenol	CN	Total SO_4	Sol SO_4	CV
				(10)*	(3)*	(600)*	(500)*	(1)*	(3)*	(3)*	(130)*	(70)*	(300)*	(5)*	(25)*	(0.2%) *	(1:2g/l) ~	2000kJ/kg
TP101 1 0.5	COLLIERY SPOIL - MIXED	1	7.8	22	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP101 4 3.0	RELICT TOPSOIL	1	6.7	15	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP102 1 0.6	COLLIERY SPOIL - MIXED	1	7.6	58	-	-	-	-	-	-	-	72	-	-	-	-	-	11,300
TP106 1 0.6	COLLIERY SPOIL - MIXED	1																3,320
TP110 1 1.0	COLLIERY SPOIL - MIXED	1	9.0	45	-	-	-	-	-	-	-	-	-	-	-	0.3	-	
TP111 1 0.3	COLLIERY SPOIL - COAL	1																12,700
TP115 1 0.3	COLLIERY SPOIL - COAL	1																2,030
TP116 1 0.3	COLLIERY SPOIL - MIXED	1	7.9	87	-	-	-	-	-	-	210	127	540	-	-	-	-	-
TP116 2 1.3	MADE GROUND (sand with odour)	1	6.1	12	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP117 2 1.3	W'ed MIDDLE COAL MEASURES	1	5.9	77	-	-	-	-	-	-	-	-	-	-	-	0.2	-	
TP119 1 0.5	COLLIERY SPOIL - MIXED	1	7.2	51	-	-	-	-	-	-	-	-	-	-	-	0.2	-	
TP121 1 0.3	W'ed ACKWORTH ROCK	1	8.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP123 1 0.2	COLLIERY SPOIL - MIXED	1	8.2	19	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP124 1 0.5	COLLIERY SPOIL - MIXED	1	7.6	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP127 1 0.3	COLLIERY SPOIL - MIXED	1	6.8	52	-	-	-	-	-	-	-	-	-	-	-	0.2	-	
TP127 2 1.0	W'ed ACKWORTH ROCK	1	5.3	80	-	-	-	-	-	-	-	-	-	-	-	0.4	-	
TP129 1 0.4	COLLIERY SPOIL - MIXED	1																-
TP132 1 0.5	COLLIERY SPOIL - MIXED	1	7.0	47	-	-	-	-	-	-	-	-	-	-	-	0.3	-	15,300
TP135 2 3.8	RELICT TOPSOIL	1	6.7	17	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP136 1 0.5	COLLIERY SPOIL - MIXED	1	8.0	225	-	-	-	-	-	-	702	132	420	-	-	-	-	4,660
TP137 1 0.3	COLLIERY SPOIL - MIXED	1	7.6	20	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP141 1 0.5	COLLIERY SPOIL - MIXED	1	7.2	24	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP142 2 1.0	W'ed ACKWORTH ROCK	1	7.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP144 1 0.5	COLLIERY SPOIL - MIXED	1																21,100
TP145 2 0.4	COLLIERY SPOIL - MIXED	1	5.2															-

Table 7 - Summary of Degree of Ground Contamination

Sample Location & Depth (m)	Material	Area of Site	Contaminant Concentration in mg/kg Residential End Use Trigger Level Concentrations are Shown in Brackets															
			pH	As	Cd	Cr	Pb	Hg	Se	B	Cu	Ni	Zn	Phenol	CN	Total SO_4	Sol SO_4	CV
				(10)*	(3)*	(600)*	(500)*	(1)*	(3)*	*(3)*	(130)*	(70)*	(300)*	(5)*	(25)*	(0.2%) *	(1:2g/l)	2000kJ/kg
TP146 1 0.4	COLLIERY SPOIL - MIXED	1	4.8	64	-	-	-	-	-	-	-	-	-	-	-	-	1.2	
TP146 3 0.6	COLLIERY SPOIL - COAL	1																22,900
TP151 1 0.6	COLLIERY SPOIL - MIXED	1	8.7	44	-	-	-	-	-	-	-	-	-	-	-	0.7	-	
TP152 1 0.3	COLLIERY SPOIL - COAL	1	4.4	40	-	-	-	-	3.8	3.7	-	-	-	-	-	-	-	24,800
TP156 1 0.5	COLLIERY SPOIL - MIXED	1																3,280
TP158 1 0.3	COLLIERY SPOIL - MIXED	1	7.5	49	-	-	-	-	-	-	-	-	-	-	-	0.7	-	
TP159 1 0.2	COLLIERY SPOIL - MIXED	1	7.7	23	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP160 2 0.8	COLLIERY SPOIL - MIXED	1	7.5	11	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP160 3 2.2	Wed MIDDLE COAL MEASURES	1	7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP164 1 0.2	COLLIERY SPOIL - MIXED	1																14,100
TP164 2 0.8	COLLIERY SPOIL - MIXED	1	7.3	11	-	-	-	-	-	3.8	-	-	-	-	-	0.2	-	
TP165 1 0.50	COLLIERY SPOIL - MIXED	1	8.5															
TP165 2 0.80	COLLIERY SPOIL - MIXED	1	8.3	12	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP165 3 1.65	RELICT TOPSOIL	1	7.4															
TP166 1 0.70	COLLIERY SPOIL - MIXED	1	4.2	73	5.1	-	-	-	-	-	-	-	-	-	-	0.8	1.2	
TP167 2 1.00	COLLIERY SPOIL - MIXED	1	4.3															
TP169 1 0.30	COLLIERY SPOIL - MIXED	1	7.0	72	-	-	-	-	-	4.0	-	100	364	-	-	0.3	-	
TP170 1 1.00	COLLIERY SPOIL - MIXED	1	3.4															
TP171 1 0.50	COLLIERY SPOIL - MIXED	1	5.0															
TP172 1 0.50	COLLIERY SPOIL - MIXED	1	5.7															
TP174 1 0.50	COLLIERY SPOIL - MIXED	1	7.2															8,470
TP175 1 0.40	COLLIERY SPOIL - MIXED	1	6.2	64	-	-	-	-	-	-	-	-	-	-	-	0.2	-	6,260
TP175 2 1.20	COLLIERY SPOIL - MIXED	1	5.5															12,300
TP176 1 0.30	COLLIERY SPOIL - MIXED	1	4.6															10,600
TP176 2 1.10	COLLIERY SPOIL - MIXED	1	3.7	56	-	-	-	-	-	-	-	-	-	-	-	1.4	2.4	9,530

Table 7 - Summary of Degree of Ground Contamination

Sample Location & Depth (m)	Material	Area of Site	Contaminant Concentration in mg/kg Residential End Use Trigger Level Concentrations are Shown in Brackets														
			pH	As	Cd	Cr	Pb	Hg	Se	B	Cu	Ni	Zn	Phenol	CN	Total SO_4	Sol SO_4	CV
				(10)*	(3)*	(600)*	(500)*	(1)*	(3)*	(3)*	(130)*	(70)*	(300)*	(5)*	(25)*	(0.2%)*	(1:2g/l)≈	2000kJ/kg
TP176 3 2.50	COLLIERY SPOIL - MIXED	1	3.7															10,600
TP179 1 0.20	COLLIERY SPOIL - MIXED	1	4.3															
TP179 3 1.20	COLLIERY SPOIL - MIXED	1	5.4															

Key

Parameter tested for but found not to be in excess of relevant trigger level concentration

Parameter not tested for

Source of guidance trigger level

* ICRCL Guidance Note 59/83, Second Edition (1987)

\+ *Health and Safety Executive "Protection of Waters and the General Public during the Development of Contaminated Land", HSE, 1991*

◊ BRE Digest 363, Sulphate and Acid Resistance of Concrete in the Ground (1991)

\# Dutch E-3c Intervention Levels for Soil Remediation (1994)

Table 8 - Summary of the EA Leachability Testing on Samples

Sample Location & Depth (m)	Material	Area of Site	Contaminant Concentration in mg/litre Unless Otherwise Shown							
			Leachable As (50)*	Leachable Cd (5)*	Leachable Cr (50)*	Leachable Cu (3000)*	Leachable Pb (50)*	Leachable Hg (1)*	Leachable Ni (50)*	Leachable Zn (5000)*
TP106 1 0.6	COLLIERY SPOIL - MIXED	1	-	-	-	-	-	-	-	-
TP111 1 0.3	COLLIERY SPOIL - COAL	1	-	-	-	-	-	-	-	-
TP115 1 0.3	COLLIERY SPOIL - COAL	1	-	-	-	-	-	-	-	-
TP116 1 0.3	COLLIERY SPOIL - MIXED	1	-	-	-	-	-	-	-	-
TP116 2 1.3	MADE GROUND (sand with odour)	1	-	-	-	-	-	-	-	-
TP121 1 0.3	W'ed ACKWORTH ROCK	1	-	-	-	-	-	-	-	-
TP124 1 0.5	COLLIERY SPOIL - MIXED	1	-	-	-	-	-	-	-	-
TP129 1 0.4	COLLIERY SPOIL - MIXED	1	-	-	-	-	-	-	-	-
TP132 1 0.5	COLLIERY SPOIL - MIXED	1	-	-	-	-	-	-	-	-
TP141 1 0.5	COLLIERY SPOIL - MIXED	1	-	-	-	-	-	-	-	-
TP142 2 1.0	W'ed ACKWORTH ROCK	1	-	-	-	-	-	-	-	-
TP144 1 0.5	COLLIERY SPOIL - MIXED	1	-	-	-	-	-	-	-	-
TP145 2 0.4	COLLIERY SPOIL - MIXED	1	-	-	-	-	-	-	-	-
TP146 3(S) 0.6	COLLIERY SPOIL - COAL	1	-	-	-	-	-	-	-	-
TP151 1 0.6	COLLIERY SPOIL - MIXED	1	-	-	-	-	-	-	-	-

Table 8 - Summary of the EA Leachability Testing on Samples

Sample Location & Depth (m)	Material	Area of Site	Contaminant Concentration in mg/litre Unless Otherwise Shown							
			Leachable As (50)*	Leachable Cd (5)*	Leachable Cr (50)*	Leachable Cu (3000)°	Leachable Pb (50)*	Leachable Hg (1)*	Leachable Ni (50)*	Leachable Zn (5,000)°
TP156 1 0.5	COLLIERY SPOIL – MIXED	1	-	-	-	-	-	-	-	-
TP158 1 0.3	COLLIERY SPOIL – MIXED	1	-	-	-	-	-	-	-	-
TP160 2 0.8	COLLIERY SPOIL – MIXED	1	-	-	-	-	-	-	-	-
TP164 1 0.2	COLLIERY SPOIL – MIXED	1	-	-	-	-	-	-	-	-
TP165 2(S) 0.80	COLLIERY SPOIL – MIXED	1	-	-	-	-	-	-	-	-
TP166 1 0.70	COLLIERY SPOIL – MIXED	1	-	-	-	-	-	-	-	-
TP169 1 0.30	COLLIERY SPOIL – MIXED	1	-	-	-	-	-	-	-	-
TP175 1 0.40	COLLIERY SPOIL – MIXED	1	-	-	-	-	-	-	-	-
TP176 2 1.10	COLLIERY SPOIL – MIXED	1	-	-	-	-	-	-	-	-

Key

[-] Parameter tested for but found not to be in excess of relevant trigger level concentration

[ ] Parameter not tested for

Source of guidance trigger level

* Water Supply (Water Quality) Regulations 1989

° *Dutch E-3c Intervention Levels for Soil Remediation* (1994)

TABLE 9 - Summary of Surface Water Contamination

Sample Location & Depth (m)	Contaminant Concentrations in µg/l unless otherwise stated. Trigger Level Concentrations are Shown in Brackets																	
	pH	As	B	Cd	Cr	Cu	Pb	Hg	Ni	Zn	Se	CN	NH_3	SO_4	BOD	COD	TPH	Phenol
		(60)[0]	(2,000)*	(6)[0]	(50)*	(3,000)*	(75)[0]	(1)*	(75)[0]	(5,000)*	(10)*	(1500)[0]	(500)*	(250)* mg/l	(2)*	(100)	(0.6)[0]	(2)[0]
Upstream	8.0	-	-	-	-	-	-	-	-	-	-		-	-		-		-
Downstream	7.7	-	-	-	-	-	-	-	-	-	-		-	289		-		-

Key

- - *Parameter tested for but found not to be in*

Source of guidance trigger level

- * Water supply (Water Quality) Regulations (1989)
- 0 Dutch E-3c Intervention Levels (1994)
- + EEC Council Directive 75/440/EEC

Organic Contamination

10.3.6 Pockets of 'tarry' material were noted within the made ground of TP116. A slight tar/oil odour was identified in TP109 at 1.3m.

10.3.7 Two of the sixteen samples screened for organic contamination (TEM) yielded elevated concentrations above the threshold limit of 5,000mg/kg. Consequently, these samples were also analysed for TPH and GRO with BTEX.

10.3.8 Nine samples were analysed for TPH by GC-FID and GRO with BTEX by GC-FID. Only two of the samples gave a concentration of TPH in excess of 500mg/kg (a value used by AIGC and based on professional judgement). In addition, a value of DRO was identified in excess of the Dutch Target Level (the level at which there is a sustainable soil quality) for the sample taken at 0.3m in TP116.

Table 10
Summary of the Degree and Extent of Hydrocarbon Contamination in Soil

Sample Location and Depth (m)	Material	Area of Site	TPH mg/kg (500)#	DRO mg/kg	LRO mg/kg	GRO mg/kg (500) #
TP116 1 0.3	Colliery Spoil –M mixed	1	968	676	-	-
TP116 2 1.3	Mmade Ground (sand with odour)	1	-	-	-	-
TP121 1 0.3	Ww'ed Aackworth Rock	1	-	-	-	-
TP124 1 0.5	Colliery Spoil – Mixed	1	-	-	-	-
TP142 2 1.0	W'ed Ackworth Rock	1	-	-	-	-
TP160 2 0.8	Colliery Spoil – Mixed	1	-	-	-	-
TP175 1 0.4	Colliery Spoil – Mixed	1	-	-	-	-

Key

-	Parameter tested for but found not to lie in excess of relevant trigger concentration.
*	Parameter not tested for

Source of Guidance Trigger Level

0 Dutch E-3.c Intervention Level for Soil Remediation (1994)
Professional Judgement of AIGC
(S) indicates that the sample recovered was not representative of the material encountered within the trial pit.

Surface Water Contamination

10.3.9 Table 9, page 31, details two samples of surface water collected upstream and downstream of the site from West Moor Dyke. The upstream sample detected no elevated contaminant values. The downstream sample yielded a soluble sulphate concentration of 289mg/l slightly above the Water Quality Regulation value of 250mg/l.

10.4 Qualitative Risk Assessment

10.4.1 As discussed in Section 10.2, assessment of contaminated land is based upon a simple assessment of pollutant linkages, referred to as the source → pathway → target model. This assessment considers the current or proposed usage of the site in terms of its suitability for use and environmental setting. This implies the use of risk assessment principles in order to evaluate the potential effects and concerns of contamination on a site-specific basis.

10.4.2 In terms of a proposed residential redevelopment, pollutant linkages are typically defined as follows:

Source: contaminated soils,

Pathways: ingestion
dermal contact
inhalation of contaminated particulates
leaching to ground and surface waters
uptake through plants/vegetation (food crops)

Targets: construction workers (temporary or transient)
end users of the site (residents)
ground and surface water

10.4.3 **Inorganic contamination** is restricted to the made ground and leachability testing has demonstrated that these determinands are immobile. Inorganic contaminants are therefore generally considered to pose negligible risk to the environment.

10.4.4 The made ground across this area is composed of colliery waste and locally contains elevated concentrations of arsenic, selenium, boron, copper, nickel, mercury, zinc and sulphate.

10.4.5 The made ground at the site, contains brick, concrete, metal and colliery spoil which are considered undesirable in near surface materials in garden areas. As such a blinding layer of more "clean" subsoil is recommended comprising 500mm of sub/topsoil

10.4.6 The colliery spoils have yielded average CV's of 8.7MJ/kg for the mixed spoil and 14.7MJ/kg for the coal spoil and are therefore considered potentially combustible. A thicker cover of 1000mm of inert fill will be required. More details on required cover thicknesses are presented in Section 11 of this report.

10.4.7 **Hydrocarbon contamination** was identified as tarry pockets in TP116. Remedial action to treat or remove this material will be required.

10.4.8 **Surface water contamination** slightly elevated levels of sulphate were noted down stream of the site and probably relate to dissolution of salts from the main colliery tip. Discussion with the EA is recommended to establish acceptable levels leaving the site.

11 REMEDIATION

11.1 Aims

11.1.1 AIGC have been commissioned to define the measures necessary to allow residential development within Area 1 and create acceptable public open space in Area 2. At the time of writing, a detailed development plan had not been produced.

11.1.2 In general terms remediation of this site is required in order to:

- provide a final ground surface free from chemical contamination and suitable for the proposed end use of the site i.e. residential housing with gardens, parking areas and public open space.
- provide a geotechnically suitable development platform to facilitate the subsequent construction of roads and installation of drainage (to adoptable standards) and the construction of housing units.
- treat colliery spoil in proposed areas of POS, to allow for the establishment of vegetation.
- ensure construction workers are not put at an unacceptable short term risk in reclaiming/remediating and redeveloping the site.
- comply with the requirements of the Local Planning Authority to ensure future users of the site are not put at risk from any chemical contamination arising from its former use(s) or nature of materials present.
- satisfy the requirements of the National Housing Building Council (NHBC) that the site can be satisfactorily remediated for residential housing with gardens etc.
- comply with the requirements of the Environment Agency (EA) in ensuring that the proposed remediation works provide the degree of protection necessary for controlled waters and satisfy any Waste Management Licensing Regulations/exemption requirements.

11.2 Overview

11.2.1 This report presents options with respect to remediation that are considered technically feasible and in line with current good practice. Consequently, we would expect to obtain full regulatory approval for whichever option is adopted. Nonetheless, copies of this report should be forwarded to the relevant regulatory authorities (NHBC, Local Authority & the Environment Agency) for their comment/approval.

11.2.2 The Developer, probably in conjunction with a specialist Contractor(s), should select the most appropriate option(s), based on economic and programme considerations. Once a specific remediation strategy has been selected, AIG should be instructed to liase with regulators prior to submitting a formal, detailed Remediation Strategy document for approval.

11.2.3 Experience of similar schemes suggests that there are likely to be two stages of regulatory liaison: (1) agreement "in principle" and (2) agreement of specific details. It should be noted that such liaison can take several months.

11.2.4 A summary of the anticipated remedial works is presented below, and further detail on certain aspects is provided in section 11.3.

- General site clearance/vegetation clearance.
- Breaking out of all slabs/hardstandings and sub-surface structures.
- Crushing of all artificial hard material.
- Excavation of localised hotspots of gross organic contamination.
- Relocation of Spoil Tip No.2 and noise alleviation bund.
- Possible relocation of made ground from within to beyond the proposed development area.
- Regrading, profiling, treatment and re-vegetation of areas of POS.
- Provision of a 1,000mm thick inert/clean cover of subsoil/topsoil over areas containing potentially combustible colliery spoil.
- Supervision of the works by a suitably qualified consultant to include detailed records, testing requirements, etc
- Validation of the remediated site in the form of a detailed Completion Statement confirming that the works set out in this document and agreed were completed and that the site is suitable for its intended use.

11.2.5 Given the limited source of inert fill available on site it may be beneficial to reduce the total area requiring cover to a minimum, however this would have significant implications with respect to site levels and infrastructure design.

11.3 Specific Aspects

Grubbing-up

11.3.1 Grubbing-up of existing concrete and tarmac hardstand/floor slabs will be required prior to development with housing.

11.3.2 Concrete and brick/block rubble generated during the grubbing up could be crushed on site. If the crushed product were screened to remove any unsuitable elements (e.g. large fragments of timber and steel) it could be used during subsequent construction works. Generation of a selected granular fill, Class 6 material as defined in the Highways Agency Specification (Series 600), should be possible. Generation of a quality granular fill, Type 1 or 2 material (Highways Agency Specification - Series 800) may be possible.

Redistribution of Made Ground

11.3.3 Made ground, predominantly colliery spoil, currently underlies the site. This made ground is heterogeneous and of poor strength and is therefore not considered a suitable foundation material. Furthermore, this material is potentially combustible and will require isolation beneath a 1,000mm thick cover of inert material.

11.3.4 Given the limited source of inert fill available on site it may be beneficial to reduce the total area requiring cover to a minimum. This could be achieved by the relocation of the full thickness of made ground from areas within the proposed development area where the made ground is relatively shallow. This would result in the exposure of clean, natural soil at the surface and the requirement for only a nominal cover of topsoil to support vegetation.

11.3.5 The strategy outlined above (section 11.3.4) has significant implications with regard to site levels and, consequently, infrastructure design. Consideration of an appropriate 'cut-off' depth should be determined by the Developer, through the production of a ground model, probably in conjunction with a specialist brownfield contractor.

11.3.6 The Environment Agency's current position with regards to the waste management licensing implications of redistributing fill within a site is unclear. It is recommended that discussions are held with the Agency to clarify matters with respect to the remedial measures proposed for this site. It is, however, likely that the fill will be classified as mines and quarry waste and as such exempt from such restrictions.

Turnover in Areas of "Residual" Made Ground

11.3.7 Consideration could be given to turnover (excavation, screening and replacement in engineered layers) of the full thickness of made ground, in areas within the proposed development where it remains (after any redistribution). The engineered fill should possess sufficient bearing capacity to enable the adoption of standard raft foundations for single or two storey housing.

11.3.8 Because turnover enables inspection of the full thickness of fill, the developer and their prospective property purchasers, would also be provided with the reassurance that no significant hazard is left undetected. This is considered advantageous from a perception viewpoint.

11.3.9 Screened and engineered fill should yield CBR values in excess of 2%, thereby reducing abnormals associated with the construction of estate roads and car parking areas. Excavations through the engineered fill, for drainage etc will not encounter significant obstructions or grossly contaminated ground and should be stable with little overbreak.

Groundwater Control

11.3.10 Groundworkers should make all necessary arrangements to prevent off-site migration of pollutants via surface water run off, inadvertent groundwater disturbance and airborne dust.

11.3.11 Groundwater should be controlled in accordance with CIRIA report 113 "Control of Groundwater for Temporary Works".

Hot Spot Removal

11.3.12 Localised "pockets" of gross organic contamination were encountered during the site investigation. However, the possibility of more extensive contamination cannot be entirely discounted. If any buried drums, "oily", odorous, brightly coloured etc. materials are encountered further, advice should be sought from AIGC.

11.3.13 Advice should be sought from a specialist brownfield contractor with respect to estimation of a nominal volume of grossly contaminated soil\fill requiring off-site disposal.

11.3.14 Any "hot spots" of grossly contaminated material encountered during the remedial works should be excavated under the supervision of a suitably qualified Geoenvironmental Engineer.

11.3.15 A minimum of 6 samples should be taken from excavation side-walls and base, in order to provide confirmation that all the grossly contaminated soil\fill has been "chased-out". These samples should be tested in a suitably accredited laboratory for relevant determinands.

11.3.16 Grossly contaminated soil\fill should be placed in temporary stockpiles on hardstand or visqueen, suitably covered and bunded. Analysis of an appropriate number of samples, for relevant determinands should be undertaken, in order to provide the receiving landfill with appropriate data in accordance with the Duty of Care *Regulations*, 1991.

11.3.17 Any material removed from site should be hauled by a registered waste carrier in accordance with the requirements of the Duty of Care Regulations, 1991 and where appropriate the Special Waste Regulations, 1996. A transfer note should be completed, signed and retained by the parties involved. The transfer note should include the volume of waste, the nature of the material and a statement of its chemical composition. Wagons that are to be used for the haulage of the contaminated material from the site should be sheeted to prevent the release of fugitive dust emissions.

Combustible Made Ground

11.3.18 The colliery spoil material at this site is potentially combustible and, in accordance with current guidance (see section 10.2), the following remedial measures should be adopted wherever it remains within the proposed development area:

- Garden areas: isolate beneath a minimum 1,000mm thickness of inert soil.
- Services: utility trenches (especially those carrying potential heat sources e.g. electric cables) should be cut oversize and backfilled with clean, inert material. This applies to any utility trenches that run beneath estate roads or extend under houses. It is strongly recommended that further advice be sought from all statutory service bodies with respect to the ground conditions within which they will lay services.
- Estate roads: no action required (although generally less than 1,000mm thick, the road construction is considered to provide adequate isolation as there will be no heat source).
- Houses: no action required (the floor slab will include insulation and therefore heat transfer into the ground will be negligible).

Import/Place Cover

11.3.19 Wherever a 1,000mm thick cover is required, the uppermost 500mm should comprise at least 350mm of "clean" subsoil and 150mm topsoil. The lowermost 500mm must be inert (i.e. CV < 2MJ/kg), and essentially "clean", but could include the crushed product generated on site.

11.3.20 Approximately 8,000m^3 of subsoil stripped during the construction of Spoil tip No.1 is stockpiled north of the tip. It is understood that testing carried out by IMC has demonstrated that this material is essentially "clean". It should therefore be suitable for reuse in garden areas.

11.3.21 Other than the above subsoil and material generated on site by crushing of hardstand etc, there is no readily available source for the 1,000mm of inert cover required. However, it may be possible to source "clean" subsoil on site from beneath the existing made ground. It may also be possible to source suitable material from foundation\drainage excavations in natural in-situ strata.

11.3.22 On-site sourcing of suitable cover material is considered consistent with Government philosophy regarding sustainable development, however regulatory approval may be required. Furthermore, on-site sourcing would negate the need for costly import and associated traffic movement.

11.3.23 Imported soils should be inspected by a suitably qualified Geoenvironmental Engineer both at source and as it arrives on site to ensure it is suitable for use. Samples from the source should be tested for an appropriate suite of determinands.

11.3.24 Consideration should be given to the temporary stockpiling of subsoil cover material for subsequent placement by the developer. The cover could be damaged or contaminated by foundation\sewer arisings if placed too early.

Culvert

11.3.25 A structural condition survey has not been carried out on the culverted section of West Moor Dyke. Should the culvert become structurally unsafe and collapse it would have a significantly detrimental effect on the stability of Spoil Tip No.1, under which it passes.

11.3.26 It is considered unlikely that the EA would require the culvert to be returned to open channel unless a diversion from its current route is required. This situation should be confirmed with the EA.

11.4 Health & Safety Issues

11.4.1 During the reclamation and construction phases of the site development it will be necessary to protect the health and safety of site personnel. General guidance on these matters is given in the Health and Safety Executive (HSE) document "Protection of Workers and the General Public during the Redevelopment of Contaminated Land".

11.5 New Utilities

11.5.1 The bulk of the existing made ground will still be present on site, subject to inspection during turnover. This made ground may contain occasional contaminants at concentrations above the guidance threshold values for an end use which includes domestic gardens, and utility workers are likely to come into direct contact with the made ground.

11.5.2 Although utility workers will only be exposed to the contaminated soil/fill for a relatively short time, the contaminants represent a risk and simple precautionary measures are required, i.e. good personal hygiene.

11.5.3 In addition to the above, the atmosphere in shored trenches in excess of 1.2m should be monitored for oxygen and hazardous gas (methane & carbon dioxide), using widely available portable instruments, prior to personnel entering such excavations. Monitoring should be continued whilst personnel are working in deep excavations.

11.5.4 Utility trench excavations are likely to yield contaminated arisings. Poor handling and control of such arisings could give rise to contamination of the clean capping material and/or areas of the site previously devoid of any contamination. It is therefore recommended that any arisings from beneath the capping layer are stockpiled in designated areas from which the clean capping material has been stripped.

11.5.5 It is recommended that trenches for services including site drainage and water supply are cut over size in order to isolate pipe materials from potential organic contaminants and to enable maintenance to be conducted in "clean" material.

11.5.6 It is strongly recommended that all statutory service bodies are consulted at an early stage with respect to the ground conditions within which they will lay services in order to enable them to assess at an early stage potential abnormal costs.

11.5.7 It is recommended that service connections should be flexible to allow for differential settlement between houses on piles and service runs. It would also be prudent to lay drains to increased falls.

12 SOAKAWAY TESTING & DESIGN

12.1 General

12.1.1 Soakaway tests were undertaken in ten trial pits in areas of the site identified to be directly underlain by Ackworth Rock (sandstone). The tests were carried out in accordance with BRE Digest 365 "Soakaway Design". The location of these soakaways (SW101 to SW110) is shown on Drawing No. 2500/5 presented in Appendix A to this report.

12.1.2 The soakaway pits were excavated across the site to a maximum depth of 2.4m (SW101 and SW106) using a JCB 3CX backactor with a 300mm wide bucket. Each pit was then rapidly filled with water to the top of the test section. The fall in water level was then monitored at regular intervals. The logs for each soakaway pit are included in Appendix G.

12.1.3 Records of the soakaway tests are presented in Appendix H to this report.

12.1.4 Unfortunately, due to the time constraints imposed on the investigation, it was only possible to fill the majority of pits with water on one occasion.

12.2 Discussion and Soakaway Design

12.2.1 The following designs have been carried out in accordance with BRE Digest 365 assuming the calculated infiltration rates above, rainfall ratio of 0.35 and assume that each soakaway will have the capacity to handle storm water from an impermeable area of 100m^2. Two soakaway types can be designed using BRE Digest 365:-

- perforated concrete ring in a square pit with granular backfill (chamber type)
- trench with granular backfill (trench type)

12.2.2 The design for the perforated ring type soakaway assumes that the chamber comprises a permeable 900mm internal diameter "hollow" chamber set in a square pit with granular material around the chamber. It is assumed that the granular material will have 30% void space.

12.2.3 The design for the trench type soakaway assumes that the trench is 600mm wide filled with granular material, having a void space of 30%.

12.2.4 It is generally assumed that soakaways become impracticable on residential developments when:-

- the chamber type design requires a square pit with side length in excess of 1.8m, or an effective depth greater than 1.5m.
- the trench type design requires a length greater than about 10m, or an effective depth greater than 1.5m.

12.2.5 For initial design purposes, a soakaway comprising a chamber type soakaway was assumed, based on a chamber of 900mm diameter with a 1.0m effective depth. Calculations suggest that sides lengths to the pits would be in the range 1.26m (SW106, Test 1) and 3.09m (SW103, Test 1). Only three of the twelve tests indicated that soakaways would be practical.

12.2.6 Further calculations were therefore carried out, with an increased effective depth of 1.5m. These calculations suggest that sides lengths to the pits would be in the range 0.81m (SW106, Test 1) to 2.38m (SW103, Test 1). In this situation only five from the twelve tests yielded chamber type soakaways greater in side length than the criteria set out in section 12.3.4.

12.2.7 Finally, calculations were carried out for a 600mm wide trench. Calculations suggest that trench lengths ranging from 3.26m (SW106, Test 1) to 13.53m (SW103, Test 1) would work with an effective depth of 1.0m.

12.2.8 With each of the above cases the soakaway was estimated to have attained 50% effective depth within 24 hours of filling.

12.2.9 Therefore, it is considered that soakaways are generally practical for the areas of the site underlain by Ackworth Rock, principally the northern section of Area 1.

13 GEOTECHNICAL ISSUES

13.1 General

13.1.1 Seventeen samples of natural soil were delivered to a suitably accredited laboratory with a schedule of geotechnical testing drawn up by AIGC. Testing was undertaken in order to enable recommendations with respect to foundation design. The geotechnical test results are presented in Appendix J to this report.

13.1.2 The tests detailed below were undertaken in accordance with BS 1377:1990.

13.2 Soluble Sulphate and pH

13.2.1 The concentrations of sulphate in nine aqueous soil/fill extracts were determined using the gravimetric method. The results are expressed in terms of SO_4 for direct comparison with BS 5328:1997. The pH value of each sample was determined by the electrometric method.

13.2.2 Values for the 2:1 water/soil extract in natural ground were between 0.08g/l and 0.9g/l SO_4. The samples of natural ground tested had pH values of between 5.3 and 7.8 (near neutral to slightly acid).

13.2.3 In addition, the concentration of sulphate in aqueous solution for made ground extracts were determined using ion chromatography as part of the contamination testing (see Section 10.3.4. The samples tested yielded 2:1 water/soil extracts between 0.03g/l and 2.36g/l.

13.2.4 Concrete prepared in accordance with **Class 1** of BRE Digest 363 'Sulfate and Acid Resistance of Concrete in the Ground (1996)' is therefore recommended for sub-surface works in contact with natural ground. However, for sub-surface works in contact with or close to made ground should be constructed with concrete prepared in accordance with **Class 2** of the above Digest.

13.3 Atterberg Limits and Moisture Content

13.3.1 The Liquid and Plastic Limits of fourteen samples of natural in-situ clay were determined. Tests were carried out using the cone penetrometer method and the rolling thread test and have been compared with guidance given in the National House Building Council (NHBC) Standards, Chapter 4.2.

13.3.2 The Plasticity Indices of the sample ranged from 31 to 36% and had moisture contents in the range 16 to 35%; therefore, in accordance with NHBC Standards these clay soil should be regarded as being of **medium shrinkability**.

13.4 Standard Penetration Testing

13.4.1 A total of 29 Standard Penetration Tests (SPTs) were undertaken in the cable percussion boreholes (BH101 to BH105), in accordance with BS 1377 1990, Part 9 Section 3.3.

13.4.2 The results showed the colliery spoil to be of variable strength/density. Tests within the weathered Middle Coal Measures indicated approximate undrained shear strengths of stiff to very stiff. Recorded 'N' values in the mudstone and siltstone were greater than 50 and suggest unconfined compressive strengths of a least very weak.

13.5 Foundations

13.5.1 Given constraints associated with the absence of a plot layout, this report can only provide an overview of anticipated foundation solutions.

13.5.2 There are a number of technically feasible foundation solutions for single or two storey residential properties constructed on this site. It is likely that the development will comprise a mixture of foundation solutions to suit local ground conditions and\or different house types. Final choice of plot-specific foundation solutions will be determined by the Client, probably in conjunction with AIGC and subject to NHBC\Building Control approval, after consideration of:

- detailed remediation strategy adopted
- proposed final levels\regrade proposals
- the detailed final plot layout
- cost and programme implications

13.5.3 The foundation recommendations provided in this section assume that new properties will be of single or two storey construction and that line loads will not exceed 60kN/m run. If this is not the case, some revision of these recommendations may be required.

13.5.4 Ground conditions at the site generally comprise made ground (of variable thickness) overlying typically firm and stiff cohesive or dense granular deposits, which in turn overlie coal measures strata at depth.

13.5.5 Made ground is not considered a suitable foundation material and foundations should therefore be taken through these materials into underlying strata of adequate bearing capacity.

13.5.6 A suspended floor construction should be used wherever the depth of made ground or infill beneath a plot exceeds 600mm. Subject to regrade proposals and site layout, this may apply to a significant proportion of the site.

13.5.7 It should be noted that existing ground conditions may be significantly modified during the site remediation (see Section 11). Most notably that the redistribution of made ground may increase the area in which strip footings could be adopted. The depth of footings in other areas could also be reduced due to the absence of made ground negating the need for 'clean' cover.

13.5.8 There are a number of foundation solution options for single or two storey residential properties constructed on this site and these are discussed below.

Strip Footings

13.5.9 Reinforced strip or trench foundations could be adopted for single or two storey houses where firm or stiff clay or dense sand / sand and gravel is the founding material. This solution would be viable where the made ground is less than about 1.5m thick for strips and up to 2.5m for trench fill.

13.5.10 Reinforcement is required to prevent differential settlement where plots span different soil types e.g. clay and sand. A suitable layer of reinforcement would be one layer of B283 mesh in the base of the footing with the main bars placed along the length of the foundation.

13.5.11 Clay classification tests suggest that natural cohesive soils at the site should be regarded as being of medium shrinkability. A minimum founding depth of 900mm is therefore recommended for all plots proposed to be built on strip footings founding on cohesive soils. Plots proposed to be founded on sand or gravel would require a minimum founding depth of 600mm. These depths are from original or finished ground level, whichever is the lower, to the underside of the foundation.

13.5.12 Where properties are to be constructed within the influence of existing/proposed trees suspended floor slabs and suitable void will be required to allow for the shrink/swell characteristics of the soils. Additionally, foundations will require to be deepened near existing/proposed trees in accordance with NHBC Standards, Chapter 4.2.

13.5.13 At the location of former, now demolished buildings, it is considered that all concrete slabs and service ducts will require breaking out prior to re-development. However, some relict foundations could be left in-situ and an allowance made for localised breaking out where these conflict with new foundations. It should be considered that given the extent of the former buildings at the site and subject to the proposed layout, localised breaking out may represent a significant abnormal cost during development and it may be more practical to remove all relict foundations during site preparatory works.

13.5.14 Foundations of plots placed over relict foundations should be taken to greater depth than the relict foundations and into natural ground of adequate bearing capacity.

13.5.15 In order to minimise softening and swelling of cohesive soils, or loosening of granular soils, it is recommended that as soon as formation level is reached, it should be blinded. The blinding should consist of concrete with as low a water:cement ratio as possible.

13.5.16 Foundations will be required to be taken below a line drawn up at 45° from the base of any service or similar excavation unless it is to be backfilled with concrete.

13.5.17 Based on the results of the investigation it is unlikely that significant groundwater flows will be encountered in shallow excavations. Where encountered groundwater shall be controlled in accordance with CIRIA report 113 "Control of Groundwater for Temporary Works". Further advice should be sought if groundwater contamination is suspected.

13.5.18 Shallow excavations are likely to remain stable in the short term.

13.5.19 It is considered that strip footings will be an appropriate foundation solution over the majority (say 80%) of Area 1 (Drawing 2500/4), where firm or stiff clay or sand and gravel is the founding material.

13.5.20 Whilst strip or trench fill footings generally represent a simple and inexpensive foundation solution, there are a number of potential disadvantages associated with their use on this site:

- The made ground contains elevated concentrations of some inorganic contaminants and a cover layer of clean blinding material has been recommended, which, in the areas underlain by combustible ash should be at least 1,000mm in thickness. This cover will increase footing depth.
- Disposal of contaminated arisings will be required.
- Foundation and drainage excavations may encounter obstructions resulting in some overbreak.
- Foundation and drainage excavations may require shoring in made ground.

13.5.21 Where overdeepened foundations are required, these should be stepped down below the base of the unsuitable material, in accordance with NHBC Standards, Chapter 4.4.

Rafts on Engineered Fill

13.5.22 Where residual made ground between approximately 1.0m and 3.0m in thickness turnover of the full thickness of fill is considered an appropriate ground improvement solution to enable raft foundations in areas of moderately deep made ground. However, the suitability of fill for placement as engineered fill should be confirmed by field trials.

13.5.23 The field trials, should be carried out in accordance with an approved Specification. The field trial will enable estimation of an achievable safe bearing capacity, with a view to establishing new dwellings on raft foundations. It will also yield the following information:

- number of passes with the specified compaction plant
- maximum and minimum layer thickness
- acceptable moisture content range

13.5.24 The engineered fill should achieve at least 95% maximum dry density (as determined by laboratory compaction tests, using 2.5kg rammer), with air voids comprising less than 5%.

13.5.25 Raft design should be in accordance with NHBC Standards, Chapter 4.5. Granular sub-base product should be placed in accordance with Table 8/1 of the D'Tp Specification for Highway works (1993).

13.5.26 NHBC generally recommend that rafts be founded on a minimum 150mm thickness of DoT granular sub-base product. Granular sub-base should extend laterally for at least 0.5m beyond the raft. The base of the granular sub-base must be at least 600mm below original or finished level, whichever is the lower. At most reclaimed brownfield sites, original level is generally equivalent to the top of engineered fill.

13.5.27 Placement of blankets of a granular sub-base, directly on top of engineered fill would normally be acceptable immediately after placement of the final layer of fill. However, if placement is delayed, climatic factors can lead to a deterioration of the near surface fill.

13.5.28 Where the engineered fill is cohesive, rainfall, (softening) or sunshine (desiccation) may cause deterioration. Cohesive fill should therefore be "blinded" with granular sub-base within 48 hours of placement of the final layer of fill. Wherever this is not possible, it is recommended that a minimum 300mm depth of fill is excavated from beneath the plot footprint, prior to placement of the granular sub-base. Furthermore, it may be necessary to remove any desiccated material if the engineered fill is left exposed during a prolonged spell of dry weather.

13.5.29 Where the engineered fill is granular, deterioration may be caused by frost (unless the fill contains less than 10% fines). Granular fill should therefore be "blinded" with granular sub-base prior to frosty weather.

13.5.30 Where rafts are within the influence of mature trees, the depth of crushed stone placed should be equal to 50% of the trench fill foundation depth determined in accordance with NHBC Chapter 4.2.

13.5.31 Where rafts are to be placed in areas that could be affected by rising water levels, i.e. after temporary dewatering measures have been removed, the above compaction criteria must be achieved otherwise inundation settlement may occur.

13.5.32 It must also be ensured that the materials placed in areas where rising water levels are expected are sufficiently resistant to softening/degradation beneath the water table. It would also be prudent to allow water levels in these areas to rise prior to development. Any inundation settlement would be expected to occur almost immediately.

Piles

13.5.33 Piled foundations may be an option for dwellings constructed in the south-east of the development area where made ground in excess of 3.0m deep has been identified.

13.5.34The safe working load that may be supported on a pile is dependent on the pile diameter, its founding depth and the method of installation. Further advice should be sought from specialist piling contractors.

13.5.35 Piles can provide an enhanced pathway for the vertical migration of mobile contaminants. The Environment Agency may therefore object to the adoption of piles as a foundation solution. However, objection is considered unlikely given the nature of the contamination encountered and the proposed remedial strategy.

13.6 Drainage

13.6.1 It is understood that there are two discharge consents formerly operated by British Coal that apply to the site. It is recommended that the developer should contact the Environment Agency with respect to continued discharge. These consents formerly allowed for the discharge of trade effluent to fresh water (probably mine water discharge to West Moor Dyke).

13.6.2 Currently approximately 60% of the proposed development site is covered with building floor slabs or hardstand. Furthermore, it is considered that the proposed residential end use will result in a reduction in "hard" areas (due to increased garden or landscaped areas), and therefore the overall volume of surface waters generated on site and requiring discharge will be reduced.

13.6.3 It is likely that soakaways will provide an effective means of surface water disposal in the northern section of the development area that overlies Ackworth Rock.

13.6.4 It is recommended that the developer contact Yorkshire Water Services with respect to capacity in existing foul and surface water sewers in the vicinity of the site.

13.7 Highways

13.7.1 For access roads and pavement constructed over granular soils or firm and stiff cohesive deposits, a minimum CBR value of 3% is considered appropriate.

13.7.2 Made ground is present across the site and it is strongly recommended that consultation regarding the specification of the highways should be made with the adopting authority. However, it is considered that the following options would be suitable to enable the construction of the highways:

- Excavation of the full thickness of made ground and replacement with suitable aggregate in accordance with Series 600 (Earthworks) of The Department of Transport (DoT) "Specification for Highway Works" 1998.

- Excavation of the full thickness of made ground, screening, selection and replacement of **suitable** made ground materials in engineered layers in accordance with Series 600. Unsuitable materials include any soft or wet materials, biodegradables including topsoil, wood, coal, scrap metal, frozen material and material which, by virtue of its particle size or shape, cannot be properly and effectively compacted (e.g. oversize material or gravels which are tabular.

13.7.3 Where the made ground is re-engineered, it is considered that a CBR value of 2% should be achievable.

13.7.4 Crushing of floor slabs\hardstand\foundation arisings will generate aggregate, which (subject to confirmatory testing) should be suitable for use as unbound pavement materials within the highways at the site.

13.8 Development Constraints associated with Existing Services

13.8.1 It is almost certain that both Yorkshire Water Services and Yorkshire Electricity will have restrictions with respect to development in the vicinity of the sewer and cables that run in or close to the existing access road and footpath; an easement and or diversion will probably be required.

13.8.2 In addition, should (in the future) development extend into Area 2 it should be noted that foundations could only be placed below a line drawn up at 45^{O} from the base of the culvert.

14 SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

14.1 General

14.1.1 Only a generalised planning layout is currently available for the site and detailed plot specific recommendations are therefore not given.

14.1.2 This report provides technically feasible options, subject to regulatory approvals, with respect to foundation solutions, treatment of contamination etc. However, final choice of a development strategy will be determined by the Client, probably in conjunction with his appointed contractor(s), after consideration of cost and programme implications.

14.2 Hazardous Gas

14.2.1 The site does **not** lie within a known radon affected area.

14.2.2 A hazardous gas investigation is being carried out to determine risks associated with migrating mine gas and potential gas production within the spoil tip. A comprehensive hazardous gas risk assessment will be issued in a supplementary letter report on completion of gas monitoring.

14.3 Contamination

14.3.1 Within Area 1 some inorganic contamination has been identified which is considered to pose negligible risk to the environment and only a slight risk to the proposed development. However, the made ground is composed of colliery spoil, materials that are generally considered undesirable as a near-surface material in garden areas.

14.3.2 In addition, all but six of the colliery spoil samples tested yielded elevated calorific values necessitating a 1,000mm cover of inert material in gardens and landscaped areas. This cover should include a 500mm thick layer of "clean" subsoil/topsoil.

14.3.3 Localised significant organic contamination was identified in TP116. However, localised areas of more onerous contamination than that identified to date may be present on site. If any buried drums, "oily", odorous, brightly coloured etc. materials are encountered further, advice should be sought from AIGC.

14.3.4 It should be noted that other 'hot-spots' of organic contamination, associated with spillages, might not have been highlighted by the investigation. It would be prudent to make an allowance for the removal/ treatment of a nominal volume of soil following consideration with a specialist brownfield contractor.

14.3.5 Approval of the above recommendations should be sought from the appropriate regulatory authorities prior to redevelopment.

14.4 Mining

14.4.1 Rotary probing at the site has proven that coal exists at shallow depth below the site as intermittent thin layers. However, no voids, broken ground or loss of flush were recorded in any of the probeholes.

14.4.2 It is therefore considered that past underground coal mining will not affect the surface stability of the site.

14.4.3 The exact location and mode of treatment of Goldthorpe Shafts 1 and 2 are documented by the Coal Authority, as is that of Bella Drift (the adit). A further shaft is believed to be located below a section of the main colliery tip in Area 2. Its exact location and mode of backfilling is unknown; however, it is not considered to pose a risk to the proposed development.

14.4.4 Further, unrecorded mine entries could exist in this area. If any are discovered they should be accurately surveyed-in and then be capped off at rockhead.

14.4.5 Construction of dwellings is not generally recommended within an angle of 45° from the intersection of a shaft with rockhead, unless special and suitable engineering precautions are taken.

14.5 Foundations

14.5.1 Ground conditions at the site generally comprise a variable cover of made ground over firm and stiff clay or dense sand and gravel, over Middle Coal Measures and Ackworth Rock bedrock. Coal mining will not affect the surface stability of the site.

14.5.2 Made ground is not considered a suitable foundation material and foundations should therefore be taken through these materials into underlying strata of adequate bearing capacity. The clay and granular soils are considered to have a safe bearing capacity of at least 100kN/m^2.

14.5.3 The natural cohesive soils are of medium shrinkability and therefore a minimum founding depth of 900mm is recommended. For granular soils, a minimum founding depth of 600mm is recommended.

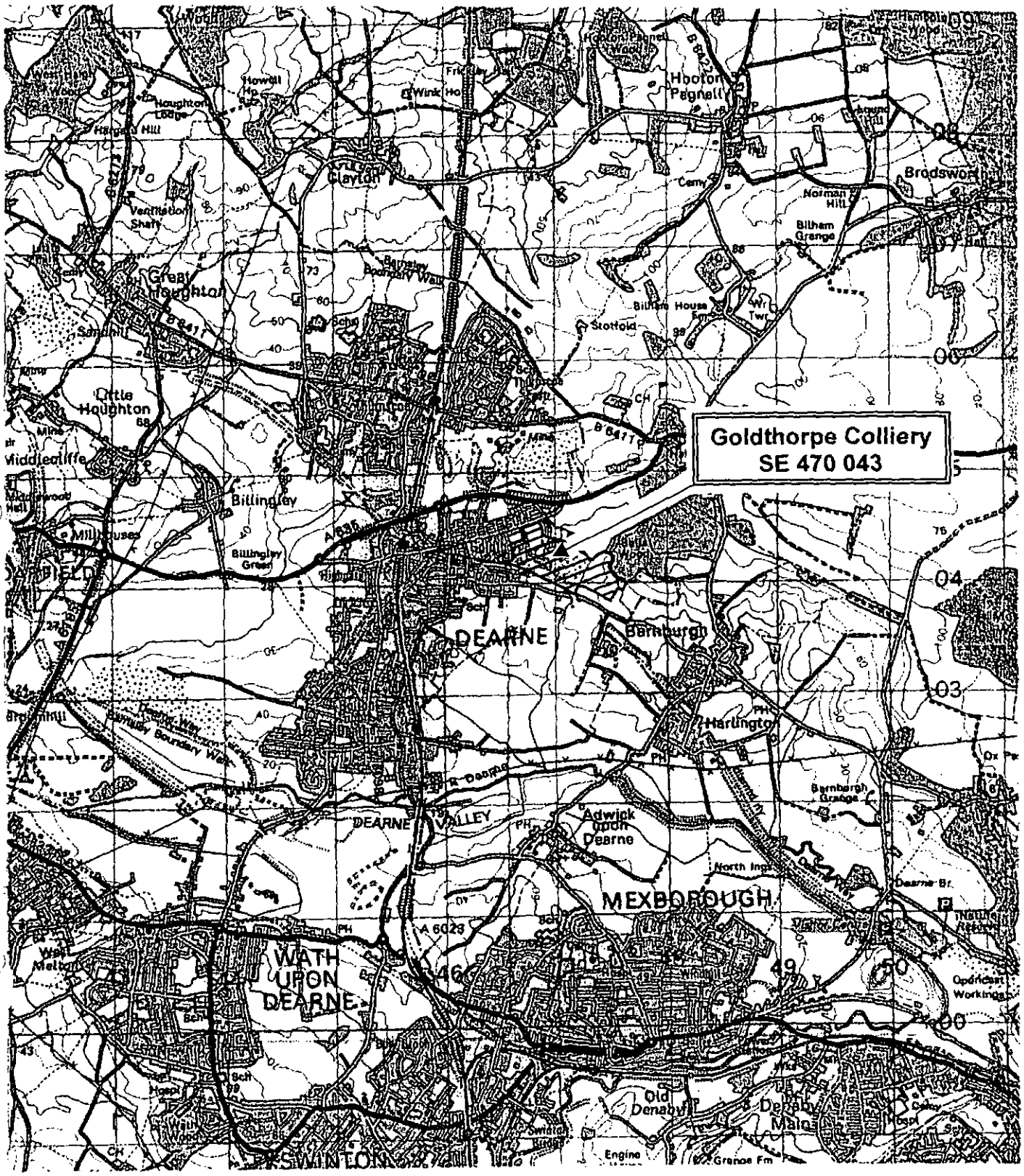
14.5.4 Class 2 sulphate conditions can be assumed for concrete in contact with made ground and Class 1 in natural ground.

14.5.5 There are a number of foundation solution options for single or two storey residential properties constructed on this site. A combination of strip footings and piles/rafts are considered likely to be the preferred foundation solutions.

14.5.6 As existing ground conditions may be significantly altered during the remediation phase the use and depth of strip footings may be beneficially affected.

APPENDIX A
DRAWINGS

AIG CONSULTANTS LTD AIG HOUSE AUDBY LANE WETHERBY W.YORSHIRE UNITED KINGDOM LS22 7RD TEL: 01937 589955 FAX: 01937 589944



AIG CONSULTANTS LTD

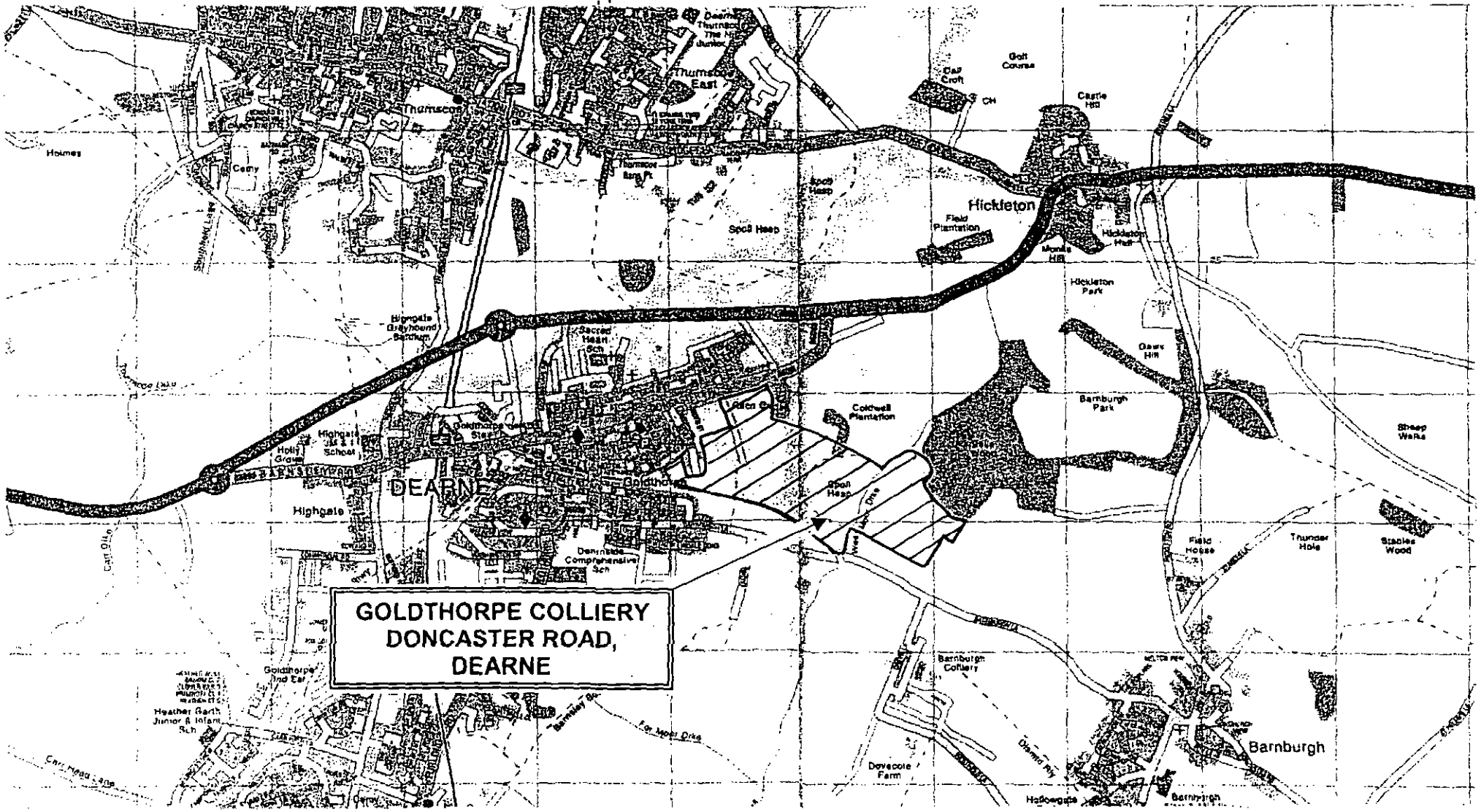
CLIENT
OGDEN GROUP OF COMPANIES

JOB TITLE
GOLDTHORPE COLLIERY

DRAWING TITLE
SITE LOCATION PLAN

WN BY	SIGNATURE	DATE	STATUS	
H		30/10/2001	FINAL	
APPROVED	SIGNATURE	DATE	SCALE	DRG NO.
			1:50,000	2500/1

AIG CONSULT TD AIG HOUSE AUDBY LANE WETHERBY W.YORSHIRE D KINGDOM LS22 7RD TEL: 01937 589955 FAX: 01937 5



AIG CONSULTANTS LTD	CLIENT: OGDEN GROUP OF COMPANIES	STATUS: FINAL	
	JOB TITLE: GOLDTHORPE COLLIERY	DRAWN BY: RJH / SIGNATURE: / DATE: 28/03/2002	
	DRAWING TITLE: DETAILED SITE LOCATION PLAN	APPROVED: AF / SIGNATURE: / DATE:	
		SCALE: NOT TO SCALE	DRG No.: 2500/2

AIG CONSULTANTS LTD AIG HOUSE AUDBY LANE WETHERBY W.YORSHIRE UNITED KINGDOM LS22 7RD TEL: 01937 589955 FAX: 01937 589944

m 50m 100m 150m

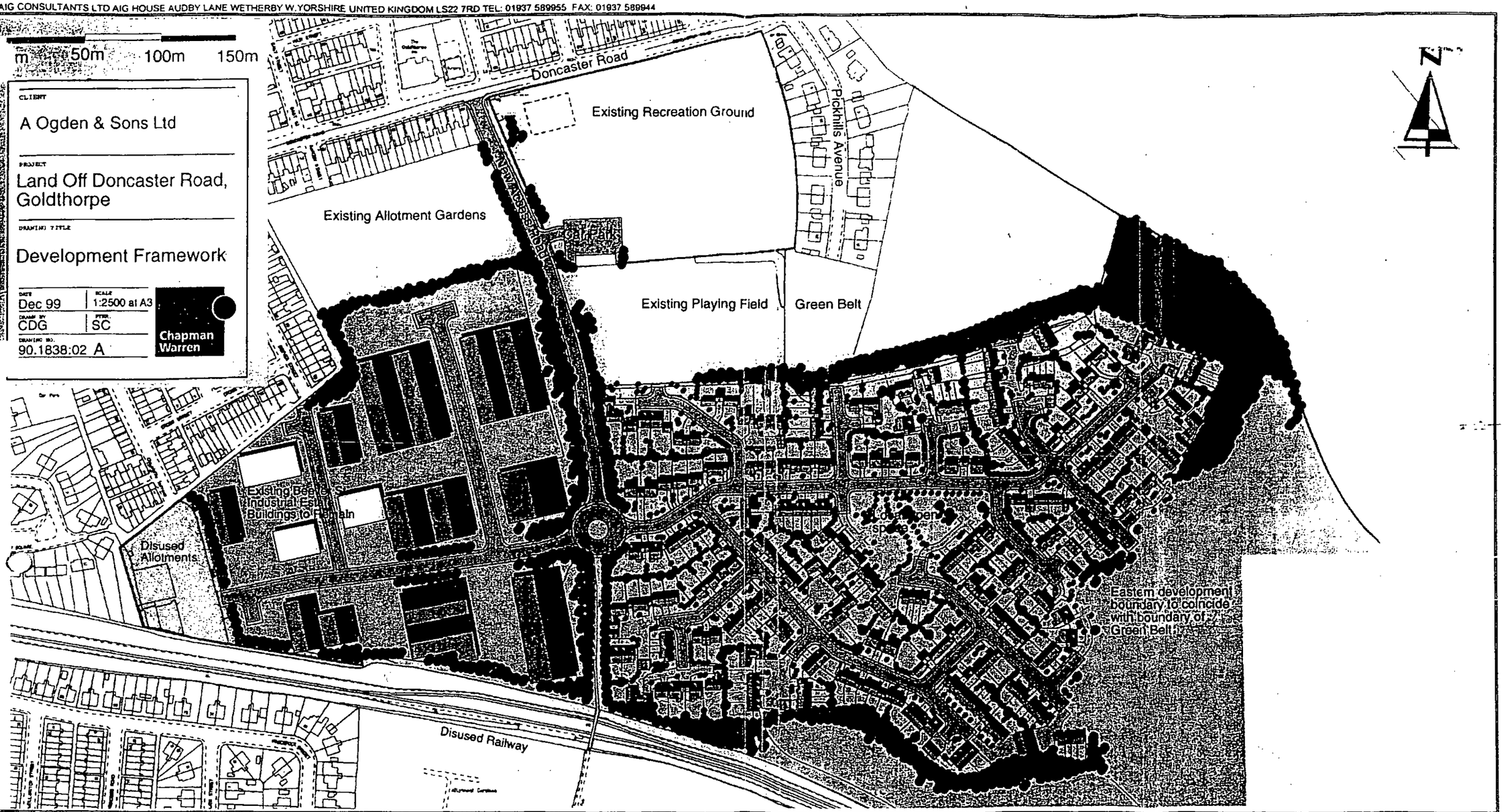
CLIENT
A Ogden & Sons Ltd

PROJECT
Land Off Doncaster Road, Goldthorpe

DRAWING TITLE
Development Framework

DATE Dec 99 | SCALE 1:2500 at A3
DRAWN BY CDG | CHK'D SC
DRAWING NO. 90.1838:02 A

Chapman Warren



N

AIG CONSULTANTS

AIG CONSULTANTS LTD
AIG HOUSE, AUDBY LANE,
WEATHERBY
WEST YORKSHIRE, LS22 7RD
TEL: 01937 589955 FAX: 01937 589944

CLIENT
BEN BAILEY HOMES LIMITED

JOB TITLE
GOLDTHROPE COLLIERY

DRAWING TITLE
PROVISIONAL DEVELOPMENT PLAN

STATUS
FINAL

DRAWN BY	SIGNATURE	DATE
RJH		02/05/02
APPROVED	SIGNATURE	DATE

SACLE 1:2,500 (at A3)
DRG No. 2500/3

APPENDIX B
CORRESPONDENCE

RECEIVED 0 5 JUN 2002

ENVIRONMENT AGENCY

Our Ref : RA/2002/012533-1/1
Your Ref : 2500

Date : 30 May 2002

Aig Consultants
Aig House
Audby Lane
Wetherby
West Yorkshire
LS22 7RD

Dear Sirs

GOLDTHORPE COLLIERY GOLDTHORPE

I refer to your letter, which was received on 2 April 2002.

GROUNDWATER

The site is located on undifferentiated Coal Measures. The Coal Measures, although composed of a variety of rock types, are designated as a Minor Aquifer (Policy and Practice for the Protection of Groundwater, EA, 1998).

The soil has not been classified due to the built up nature of the area. It has been termed "urban" according to sheet 111 of the EA Groundwater Vulnerability Maps. It should therefore be assumed that the groundwater is highly vulnerable to any potentially polluting activity.

The site is not within a currently defined Groundwater (source) Protection Zone (GPZ).

WATER RESOURCES

There are no water abstraction licences within 1km.

ENVIRONMENT PROTECTION

The Agency has no records of any landfill sites within 250 metres of the site in question.

The Water Quality Objective for Wortley Beck is a 4 and is achieving that grade.

FLOOD DEFENCE

The site does not lie within the 1 in 100 year fluvial (river) or 1 in 200 year tidal floodplain as identified on the Environment Agency Indicative Flood Plain Maps. These maps do not take account of any flood defences that may exist as these could be overtopped or breached by a more severe event than designed for or maintained against.

Environment Agency
Phoenix House, Global Avenue, Leeds, LS11 8PG
Telephone : 0113 244 0191 Fax : 0113 213 4609

ENVIRONMENT AGENCY

It should be remembered that the risk of flooding is there at all times where the site is within the floodplain.

FISHERIES, ECOLOGY & RECREATION

There are no Sites of Special Scientific Interest (SSSIs) known to the Agency within 250m of the site in question.

The information provided is based on that currently available to the Agency. The Agency and its officers accept no liability whatsoever for any loss or damage arising from the interpretation or use of the information.

I can advise that the interpretation of the information is your own responsibility however, should you have any queries regarding this letter, please contact this office at the address given below.

The Agency provides all relevant information available relating to your enquiry. Should any specific questions be left unanswered, this will be due to the Agency having no information on that issue.

Yours faithfully

LESLEY SLANEY
CUSTOMER CONTACT OFFICER

Encs:-

Environment Agency
Phoenix House, Global Avenue, Leeds, LS11 8PG
Telephone : 0113 244 0191 Fax : 0113 213 4609

THE CHEMISTRY COMPONENT OF THE GQA SCHEME

The basic chemical grade of the GQA Scheme is defined by standards for the concentration of BOD, ammonia and dissolved oxygen. These have been selected because they are indicators of the extent to which waters are affected by wastewater discharges and rural land use run-off containing organic, degradable material. The quality of many of our rivers and canals is affected by such discharges which include effluents from sewage treatment works and industries, and drainage from farms. These three simple determinands are therefore the best overall basic chemical measure of river quality for the purpose of GQA which will apply to all rivers and canals within the classified network.

The use of these three determinands provides some continuity with the NWC system. In the GQA assessment, however, data from three years sampling is used to make the assessment of class. For the 1995 assessment, data from 1993, 1994 and 1995 has been used. The boundaries of each class are given in the table below.

GQA CHEMICAL	GRADING FOR	RIVERS AND	CANALS	
WATER QUALITY	GRADE	DISSOLVED OXYGEN (% SATURATION 10 PERCENTILE)	BIOCHEMICAL OXYGEN DEMAND (BOD) (mg/l) 90 PERCENTILE	AMMONIA (mg/l) 90 PERCENTILE
VERY GOOD	A	80	2.5	0.25
GOOD	B	70	4	0.6
FAIRLY GOOD	C	60	6	1.3
FAIR	D	50	8	2.5
POOR	E	20	15	9
BAD	F	LESS THAN 20	MORE THAN 15	MORE THAN 15
The overall grade three grades for	assigned to a river the individual	or canal reach is determinands	determined by the	worst of the

Adapted from:- *The Quality of Rivers and Canals in Wales (1990 to 1992)* Report of the National Rivers Authority May 1994, Water Quality Series No. 19

RIVER AIRE CATCHMENT

REACH	RIVER_NAME	REACH_FROM	REACH_TO	LENGTH (KM)	GQA97	GQA98	GQA99
0271200123360A	River Aire	Malham Tarn	Malham Beck	5.1	B	B	B
0271200123350A	River Aire	Malham Beck	Kirkby Beck	1.3	B	B	B
0271200123340A	River Aire	Kirkby Beck	Otterburn Beck	5.6	B	B	B
0271200123330B	River Aire	Otterburn Beck	Crosber Beck	4.6	B	B	B
0271200123330A	River Aire	Crosber Beck	Eshton Beck	2.3	B	B	B
0271200123320B	River Aire	Eshton Beck	Gargrave STW	0.4	B	B	B
0271200123320A	River Aire	Gargrave STW	Broughton Beck	3.1	C	B	B
0271200123310B	River Aire	Broughton Beck	SD960518	3	C	B	B
0271200123310A	River Aire	SD960518	Eller Beck	0.2	C	B	B
0271200123300A	River Aire	Eller Beck	Bradley Beck	2.9	C	C	B
0271200123290A	River Aire	Bradley Beck	Cononley Beck	1.9	C	C	B
0271200123280A	River Aire	Cononley Beck	Eastburn Beck	4.2	C	C	B
0271200123270A	River Aire	Eastburn Beck	Silsden Beck	2.7	C	C	B
0271200123260A	River Aire	Silsden Beck	River Worth	5.8	C	C	B
0271200123250B	River Aire	River Worth	Marley STW	2.3	C	B	B
0271200123250A	River Aire	Marley STWh	Morton Beck	1.3	C	C	C
0271200123240A	River Aire	Morton Beck	Harden Beck	3.1	C	C	C
0271200123230A	River Aire	Harden Beck	Little Beck	3.7	C	C	B
0271200123220A	River Aire	Little Beck	Loadpit Beck	0.5	C	C	C
0271200123210A	River Aire	Loadpit Beck	Bradford Beck	2.3	C	C	C
0271200123200A	River Aire	Bradford Beck	Gill Beck (Baildon)	3.5	C	C	C
0271200123190A	River Aire	Gill Beck (Baildon)	Gill Beck (Guisley)	1.9	C	C	C
0271200123180D	River Aire	Gill Beck (Guisley)	Esholt STW	0.9	D	D	C
0271200123180C	River Aire	Esholt STW	Apperley	1.1	D	D	C
0271200123180B	River Aire	Apperley	Sandoz	3.2	C	C	B
0271200123180A	River Aire	Sandoz	Oil Mill Beck	4.8	C	C	B
0271200123170A	River Aire	Oil Mill Beck	Low Beck (Leeds/Liverpool Canal)	8	D	D	C
0271200123160A	River Aire	Low Beck (Leeds/Liverpool Canal)	Meanwood Beck	1.5	D	D	C
0271200123150A	River Aire	Meanwood Beck	Aire & Calder Navigation at Yarn Street	1.4	D	C	C
0271200123140A	River Aire	Aire & Calder Navigation at Yarn Street	Wyke Beck	4.7	D	D	D
0271200123130A	River Aire	Wyke Beck	Oulton Beck	4.8	E	E	E
0271200123120A	River Aire	Oulton Beck	Fleakingley Beck	1.6	E	E	E
0271200123110A	River Aire	Fleakingley Beck	Leeds/Knottingley Canal	1.9	E	E	D
0271200123100A	River Aire	Aire & Calder Navigation at Kippax Lock	River Calder	2.4	E	E	D
0271200123090A	River Aire	River Calder	Lin Dike	2.6	D	D	D
0271200123080A	River Aire	Lin Dike	Fairburn Ings	4.2	E	D	D
0271200123070A	River Aire	Fairburn Ings	Fryston Beck	2.6	D	D	D
0271200123060A	River Aire	Fryston Beck	Aire & Calder Navigation	0.6	E	D	D
0271200123050A	River Aire	Aire & Calder Navigation	Aire & Calder Navigation	3.5	D	D	D
0271200123040A	River Aire	Aire & Calder Navigation	The Fleet	9	D	D	D
0271200123030A	River Aire	The Fleet	Selby Canal	0.6	D	D	D
0271200123020B	River Aire	Selby Canal	Chapel Haddlesey	1.4	D	D	D
0271200123020A	River Aire	Chapel Haddlesey	Ings & Tetherings Drain	6.1	E	D	D
0271200123010A	River Aire	Ings & Tetherings Drain	River Ouse	19.6	E	D	D

REACH	RIVER_NAME	REACH_FROM	REACH_TO	LENGTH (KM)	GQA97	GQA98	GQA99
027120012401A	Ings and Tetherings/Marsh Drain	Eggborough STW	River Aire	1.6	E	E	D
027120012401B	Ings and Tetherings/Marsh Drain	Beal	Eggborough STW	6.4	E	E	E
027120012501A	The Fleet	Near Gateforth	River Aire	4	E	E	E
027120012501B	The Fleet	Hillam	Near Gateforth	4	E	E	E
027120012601A	Fryston Beck	Park Road Glasshoughton	River Aire	4.5	C	C	B
027120012701A	Ledsham Beck	Ledsham	River Aire	3.9	U	U	U
027120012801A	Lin Dike/Sheffield Beck	d/s Newton Ings	River Aire	0.8	E	D	D
027120012801B	Lin Dike/Sheffield Beck	A656	d/s Newton Ings	1.1	E	D	D
027120012801C	Lin Dike/Sheffield Beck	Owlwood STW	A656	1	E	D	D
027120012801D	Lin Dike/Sheffield Beck	Hollins Beck	Owlwood STW	1.3	C	C	D
027120012802A	Lin Dike/Sheffield Beck	Barrowby Park	Hollins Beck	4.2	C	C	D
027120012901A	Hollins Beck	Moor Gate	Lin Dike	1.6	C	C	D
027120018901A	Fleakingley Beck	Swillington	River Aire	1.1	U	U	U
027120018901B	Fleakingley Beck	Goody Cross Road	Swillington	1.6	U	U	U
027120018901C	Fleakingley Beck	Armitage's Brick Works	Goody Cross Rd.	1.2	U	U	U
027120019001A	Oulton Beck	Lemonroyd	River Aire	0.8	C	C	B
027120019001B	Oulton Beck	West Beck	Lemonroyd	5	C	C	C
027120019001C	Oulton Beck	d/s Leemoor	West Beck	2.5	C	C	C
027120019001D	Oulton Beck	Lofthouse Gate	d/s Leemoor	1.5	C	C	C
027120019001E	Oulton Beck	Lofthouse Colliery	Lofthouse Gate	1	C	C	C
027120019001F	Oulton Beck	M1 Bridge	Lofthouse Colliery	1	C	C	C
027120019001G	Oulton Beck	The Fall	M1 Bridge	1	C	C	C
027120019101A	Wyke Beck/Great Heads Beck	Knostrop STW	River Aire	0.3	F	F	F
027120019101B	Wyke Beck/Great Heads Beck	Minor Road	Knostrop STW	1.6	D	C	C
027120019101C	Wyke Beck/Great Heads Beck	Donisthorpe	Minor Road	2.1	D	C	C
027120019101D	Wyke Beck/Great Heads Beck	Roundhay Park	Donisthorpe	8.7	D	C	C
027120019201A	Meanwood Beck	Sheepscar	River Aire	1.5	E	E	E
027120019201B	Meanwood Beck	Buslingthorpe Lane	Sheepscar	2.5	C	C	B
027120019201C	Meanwood Beck	Meanwood	Buslingthorpe Lane	1.5	C	D	C
027120019201D	Meanwood Beck	d/s Golden Acre Park	Meanwood	5.8	C	D	C
027120019201E	Meanwood Beck	Bramhope	d/s Golden Acre Park	3.2	U	U	U
027120019301A	Low/Wortley/Pudsey Becks	Conf Wortley and Millshaw Becks	River Aire	3.2	D	C	D
027120019302A	Low/Wortley/Pudsey Becks	d/s Farnley Reservoir	Conf Wortley and Millshaw Becks	3.8	D	D	D
027120019302B	Low/Wortley/Pudsey Becks	d/s Houghside	d/s Farsley Reservoir	2	D	D	C
027120019302C	Low/Wortley/Pudsey Becks	Tong Beck	d/s Houghside	1.9	D	D	C
027120019303A	Low/Wortley/Pudsey Becks	Smalewell STW	Tong Beck	3	F	F	F
027120019303B	Low/Wortley/Pudsey Becks	The Oatlands	Smalewell STW	2.1	D	D	E
027120019401A	Millshaw Beck	Cotton Mill Beck	Low Beck	3.1	E	D	D
027120019401B	Millshaw Beck	Owler Beck	Cotton Mill Beck	1.1	C	C	C
027120019401C	Millshaw Beck	Grove Mills	Owler Beck	1	U	U	U
027120019501A	Tong Beck	Tong	Wortley Beck	2.4	E	E	D
027120019501B	Tong Beck	Westgate Hill	Tong Beck	2.6	E	E	D
027120019601A	Carlton Beck	Clayton Woods	River Aire	2	C	C	B
027120019601B	Carlton Beck	Horsforth Station	Clayton Woods	1.5	C	C	C

REACH	RIVER_NAME	REACH_FROM	REACH_TO	LENGTH (KM)	GQA97	GQA98	GQA99
027120022101A	Haw Beck	Embsay STW	Elfer Beck	0.7	C	B	B
027120022101B	Haw Beck	Embsay Beck	Embsay STW	0.4	C	B	B
027120022102A	Haw Beck	Tewit Bogs	Embsay Beck	4	C	C	B
027120022201A	Embsay Beck	Wayshaw Bogs	Haw Beck	3.4	C	C	C
027120022301A	Broughton Beck/Earby Beck	Langber Beck	River Aire	4.3	C	C	B
027120022302A	Broughton Beck/Earby Beck	U/S Earby STW	Langber Beck	5.2	C	C	B
027120022302B	Broughton Beck/Earby Beck	New Cut at Sough Bridge	U/S Earby STW	2.5	C	C	C
027120022303A	Lancashire Gill	Kelbrook Wood	New Cut at Sough Bridge	3.7	C	C	B
027120022401A	Langber Beck	Crickle Beck	Broughton Beck	1.1	C	C	B
027120022401B	Crickle Beck	Green Bank	Langber Beck	1.4	C	C	B
027120022401C	Crickle Beck	d/s West Marton Dairy	Green Bank	1.3	C	C	C
027120022401D	Crickle Beck	West Marton	d/s West Marton Dairy	2.1	C	C	C
027120022501A	New Cut	D/S B6383	Sough Bridge	1.9	C	C	B
027120022501B	New Cut	New Cut at B6383	D/S B6383	0.6	C	C	B
027120022501C	New Cut	Hullett Hall	New Cut at B6383	0.5	C	C	B
027120022501D	New Cut	Warehouse Lane SSO	Hullett Hall	0.4	C	C	B
027120022601A	Eshton/Winterburn/Hetton Common/Bordley Becks	Flasby Beck	River Aire	2.3	C	B	B
027120022602A	Eshton/Winterburn/Hetton Common/Bordley Becks	Winterburn Reservoir	Flasby Beck	10.8	C	B	B
027120022701A	Flasby Beck	Cracoe Fell Ingfell	Eshton Beck	8	C	B	B
027120022801A	Otterburn Beck	Scosthrop High Moor	River Aire	8.5	C	B	B
027120022901A	Kirkby Beck/Grains Beck	Kirkby Malham	River Aire	0.5	C	B	B
027120022902A	Kirkby Beck/Grains Beck	Kirkby Fell	Kirkby Malham	4.6	C	B	B
027120023001A	Malham Beck	Gordale Beck	River Aire	0.2	C	B	A
027120023002A	Malham Beck	Malham STW	Gordale Beck	0.5	C	B	A
027120023002B	Malham Beck	Malham Cove	Malham STW	1.8	C	B	A
027120023101A	Gordale Beck	Great Close Mire	Malham Beck	5.6	C	B	A
027120067101A	Langber Beck	East Marton Sewage Works	Crickle Beck	1.3	U	U	U
027120091401A	Gordon Beck	Source	Kirkby Beck	0.3	U	U	U
027120091501A	Sough Dike	Source	Harden Beck	0.5	U	U	U
027120091601A	Westbrook Beck	Source	Bradford Beck	2	C	D	D
027120091701A	Bowling Beck	Source	Bradford Beck	1.3	C	C	B
027120091801A	Eastbrook Beck	Source	Bradford Beck	1.5	F	F	F

REACH	RIVER_NAME	REACH_FROM	REACH_TO	LENGTH (KM)	GQA97	GQA98	GQA99
027120021001A	North Beck	CSOs	River Worth	1	C	C	C
027120021001B	North Beck	Goose Eye	CSO	2.7	C	C	B
027120021001C	North Beck	Comber Hill	Goose Eye	5.7	C	C	B
027120021101A	Bridgehouse Beck	Oxenhope	River Worth	2.4	C	B	B
027120021101B	Bridgehouse Beck	Leeshaw Beck	Oxenhope	0.8	C	B	B
027120021102A	Bridgehouse Beck	Leeming Reservoir	Leeshaw Beck	3.4	C	B	B
027120021201A	Leeshaw Beck	Leeshaw Reservoir	Bridgehouse Beck	3.4	C	B	B
027120021301A	Sladen Beck	Sandy Hill	River Worth	4	B	B	B

REACH	RIVER_NAME	REACH_FROM	REACH_TO	LENGTH (KM)	GQA97	GQA98	GQA99
0271200209001A	River Worth	North Beck	River Aire	2.3	C	C	C
0271200209002A	River Worth	Bridgehouse Beck	North Beck	3.1	C	C	C
0271200209002B	River Worth	Bridgehouse Beck	North Beck	1.7	C	C	C
0271200209003A	River Worth	Sladen Beck	Bridgehouse Beck	1.9	B	B	B
0271200209004A	River Worth	Water Sheddles Reservoir	Sladen Beck	6.3	B	B	B

RA/2002/12714

Report Title ABSTRACTION LICENCE SUMMARY BY MANAGEMENT UNIT / REPORTING UNIT EXTERNAL USAGE

Short Name AR251R

PARAMETERS	VALUES	PARAMETERS	VALUES
USER	JVARLEY		
REPORT TYPE	DETAIL	SORT BY	LIC_NO
DESTINATION TYPE	Preview	DESTINATION NAME	
REQUIRED DATE FROM	02/05/2002	REQUIRED DATE TO	
MANAGEMENT UNIT		REPORTING UNIT	ENVIRONMENT AGENCY RIDINGS AREA
LICENCE NO	ALL		
LICENCE HOLDER NAME	ALL		
CONDITIONS ON LICENCES	ALL	AGREEMENTS	ALL
SOURCE OF SUPPLY	ALL	SOS TYPE	ALL
		POINT CATEGORY	ALL
PURPOSE	ALL	POINT TYPE	ALL
	ALL		
	ALL		
RANGE SEARCH BY ANNUAL QTY	NONE DEFINED		
RANGE SEARCH BY DAILY QTY	NONE DEFINED		
RADIAL SEARCH	NGR SE 2885 3264	DISTANCE 1.0	km
SQUARE SEARCH	NONE DEFINED		

Warning: The figures shown on this report do not take account of any authorised quantity restrictions that may exist between linked licences or within a licence (See the conditions section of the report for this information)

Licence No: 2/27/17/106 Orig Application: 03773 Expiry Date:
Revoked Date:
Lapsed Date:

Issue No	Incr No	Status	Effective Start	Effective End	Returns Req?	Chargeable?
101	0	CURR	16/12/1997		Y	Y

Licence Holder
10007245 DONCASTERS MONK BRIDGE LIMITED
10004487 MONKBRIDGE DIVISION
P O BOX 108
WHITEHALL ROAD
LEEDS
WEST YORKSHIRE
LS1 1PE

Licence Type: Licence of Right
Source: GROUNDWATERS
Multiple Lh?: N

Purpose: Industrial, Commercial and Public Services - Metal
General Cooling (Existing Licences Only) (Low Loss)
Abs Period Start:1/1 Abs Period End: 31/12 Time Ltd Start: Time Ltd End:

Annual Qty:	471000 m3	Usability:	Derived
Daily Qty:	1290 m3	Usability:	Derived
Hourly Qty:	53.75 m3	Usability:	Derived
Inst Qty:	14.9 l/s	Usability:	Derived

Conditions Exist: No
Agreements Exist: No

Local Name	Primary Type	Secondary Type	Category
BOREHOLE - COAL MEASURES - LEEDS	Groundwater	Borehole	Single Point
NGR1:SE 2904 3308 0.5km NGR2:	NGR3:	NGR4:	

Purpose: Industrial, Commercial and Public Services - Metal
General use relating to Secondary Category (Medium Loss)
Abs Period Start:1/1 Abs Period End: 31/12 Time Ltd Start: Time Ltd End:

Annual Qty:	83000 m3	Usability:	Derived
Daily Qty:	227.4 m3	Usability:	Derived
Hourly Qty:	9.475 m3	Usability:	Derived
Inst Qty:	2.63 l/s	Usability:	Derived

Conditions Exist: No
Agreements Exist: No

Local Name	Primary Type	Secondary Type	Category
BOREHOLE - COAL MEASURES - LEEDS	Groundwater	Borehole	Single Point
NGR1:SE 2904 3308 0.5km NGR2:	NGR3:	NGR4:	

****
* END OF REPORT *
****

Report Title **ABSTRACTION LICENCE SUMMARY BY MANAGEMENT UNIT / REPORTING UNIT**

Short Name **AR251R**

REPORT SUMMARY

Report Summary for report Date : 02/05/2002

Total Number of Licences	Sum of Hourly Quantities	Sum of Daily Quantities	Sum of Annual Quantities
1	63.225 m3	1517.400 m3	554000.000 m3

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BARNSLEY
Metropolitan Borough Council

Environmental Health and Trading Standards
Environmental Health Services Manager: Peter J. Hubbard
Central Offices, Kendray Street, Barnsley S70 2TN
Fax: (01226) 772498

RECEIVED 2 9 APR 20
12329

My Ref: JSC/85869 Your Ref: 2500 Date: 25 April 2002

Enquiries To: Mr J Scott Dial Direct: (01226) 772456 Fax: (01226) 772498

Dear Sir

Re - Goldthorpe Colliery, Goldthorpe, Rotherham.

Order No. - 14010\2500\1\RJH

Further to your request for environmental information, dated 27th March 2002, for the above address, I can now supply you with the necessary details that are held within our Service.

Landfill Sites

We have no details of any areas of landfilling on, or within 250m of the site boundary. Of course, the site itself, being a former colliery, has areas of tipping of spoil wastes. Details of these Tips can be obtained from the South Yorkshire Mining Advisory Service (SYMAS), who can be contacted on (01226) 772685.

Contaminated Land

No determinations have been made by this Service under the provisions of the Environmental Protection Act 1990, regarding the classification of contaminated land. However, as I have already mentioned a large part of this site was formerly a colliery and the associated spoil tipping areas. In view of these former uses, there is the potential for the land to be contaminated.

Environmental Protection Act 1990 - Authorised Processes

There has been no Part A processes carried out on this site. However there has been a Part B process operated, details of which are below.
Name - British Coal Corporation, Goldthorpe Colliery, Rotherham
EPA Ref. - 23
The authorisation relates to a Coal Handling Process. The authorisation was revoked in May 1995.

There are no other Part A or Part B authorisation operating within 250 metres of the site boundary.

Mr G Shaw
AIG Consultants
AIG House
Audby Lane
Wetherby
LS22 7RD

Nuisances

The Council have not served any formal notices for nuisance with regard to the above site in the last 3 years.

Report Incidents

The Council have no reports of any spillages or other incidents associated with the site.

I must inform you that the Council make a charge for supplying this information and you will be invoiced accordingly in due course. This charge will be £80 + VAT.

Yours faithfully

John Scott
Contaminated Land Officer
For and on behalf of the Environmental Health Services Manager

2500/RJH/rjh

21st April 2004

Mr B Tinnion
Ogden Group
Brodsworth House
Longlands Lane
Brodsworth
Doncaster South Yorkshire
DN5 7XB

By Fax & Post – 01302 330 777 (4 pages)

Dear Brian

Goldthorpe Colliery – Reclamation Design & Supervision

Further to your recent invitation, please find attached our proposal for the design and supervision of the earthworks necessary at the above site to produce a development platform suitable for a residential redevelopment.

Redevelopment of this site will be subject to planning conditions relating to ground investigation, remediation and validation. The ground investigation phase of works has been completed and reported in Encia Consulting (formerly AIG Consultants Limited) reports 2500/1 to 2500/3.

The works detailed below will aim to resolve issues related to remediation and validation.

Compaction Trial: Site sourced fill material will be constructed into a test pad using suitable plant. Sufficient in-situ and laboratory geotechnical analysis will be carried out to provide a method specification for the fills placement as engineered fill for the construction of houses and roads. A method specification allows a prescriptive methodology to be assigned and utilised throughout fill placement.

Earthworks Design: A detailed engineering specification will be provided. This specification will include details on preparation of the site, deposition of fill, placing and compacting fill, control testing and monitoring of performance. Earthworks contour plans will also be provided.

Supervision: The works will be supervised on a full-time basis by an experienced Resident Engineer (RE) who will direct the works and produce daily records of the work completed. The RE will direct the Contractor and determine timing and location of control testing. Where necessary the RE will perform on-site moisture content determination to insure rapid determination of material quality. – Poss. PT if method spec adopted.

Confirmatory Testing: Both in-situ and laboratory geotechnical and chemical testing will be carried out to substantiate that the remediation works have been fully completed to the specification and that the site is suitable for residential redevelopment.

Completion Report: On completion of all works a report will be produced providing as built drawings, full details of the works completed and confirmatory testing in support of the reports conclusions.

Invoicing: The compaction trial, design and completion report items will be provided for a lump sum price of £13,373 plus VAT. Rates (along with a estimate of likely quantities) for site supervision and confirmatory testing are provided.
We will submit invoices for this project on a milestone basis. Invoices will be raised on completion of each Item (A, B and E) and on a monthly basis for Items C and D.

Terms & Conditions: This work will be undertaken in accordance with our Standard Terms and Conditions (a copy of which is available on request).

It is hoped the above is sufficient for your present needs. However, should you require any further information, please contact the undersigned.

Yours sincerely

Richard Hey
For and on behalf of
ENCIA CONSULTING LIMITED

enc

AIG CONSULTANTS LIMITED

Proposal No: 2500/2/1

Client: Ogden Group of Companies

Date: 19 April 2004

Site: Goldthorpe Colliery

Item		No	Unit	Rate/£	Cost/£
A	**COMPACTION FIELD TRIALS**				
	Complete compaction trial on colliery spoil material	1	sum		3568.00
	Sub Total				**3,568.00**
B	**DESIGN**				
	Production of a Specification for the proposed site preparatory and remedial works	1	sum	2500.00	2500.00
	Sub Total				**2,500.00**
C	**SUPERVSION**				
	Full-time supervision by an experienced engineer including project manager support and office assistance	20	week	2000.00	40,000.00
	Sub Total				**40,000.00**
D	**CONFIRMATORY TESTING**				
	Atterberg Limits including moisture content	40	no	25.00	1,000.00
	Particle Size Distribution	30	*no*	21.00	*630.00*
	Mobilisation of plate loading test equipment and technician	10	sum	100.00	1,000.00
	Carry out plate loading test (2 load\unload cycles)	30	nr	130.00	3,900.00
	pH, arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, zinc and boron	15	no	21.00	315.00
	Calorific Value	15	no	16.00	240.00
	Petrol Range Hydrocarbon contamination - BTEX	10	no	26.00	260.00
	TPH by GC-FID (DRO & LRO)	10	no	26.00	260.00
					0.00
	Sub Total				**7,605.00**

Client: Ogden Group of Companies
Site: Goldthorpe Colliery

Date: 19 April 2004

Item		No	Unit	Rate/£	Cost/£
E	**COMPLETION REPORT**				
	Production of copletion report to detail all works completed on site	1	sum	2200.00	2,200.00
	Sub Total				**2,200.00**
	TOTAL				**£53,373.00**

All sums quoted above exclude VAT, which will be charged at the prevailing rate.

Notes:

1. *Rates for attendance of meetings.*

   Senior Engineer - £43.00 per hour
   Principal Engineer - £58.00 per hour
   Regional Director - £90.00 per hour

2. This quotation allows for the supply of one bound & one loose copy of the report. Additional copies, if required, can be supplied at a cost of £40.00 per copy

South Yorkshire
Fire and Rescue Service

"Committed to the Principles of Good Enforcement"

B R O'Donnell, QFSM, MIFireE
Chief Fire Officer

Date: 05.04.02.
Your Ref: 2500 Our Ref: NA10000/SW/LAB

This matter is being dealt with by Mr S Walsh
Telephone Direct Line: 01226 720402
E-Mail: aibbotson@syfire.org.uk

Dearne District Fire Safety
Broadway
Barnsley
South Yorkshire S70 6RA
Telephone: 01226 282222
Fax: 01226 247712

AIG Consultants Limited
AIG House
Audby Lane
Wetherby
West Yorkshire
LS22 7RD

RECEIVED 10 APR 2002

For the attention of G Shaw

Dear Sir

PREMISES: **Former Goldthorpe Colliery, Doncaster Road, Goldthorpe, Barnsley.**

Following receipt of your fax received at this office 27th March 2002, this office has no record of any underground petroleum storage tanks at this site.

If you require any further information please contact the officer dealing with this matter.

Yours faithfully

B.R.O'Donnell.

Chief Fire Officer SW

Awarded for excellence

SOUTH YORKSHIRE
FIRE AND CIVIL DEFENCE
AUTHORITY

INVESTOR IN PEOPLE

FIRE KILLS
YOU CAN PREVENT IT

Report prepared for:

GARETH SHAW
AIG CONSULTANTS
AIG HOUSE
AUDBY LANE
WETHERBY
WEST YORKSHIRE
LS22 7RD

Radon Protective Measures Site Report

Advisory report on the requirement for radon protective measures in new dwellings

Stage 2 Geological Assessment for BR211 (1999)

Client's Reference:

2500

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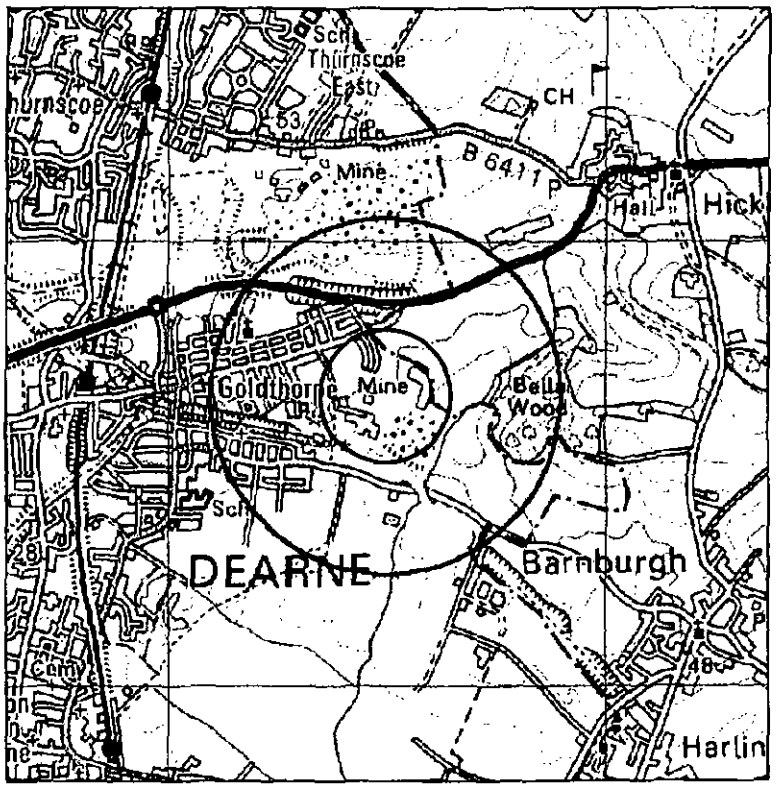
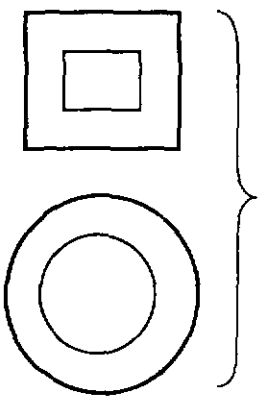
Section 1: Location and extent of report area

Area centred at: *SE 47000 04300*
Radius of site area: *300 metres*



Topography based on the latest 1:50,000 scale Ordnance Survey Maps with the permission of The Controller of Her majesty's Stationery Office, Crown Copyright. Ordnance Survey licence number GD272191/2000. Display scale may vary.

KEY:



INNER RECTANGLE or CIRCLE defines site area (details provided by client).

OUTER LINE shows extent of TOTAL SEARCH AREA comprising the site area and automatically generated buffer zone. The requirement for radon protective measures indicated in Section 2 is based on a geological assessment of the Total Search Area.

Please see Section 4 for details of how the search is carried out

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Section 2: Requirement for radon protective measures

The RPM GIS has determined that:

NO RADON PROTECTIVE MEASURES ARE REQUIRED FOR THE REPORT AREA.

This assessment was derived from 1:250,000 scale data.
Where protective measures are indicated, guidance can be found in BR211(1999) *Radon: guidance on protective measures for new dwellings.*

Important Note: The level of radon protection indicated in Annex A of *BR211 Radon: Guidance on protective measures for new dwellings (1999 edition)* is the minimum requirement for this site. Thus if Annex A indicates basic protection and this RPM Site Report indicates no protection then basic protection should be installed. See Section 4 for more details.

Please see Section 4 for details of how the assessment is carried out

Section 3: Geological units within the search area

Below is a listing, if available, of the possible combinations of Solid Geology units and overlying Drift (Superficial) Geology units within the total search area.

These have been derived (as indicated) from searches of either:

a) Combined 1:250,000 Solid and 1:625,000 Drift geology maps
b) 1:50,000 Solid, Drift and Artificial geology maps

1:250,000 data

1. UPPER COAL MEASURES (FORMATION)(ARGILLACEOUS ROCKS, UNDIFFERENTIATED); No drift
2. MIDDLE COAL MEASURES (FORMATION)(ARGILLACEOUS ROCKS, UNDIFFERENTIATED); No drift
3. UPPER COAL MEASURES (FORMATION)(SANDSTONE 3D00); No drift

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Section 4: Determining the level of radon protection.

BR 211 (1999) sets out a two-stage procedure to help determine the level of radon protection required in new dwellings and extensions.

In Stage 1 of the procedure, the 5 km grid square radon potential maps (Appendix A, BR211,1999) produced by the National Radiological Protection Board (NRPB) are used to make the primary determination of the level of radon protection needed. The NRPB maps are based on the average estimated proportion of homes exceeding the radon Action Level for each 5 km square of the Ordnance Survey National Grid.

In Stage 2, a second series of maps produced by the BGS (Appendix B, BR211,1999) is used to decide whether it is necessary to consider upgrading the requirement for protection indicated by Stage 1. This procedure has the objective of avoiding cases of underprotection that might occur had the guidance depended solely on the average radon level in the 5 km grid square indicated by the NRPB maps. The BGS maps in Appendix B (BR211, 1999) show those 5 km grid squares that are underlain, completely or in part, by geological units that require either basic or full protection to be installed in new dwellings.

A geological assessment may need to be carried out where the site falls within a shaded grid square on the BGS map in Annex B of BR211 (1999). The geological assessment checks whether a site is on or close to a geological unit which potentially exceeds the action levels for either basic or full radon protection. Consideration must be given to installing basic or full radon protection if the geological assessment shows that this is indicated. If a site falls within one of the shaded squares, it does not necessarily mean that it must have radon protection. This is because some of the grid squares contain bed rocks and unconsolidated (drift) deposits with lower radon potential than the maximum levels shown on the 5 km grid maps in Appendix B (BR211, 1999).

In many cases the geological radon potential varies considerably within a grid square. In other cases, only a very small area (sometimes only a few hundred square metres) with a radon potential exceeding the thresholds for basic or full protection occurs within the shaded grid square. The level of protection that might be required is thus site specific, and can be determined by reference to the relevant radon potential map in BR211 (1999) followed by a geological assessment of the site.

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The geological assessment in this report is produced by the BGS Radon Protective Measures Geographical Information System (RPM GIS), which has been developed to provide Stage 2 Geological Assessments (RPM Site Reports). The assessment is derived from a geologically based interpretation of radon measurements in dwellings which were provided to the BGS by the NRPB without prejudicing confidentiality undertakings to householders and the Department of the Environment, Transport and the Regions (DETR). The reliability of a geological radon potential assessment is approximately proportional to the number of radon measurements available and the scale of the geological maps.

The RPM GIS currently comprises 1:250,000 scale data with more detailed information for twenty 1:50,000 scale geological map sheets covering the most radon-prone parts of Derbyshire, Northamptonshire, Nottinghamshire, Leicestershire, Lincolnshire, Oxfordshire, Shropshire, Somerset and Yorkshire. The RPM-GIS is being upgraded to 1:50,000 scale over the next 12 months as new digital maps become available through the BGS DIGIMAP programme.

The search area (circle or rectangle) for a site is increased by a buffer zone of 50 m in areas with 1:50,000 scale data and 500m in areas with 1:250,000 scale data. This is to allow for potential inaccuracies in the position of the geological boundaries. In many cases a number of combinations of bed rock and drift with differing geological radon potentials will occur within the total search area. Following the precautionary principle, the requirement for protective measures is derived from the highest geological radon potential encountered within the total search area.

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Section 5: Follow-up radon protective measures site report

For most parts of the UK, a higher resolution assessment of radon protective measures requirements can also be provided by BGS. This will comprise:

i. Assessment by a qualified geologist of the relevant 10,000, 1:10,560 or 1:50,000 scale geological map(s) covering the total search area from BGS archives.
ii. Precise identification of the level of radon protective measures indicated for all geological units encountered within the site and the immediately surrounding area.

The basic charge for a Radon Follow-up Report is **£80+VAT**. Reports for very large or geologically complex sites may, however, have to be supplemented with additional £40+VAT increments to allow for each extra half-hour of time taken – in such cases, enquiry staff will confirm with the client before proceeding.

The Radon follow-up reports can be ordered from:-
Geological Enquiries, British Geological Survey, Keyworth, Nottingham NG12 5GG; Tel: 0115-936-3192; Fax: 0115-936-3192; e-mail: geohelp@bgs.ac.uk. An on-line ordering facility will be available in the near future from Services on the BGS web site *http://www.bgs.ac.uk.*

Section 6: What is radon ?

Radon is a naturally occurring radioactive gas, which is produced by the radioactive decay of radium which, in turn, is derived from the radioactive decay of uranium. Uranium is found in small quantities in all soils and rocks, although the amount varies from place to place. Radon released from rocks and soils is quickly diluted in the atmosphere. Concentrations in the open air are normally very low and do not present a hazard. Radon that enters poorly ventilated enclosed spaces such as some basements, buildings, caves, mines, and tunnels may reach high concentrations in some circumstances. The construction method and degree of ventilation will influence radon levels in individual buildings. A person's exposure to radon will also vary according to how particular buildings and spaces are used.

Inhalation of the radioactive decay products of radon gas increases the chance of developing lung cancer. If individuals are exposed to high concentrations for significant periods of time, there may be cause for concern. In order to limit the risk to individuals, the Government has adopted an Action Level for radon in homes of 200 becquerels per cubic metre (Bq m^{-3}). The Government advises householders that, where the radon level exceeds the Action Level, measures should be taken to reduce the concentration.

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Section 7: Radon in workplaces

The Ionising Radiation Regulations, 1999, require employers to take action when radon is present above a defined level in the workplace. Advice may be obtained from your local Health and Safety Executive Area Office or the Environmental Health Department of your local authority. The BRE publishes a guide (BR293): **Radon in the workplace.**

BRE publications may be obtained from Construction Research Communications Ltd, 151 Roseberry Avenue, London EC1R 4QX (Tel: 0171 505 6622; Fax: 0171 505 6606).

Section 8: Radon in existing dwellings

Useful information is given in the following free publications which can be obtained by writing to: DETR Free Literature, PO Box 236, Wetherby, West Yorkshire, LS23 7NB.
Radon - A Householder's Guide
Radon - You Can Test for it
Radon - A Guide for Homebuyers and Sellers
Radon - A Guide to Reducing Levels in Your Home
Information in the booklets is also available on the DETR website at:
http://www.environment.detr.gov.uk/radioactivity/index.htm

Householders are recommended to follow advice in **Radon - a householder's guide.** The guide outlines simple solutions for dealing with the radon problem depending on whether or not the home has been tested for radon. In radon affected homes, the problem of radon can usually be tackled with simple, effective and relatively inexpensive measures. These measures are comparable in cost to work such as damp-proofing and timber treatment. You can get practical advice about construction work to reduce radon levels from the Building Research Establishment (BRE) **Radon hotline** on **01923 664707.**

Advice about radon, its health risks and details of how to order the radon test may be obtained from the NRPB **Radon Freephone** on 0800 614529 or by post from **NRPB, Chilton, Didcot, Oxfordshire OX11 0RQ.**

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Report issued by: Christine Thomson

BGS Enquiries Service

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The Coal Authority,
Mining Reports Office,
200 LICHFIELD LANE,
BERRY HILL,
MANSFIELD,
NOTTINGHAMSHIRE,
NG18 4RG
Telephone: 0845 762 6848
DX 716176 MANSFIELD 5
On-Line Service: www.coalminingreports.co.uk

The COAL AUTHORITY

Cost: £37.45
Plus V.A.T: £6.55
Total Received: £44.00
V.A.T. Reg Number: 589 5850 68

GARETH SHAW,
A I G CONSULTANTS LTD,
A I G HOUSE,
AUDBY LANE,
WETHERBY,
WEST YORKSHIRE,
LS22 7RD

RECEIVED 0 1 MAY 2002
12347

This matter is being dealt with by Darren Moody

Our Ref: **162007-02**
Your Ref: 1674
Date: 30 April 2002

Dear Sir,

Coal Mining Report
FORMER GOLDTHORPE COLLIERY SITE, GOLDTHORPE

I refer to your enquiry dated 29 April 2002, received 29 April 2002, in connection with the above.

This report relates to the address given above and the location plan where supplied.

As requested I enclose the mine entry data sheet(s) held for the shaft(s) referred to.

We acknowledge receipt of your remittance in payment of our fee.

Yours faithfully

A Schofield

Albert Schofield
Director of Mining Records and Services

Mine Entry Data

Shaft/Adit:	Shaft
Mine Entry Reference:	446404-002
Source:	3rd and NG Ed. 1/2500 O.S. Y275-16, Prov Ed. Geological Y275SE
Colliery Name:	GOLDTHORPE
Entry Name:	*Goldthorpe Colliery No.2 Shaft*
Date Abandoned:	N/A
Depth of Superficial Deposits (m):	Unknown
Depth of Shaft (m):	66.8
Diameter of Shaft (m):	3.2
Probable Adit Azimuth:	N/A
Treatment Details:	is filled and capped with reinforced concrete
Conveyance:	N/A
Other Information:	None

446404-002.

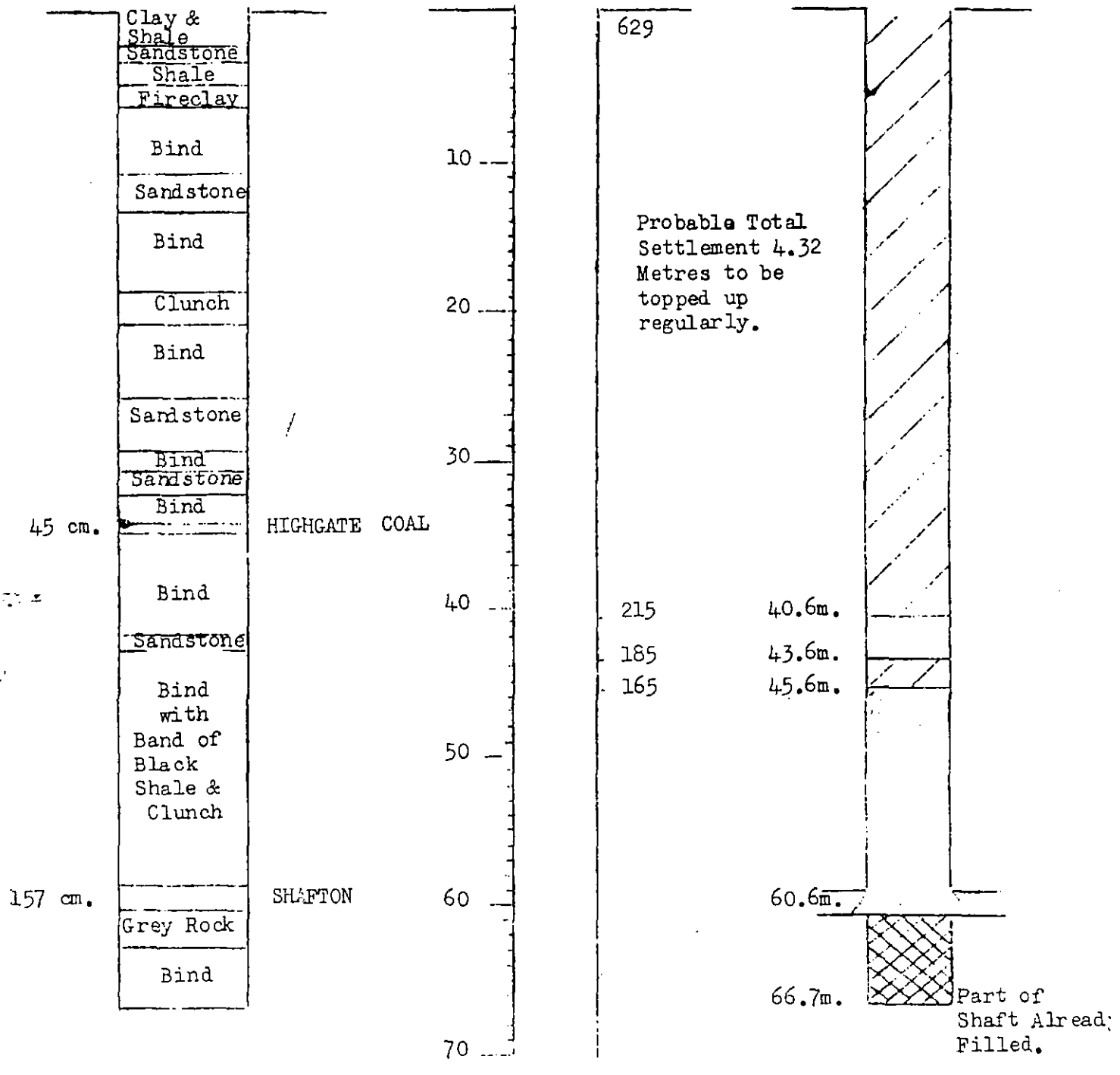
N.C.B. - MINES DRAINAGE UNIT

DONCASTER AREA - GOLDTHORPE COLLIERY

SPECIFICATION FOR FILLING NO.2.SHAFT

DIAMETER OF SHAFT 12' - 0"

O.S. SHEET NO. S.E. 40 S.E.



NOTE

FINES, UNPRESSED TAILINGS & CARBONACEOUS MATERIALS MUST NOT BE USED.

HARDCORE FILL SHOWN
CLAY FILL SHOWN
COLLIERY SPOIL FILL SHOWN

SCALE: 10 Metres to One Inch

Mine Entry Data (Continued)

Shaft/Adit:	Shaft
Mine Entry Reference:	446404-001
Source:	3rd and NG Ed. 1/2500 O.S. Y275-16, Prov Ed. Geological Y275SE
Colliery Name:	GOLDTHORPE
Entry Name:	Goldthorpe Colliery No.1 Shaft
Date Abandoned:	N/A
Depth of Superficial Deposits (m):	Unknown
Depth of Shaft (m):	63.1
Diameter of Shaft (m):	4.3
Probable Adit Azimuth:	N/A
Treatment Details:	is filled and capped with reinforced concrete
Conveyance:	N/A
Other Information:	None

446404-001

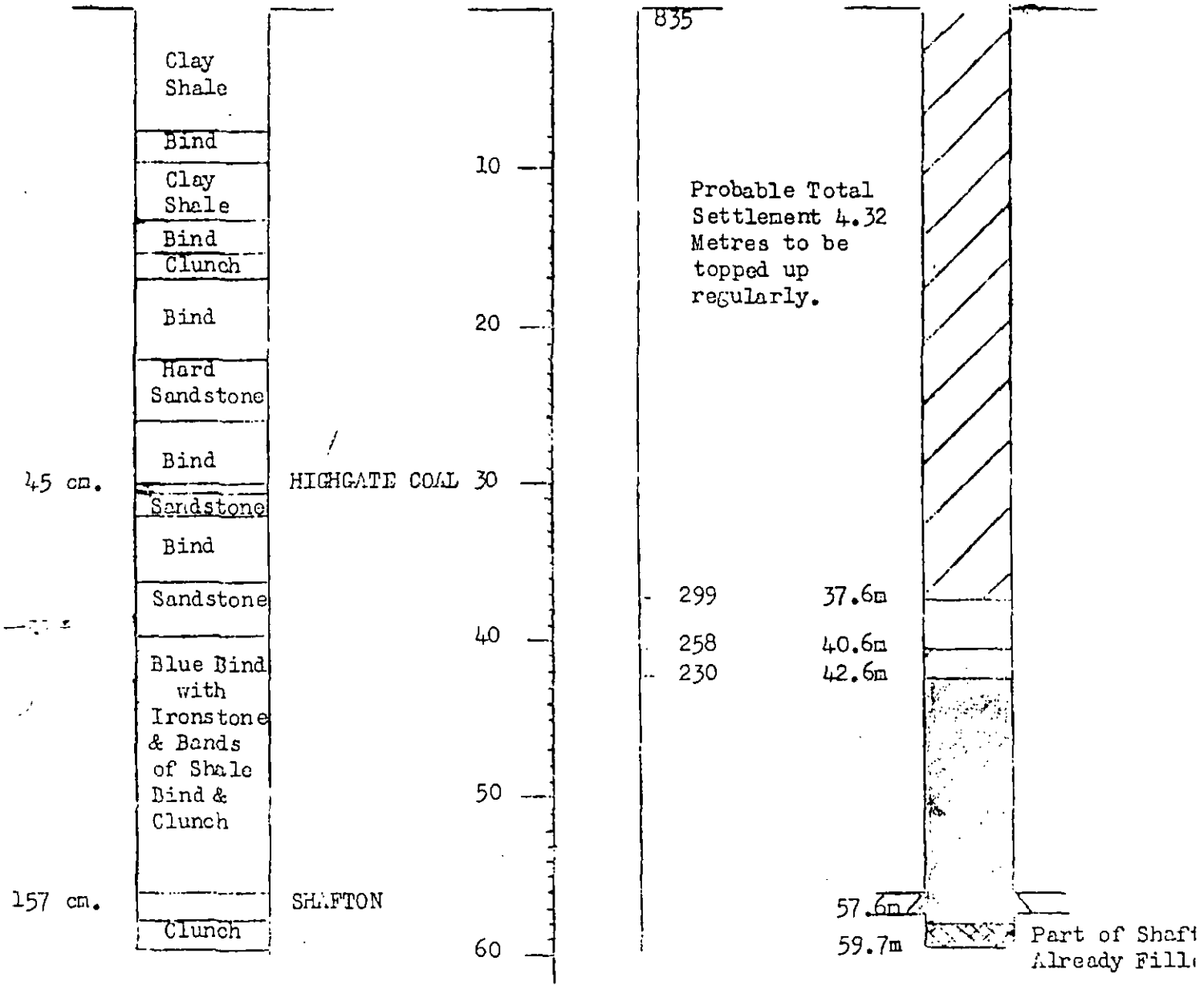
N.C.B. - MINES DRAINAGE UNIT

DONCASTER AREA - GOLDTHORPE COLLIERY

SPECIFICATION FOR FILLING NO.1 SHAFT

DIAMETER OF SHAFT 14' - 0"

O. S. SHEET NO. S.E. 40 S.E.



NOTE

FINES, UNPRESSED TAILINGS & CARBONACEOUS MATERIALS MUST NOT BE USED.

HARDCORE FILL SHOWN
CLAY FILL SHOWN
COLLIERY SPOIL FILL SHOWN

SCALE: 10 Metres to One Inch

12/6/72

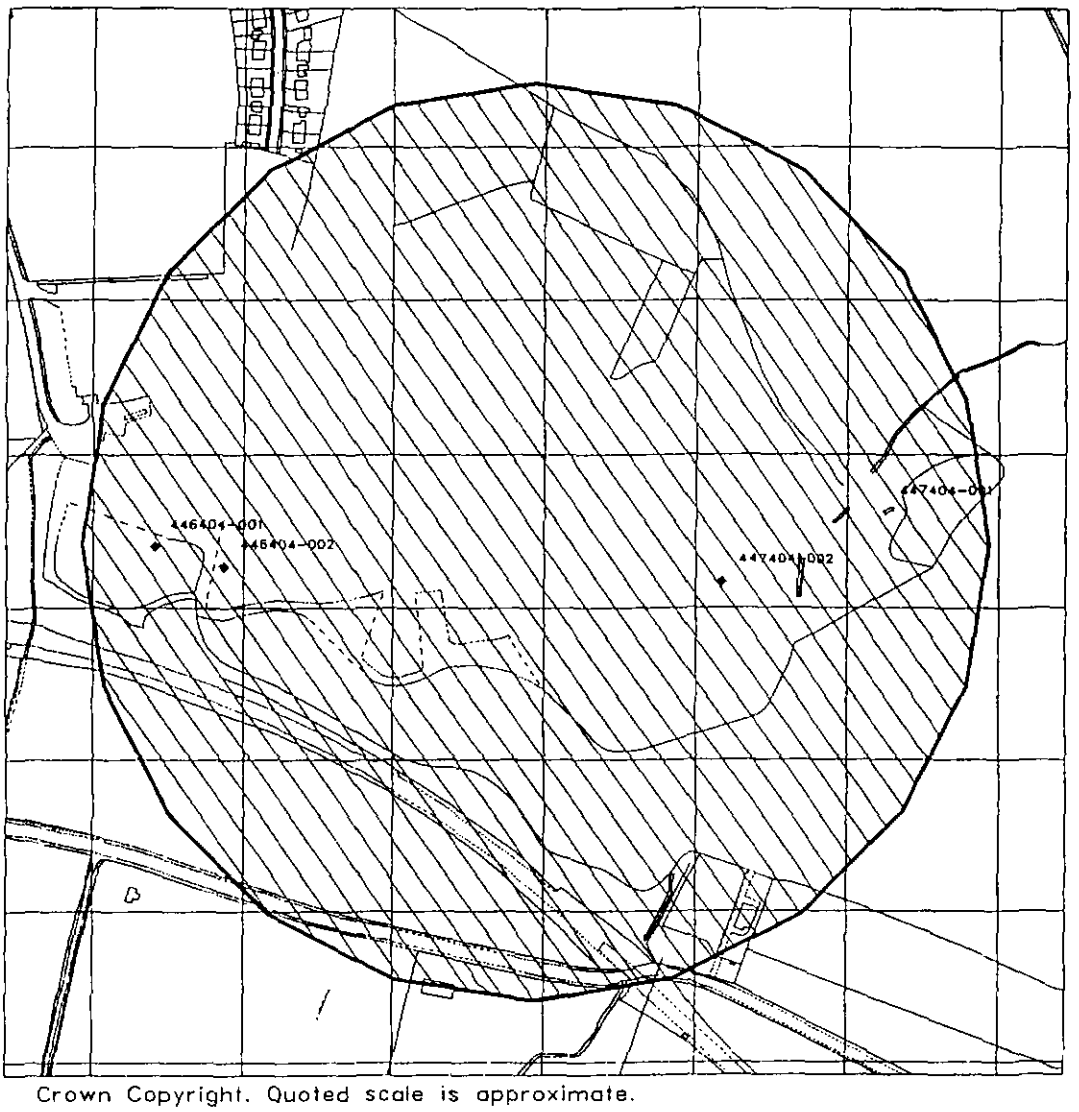
G.1.

Mine Entry Data (Continued)

Shaft/Adit:	Shaft
Mine Entry Reference:	447404-002
Source:	Plan Showing Interests of Sir THL Brinckman in the Parish of Goldthorpe
Colliery Name:	Unknown
Entry Name:	
Date Abandoned:	N/A
Depth of Superficial Deposits (m):	Unknown
Depth of Shaft (m):	Unknown
Diameter of Shaft (m):	Unknown
Probable Adit Azimuth:	N/A
Treatment Details:	None
Conveyance:	N/A
Other Information:	None

Mine Entry Data (Continued)

Shaft/Adit:	Adit
Mine Entry Reference:	447404-001
Source:	NG Ed. 1/2500 O.S.
Colliery Name:	GOLDTHORPE
Entry Name:	Goldthorpe Colliery Bella Adit
Date Abandoned:	N/A
Depth of Superficial Deposits (m):	Unknown
Depth of Shaft (m):	Unknown
Diameter of Shaft (m):	Unknown
Probable Adit Azimuth:	63
Treatment Details:	was filled to the surface from a stopping at 420m in 1995. The adit is fitted with a gas vent
Conveyance:	N/A
Other Information:	None



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SCALE: 1:5000

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This is a plan of the boundaries of the property in respect of which this report has been prepared. It is the responsibility of the user to ensure that the boundaries shown correspond with those of the property.

APPROXIMATE POSITION OF ENQUIRY BOUNDARY SHOWN

APPROXIMATE POSITION OF DISUSED MINE SHAFTS SHOWN

APPROXIMATE POSITION OF DISUSED MINE ADITS SHOWN

This plan shows the approximate location of the disused mine entry/entries referred to in the attached mining report. For reasons of clarity, mine entry symbols may not be drawn to the same scale as the plan.

Property owners have the benefit of statutory protection (under the Coal Mining Subsidence Act 1991). This contains provision for the making good, to the reasonable satisfaction of the owner, of physical damage from disused coal mine workings including disused coal mine entries. A DTI leaflet setting out the rights and the obligations of either the Coal Authority or other responsible persons under the 1991 Act can be obtained by telephoning 0845 762 6848.

If you wish to discuss the relevance of any of the information contained in the attached report you should seek the advice of a qualified mining engineer or surveyor. If you or your adviser wish to examine the source plans from which the information has been taken these are available at our Mansfield office, free of charge, by prior appointment, telephone 01623 638233. Should you or your advisor wish to carry out any physical investigations that may enter, disturb or interfere with any disused mine entry the prior permission of the owner must be sought. For coal mine entries the owner will normally be the Coal Authority.

The Coal Authority, regardless of responsibility and in conjunction with other public bodies, provide an emergency call out facility in coalfield areas to assess the public safety implications of mining features (including disused mine entries). Our emergency telephone number at all times is 01623 646333.

The Coal Authority,
Mining Reports Office,
200 LICHFIELD LANE,
BERRY HILL,
MANSFIELD,
NOTTINGHAMSHIRE,
NG18 4RG
Telephone: 0845 762 6848
DX 716176 MANSFIELD 5
On-Line Service: www.coalminingreports.co.uk

The COAL AUTHORITY

The Coal Authority
Cost: £38.30
Plus V.A.T. £6.70
Total Received: £45.00
V.A.T. Reg Number: 598 5850 68

AIG CONSULTANTS,
AIG HOUSE,
AUDBY LANE,
WETHERBY,
WEST YORKSHIRE,
LS22 7RD

RECEIVED 16 APR 2002

This matter is being dealt with by Keith Pennington

Our Ref: 137839-02

Your Ref: 2500

Electronic Ref:

Date: 12 April 2002

Dear Sir,

Coal Mining Report
GOLDTHORPE COLLIERY, GOLDTHORPE

I refer to the enquiry dated 08th April 2002, received 10th April 2002, in connection with the above.

This report is based on and limited to the records in the possession of The Coal Authority at the time the search is answered.

Past Underground Mining

The property is within the likely zone of influence on the surface from workings in 5 seams of coal at 50m to 760m depth, the last date of working being 1989.

Ground movement from the above mentioned past coal workings should by now have ceased.

Present Underground Mining

The property is not within the zone of likely physical influence on the surface from any present underground coal workings.

Future Underground Mining

The property is not within a geographical area for which a licence to extract coal by underground methods is awaiting determination by the Coal Authority.

The property is not within a geographical area for which a licence to extract coal by underground methods has been granted.

The property is not within the zone of likely physical influence at the surface from plans of future workings in our possession.

However reserves of coal exist in the locality which could be worked at some time in the future subject to feasibility, licences, and planning consents.

We have no record of any notice of the risk of the land being affected by subsidence being given under S.46 of the Coal Mining Subsidence Act 1991.

Shafts and Adits

Within or within 20 metres of the property there are 4 mine entries, the approximate positions of which are shown on e attached plan. Your attention is drawn to the statements made on that plan.

Our records disclose the following information:

446404-002. is filled and capped with reinforced concrete .

446404-001. is filled and capped with reinforced concrete .

447404-002. No treatment details.

447404-001. was filled to the surface from a stopping at 420m in 1995. The adit is fitted with a gas vent .

The records held by the Coal Authority may be incomplete. Consequently, there may exist in this locality mine entries of which we have no knowledge.

Surface Geology

Records in our possession do not disclose any fault or other line of weakness at the surface as having affected the stability of the property.

Past Opencast Mining

The property is not located within the geographical boundary of an opencast site from which coal has been extracted by opencast methods.

Present Opencast Mining

The property does not lie within 200 metres of the geographical boundary of an opencast site within which coal is being extracted by opencast methods.

Future Opencast Mining

The property is not within 800 metres of the geographical boundary of an opencast site for which a licence to extract coal by opencast methods is awaiting determination.

The property is within 800 metres of the geographical site boundary of the Furlong prospective opencast site for which a licence to extract coal by opencast methods was granted in October 1994. The grant of this licence is conditional on the applicant securing any other rights, permissions (including planning permissions) and consents to enable him to carry out his operations.

Subsidence

Claim(s) within, or intersecting, the property boundary that do not match the property address are shown on the attached plan.

The records in our possession do not show any request having been made to execute preventative works under S.33 of the Coal Mining Subsidence Act 1991.

Withdrawal of Support

The property lies within a geographical area in respect of which notices of entitlement to withdraw support were published in 1982,1946.

The property does not lie within a geographical area in respect of which a notice has been given under S.41 of the Coal Industry Act 1994, revoking the entitlement to withdraw support.

Working Facilities Orders

The property is not within a geographical area that is the subject of an Order made under the provisions of the Mines Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

Payments to Owners of Former Copyhold Land

The property is not within an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Additional Remarks

In view of the mining circumstances a prudent developer would seek appropriate technical advice before works are undertaken on site. All proposals should have regard to good engineering practice in mining areas as identified in authoritative publications on mining stability problems. In any event, no activities should be undertaken that intersect, disturb, or interfere with any coal or mines of coal without permission of the Coal Authority.

These replies are prepared in accordance with the Law Society's Guidance Notes 1998.

We acknowledge the receipt of your remittance in payment of our fee.

Yours faithfully

A Schofield

Albert Schofield

Director of Mining Records and Services

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SCALE: 1:10000

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This is a plan of the boundaries of the property in respect of which this report has been prepared. It is the responsibility of the user to ensure that the boundaries shown correspond with those of the property.

APPROXIMATE POSITION OF ENQUIRY BOUNDARY SHOWN

APPROXIMATE POSITION OF CLAIM BOUNDARIES SHOWN

APPROXIMATE POSITION OF DISUSED MINE SHAFTS SHOWN

APPROXIMATE POSITION OF DISUSED MINE ADITS SHOWN

This plan shows the approximate location of the disused mine entry/entries referred to in the attached mining report. For *reasons of clarity, mine entry symbols may not be drawn to the same scale as the plan.*

Property owners have the benefit of statutory protection (under the Coal Mining Subsidence Act 1991). This contains provision for the making good, to the reasonable satisfaction of the owner, of physical damage from disused coal mine workings *including disused coal mine entries.* A DTI *leaflet setting out the rights and the obligations of either the Coal Authority* or other responsible persons under the 1991 Act can be obtained by telephoning 0845 762 6848.

If you wish to discuss the relevance of any of the information contained in the attached report you should seek the advice of a qualified *mining* engineer or surveyor. If you or your adviser wish to examine the source plans from which the information has been taken these are available at our Mansfield office, free of charge, by prior appointment, telephone 01623 638233. Should you or your advisor wish to carry out any physical investigations that may enter, disturb or interfere with any disused mine entry the prior permission of the owner must be sought. For coal mine entries the owner will normally be the Coal Authority.

The Coal Authority, regardless of responsibility and in conjunction with other public bodies, provide an emergency call out facility in coalfield areas to assess the public safety implications of mining features (including disused mine entries). Our emergency telephone number at all times is 01623 646333.

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RECEIVED 07 MAY 2002

BARNSLEY
Metropolitan Borough Council

Planning & Transportation Service
Assistant Director, Planning & Transportation: Martin Kimber BA. DipTP. MRTPI
South Yorkshire Mining Advisory Service
Mining Advisory Manager: C. P. Naylor, CEng., MIMM.,
Central Offices, Kendray Street, Barnsley, S70 2TN
Tel: (01226) 772685 Fax: (01226) 772688
Email: SYMAS@barnsley.gov.uk

My Ref: CPN/SML/M2723 Your Ref: 2500

Date: 3rd May, 2002 Enquiries to: Mr. C. P. Naylor Dial Direct: (01226) 772685

AIG Consultants,
AIG House,
Audby Lane,
Wetherby,
West Yorkshire.
LS22 7RD

FOR THE ATTENTION OF MR. GARETH SHAW

Dear Sir,

GOLDTHORPE COLLIERY SITE

With reference to your facsimile request of the 16th April concerning any available information on the above site; I am enclosing copies of the reports and plans etc. listed below:

(i) Drawing M2723/1 - this is an extract from the colliery tip abandonment plan dated May 1994, prepared subsequent to the closure of the colliery on 1/2500 scale.

The plan shows some surface details of colliery buildings, the culvert under the tip, tip and lagoon details and the Bella Drift conveyor housing to the railway rapid loading bunker.

(ii) Drawing M2723/1A (SE 4604-1961) - this shows the locations of the former operational mineshafts nos. 1 and 2 and the Bella Drift Adit entrance. The shafts were sunk from 1909-1910 some 64 yds (59 m) to the Shafton Seam, with No. 1 Shaft having a diameter of 14 ft and No. 2 Shaft 12ft. Both shafts are thought to have been filled in the late 1960's after Goldthorpe combined with Highgate Mine.

(iii) The Bella Drift was driven between 1954 and 1957 to access reserves in the seam to the north-east of the colliery. Extracts of old drawings of the drivage show details of the geology etc., together with a memorandum dated 25th January, 1983.

(iv) Drawing M2723/1B (SE 4603-1961) - this extract of the original National Grid Sheet shows the sidings and electrical sub-station to the south-east of the colliery.

(v) Copies of the Regulation 18 Reports for Tips Nos. 1 and 2 give details regarding the condition of the two colliery tips as submitted to the Mines Inspectorate subsequent to them becoming disused.

(vi) A copy of the SYMAS Report dated January 1998, gives details of the colliery and tip inspection.

(vii) A copy of the British Coal Sectional Drawing GH/T/3.1 dated May 1994 shows geological sections along the lines indicated on drawing M2723/1.

(viii) Drawings M2723/1C and M2723/1D form extracts from the 1930 O.S. County Sheets 275/16 and 276/13 (1/2500 scale) and show details of the colliery at that time, together with the original route of West Moor Dike - since culverted under the tip.

(ix) Copies of the Goldthorpe Colliery Shaft Section and the relevant parts of the 1931 Geological Sheets 275 SE and 276 SW are attached.

(x) Drawing M2723/1E (1/10560 scale) indicates the location of past underground mineworkings in the Shafton Seam from mining records, in relation to the colliery shafts. Ancient unrecorded workings may be present, but a shaft/colliery pillar of protection appears to have been left.

Additional extractions took place in the past in deeper coal seams from other collieries in the area, but some form of shaft pillar was left in each seam. All the details are listed below:

Seam	Depth (m)	Thickness (mm)	Timing
Shafton	60	1550	Over 50 years
Newhill	280	1520	1970's to south
Meltonfield	305	1150	1960's to south-west
Barnsley	450	1700	1904 to 1933
Parkgate	700	1450	Over 50 years

All effects of subsidence from these operations would be complete over 20 years ago.

A specific report for the Goldthorpe Colliery Site has never been prepared by SYMAS, but I hope this information is helpful to you. Over a day's work has been involved finding and collating the data, which should cost around £250.00.

Yours faithfully,

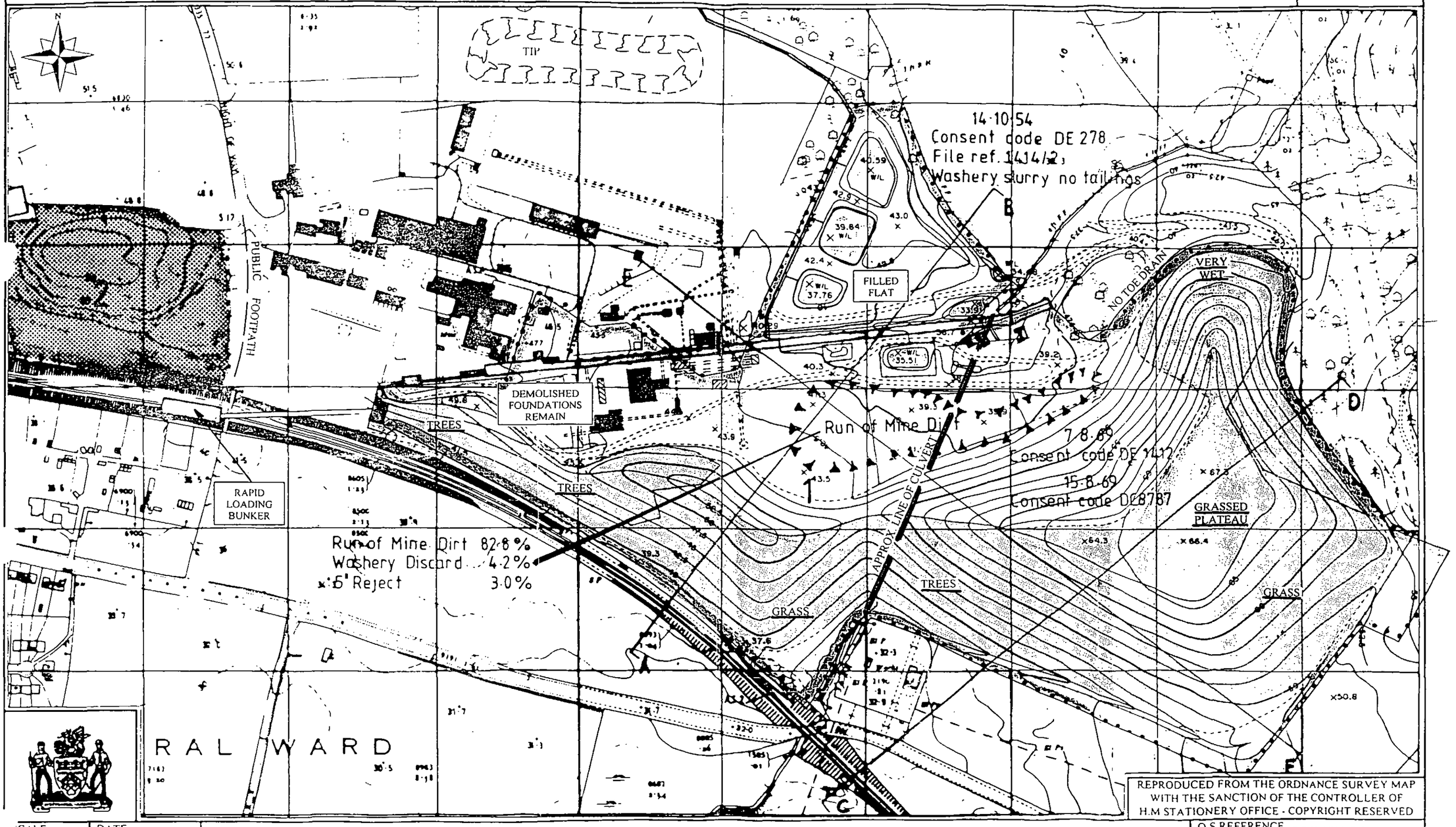
C. P. Naylor,
Mining Advisory Manager.

DRAWING TITLE

EXTRACT FROM GOLDTHORPE COLLIERY TIP ABANDONMENT PLAN

DRAWING NO

M 2723 / 1



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SCALE	DATE
1 / 2500	2 / 5 / 02
DRAWN BY	CHECKED BY
SML	CPN

SOUTH YORKSHIRE MINING ADVISORY SERVICE

O.S REFERENCE BRITISH COAL (MAY 1994)

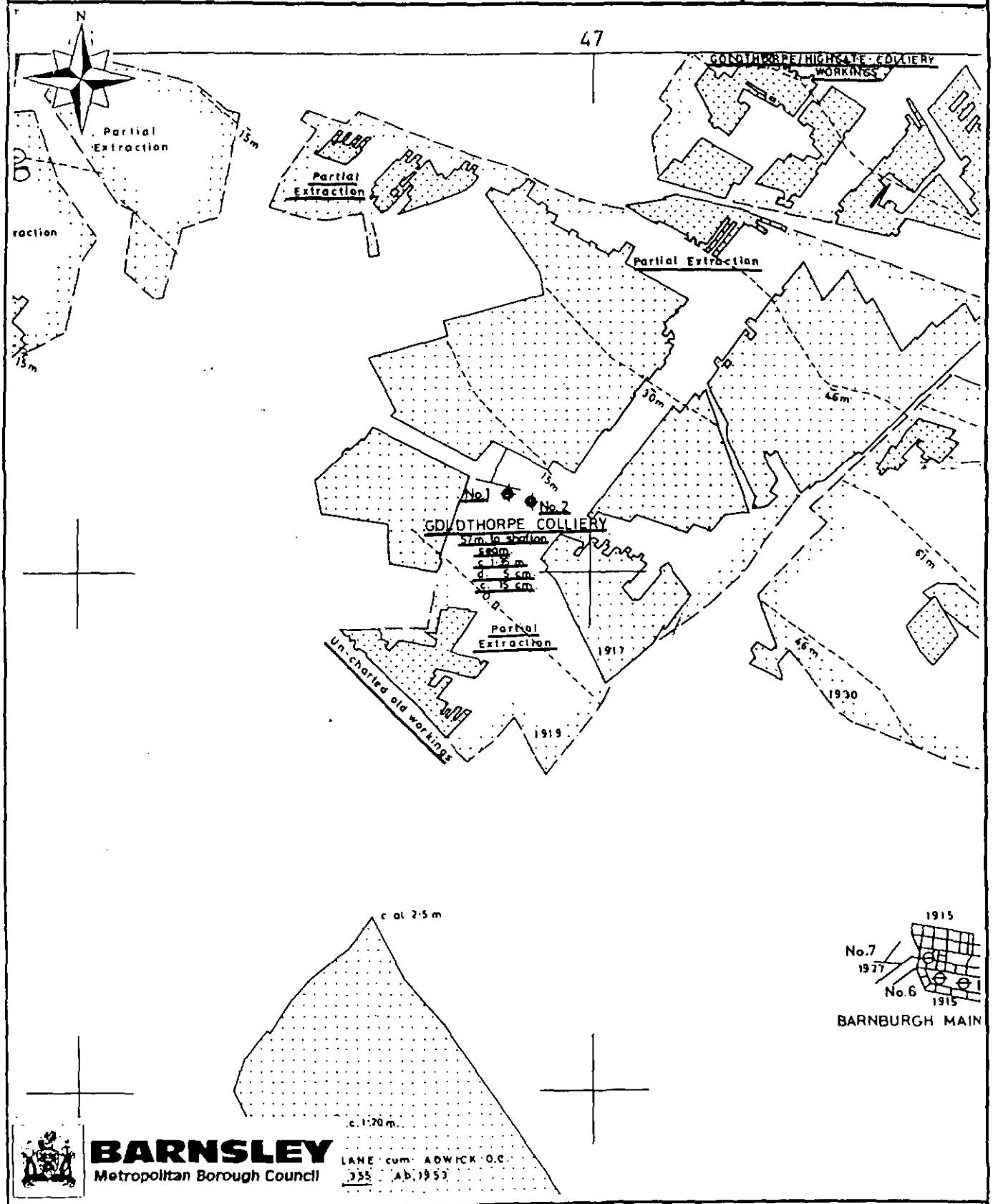
C. P. NAYLOR CEng MIMM
MINING ADVISORY MANAGER

DRAWING TITLE

GOLDTHORPE COLLIERY
WORKINGS IN SHAFTON SEAM

DRAWING NO.

M 2723 / 1E



BARNSLEY
Metropolitan Borough Council

LANE cum ADWICK O.C.
355 A.D. 1953

SCALE	DATE		O.S REFERENCE
1/10560	2/5/02	SOUTH YORKSHIRE MINING	SE 40 SE
DRAWN BY: SML	CHECKED BY: CPN	ADVISORY SERVICE	C. P. NAYLOR CEng MIMM MINING ADVISORY MANAGER

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APPENDIX C
HISTORICALOS PLANS & ENVIROCHECK REPORT

Data Type	0 to 50m	51 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological				
Air Pollution Controls		1		
Discharge Consents			2	
Enforcement and Prohibition Notices				
Integrated Pollution Controls				
Nearest Surface Water Feature			Yes	
Pollution Incidents to Controlled Waters				1
Prosecutions Relating to Authorised Processes				
Prosecutions Relating to Controlled Waters				
Red List Discharge Consents				
Registered Radioactive Substances		1		
River Quality			2	
Water Abstractions			2	(*2)
Groundwater Vulnerability	Yes			
Fluvial Indicative Floodplains				
Tidal Indicative Floodplains				
Source Protection Zones				
Waste				
BGS Recorded Landfill Sites				1
Integrated Pollution Control Registered Waste Sites				
Licensed Waste Management Facilities (Landfills)				
Registered Landfill Sites			1	3
Registered Waste Transfer Sites				
Registered Waste Treatment or Disposal Sites				
Hazardous Substances				
Control of Major Accident Hazards Sites (COMAH)				
Explosive Sites				
Notification of Installations Handling Hazardous Substances (NIHHS)				
Planning Hazardous Substance Consents				
Planning Hazardous Substance Enforcements				

Envirocheck®
A Landmark® product

Envirocheck® Report On:

Report on:
Goldthorpe Colliery
DEARNE

National Grid Reference :
447000, 404300

Prepared For :
AIG Consultants Limited
AIG House
Audby Lane
WETHERBY
West Yorkshire
LS22 7RD

Your Reference
Gareth Shaw,2500_EC

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Ordnance Survey County Series Published 1892

County	Mapsheet	Scale	Year
Yorkshire	275_16	1:2,500	1892
Yorkshire	276_13	1:2,500	1892

Ordnance Survey County Series Published 1906

County	Mapsheet	Scale	Year
Yorkshire	275_16	1:2,500	1906
Yorkshire	276_13	1:2,500	1906

Ordnance Survey County Series Published 1930

County	Mapsheet	Scale	Year
Yorkshire	275_16	1:2,500	1930
Yorkshire	276_13	1:2,500	1930

Ordnance Survey Plan Published 1962

National Grid Series	Mapsheet	Scale	Year
Ordnance Survey Plan	SE4603	1:2,500	1962
Ordnance Survey Plan	SE4604	1:2,500	1962
Ordnance Survey Plan	SE4703	1:2,500	1962
Ordnance Survey Plan	SE4704	1:2,500	1962

Ordnance Survey Plan Published 1961 to 1962

National Grid Series	Mapsheet	Scale	Year
Ordnance Survey Plan	SE4603NE	1:1,250	1961
Ordnance Survey Plan	SE4604NE	1:1,250	1962
Ordnance Survey Plan	SE4604SE	1:1,250	1962

Ordnance Survey Plan Published 1973 to 1981

National Grid Series	Mapsheet	Scale	Year
Ordnance Survey Plan	SE4604NE	1:1,250	1981
Ordnance Survey Plan	SE4604SE	1:1,250	1973

Ordnance Survey County Series Published 1851 to 1855

County	Mapsheet	Scale	Year
Yorkshire	275_00	1:10,560	1854
Yorkshire	276_00	1:10,560	1851
Yorkshire	283_00	1:10,560	1855
Yorkshire	284_00	1:10,560	1854

Ordnance Survey County Series Published 1893 to 1894

County	Mapsheet	Scale	Year
Yorkshire	275_SE	1:10,560	1894
Yorkshire	276_SW	1:10,560	1893
Yorkshire	283_NE	1:10,560	1893
Yorkshire	284_NW	1:10,560	1893

Ordnance Survey County Series Published 1903 to 1907

County	Mapsheet	Scale	Year
Yorkshire	275_SE	1:10,560	1906
Yorkshire	276_SW	1:10,560	1907
Yorkshire	283_NE	1:10,560	1905
Yorkshire	284_NW	1:10,560	1903

Ordnance Survey County Series Published 1938 to 1948

County	Mapsheet	Scale	Year
Yorkshire	275_SE	1:10,560	1938
Yorkshire	276_SW	1:10,560	1948
Yorkshire	283_NE	1:10,560	1938
Yorkshire	284_NW	1:10,560	1948

Ordnance Survey Plan Published 1956

National Grid Series	Mapsheet	Scale	Year
Ordnance Survey Plan	SE40NE	1:10,560	1956
Ordnance Survey Plan	SE40SE	1:10,560	1956

Ordnance Survey Plan Published 1966

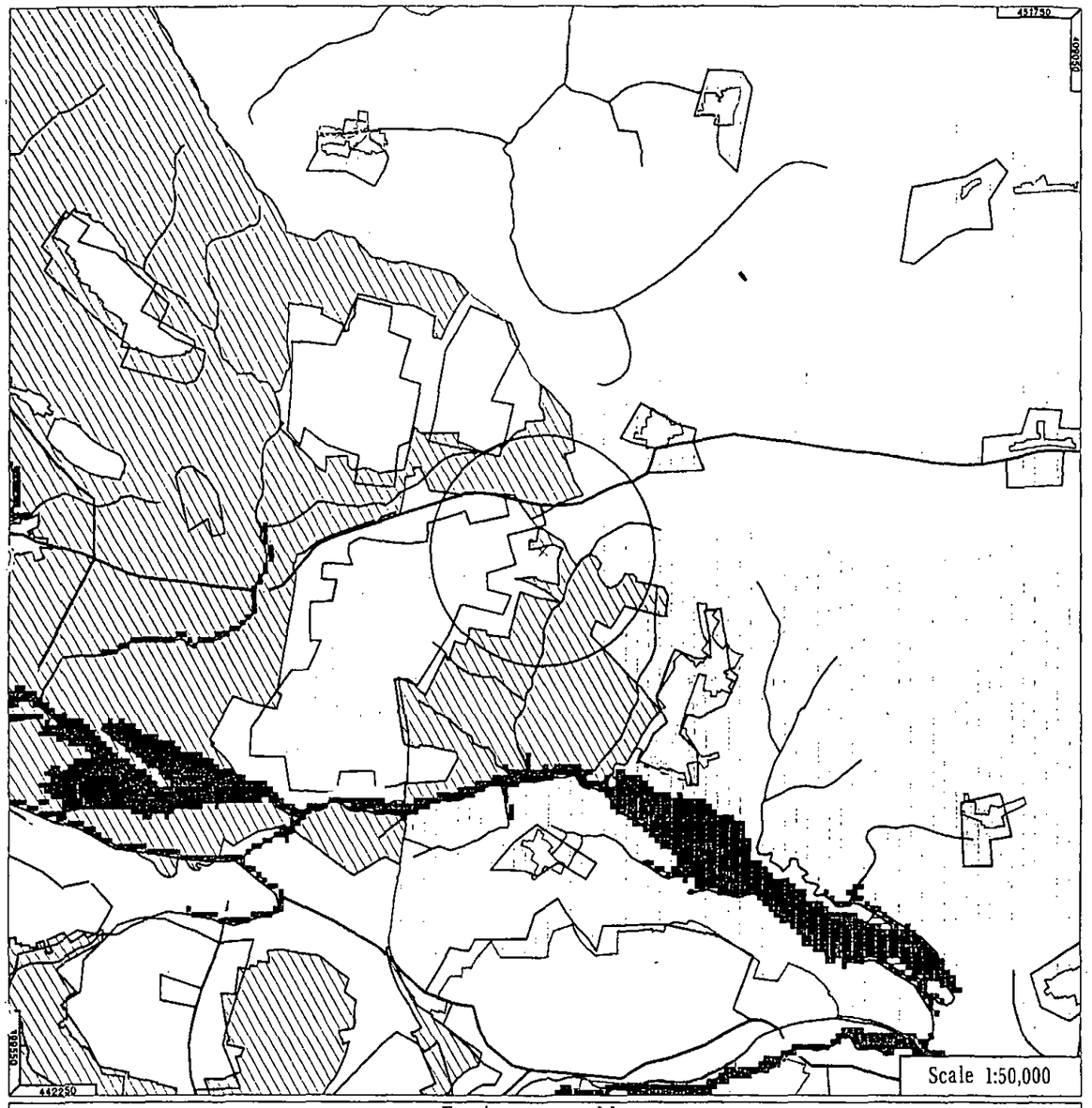
National Grid Series	Mapsheet	Scale	Year
Ordnance Survey Plan	SE40NE	1:10,560	1966
Ordnance Survey Plan	SE40SE	1:10,560	1966

Ordnance Survey Plan Published 1976 to 1983

National Grid Series	Mapsheet	Scale	Year
Ordnance Survey Plan	SE40NE	1:10,000	1983
Ordnance Survey Plan	SE40SE	1:10,000	1976

Ordnance Survey Plan Published 1988 to 1991

National Grid Series	Mapsheet	Scale	Year
Ordnance Survey Plan	SE40NE	1:10,000	1991
Ordnance Survey Plan	SE40SE	1:10,000	1988



Environment Map

- Urban Areas
- River Network and Water Features
- Motorways
- 0 - 1m estimated 100 yr flood depth
- 'A' Roads
- 1 - 2m estimated 100 yr flood depth
- Point from which direction is measured
- over 2m estimated 100 yr flood depth
- Buffer

The flooded areas have been generated using a generalised technique and should not, by themselves, be used to infer that specific areas are or are not at risk of inundation. Flood risk at any specific location may be influenced by local factors - not least flood defences - that have not been taken into account.

- Adopted Green Belt
- Areas of Oustanding Natural Beauty
- Environmentally Sensitive Areas
- Forest Parks
- Local Nature Reserves
- Ramsar Sites
- Sites of Special Scientific Interest
- Special Areas of Conservation
- Special Protection Areas
- Marine Nature Reserves
- National Nature Reserves
- National Scenic Areas
- National Parks
- Nitrate Sensitive Areas
- Nitrate Vulnerable Zones
- Unadopted Green Belt

Groundwater Vulnerability and River Quality Map

- Water
- Minor Aquifer Low
- Minor Aquifer High 3
- Minor Aquifer High U
- Major Aquifer High 3
- Minor Aquifer High 1
- Major Aquifer High U
- Drift Deposit
- River Quality D
- Canal Quality D
- River Quality E
- River Quality C
- River Quality F
- River Quality 0
- Sea

CLIENT DETAILS — Order No. EC111817_1_1 (27-Mar-2002 20:14)

Customer Ref: Gareth Shaw,2500_EC
AIG Consultants Limited
AIG House Audby Lane
WETHERBY
West Yorkshire LS22 7RD

SITE DETAILS — Grid Reference 447000 404300

Goldthorpe Colliery

DEARNE

ENVIRONMENT AGENCY

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CLIENT DETAILS Envirocheck Order No. EC111817_1_1
(27-Mar-2002 20:10)

Customer Ref: Gareth Shaw,2500_EC
AIG Consultants Limited
AIG House Audby Lane
WETHERBY
West Yorkshire LS22 7RD

SITE DETAILS Grid Reference 447000 404300

Goldthorpe Colliery

DEARNE

KEY TO THE LEGEND DATABASE

General

- Specified Site
- Buffer
- Reference Number
- Several of Type at Location
- Pylon or Mast
- North
- Map Scale=1:10,000

Agency and Hydrological

- Air Pollution Control
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- Red List Discharge Consent
- River Network and Water Feature
- Water Abstraction

Waste

- BGS Recorded Landfill Site
- BGS Recorded Landfill Site
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facilities (Landfill)
- Registered Landfill Site
- Registered Waste Treatment or Disposal Site
- Registered Waste Transfer Site

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

Geological

- BGS Borehole
- BGS Recorded Mineral Site

Industrial Land Use

- Fuel Station Entry
- Post 1995 Planning Application (of possible contaminative use)
- Contemporary Trade Directory Entry

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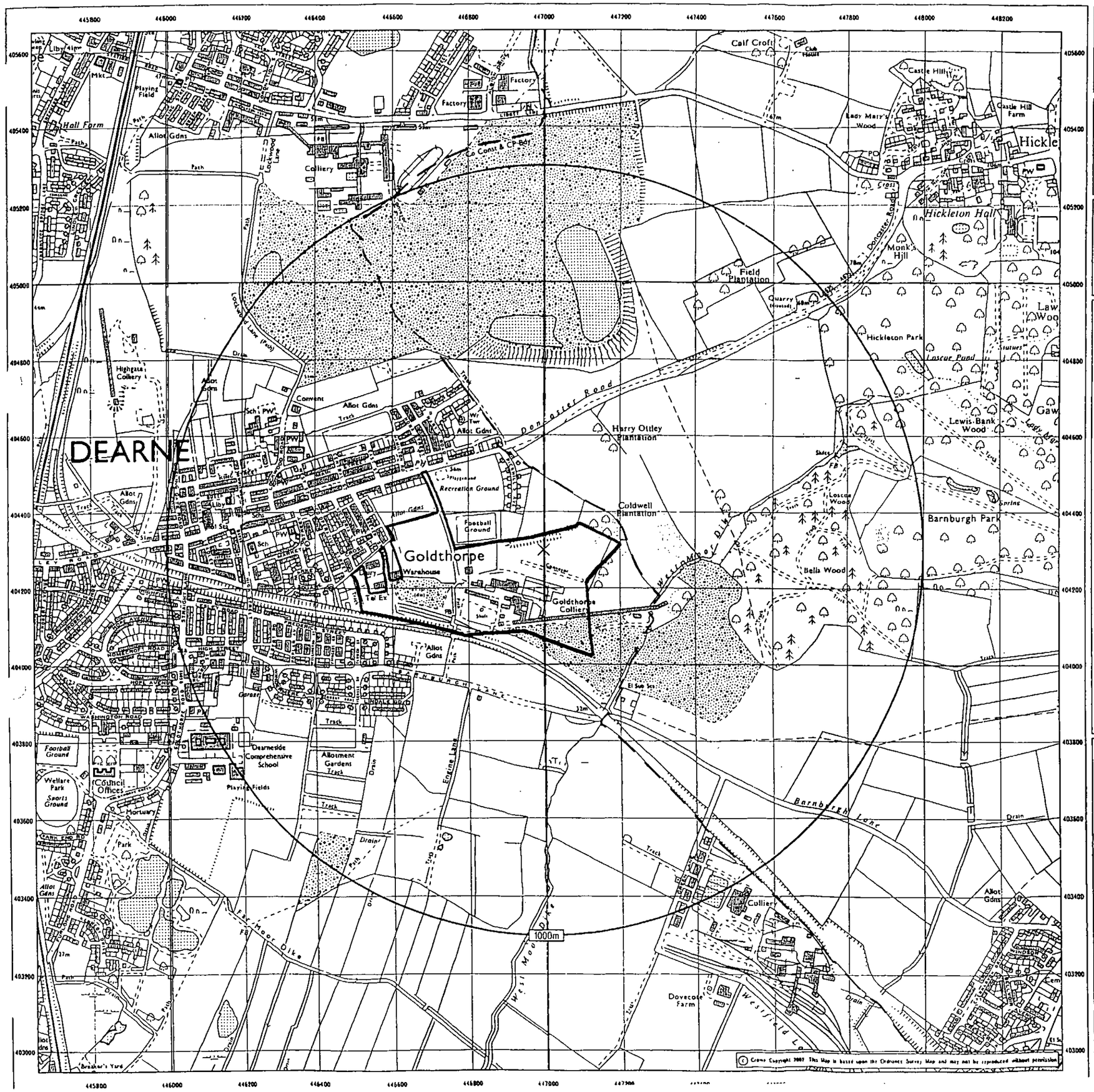

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Customer Ref: Gareth Shaw,2500_EC
AIG Consultants Limited
AIG House Audby Lane
WETHERBY
West Yorkshire LS22 7RD

SITE DETAILS — Grid Reference 447000 404300

Goldthorpe Colliery

DEARNE

Historical Map Legend

- Chalk Pit, Clay Pit or Quarry
- Gravel Pit
- Sand Pit
- Disused Pit or Quarry
- Refuse or Slag Heap
- Lake, Loch or Pond
- Non-Coniferous Trees
- Coniferous Trees
- Scrub
- Pylon / Pole — Electricity Transmission Line
- Direction of Flow of Water
- Shingle
- Sand
- Cutting / Embankment
- Road Under / Road Over / Level Crossing / Foot Bridge
- Bracken
- Heath
- Rough Grassland
- Reeds
- Marsh
- Saltings
- Standard Gauge Multiple Track
- Standard Gauge Single Track
- Siding, Tramway or Mineral Line
- Narrow Gauge

ORDNANCE SURVEY PLAN

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given on the right therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

North

Map Scale=1:10,000

Date(s) of Publication
1991
1988

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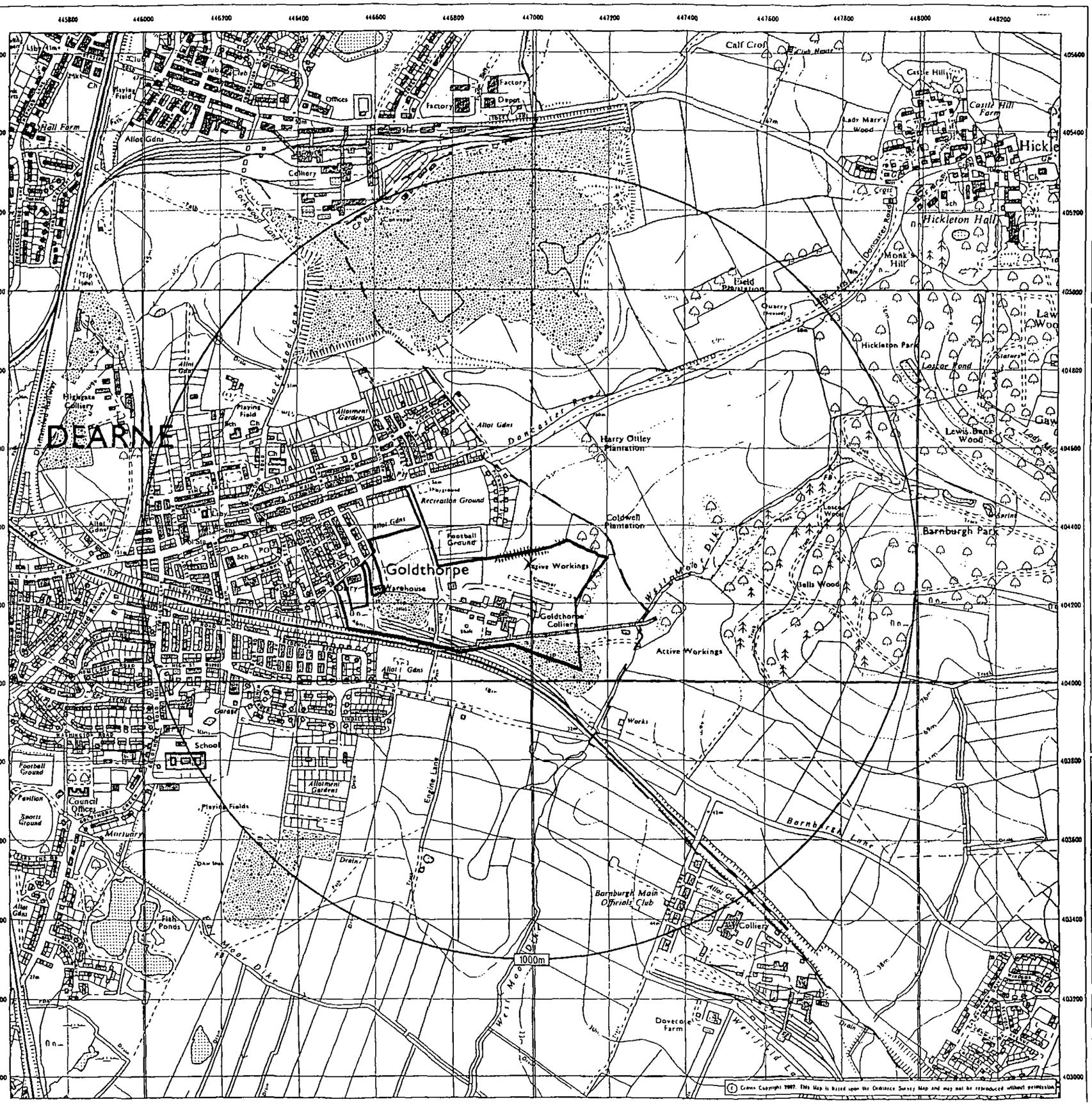

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West Yorkshire LS22 7RD

SITE DETAILS — Grid Reference 447000 404300

Goldthorpe Colliery

DEARNE

Historical Map Legend

- Chalk Pit, Clay Pit or Quarry
- Gravel Pit
- Sand Pit
- Disused Pit or Quarry
- Refuse or Slag Heap
- Lake, Loch or Pond
- Non-Coniferous Trees
- Coniferous Trees
- Scrub
- Pylon
- Electricity Transmission Line
- Pole
- Direction of Flow of Water
- Shingle
- Sand
- Bracken
- Heath
- Rough Grassland
- Reeds
- Marsh
- Saltings
- Cutting
- Embankment
- Road Under
- Road Over
- Level Crossing
- Foot Bridge
- Standard Gauge Multiple Track
- Standard Gauge Single Track
- Siding, Tramway or Mineral Line
- Narrow Gauge

ORDNANCE SURVEY PLAN

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given on the right therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

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North

Map Scale=1:10,000

Date(s) of Publication
1883
1976

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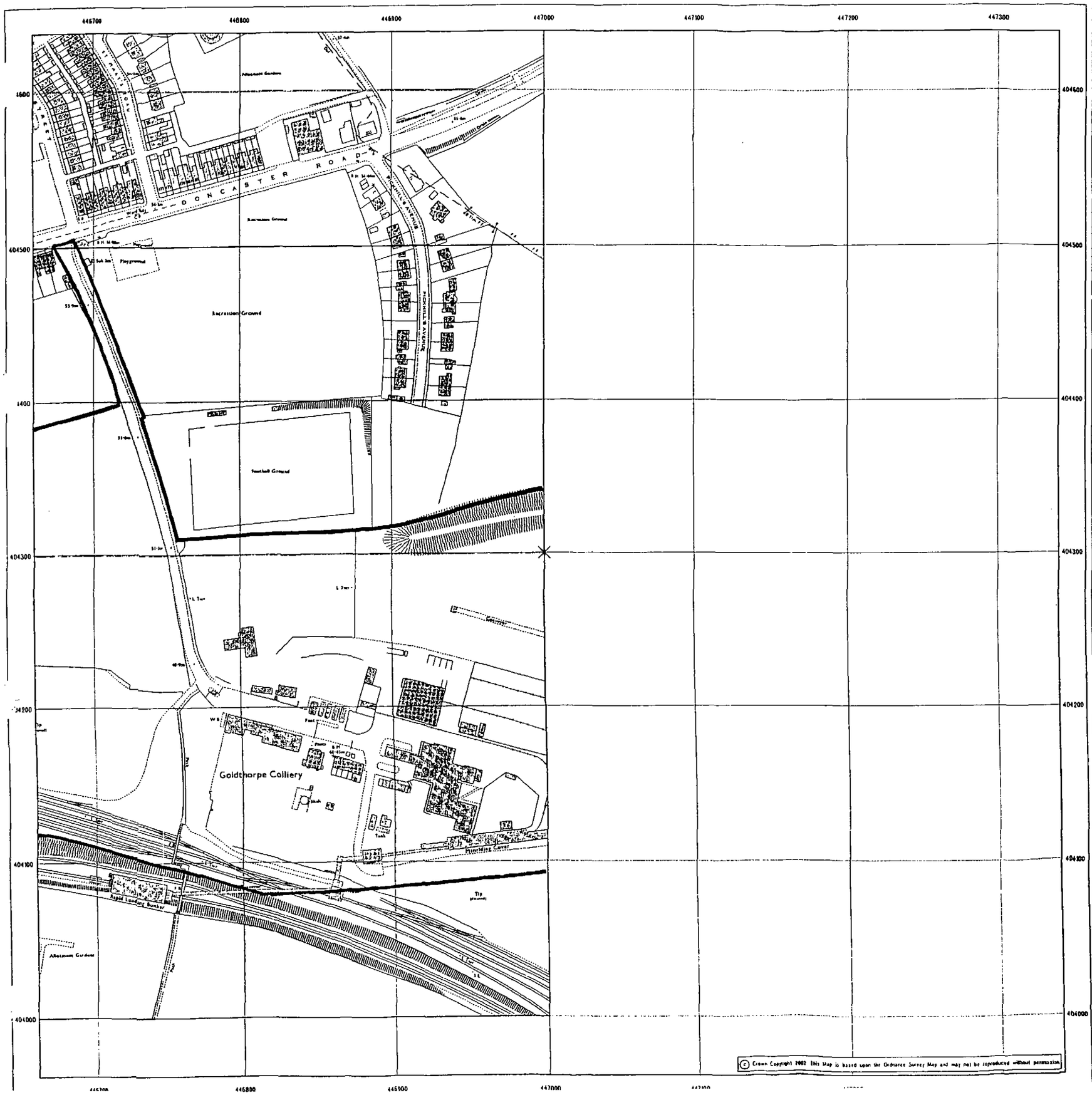

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(27-Mar-2002 20:28)

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WETHERBY
West Yorkshire LS22 7RD

SITE DETAILS

Grid Reference 447000 404300

Goldthorpe Colliery

DEARNE

Historical Map Legend

Chalk Pit, Clay Pit or Quarry
Gravel Pit
Sand Pit
Disused Pit or Quarry
Refuse or Slag Heap
Lake, Loch or Pond
Non-Coniferous Trees
Coniferous Trees
Scrub
Pylon
Pole
Electricity Transmission Line
Direction of Flow of Water
Shingle
Sand
Cutting
Embankment
Road Under
Road Over
Level Crossing
Foot Bridge
Bracken
Heath
Rough Grassland
Reeds
Marsh
Saltings
Standard Gauge Multiple Track
Standard Gauge Single Track
Siding, Tramway or Mineral Line
Narrow Gauge

ORDNANCE SURVEY PLAN

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1886 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given on the right is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

North

Map Scale=1:2,500

1901

1973

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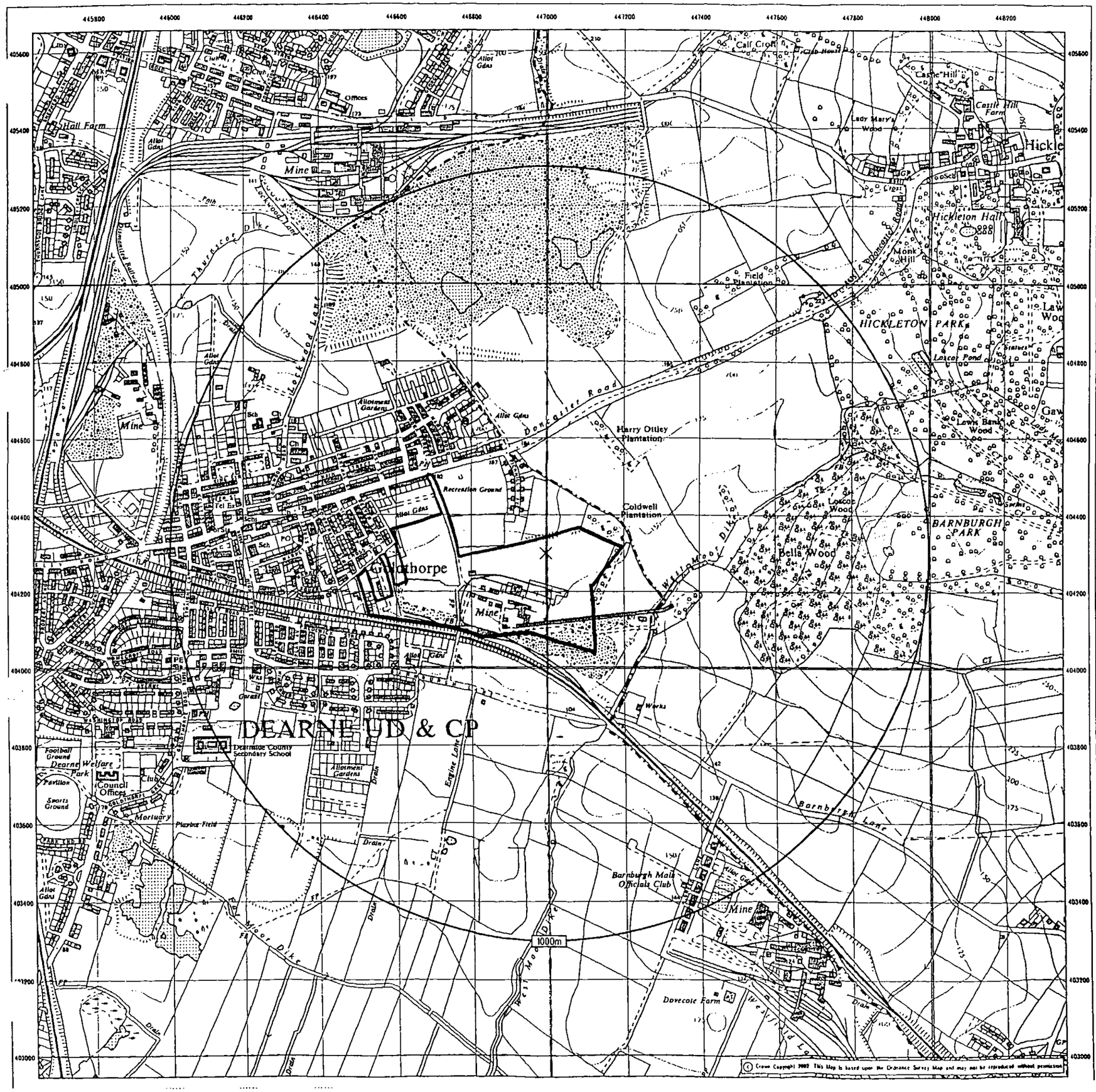

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(27-Mar-2002 20:44)

Customer Ref: Gareth Shaw,2500_EC
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AIG House Audby Lane
WETHERBY
West Yorkshire LS22 7RD

SITE DETAILS

Grid Reference 447000 404300

Goldthorpe Colliery

DEARNE

Historical Map Legend

Quarry
Shingle
Railway over Road
Road over Railway
Railway over River
Gravel Pit
Sand Pit
Level Crossing
Other Pits
Road over River or Canal
Road over Stream
Mixed Wood
Rough Pasture
Road over Stream
Marsh
Sunken Road
Raised Road
Sketched Contour
Arrow denotes flow of water
Instrumental Contour

ORDNANCE SURVEY PLAN

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given on the right therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

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North

Map Scale=1:10,000

Date(s) of Publication
1966
1966

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WETHERBY
West Yorkshire LS22 7RD

SITE DETAILS

Grid Reference 447000 404300

Goldthorpe Colliery

DEARNE

Historical Map Legend

- Chalk Pit, Clay Pit or Quarry
- Gravel Pit
- Sand Pit
- Disused Pit or Quarry
- Refuse or Slag Heap
- Lake, Loch or Pond
- Bracken
- Non-Coniferous Trees
- Heath
- Coniferous Trees
- Rough Grassland
- Scrub
- Pylon / Electricity Transmission Line / Pole
- Reeds
- Marsh
- Direction of Flow of Water
- Shingle / Sand
- Saltings
- Cutting / Embankment
- Standard Gauge Multiple Track
- Standard Gauge Single Track
- Road Under / Road Over / Level Crossing / Foot Bridge
- Siding, Tramway or Mineral Line
- Narrow Gauge

ORDNANCE SURVEY PLAN

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North

Map Scale=1:2,500

1962	1962

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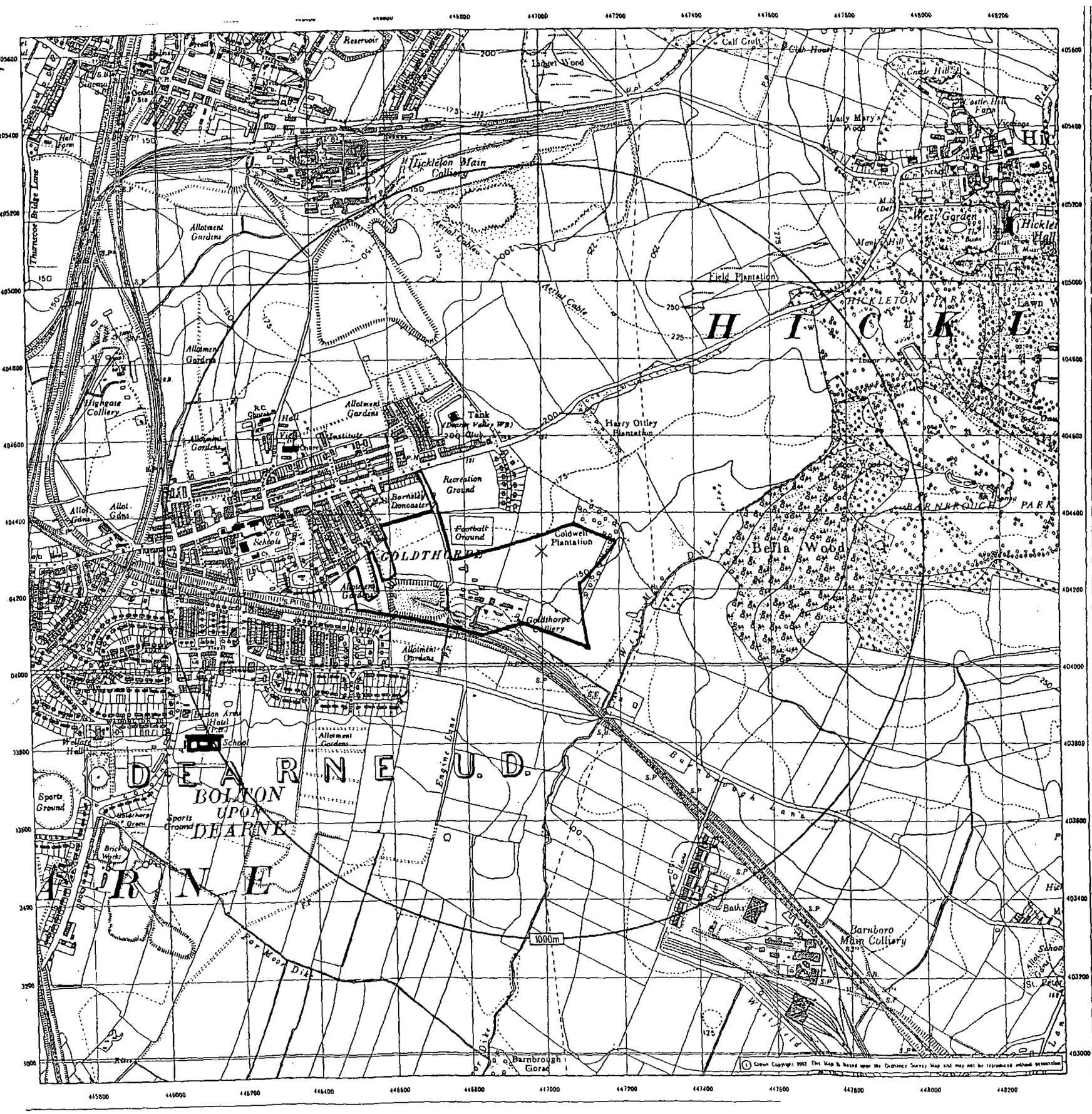
LANDMARK® Information Group



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(27-Mar-2002 20:41)

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WETHERBY
West Yorkshire LS22 7RD

SITE DETAILS

Grid Reference 447000 404300

Goldthorpe Colliery

DEARNE

Historical Map Legend

Quarry
Shingle
Railway over Road
Road over Railway
Railway over River
Gravel Pit
Sand Pit
Level Crossing
Other Pits
Road over River or Canal
Road over Stream
Mixed Wood
Rough Pasture
Road over Stream
Marsh
Sunken Road
Raised Road
Sketched Contour
Arrow denotes flow of water
Instrumental Contour

ORDNANCE SURVEY PLAN

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given on the right therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

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North.

Map Scale=1:10,000

Date(s) of Publication
1956
1956

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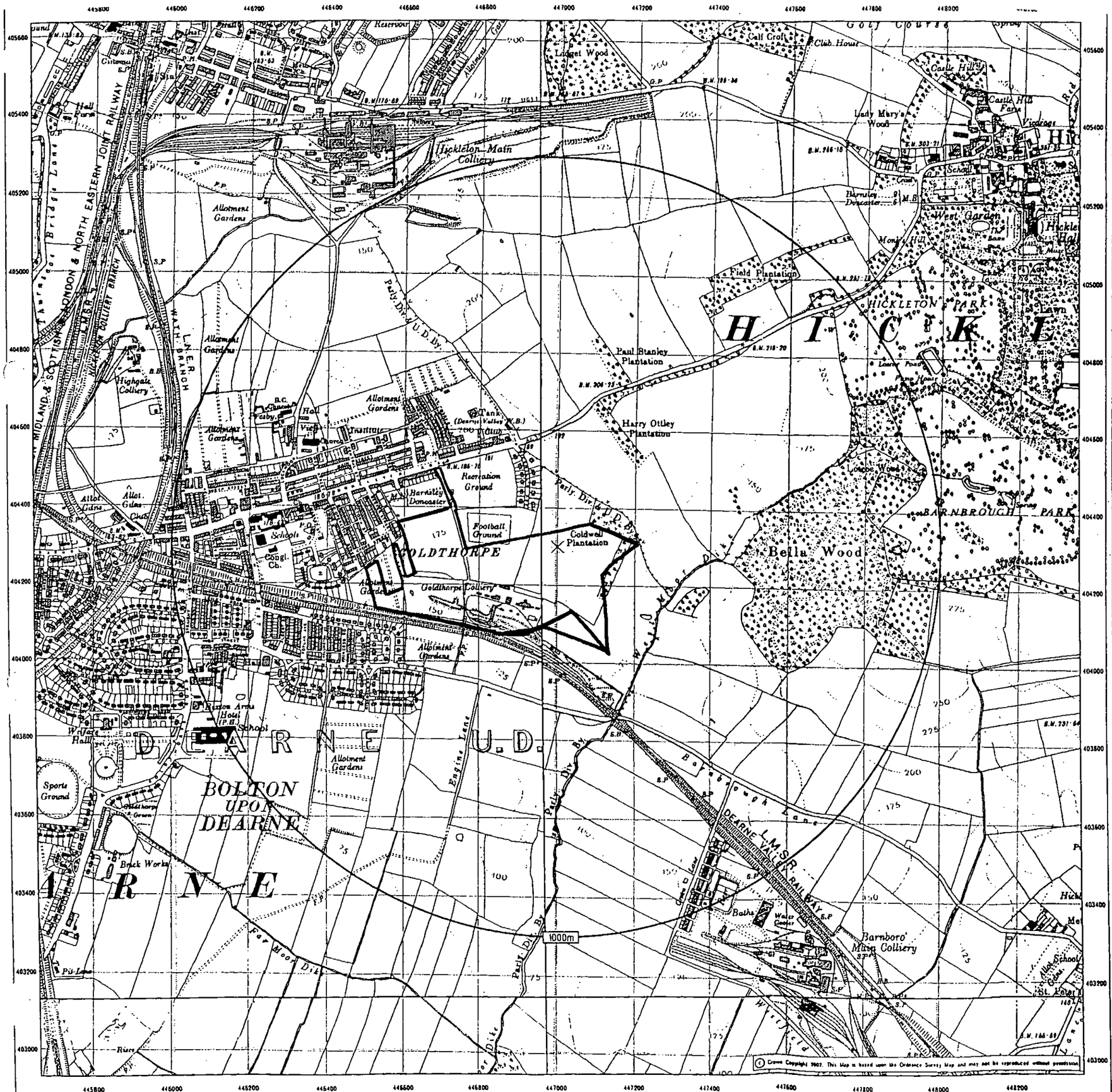

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AIG House Audby Lane
WETHERBY
West Yorkshire LS22 7RD

SITE DETAILS — Grid Reference 447000 404300

Goldthorpe Colliery

DEARNE

Historical Map Legend

Quarry
Shingle
Railway over Road
Road over Railway
Railway over River
Gravel Pit
Sand Pit
Level Crossing
Other Pits
Road over River or Canal
Road over Stream
Mixed Wood
Rough Pasture
Road over Stream
Sunken Road
Raised Road
Marsh
Sketched Contour
Arrow denotes flow of water
Instrumental Contour

YORKSHIRE

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1/2,500 scale was adopted for mapping urban areas; these maps were used to update the 1/10,560 maps. The published date given on the right therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

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North

Map Scale=1:10,000

1938	1948
1938	1948

Date(s) of Publication

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LANDMARK® Information Group

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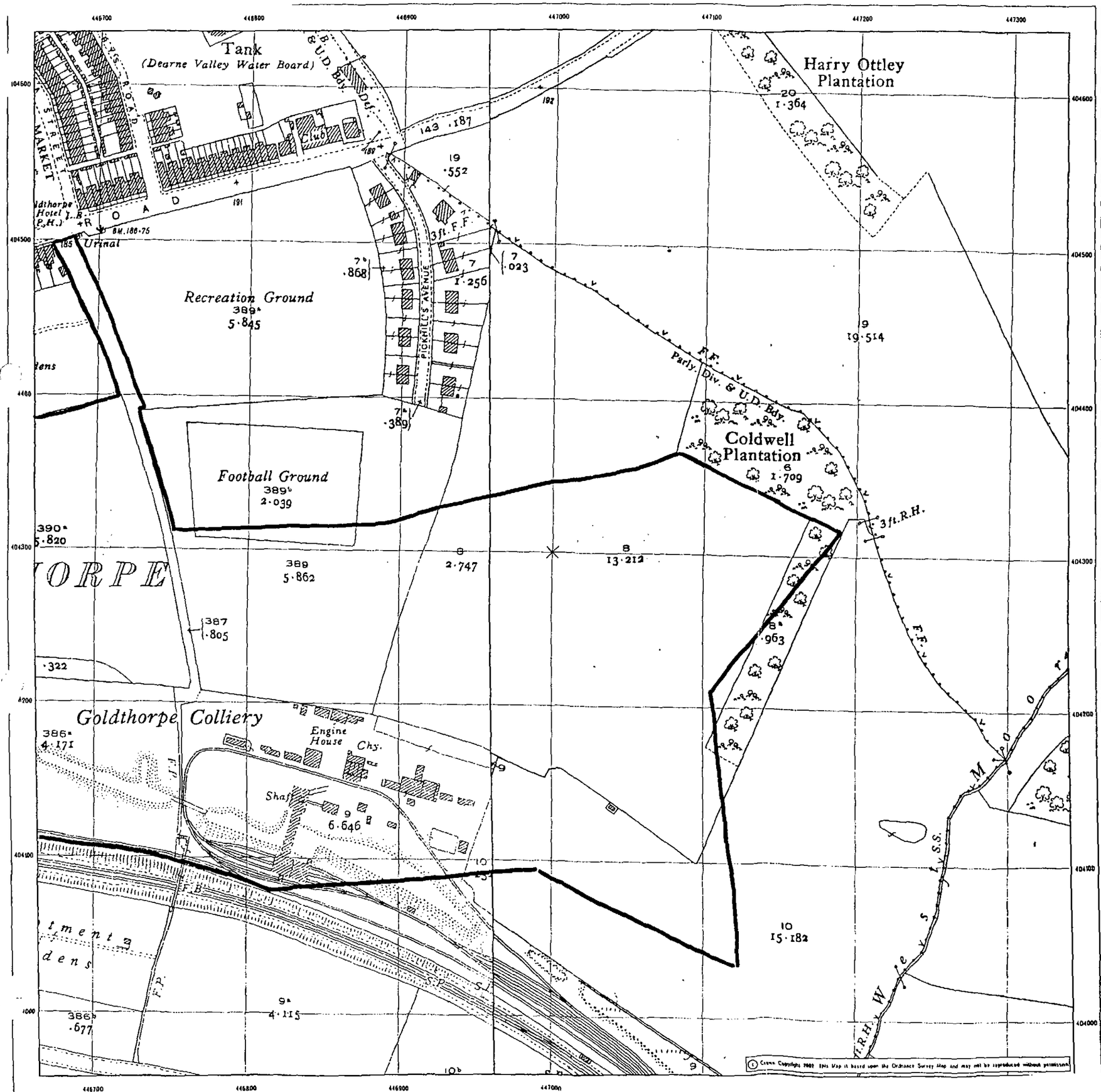

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AIG Consultants Limited
AIG House Audby Lane
WETHERBY
West Yorkshire LS22 7RD

SITE DETAILS

Grid Reference 447000 404300

Goldthorpe Colliery

DEARNE

Historical Map Legend

Quarry
Shingle
Railway over Road
Road over Railway
Railway over River
Gravel Pit
Sand Pit
Level Crossing
Other Pits
Road over River or Canal
Road over Stream
Mixed Wood
Rough Pasture
Road over Stream
Marsh
Sunken Road
Raised Road
Sketched Contour
Arrow denotes flow of water
Instrumental Contour

YORKSHIRE

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given on the right is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

1930	1930

North

Map Scale=1:2,500

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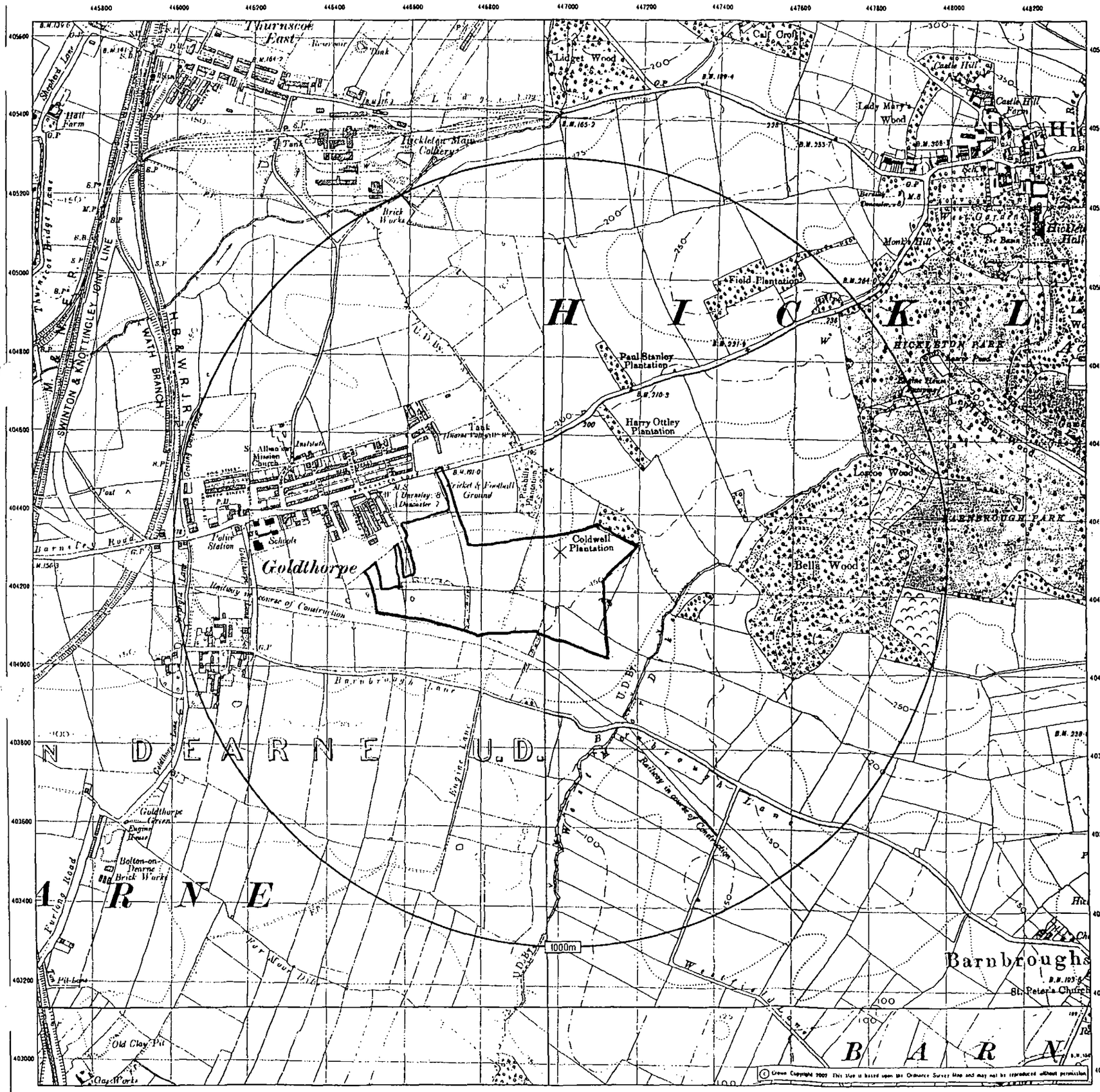

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WETHERBY
West Yorkshire LS22 7RD

SITE DETAILS

Grid Reference 447000 404300

Goldthorpe Colliery

DEARNE

Historical Map Legend

Quarry
Shingle
Railway over Road
Road over Railway
Railway over River
Gravel Pit
Sand Pit
Level Crossing
Other Pits
Road over River or Canal
Road over Stream
Mixed Wood
Rough Pasture
Road over Stream
Marsh
Sunken Road
Raised Road
Sketched Contour
Instrumental Contour
Arrow denotes flow of water

YORKSHIRE

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given on the right therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

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North

Map Scale=1:10,000

1906	1907
1905	1903

Date(s) of Publication

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WETHERBY
West Yorkshire LS22 7RD

SITE DETAILS

Grid Reference 447000 404300

Goldthorpe Colliery

DEARNE

Historical Map Legend

Quarry
Shingle
Railway over Road
Road over Railway
Railway over River
Gravel Pit
Sand Pit
Level Crossing
Other Pits
Road over River or Canal
Road over Stream
Mixed Wood
Rough Pasture
Road over Stream
Marsh
Sunken Road
Raised Road
Sketched Contour
Arrow denotes flow of water
Instrumental Contour

YORKSHIRE

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given on the right is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

1906	1906

North

Map Scale=1:2,500

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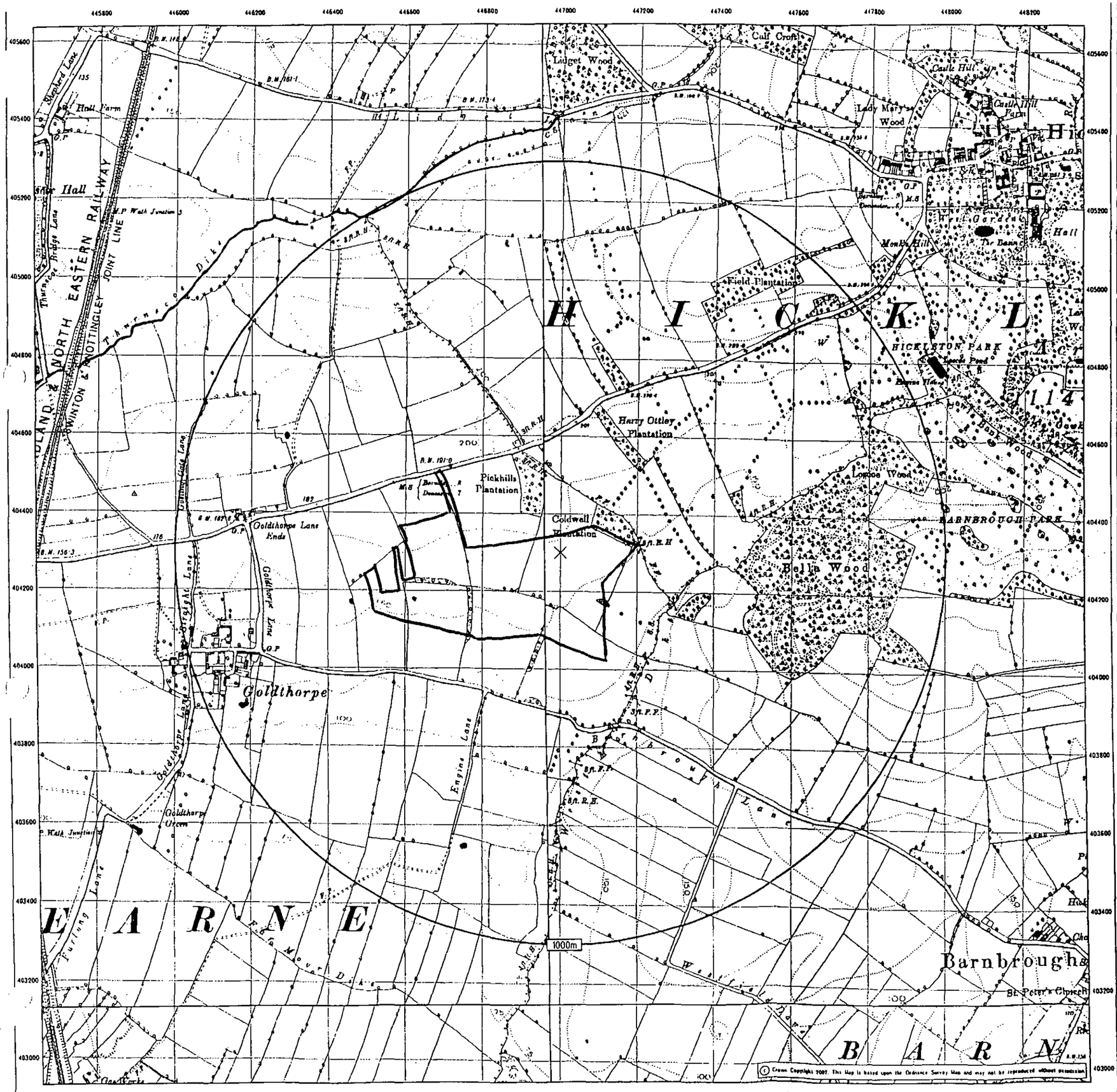

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(27-Mar-2007 20:34)

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AIG House Audby Lane
WETHERBY
West Yorkshire LS22 7RD

SITE DETAILS

Grid Reference 447000 404300

Goldthorpe Colliery

DEARNE.

Historical Map Legend

Quarry
Shingle
Railway over Road
Road over Railway
Railway over River
Gravel Pit
Sand Pit
Level Crossing
Other Pits
Road over River or Canal
Road over Stream
Mixed Wood
Rough Pasture
Road over Stream
Marsh
Sunken Road
Raised Road
Sketched Contour
Instrumental Contour
Arrow denotes flow of water

YORKSHIRE

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to *update the 1:10,560 maps. The published date given on the right* therefore is often some years later than the surveyed date. Before 1932, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

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North

Map Scale=1:10,000

1894	1893
1893	1893

Date(s) of Publication

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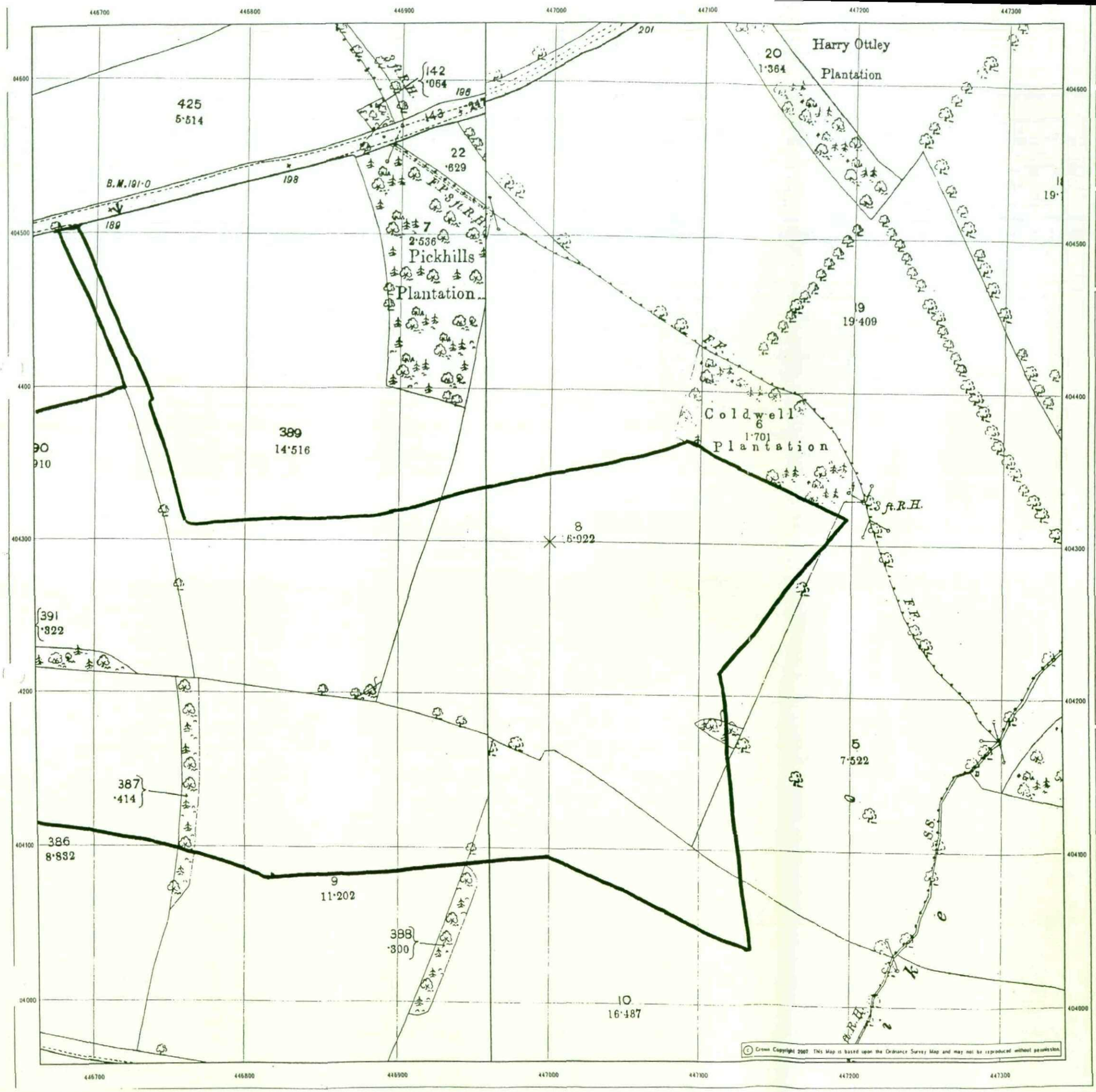

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(27-Mar-2002 20:16)

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AIG House Audby Lane
WETHERBY
West Yorkshire LS22 7RD

SITE DETAILS

Grid Reference 447000 404300

Goldthorpe Colliery

DEARNE

Historical Map Legend

Quarry
Shingle
Railway over Road
Road over Railway
Railway over River
Gravel Pit
Sand Pit
Level Crossing
Other Pits
Road over River or Canal
Road over Stream
Mixed Wood
Rough Pasture
Road over Stream
Marsh
Sunken Road
Raised Road
Sketched Contour
Arrow denotes flow of water
Instrumental Contour

YORKSHIRE

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given on the right is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

North

Map Scale=1:2,500

1892	1892

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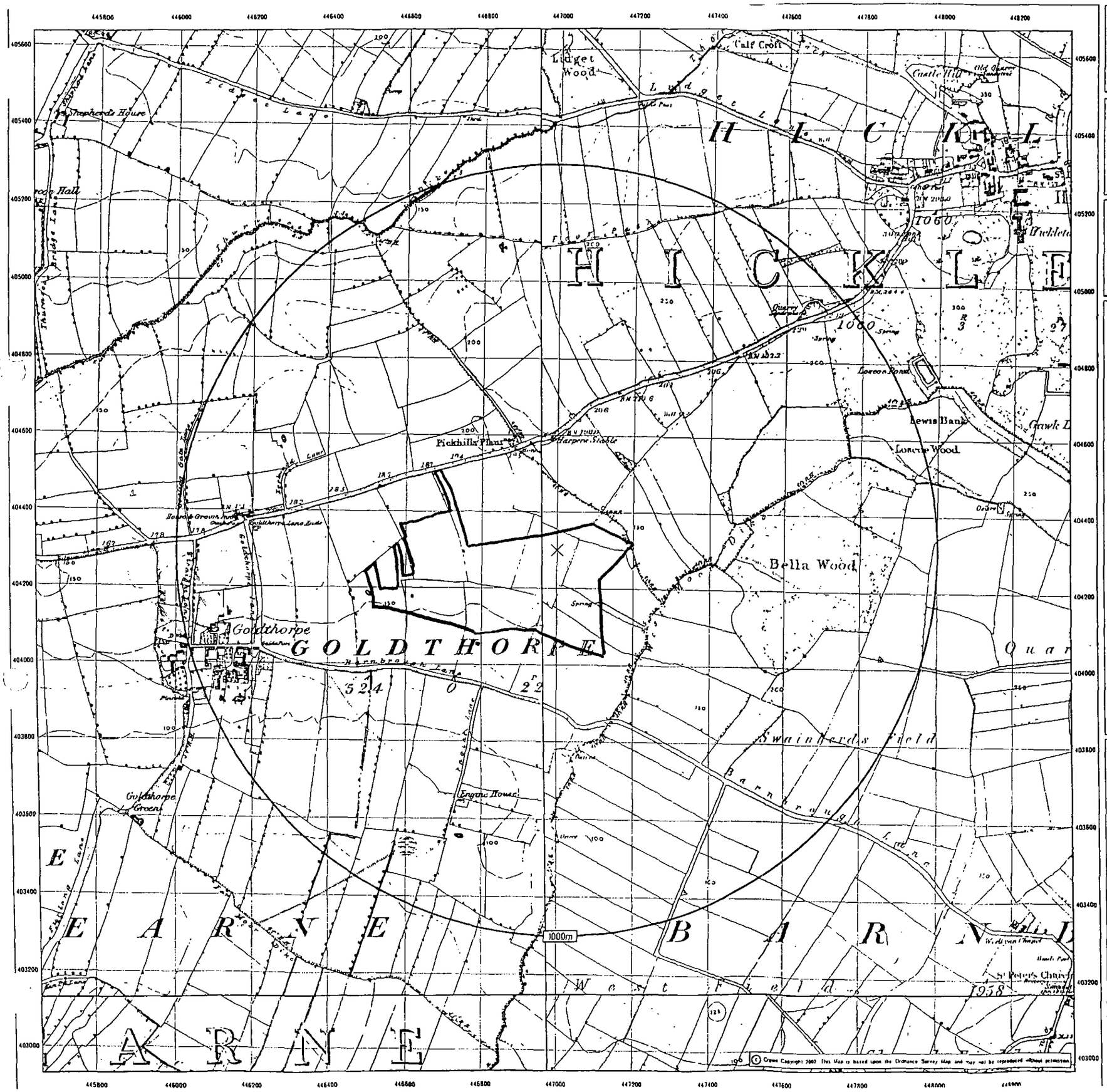

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(27-Mar-2002 20:31)

Customer Ref: Gareth Shaw,2500_EC
AIG Consultants Limited
AIG House Audby Lane
WETHERBY
West Yorkshire LS22 7RD

SITE DETAILS

Grid Reference 447000 404300

Goldthorpe Colliery

DEARNE

Historical Map Legend

Quarry
Shingle
Railway over Road
Road over Railway
Railway over River
Gravel Pit
Sand Pit
Level Crossing
Other Pits
Road over River or Canal
Road over Stream
Mixed Wood
Rough Pasture
Road over Stream
Marsh
Sunken Road
Raised Road
Sketched Contour
Arrow denotes flow of water
Instrumental Contour

YORKSHIRE

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given on the right therefore is often some years later than the surveyed date. *Before 1932, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.*

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North

Map Scale=1:10,000

1854	1851
1855	1854

Date(s) of Publication

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APPENDIX D
TRIAL PIT LOGS

KEY TO LOGS
Symbols & Legends

AIG CONSULTANTS

SAMPLES/TESTS

SYMBOL	EXPLANATION
D	Small representative disturbed sample (c. 1kg)
B	Bulk representative disturbed sample (>5kg)
D* or B*	Unrepresentative small/bulk sample
U	Undisturbed sample (100mm Ø)
W	Water sample
S	Standard Penetration Test
C	Cone Penetration Test
V	In-situ shear vane reading

SPT results are presented as S=N, where N is the number of blows for 300mm penetration. CPT results are presented in a similar manner, as C=N. If full penetration is not achieved, an extrapolated value is calculated or the result is reported as N/x mm, where N is the number of blows for a penetration of x mm

WATER STRIKES

SYMBOL	EXPLANATION
▽	Depth at which water first struck
▼	Level to which water rose during excavation (This may not be the equilibrium water level)

BACKFILL LEGENDS

LEGEND	EXPLANATION
	Concrete
	Bentonite seal
	Gravel
	Arisings
	Well casing
	Well screen

SOIL/ROCK LEGENDS

LEGEND	EXPLANATION
	Made Ground
	Topsoil
	Clay
	Silt
	Sand
	Gravel
	Cobble
	Boulder
	Mudstone
	Siltstone
	Sandstone
	Coal
	Limestone
	Composite soil types are shown as combined symbols. The example shown is sandy CLAY

KEY TO LOGS
(Terms & Definitions)

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SOIL STRENGTH

COHESIVE SOILS		
Descriptor	**Undrained Cohesion/kPa**	**Approx SPT N value**
Very soft	<20	<4
Soft	20-40	4-8
Firm	40-75	8-15
Stiff	75-150	15-30
Very Stiff	>150	>30

GRANULAR SOILS	
Descriptor	**Approx SPT N value**
Very loose	<4
Loose	4-10
Medium dense	10-30
Dense	30-50
very Dense	>50

AMOUNT OF MINOR CONSTITUENTS

Descriptor before SOIL NAME	Amount of Minor Constituent/%	Descriptor after SOIL NAME
	<1	with a trace
Slightly ---y	1-5	with a little/occasional
---y	5-20	with some
Very ---y	>20	with much
and	50-50	

PARTICLE SIZE

Soil Constituent	Grain size/mm
Boulder	>200
Cobble	60-200
Coarse Gravel	20-60
Medium Gravel	6-20
Fine Gravel	2-6
Coarse Sand	0.6-2
Medium Sand	0.2-0.6
Fine Sand	0.06-0.2
Silt	0.002-0.06
Clay	<0.002

BEDDING/DISCONTINUITY SPACING

Spacing/mm	Bedding	Fractures	General
>2000	Very thickly bedded	Scarcely fractured	Very widely
600-2000	Thickly bedded	Slightly fractured	Widely
200-600	Medium bedded	Moderately fractured	Medium
60-200	Thinly bedded	Highly fractured	Closely
20-60	Very thinly bedded	Very highly fractured	Very closely
6-20	Thickly laminated	Intensely fractured	Extremely closely
<6	Thinly laminated		

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP101

DATE 9 Apr 02 Co-ords 446632E 404154N Sheet 1 of 1

Ground Level 46.0mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Friable dry light brown slightly sandy clay with occasional rootlets. (TOPSOIL)	0.30	45.72		
1D	0.50		MADE GROUND: ?Firm moist dark grey very gravely clay. Gravel is angular fine to coarse of mudstone with rare coal. (COLLIERY SPOIL - MIXED)	0.80	45.22		
2D	0.85		MADE GROUND: ?Loose dry dark grey slightly sandy angular to subrounded fine to coarse gravel of ash and clinker. (COLLIERY SPOIL - MIXED)	0.90	45.12		
3D	1.10		MADE GROUND: ?Firm moist red-brown mottled yellow very gravely clay. Gravel is angular fine to coarse of red shale. (COLLIERY SPOIL- RED SHALE)	2.60	43.42	▼	
4D	3.00		?Firm moist grey and green mottled CLAY with occasional decomposed plant remains. Natural organic odour. (RELICT TOPSOIL)	3.10	42.92		
			?Firm moist light brown and grey mottled slightly sandy CLAY. (WEATHERED MIDDLE COAL MEASURES)	3.90	42.12		
			End of trial pit at 3.90 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: Seepage at 2.6m.
3. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.8m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP102

DATE 9 Apr 02 Co-ords 446669E 404145N Sheet 1 of 1

Ground Level 45.8mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Friable dry light brown slightly sandy clay with occasional rootlets. (TOPSOIL)	0.50	45.33		
1D	0.60		MADE GROUND: ?Loose dry dark grey slightly sandy angular to subrounded fine to coarse gravel of ash and clinker. (COLLIERY SPOIL - MIXED)	0.90	44.93		
			MADE GROUND: ?Loose dry red-orange slightly clayey angular fine to coarse gravel of red shale with rare coal. (COLLIERY SPOIL - RED SHALE)	2.30	43.53	▼	
			Firm moist grey and green mottled CLAY.	2.60	43.23		
2B	3.00	V= 65kPa (2.80m)	?Firm dry light brown slightly sandy thinly laminated CLAY with occasional angular fine to coarse gravel of sandstone and mudstone. (WEATHERED MIDDLE COAL MEASURES)	3.80	42.03		
			End of trial pit at 3.80 m				

Remarks

1. *Stability: Slight spalling of sides during excavation from 0.9 to 2.3m.*
2. Groundwater: Seepage at 2.3m.
3. *Vane test at 2.8m carried out on excavated material.*
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.8m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP103

DATE 9 Apr 02 Co-ords 446707E 404136N Sheet 1 of 1

Ground Level 45.6mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Friable dry light brown slightly sandy clay with occasional rootlets. (TOPSOIL)	0.40	45.22		
			MADE GROUND: Damp dark grey slightly clayey angular to subrounded fine to coarse gravel of mudstone, coal, ash and clinker. (COLLIERY SPOIL - MIXED)				
1D	1.00			1.10	44.52		
			MADE GROUND: ?Loose dry orange-brown and grey angular fine to coarse gravel of red shale. (COLLIERY SPOIL - RED SHALE)	1.70	43.92		
			?Firm moist grey and green mottled CLAY with occasional decomposed plant remains. Natural organic odour. (RELICT TOPSOIL)	1.80	43.82		
		V= 100kPa (2.00m)	Stiff moist light brown mottled grey CLAY with rare subrounded fine to medium gravel of ironstone. (WEATHERED MIDDLE COAL MEASURES)				
2B	2.50						
		V= 120kPa (3.00m)					
			?Weak light brown thinly laminated fine to medium grained SANDSTONE. (MIDDLE COAL MEASURES)	3.20	42.42		
			End of trial pit at 3.30 m	3.30	42.32		

Remarks

1. *Stability: Trail pit stable.*
2. Groundwater: None encountered.
3. Vane tests at 2.0 and 3.0m carried out on excavated material.
4. Railway line encountered at 0.3m.
5. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.8m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP104

DATE 9 Apr 02 Co-ords 446804E 404117N Sheet 1 of 2

Ground Level 45.6mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
1D	0.10		MADE GROUND: Friable dry light brown slightly sandy clay with occasional rootlets. (TOPSOIL)	0.25	45.32		
			MADE GROUND: Damp dark grey very clayey angular fine to coarse gravel of mudstone, coal and ash with occasional bricks. (COLLIERY SPOIL - MIXED)	0.70	44.87		
			MADE GROUND: ?Loose damp grey occasionally red-orange slightly clayey angular fine to coarse gravel of mudstone. (COLLIERY SPOIL - MIXED)	2.30	43.27	▼	
		V= 130kPa (2.50m)	Firm moist grey and green mottled CLAY. (RELICT TOPSOIL)	2.40	43.17		
			Stiff moist light brown and grey mottled CLAY with rare subangular to subrounded fine to medium gravel of ironstone. (WEATHERED MIDDLE COAL MEASURES)				
			Cont...	4.00	41.57		

Remarks

1. Stability: Trial pit stable.
2. Groundwater: Seepage at 2.3m.
3. Vane test at 2.5m carried out on excavated material.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.8m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP104

DATE 9 Apr 02 Co-ords 446804E 404117N Sheet 2 of 2

Ground Level 45.6mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			Stiff moist light brown and grey mottled CLAY with rare subangular to subrounded fine to medium gravel of ironstone. (WEATHERED MIDDLE COAL MEASURES)	4.00	41.57		
			?Moderately weak light brown fine to medium grained SANDSTONE. (MIDDLE COAL MEASURES)	4.10	41.47		
			End of trial pit at 4.10 m				

Remarks

1. Stability: Trial pit stable.
2. *Groundwater: Seepage at 2.3m.*
3. Vane test at 2.5m carried out on excavated material.
4. *Backfill: Trial pit backfilled with arisings on completion.*

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.8m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP105

DATE 9 Apr 02 Co-ords 446851E 404080N Sheet 1 of 1

Ground Level 43.4mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
1D	0.30		MADE GROUND: Wet black angular fine to medium gravel of coal with occasional bricks. (COLLIERY SPOIL - COAL)	0.40	43.05		
			MADE GROUND: Grey reinforced CONCRETE. Reinforcement 1 layer of 7mm diameter steel at 150 x 150mm spacing.	0.70	42.75		
			?Stiff moist orange-brown and grey gravelly CLAY. Gravel is angular fine to coarse of sandstone. (WEATHERED MIDDLE COAL MEASURES)	2.10	41.35		
			?Weak light brown with occasional red-brown iron staining fine to medium grained SANDSTONE. (MIDDLE COAL MEASURES)	2.20	41.25		
			End of trial pit at 2.20 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.8m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP106

DATE 9 Apr 02 Co-ords 446908E 404064N Sheet 1 of 1

Ground Level 42.9mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: ?Firm moist brown gravely clay. Gravel is angular fine to coarse of mudstone and coal. (COLLIERY SPOIL - COAL)	0.20	42.68		
1D	0.60		MADE GROUND: Damp dark grey clayey angular fine to coarse gravel of mudstone and coal with occasional bricks, timber and metal (10%). (COLLIERY SPOIL - MIXED)				
				2.30	40.58		
2B	2.70		?Stiff dry light brown and grey mottled slightly gravely CLAY with occasional cobbles of sandstone. Gravel is angular fine to coarse of sandstone. (WEATHERED MIDDLE COAL MEASURES)				
				3.00	39.88		
			?Moderately weak light brown fine to medium grained SANDSTONE. (MIDDLE COAL MEASURES)	3.10	39.78		
			End of trial pit at 3.10 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.8m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP107

DATE 9 Apr 02 Co-ords 446941E 404061N Sheet 1 of 2

Ground Level 45.2mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: ?Firm dry brown slightly sandy gravely clay with occasional rootlets. Gravel is angular fine to coarse of sandstone and mudstone. (TOPSOIL)	0.30	44.88		
1D	0.70		MADE GROUND: Damp dark grey clayey angular fine to coarse gravel of mudstone and coal with occasional bricks, plastic, timber, conveyor belt, metal and 1no. lorry tyre (20%). (COLLIERY SPOIL - MIXED)	2.30	42.88	▼	
2D	2.50		MADE GROUND: Damp dark grey clayey angular to subangular fine to coarse gravel of mudstone with occasional cobbles of mudstone. (COLLIERY SPOIL - MIXED)				
			Cont...				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: Seepage at 1.5m.
3. Brick wall in north face from 2.4 to 4.6m.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.8m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP107

DATE 9 Apr 02 Co-ords 446941E 404061N Sheet 2 of 2

Ground Level 45.2mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Damp dark grey clayey angular to subangular fine to coarse gravel of mudstone with occasional cobbles of mudstone. (COLLIERY SPOIL - MIXED)	4.60	40.58		
			?Moderately weak light brown fine to medium grained SANDSTONE. (MIDDLE COAL MEASURES)	4.70	40.48		
			End of trial pit at 4.70 m				

Remarks

1. *Stability: Trial pit stable.*
2. Groundwater: Seepage at 1.5m.
3. Brick wall in north face from 2.4 to 4.6m.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.8m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP108

DATE 9 Apr 02 Co-ords 446967E 404066N Sheet 1 of 2

Ground Level 48.4mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: ?Firm dry brown and grey mottled slightly sandy gravely clay. Gravel is angular to subangular fine to coarse of brick, mudstone and coal. (COLLIERY SPOIL - MIXED)	0.50	47.94		
			MADE GROUND: Damp dark grey clayey angular fine to coarse gravel of mudstone with occasional bricks, plastic, timber, conveyor belt and metal (15%). Slight organic/sulphur odour. (COLLIERY SPOIL - MIXED)				
1D	3.50		*Cont...*				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.8m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP108

DATE 9 Apr 02 Co-ords 446967E 404066N Sheet 2 of 2

Ground Level 48.4mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Damp dark grey clayey angular fine to coarse gravel of mudstone with occasional bricks, plastic, timber, conveyor belt and metal (15%). Slight organic/sulphur odour. (COLLIERY SPOIL - MIXED)	4.80	43.64		
			End of trial pit at 4.80 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.8m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP109

DATE 9 Apr 02 Co-ords 447021E 404041N Sheet 1 of 2

Ground Level 48.7mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Friable dry brown slightly sandy clay with some rootlets. (TOPSOIL)	0.30	48.35		
1D	1.00		MADE GROUND: Damp dark grey and brown clayey angular to subangular fine to coarse gravel of mudstone and coal with occasional bricks, plastic, timber, conveyor belt and metal (20%). Slight tar/oil odour. (COLLIERY SPOIL - MIXED)				
			Cont...	4.00	44.65		

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Slight oil/tar odour at 1.3m.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.8m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP109

DATE 9 Apr 02 Co-ords 447021E 404041N Sheet 2 of 2

Ground Level 48.7mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Damp dark grey and brown clayey angular to subangular fine to coarse gravel of mudstone and coal with occasional bricks, plastic, timber, conveyor belt and metal (20%). Slight tar/oil odour. (COLLIERY SPOIL - MIXED)	4.00	44.65		
			MADE GROUND: Loose red-orange angular fine to coarse gravel of red shale. (COLLIERY SPOIL - RED SHALE)	4.70	43.95		
			End of trial pit at 4.70 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Slight oil/tar odour at 1.3m.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.8m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP110

DATE 10 Apr 02 Co-ords 446806E 404175N Sheet 1 of 1

Ground Level 48.1mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 7mm diameter steel at 200 x 200mm spacing.	0.24	47.83		
			MADE GROUND: Dry light brown sandy angular fine to coarse gravel of limestone. (SUB-BASE)	0.35	47.72		
			MADE GROUND: ?Loose dry dark grey and red-orange slightly sandy angular fine to coarse gravel of coal and red shale. (COLLIERY SPOIL - MIXED)	0.90	47.17		
1D	1.00		MADE GROUND: ?Loose dry grey-brown clayey angular to subangular fine to coarse gravel of brick, ash and red shale. Rare scrap metal. (COLLIERY SPOIL - MIXED)	1.30	46.77		
2B	1.50		?Firm moist orange-brown and grey mottled slightly sandy CLAY. (WEATHERED MIDDLE COAL MEASURES)				
			End of trial pit at 2.60 m	2.60	45.47		

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Metal pipe, 30mm diameter, at 1.3m depth in south face.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.2m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP111

DATE 10 Apr 02 Co-ords 446912E 404121N Sheet 1 of 1

Ground Level 48.6mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Loose dry light brown sandy angular fine to coarse gravel of limestone. (SUB-BASE)	0.15	48.45		
1D	0.30		MADE GROUND: ?Stiff dry black slightly gravely clay. Gravel is angular fine of mudstone and coal. (COLLIERY SPOIL - COAL)	0.60	48.00		
			MADE GROUND: Loose dry light brown sandy subangular to rounded fine to coarse gravel of limestone with rare timber/sleeper fragments. (SUB-BASE)	1.20	47.40		
2B	1.50	V= 120kPa (1.30m)	Stiff moist orange-brown and grey mottled slightly sandy CLAY. (WEATHERED MIDDLE COAL MEASURES)	2.50	46.10		
			?Stiff moist grey mottled brown slightly sandy slightly gravely CLAY. Gravel is angular fine to coarse of mudstone. (WEATHERED MIDDLE COAL MEASURES)	2.80	45.80		
			?Weak brown occasionally stained black thinly laminated MUDSTONE. Locally clay with many mudstone lithorelicts. (MIDDLE COAL MEASURES)	3.20	45.40		
			End of trial pit at 3.20 m				

Remarks

1. *Stability:* Trial pit stable.
2. Groundwater: None encountered.
3. 2no. Steel pipes, 80 and 250mm diameter at 1.2m 4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.2m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP112

DATE 10 Apr 02 Co-ords 447048E 404039N Sheet 1 of 1

Ground Level 51.5mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
1D	0.20		MADE GROUND: ?Firm moist brown slightly sandy slightly gravely clay with occasional rootlets. Gravel is subangular to subrounded fine to coarse of sandstone and mudstone.	0.40	51.12		
2D	0.70		MADE GROUND: Dry grey slightly clayey angular to subangular fine to coarse gravel of mudstone, ironstone and coal. Occasional scrap metal, wood and plastic (10%). Occasional pockets (200mm diameter) of black coal dust. (COLLIERY SPOIL - MIXED)				
3D	2.50						
			End of trial pit at 3.70 m	3.70	47.82		

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.2m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP113

DATE 10 Apr 02 Co-ords 447077E 404035N Sheet 1 of 2

Ground Level 53.3mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: ?Firm moist brown slightly sandy slightly gravely clay with some rootlets. Gravel is subangular to subrounded fine to coarse of sandstone and mudstone. (TOPSOIL)	0.20	53.15		
1D	0.50		MADE GROUND: Dry grey and brown sandy angular fine to coarse gravel of mudstone, coal and sandstone with occasional plastic, timber and metal (10%). Locally very clayey gravel. (COLLIERY SPOIL - MIXED)				
			MADE GROUND: ?Dense dry grey clayey slightly sandy angular fine to coarse gravel of mudstone and coal. Occasional scrap metal, wood and plastic (10%). Occasional timber. (COLLIERY SPOIL - MIXED)	2.50	50.85		
2D	4.00		*Cont...*				

Remarks

1. Stability: Trial pit stable.
2. *Groundwater: None encountered.*
3. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.2m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP113

DATE 10 Apr 02 Co-ords 447077E 404035N Sheet 2 of 2

Ground Level 53.3mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
2D	4.00		MADE GROUND: ?Dense dry grey clayey slightly sandy angular fine to coarse gravel of mudstone and coal. Occasional scrap metal, wood and plastic (10%). Occasional timber. (COLLIERY SPOIL - MIXED)	4.20	49.15		
			End of trial pit at 4.20 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.2m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP114

DATE 10 Apr 02 Co-ords 447035E 404060N Sheet 1 of 2

Ground Level 45.2mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: ?Firm moist brown slightly sandy clay with some rootlets. (TOPSOIL)	0.15	45.04		
1D	0.50		MADE GROUND: ?Loose dry grey occasionally red-orange angular fine to coarse gravel of coal, mudstone and red shale. (COLLIERY SPOIL - MIXED)				
				2.80	42.39		
2D	3.00		MADE GROUND: ?Loose dry red-orange slightly clayey slightly sandy angular fine to coarse gravel of red shale. (COLLIERY SPOIL - RED SHALE)				
			Cont...				

Remarks

1. *Stability: Slight spalling of the sides during excavation.*
2. Groundwater: None encountered.
3. Backfill: Trial pit backfilled with arisingson completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.2m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP114

DATE 10 Apr 02 Co-ords 447035E 404060N Sheet 2 of 2

Ground Level 45.2mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: ?Loose dry red-orange slightly clayey slightly sandy angular fine to coarse gravel of red shale. (COLLIERY SPOIL - RED SHALE)				
				5.00	40.19		
			End of trial pit at 5.00 m				

Remarks

1. Stability: Slight spalling of the sides during excavation.
2. Groundwater: None encountered.
3. Backfill: Trial pit backfilled with arisingson completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.2m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP115

DATE 10 Apr 02 Co-ords 447086E 404061N Sheet 1 of 1

Ground Level 46.1mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
1D	0.30		MADE GROUND: ?Dense damp grey clayey angular fine to coarse gravel of mudstone and coal. (COLLIERY SPOIL - COAL)	0.40	45.68		
			MADE GROUND: ?Loose dry red-orange slightly sandy angular fine to coarse gravel of red shale. (COLLIERY SPOIL - RED SHALE)				
2B	2.50						
			End of trial pit at 3.80 m	3.80	42.28		

Remarks

1. Stability: Continuous collapse between 1.0 and 3.8m during excavation.
2. Groundwater: None encountered.
3. Backfill: Trial pit backfilledwith arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.2m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP116

DATE 10 Apr 02 Co-ords 446963E 404138N Sheet 1 of 1

Ground Level 47.6mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 5mm diameter steel at 200 x 150mm spacing.	0.10	47.50		
1D	0.30		MADE GROUND: ?Dense dry brown, black and red-brown clayey angular fine to coarse gravel of brick, ash, tar/tarmac and red shale. Occasional boulders (300mm diameter) of tar/tarmac. Slight chemical odour. (COLLIERY SPOIL - MIXED)	1.00	46.60		
2D	1.30		MADE GROUND: ?Dense damp dark orange-brown fine to medium sand. Slight chemical odour.	1.50	46.10		
3D	1.80	V= 120kPa (2.00m)	Stiff moist orange-brown and grey mottled slightly gravely CLAY. Gravel is angular fine to medium of mudstone. (WEATHERED MIDDLE COAL MEASURES)	2.60	45.00		
			End of trial pit at 2.60 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Vane test at 2.0m carried out on excavated material.
4. Slight solvent odour between 0.1 and 1.5m.
5. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.2m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP117

DATE 10 Apr 02 Co-ords 446931E 404147N Sheet 1 of 1

Ground Level 47.8mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 5mm diameter steel at 150 x 150mm spacing.	0.20	47.56		
			MADE GROUND: Red brick sets.	0.50	47.26		
1D	0.70		?Moderately strong light brown thinly bedded fine to coarse grained SANDSTONE. (MIDDLE COAL MEASURES)	1.20	46.56		
2D 3B	1.30 1.40		?Firm moist grey mottled orange-brown CLAY with many angular fine to medium gravel size lithorelicts of mudstone. (MIDDLE COAL MEASURES)	1.50	46.26		
			?Weak grey occasionally stained orange-black MUDSTONE. (MIDDLE COAL MEASURES)	2.50	45.26		
			?Moderately weak orange-brown micaceous fine grained SANDSTONE. (MIDDLE COAL MEASURES)	2.80	44.96		
			End of trial pit at 2.80 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.2m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP118

DATE 10 Apr 02 Co-ords 446840E 404167N Sheet 1 of 1

Ground Level 48.4mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 8mm diameter steel at 150 x 200mm spacing.	0.20	48.16		
1D	0.40		MADE GROUND: ?Dense dry dark grey/black slightly clayey sandy angular fine to coarse gravel of brick and ash. Occasional bricks and metal cable. (COLLIERY SPOIL -MIXED)	1.10	47.26		
		V= 62kPa (1.50m)	*Firm moist orange-brown mottled grey CLAY.* (WEATHERED MIDDLE COAL MEASURES)	1.80	46.56		
			?Firm moist grey and orange-brown mottled CLAY with many angular fine to medium gravel size lithorelicts of mudstone. (WEATHERED MIDDLE COAL MEASURES)	2.60	45.76		
			?Moderately weak orange-brown micaceous fine grained SANDSTONE. (MIDDLE COAL MEASURES)	2.90	45.46		
			End of trial pit at 2.90 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Vane test at 1.5m carried out on excavated material.
4. Backfill: Trialpit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.2m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP119

DATE 10 Apr 02 Co-ords 446878E 404152N Sheet 1 of 1

Ground Level 48.1mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey unreinforced concrete.	0.30	47.80		
1D	0.50		MADE GROUND: ?Loose dry dark grey/black clayey angular fine to coarse gravel of brick, sandstone and ash. Occasional bricks, plastic and armoured metal cable. Brick wall in east face- ?cable junction box. (COLLIERY SPOIL - MIXED)	1.30	46.80		
2B	1.50	V= 90kPa (1.60m)	Stiff moist orange-brown and grey mottled slightly gravely CLAY. Gravel is angular fine to coarse of mudstone. (WEATHERED MIDDLE COAL MEASURES)	2.80	45.30		
			?Weak grey occasionally stained orange-black MUDSTONE. Coal/mudstone band at 3.1m. (MIDDLE COAL MEASURES)	3.20	44.90		
			End of trial pit at 3.20 m				

Remarks

1. Stability: Trial pit unstable between 0.3 and 1.3m.
2. Groundwater: None encountered.
3. Vane test at 1.6m carried out on excavated material.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Tracked 360 degree excavator with 1.2m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP120

DATE 11 Apr 02 Co-ords 446887E 404209N Sheet 1 of 1

Ground Level 48.1mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 8mm diameter steel at 200 x 200mm spacing.	0.10	47.98		
1D	0.40		MADE GROUND: Loose dry light brown sandy angular fine to coarse gravel of limestone. Plastic sheet at 0.2m. (SUB-BASE)	0.30	47.78		
			?Dense damp orange-brown slightly clayey fine to coarse SAND and angular fine to coarse GRAVEL of sandstone. (WEATHERED COAL MEASURES)	1.30	46.78		
2D	1.40		Stiff moist grey and orange-brown mottled CLAY. (WEATHERED MIDDLE COAL MEASURES)				
3B	1.50	V= 110kPa (1.80m)		2.20	45.88		
		V= 110kPa (2.60m)	Stiff moist grey and orange-brown mottled CLAY with *many angular fine to coarse gravel size lithorelicts of* mudstone. (WEATHERED MIDDLE COAL MEASURES)	2.90	45.18		
			?Weak grey occasionally stained orange-black MUDSTONE. Coal/mudstone band at 3.1m. (MIDDLE COAL MEASURES)	3.10	44.98		
			End of trial pit at 3.10 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Vane tests at 1.8 and 2.6m carried out on excavated material.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP121

DATE 11 Apr 02 Co-ords 446859E 404220N Sheet 1 of 1

Ground Level 48.2mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Friable dry light brown slightly gravely clay with occasional rootlets. Gravel is angular fine to medium of sandstone and mudstone. (TOPSOIL)	0.10	48.15		
1D	0.30		?Dense/weakly cemented light brown fine to coarse SAND. (WEATHERED ACKWORTH ROCK)				
				1.00	47.25		
2D	1.10		?Moderately weak orange-brown thinly laminated fine to coarse grained SANDSTONE. (ACKWORTH ROCK)				
				2.20	46.05		
			End of trial pit at 2.20 m				

Remarks

1. *Stability: Trial pit stable.*
2. Groundwater: None encountered.
3. *Backfill: Trial pit backfilled with arisings on completion.*

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE *Goldthorpe Colliery*

TP122

DATE 11 Apr 02 Co-ords 446806E 404228N Sheet 1 of 1

Ground Level 49.2mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Black TARMAC with angular fine gravel.	0.07	49.10		
			MADE GROUND: Black TARMAC with angular coarse gravel.	0.19	48.98		
		V= 100kPa	MADE GROUND: Poor quality black TARMAC with angular coarse gravel. (SUB-LAYER)	0.29	48.88		
1D	0.50	(0.40m)	MADE GROUND: Loose dry light brown sandy angular fine to coarse gravel of limestone. (SUB-BASE)	0.34	48.83		
		V= 80kPa (1.10m)	MADE GROUND: Stiff moist grey/black slightly gravely clay. Gravel is angular fine to coarse of sandstone and coal. (COLLIERY SPOIL - MIXED)	1.50	47.67		
2B	1.80	V= 112kPa (2.00m)	Stiff moist orange-brown and grey mottled CLAY. (WEATHERED MIDDLE COAL MEASURES)	2.80	46.37		
			?Moderately weak light brown with occasional orange-brown/black staining thinly laminated fine grained SANDSTONE. (MIDDLE COAL MEASURES)	3.10	46.07		
			End of trial pit at 3.10 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Vane test at 2.0m carried out on excavated material.
4. Backfill: Trialpit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP123

DATE 11 Apr 02 Co-ords 446804E 404237N Sheet 1 of 1

Ground Level 49.1mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
1D	0.20		MADE GROUND: ?Firm moist brown gravely clay with some rootlets. Gravel is angular fine to coarse of sandstone, mudstone, quartz and coal. (COLLIERY SPOIL - MIXED)	0.40	48.70		
2D	0.70	V= 70kPa (0.60m)	*Firm becoming stiff moist orange-brown mottled grey* CLAY. (WEATHERED MIDDLE COAL MEASURES)				
		V= 110kPa (1.20m)					
				2.30	46.80		
			?Firm moist grey and orange-brown mottled CLAY with many angular fine to medium gravel size lithorelicts of mudstone. (MIDDLE COAL MEASURES)	2.60	46.50		
			?Moderately weak orange-brown with much black iron staining thinly laminated MUDSTONE. (WEATHERED MIDDLE COAL MEASURES)				
				3.20	45.90		
			End of trial pit at 3.20 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP124

DATE 11 Apr 02 Co-ords 446801E 404262N Sheet 1 of 1

Ground Level 49.8mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 5mm and 7mm diameter steel at 100 x 150mm spacing.	0.10	49.70		
				0.25	49.55		
			MADE GROUND: Loose dry light brown sandy angular fine to coarse gravel of limestone. (SUB-BASE)	0.30	49.50		
1D	0.50		MADE GROUND: Loose dry red sandy angular fine to coarse gravel of brick. (SUB-BASE)				
			MADE GROUND: ?Firm moist grey/black slightly gravely clay. Gravel is angular fine to coarse of sandstone and coal. (COLLIERY SPOIL - MIXED)	0.80	49.00		
		V= 80kPa (1.00m)	Stiff moist grey and orange-brown mottled CLAY with occasional subangular cobbles of sandstone. (WEATHERED MIDDLE COAL MEASURES)			▼	
2D	1.60						
		V= 127kPa (2.00m)					
			?Weak grey with much orange-brown/black iron staining thinly laminated MUDSTONE. (MIDDLE COAL MEASURES)	2.30	47.50		
			End of trial pit at 3.20 m	3.20	46.60		

Remarks

1. Stability: Trial pit stable.
2. *Groundwater: Seepage at 1.1m.*
3. Vane test at 2.0m carried out on excavated material.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP125

DATE 11 Apr 02 Co-ords 446833E 404266N Sheet 1 of 1

Ground Level 49.7mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey unreinforced concrete.	0.10	49.64		
1D	0.30		MADE GROUND: ?Dense damp red-brown slightly clayey angular fine to coarse gravel of brick and red shale. (COLLIERY SPOIL - MIXED)	0.60	49.14		
2D	0.80		?Dense damp light brown fine to medium SAND. Locally clayey. (WEATHERED ACKWORTH ROCK)	1.30	48.44		
			?Dense damp light brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)	2.00	47.74		
			?Weak light brown thinly bedded fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	2.40	47.34		
			End of trial pit at 2.40 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Difficult to excavate below 2.0m.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP126

DATE 11 Apr 02 Co-ords 446818E 404297N Sheet 1 of 1

Ground Level 50.5mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey unreinforced concrete.	0.20	50.29		
1D	0.40		MADE GROUND: ?Dense damp grey and red-brown sandy angular fine to coarse gravel of mudstone and red shale. (COLLIERY SPOIL - MIXED)	0.70	49.79		
			?Dense damp light brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)	1.60	48.89		
			?Moderately weak light orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	2.40	48.09		
			End of trial pit at 2.40 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Difficult to excavate below 1.8m.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP127

DATE 11 Apr 02 Co-ords 446852E 404299N Sheet 1 of 1

Ground Level 50.3mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey unreinforced concrete.	0.15	50.12		
1D	0.30		MADE GROUND: ?Dense damp grey and red-brown sandy angular fine to coarse gravel of mudstone and red shale. (COLLIERY SPOIL - MIXED)				
2D	1.00			1.10	49.17		
			?Dense damp orange-brown fine to coarse SAND. (WEATHERED ACKWORTH ROCK)	1.30	48.97		
3D	1.50		?Moderately weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)				
			End of trial pit at 2.50 m	2.50	47.77		

Remarks

1. *Stability: Trial pit stable.*
2. Groundwater: None encountered.
3. Difficult to excavate below 2.3m.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP128

DATE 11 Apr 02 Co-ords 446859E 404266N Sheet 1 of 1

Ground Level 49.5mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey unreinforced concrete.	0.10	49.36		
1D	0.30		MADE GROUND: ?Dense damp grey and red-brown sandy angular fine to coarse gravel of mudstone and red shale. Rare rubber hose and conveyor belt. (COLLIERY SPOIL - MIXED)				
			?Dense damp orange-brown fine to coarse SAND. (WEATHERED ACKWORTH ROCK)	0.90	48.56		
			?Dense damp light brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)	1.30	48.16		
			?Moderately weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	1.80	47.66		
			End of trial pit at 2.70 m	2.70	46.76		

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Difficult to excavate below 2.2m.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP129

DATE 11 Apr 02 Co-ords 446892E 404289N Sheet 1 of 1

Ground Level 49.1mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 8mm diameter steel at 200 x 200mm spacing.	0.25	48.88		
1D	0.40	V= 70kPa (0.60m)	MADE GROUND: Firm moist dark orange-brown sandy slightly gravely clay. Gravel is subangular fine to coarse of sandstone, coal and ceramic. (COLLIERY SPOIL - MIXED)	0.70	48.43		
2D	0.90		?Dense damp orange-brown slightly gravely fine to coarse SAND. Gravel is subangular fine to coarse of sandstone. (WEATHERED ACKWORTH ROCK)	1.50	47.63		
			?Dense damp light brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)	2.00	47.13		
			?Moderately weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	2.40	46.73		
			End of trial pit at 2.40 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Difficult to excavate below 2.2m.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP130

DATE 11 Apr 02 Co-ords 446885E 404267N Sheet 1 of 1

Ground Level 49.0mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 10mm diameter steel at 300 x 300mm spacing.	0.25	48.74		
1D	0.40		MADE GROUND: ?Dense damp red-brown and black angular fine to coarse gravel of mudstone and red shale. (COLLIERY SPOIL - MIXED)	0.70	48.29		
			?Dense damp dark orange-brown slightly clayey fine to coarse SAND. (WEATHERED ACKWORTH ROCK)	0.80	48.19		
2B	1.00		?Dense damp orange-brown very gravely fine to coarse SAND. Gravel is subangular fine to coarse of sandstone. (WEATHERED ACKWORTH ROCK)	1.60	47.39		
			?Dense damp light brown fine to coarse SAND and angular to subangular fine to coarse gravel of sandstone. (WEATHERED ACKWORTH ROCK)	2.20	46.79		
			?Moderately weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)			▼	
			End of trial pit at 2.60 m	2.60	46.39		

Remarks

1. Stability: Trial pit stable.
2. Groundwater: Slow inflow at 2.5m.
3. Difficult to excavate below 2.2m.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP131

DATE 11 Apr 02 Co-ords 446902E 404239N Sheet 1 of 1

Ground Level 48.3mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
0	0.00		MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 8mm diameter steel at 200 x 200mm spacing.	0.20	48.06		
			MADE GROUND: Grey unreinforced concrete. Metal rails/tracks at 0.4m depth.	0.50	47.76		
			End of trial pit at 0.50 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP132

DATE 11 Apr 02 Co-ords 446936E 404275N Sheet 1 of 1

Ground Level 48.6mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 8mm diameter steel at 200 x 200mm spacing. Plastic sheet at 0.3m.	0.30	48.28		
1D	0.50		MADE GROUND: ?Dense damp black angular fine to coarse gravel of mudstone and coal. (COLLIERY SPOIL - MIXED)	1.00	47.58		
			?Dense/weakly cemented damp orange-brown fine to coarse SAND. (WEATHERED ACKWORTH ROCK)	1.30	47.28		
			?Dense damp light brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)	2.40	46.18		
			?Moderately weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	2.60	45.98		
			End of trial pit at 2.60 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Difficult to excavate below 2.4m.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP133

DATE 11 Apr 02 Co-ords 446912E 404199N Sheet 1 of 1

Ground Level 47.9mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 5mm diameter steel at 150 x 150mm spacing.	0.15	47.75		
			MADE GROUND: ?Dense damp grey/black angular fine to coarse gravel of mudstone, ash and red shale. (COLLIERY SPOIL - MIXED)	0.20	47.70		
1D	0.60		MADE GROUND: Red brick sets.	0.40	47.50		
			?Dense damp orange-brown clayey fine to coarse SAND. (WEATHERED ACKWORTH ROCK)	0.90	47.00		
			?Dense damp light brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)	2.00	45.90		
			?Moderately weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	2.20	45.70		
2B	2.50	V= 94kPa (2.60m)	?Weak grey mottled light brown MUDSTONE. (MIDDLE COAL MEASURES)				
			End of trial pit at 3.40 m	3.40	44.50		

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP134

DATE 11 Apr 02 Co-ords 446907E 404156N Sheet 1 of 1

Ground Level 47.8mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 5mm and 8mm diameter steel at 100 x 200mm spacing.	0.12	47.70		
				0.25	47.57		
1D	0.40	V= 55kPa (0.50m)	MADE GROUND: Loose dry light brown sandy angular fine to coarse gravel of limestone. (SUB-BASE)				
			Firm moist grey and light brown mottled CLAY. (WEATHERED MIDDLE COAL MEASURES)				
2D	0.95			1.00	46.82		
			?Stiff dry brown and grey mottled CLAY with some angular fine to medium gravel size lithorelicts of mudstone. (WEATHERED MIDDLE COAL MEASURES)				
				2.00	45.82		
			?Weak grey mottled light brown MUDSTONE. (MIDDLE COAL MEASURES)				
				2.40	45.42		
			End of trial pit at 2.40 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Difficult to excavate below 2.0m.
4. 4no. Ceramic pipes containing black silt at 0.95m 5. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP135

DATE 11 Apr 02 Co-ords 446991E 404095N Sheet 1 of 1

Ground Level 46.9mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Black TARMAC with angular fine gravel.	0.12	46.78		
			MADE GROUND: Loose dry light brown sandy angular fine to coarse gravel of limestone. (SUB-BASE)	0.30	46.60		
1D	0.60		MADE GROUND: ?Loose dry red-orange slightly sandy angular fine to coarse gravel of red shale with occasional cobbles. (COLLIERY SPOIL - RED SHALE)				
				3.70	43.20		
2D	3.80	V= 85kPa (3.90m)	Stiff moist grey and green mottled CLAY with occasional *Cont...*	4.00	42.90		

Remarks

1. Stability: Trial pit unstable between 0.3 and 3.7m.
2. Groundwater: None encountered.
3. Vane tests at 3.9 and 4.2m carried out on excavated material.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP135

DATE 11 Apr 02 Co-ords 446991E 404095N Extra Sheet

Ground Level 46.9mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
3D	4.10	V= 70kPa (4.20m)	decomposed plant remains. Natural organic odour. (RELICT TOPSOIL)	4.00	42.90		
			Firm moist grey-green CLAY. (WEATHERED MIDDLE COAL MEASURES)	4.30	42.60		
			End of trial pit at 2.40 m				

Remarks

1. Stability: Trial pit unstable between 0.3 and 3.7m.
2. Groundwater: None encountered.
3. Vane tests at 3.9 and 4.2m carried out on excavated material.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP136

DATE 11 Apr 02 Co-ords 446949E 404158N Sheet 1 of 1

Ground Level 47.9mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 5mm diameter steel at 150 x 150mm spacing.	0.15	47.77		
1D	0.50		MADE GROUND: Loose dry light brown sandy angular fine to coarse gravel of ash, limestone and sandstone with many bricks. (SUB-BASE)	0.40	47.52		
			MADE GROUND: ?Loose damp brown and dark grey sandy angular to subangular fine to coarse gravel of ash, coal, sandstone and mudstone. Occasional plastic, cable, scrap metal, brick and timber. (COLLIERY SPOIL - MIXED)	1.00	46.92		
2D	1.20		?Dense damp orange-brown fine to coarse SAND. (WEATHERED ACKWORTH ROCK)	1.40	46.52		
			?Dense damp light brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)	2.10	45.82		
		V= 110kPa (2.30m)	Stiff moist light orange-brown mottled grey CLAY. (WEATHERED MIDDLE COAL MEASURES)	2.50	45.42		
			?Stiff moist light orange-brown mottled grey CLAY with much angular fine to medium gravel size lithorelicts of mudstone. (WEATHERED MIDDLE COAL MEASURES)	3.10	44.82		
			?Weak grey with some orange-brown/black iron staining thinly laminated MUDSTONE. (MIDDLE COAL MEASURES)	3.80	44.12		
			End of trial pit at 3.80 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Vane test at 2.3m carried out on excavated material.
4. Backfill: Trialpit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP137

DATE 12 Apr 02 Co-ords 447036E 404101N Sheet 1 of 2

Ground Level 44.7mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Black TARMAC with angular fine gravel.	0.12	44.56		
1D	0.30		MADE GROUND: Loose dry light brown sandy angular fine to coarse gravel of limestone. (SUB-BASE)	0.20 0.40	44.48 44.28		
2D	0.80		MADE GROUND: ?Stiff moist brown and grey mottled slightly sandy slightly gravely CLAY. Gravel is angular fine to coarse of sandstone and mudstone. (COLLIERY SPOIL - MIXED)				
			MADE GROUND: ?Loose dry red-orange slightly sandy angular fine to coarse gravel of red shale with occasional cobbles. (COLLIERY SPOIL - RED SHALE)				
				3.60	41.08		
3D	3.70	V= 50kPa (3.80m) V= 95kPa	Firm locally soft moist grey-green slightly sandy CLAY. (RELICT TOPSOIL)	3.90	40.78		
			Cont...				

Remarks

1. Stability: Trial pit unstable between 0.4 and 3.6m.
2. Groundwater: None encountered.
3. Vane tests at 3.8 and 4.0m carried out on excavated material.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP137

DATE 12 Apr 02 Co-ords 447036E 404101N Sheet 2 of 2

Ground Level 44.7mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
		Vane 85kPa (4.00m)	Stiff moist light brown and grey-green mottled CLAY. (WEATHERED MIDDLE COAL MEASURES)	4.30	40.38		
			End of trial pit at 4.30 m				

Remarks

1. Stability: Trial pit unstable between 0.4 and 3.6m.
2. Groundwater: None encountered.
3. Vane tests at 3.8 and 4.0m carried out on excavated material.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP138

DATE 12 Apr 02 Co-ords 447028E 404133N Sheet 1 of 1

Ground Level 46.0mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 8mm diameter steel at 200 x 200mm spacing.	0.22	45.78		
			MADE GROUND: Loose dry light brown sandy angular fine to coarse gravel of limestone. (SUB-BASE)	0.40	45.60		
			MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 7mm diameter steel at 200mm x 200mm spacing.	0.70	45.30		
1D	1.00		MADE GROUND: Damp grey very clayey angular fine to coarse gravel of mudstone. Occasional angular cobbles of mudstone.				
2D	2.00						
				2.90	43.10		
			End of trial pit at 2.90 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP139

DATE 12 Apr 02 Co-ords 447018E 404171N Sheet 1 of 2

Ground Level 47.0mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 5mm diameter steel at 150 x 150mm spacing.	0.29	46.73		
1D	0.50		MADE GROUND: ?Dense dry red-orange sandy angular fine to coarse gravel of red shale . (COLLIERY SPOIL - RED SHALE)	0.85	46.17		
			MADE GROUND: ?Dense grey angular fine to coarse gravel of mudstone. (COLLIERY SPOIL - MIXED)	1.00	46.02		
2D	1.50		MADE GROUND: ?Firm moist light brown mottled grey slightly sandy slightly gravely CLAY. Gravel is angular fine to coarse of brick, sandstone and mudstone. Occasional scrap metal, timber and bricks. (COLLIERY SPOIL - MIXED)	3.00	44.02		
			?Firm dry dark orange-brown very sandy CLAY. (WEATHERED MIDDLE COAL MEASURES)				
			Cont...				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Reinforced concrete slab (1.5m wide x 200mm thick) at 1.8m.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP139

DATE 12 Apr 02 Co-ords 447018E 404171N Sheet 2 of 2

Ground Level 47.0mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			?Firm dry dark orange-brown very sandy CLAY. (WEATHERED MIDDLE COAL MEASURES)	4.10	42.92		
			?Stiff dry orange-brown and grey mottled CLAY. (WEATHERED MIDDLE COAL MEASURES)	4.30	42.72		
			End of trial pit at 4.30 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Reinforced concrete slab (1.5m wide x 200mm thick) at 1.8m.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP140

DATE 12 Apr 02 Co-ords 446985E 404182N Sheet 1 of 1

Ground Level 47.6mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 5mm diameter steel at 150 x 150mm spacing.	0.17	47.40		
			MADE GROUND: ?Dense dry red-orange sandy angular fine to coarse gravel of red shale. (COLLIERY SPOIL - RED SHALE)	0.30	47.27		
1D	0.50		MADE GROUND: ?Dense dry dark grey/red-orange very clayey slightly sandy angular fine to coarse gravel of brick, red shale and sandstone. Occasional bricks (10%). (COLLIERY SPOIL - MIXED)				
			?Dense damp light orange-brown very clayey fine to coarse SAND. Locally very sandy clay. (WEATHERED ACKWORTH ROCK)	1.80	45.77		
			?Firm moist grey-green and brown mottled CLAY. (WEATHERED MIDDLE COAL MEASURES)	2.20	45.37		
2B	2.60	V= 71kPa (2.70m)	Firm moist light orange-brown and grey mottled slightly gravely CLAY. Gravel is subangular fine to coarse of sandstone. (WEATHERED MIDDLE COAL MEASURES)	2.40	45.17		
			End of trial pit at 3.50 m	3.50	44.07		

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Vane test at 2.7m carried out on excavated material.
4. Backfill: Trialpit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP141

DATE 12 Apr 02 Co-ords 446952E 404191N Sheet 1 of 1

Ground Level 47.9mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey unreinforced concrete.	0.18	47.74		
			MADE GROUND: ?Dense dry red-orange sandy angular fine to coarse gravel of red shale. (COLLIERY SPOIL - RED SHALE)	0.25	47.67		
1D	0.50		MADE GROUND: ?Firm dry dark grey/brown sandy gravely clay. Gravel is angular fine to coarse of brick, red shale, mudstone and sandstone. Pockets (250mm diameter) of ?lime at 1.4m. (COLLIERY SPOIL - MIXED)				
2D	1.40			2.00	45.92		
			?Firm moist orange-brown very sandy CLAY. Locally very clayey sand. (WEATHERED MIDDLE COAL MEASURES)	2.90	45.02		
		V= 100kPa (3.00m)	Stiff moist light brown and grey mottled CLAY. (WEATHERED MIDDLE COAL MEASURES)	3.70	44.22		
			End of trial pit at 3.70 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Vane test at 3.0m carried out on excavated material.
4. Backfill: Trialpit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP142

DATE 12 Apr 02 Co-ords 446880E 404248N Sheet 1 of 1

Ground Level 48.4mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Red brick rubble.	*0.10*	*48.33*		
			MADE GROUND: Grey unreinforced concrete. Plastic sheet at 0.16m.	0.16	48.27		
1D	0.50		MADE GROUND: ?Dense dry red-orange sandy angular fine to coarse gravel of red shale and limestone. (SUB-BASE)	0.40	48.03		
			?Firm moist orange-brown very sandy CLAY. Locally very clayey sand. (WEATHERED ACKWORTH ROCK)	0.80	47.63		
2D	1.00		?Dense damp light orange-brown slightly clayey fine to coarse SAND. (WEATHERED ACKWORTH ROCK)	1.40	47.03		
			?Dense damp light orange-brown slightly clayey gravely fine to coarse SAND. Gravel is angular fine to coarse of sandstone. (WEATHERED ACKWORTH ROCK)	1.80	46.63		
			?Dense damp light brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)	*2.60*	*45.83*		
			?Moderately weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	*3.00*	*45.43*		
			End of trial pit at 3.00 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Difficult to excavate below 2.6m.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP143

DATE 12 Apr 02 Co-ords 447012E 404214N Sheet 1 of 1

Ground Level 47.4mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 8mm diameter steel at 200 x 200mm spacing.	0.25	47.15		
			MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 7mm diameter steel at 200 x 200mm spacing.	0.40	47.00		
1D	0.60		MADE GROUND: Damp dark grey/black slightly clayey sandy angular fine to coarse gravel of mudstone, brick, coal and red shale. Occasional angular cobbles of mudstone.				
2D	1.60			2.00	45.40		
			Damp dark orange-brown very clayey fine to coarse SAND. (WEATHERED ACKWORTH ROCK)	2.10	45.30		
			Damp orange-brown fine to coarse SAND. (WEATHERED ACKWORTH ROCK)	2.70	44.70		
			Damp orange-brown fine to coarse SAND and angular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)	2.90	44.50		
			End of trial pit at 2.90 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP144

DATE 12 Apr 02 Co-ords 446973E 404243N Sheet 1 of 1

Ground Level 47.4mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
1D	0.50		MADE GROUND: ?Dense dry grey/black sandy angular fine to coarse gravel of brick, coal, red shale and mudstone. (COLLIERY SPOIL - MIXED)	1.50	45.88		
			?Dense damp orange-brown very clayey slightly gravely fine to coarse SAND. Gravel is angular fine to coarse of sandstone. (WEATHERED ACKWORTH ROCK)	2.10	45.28		
			?Dense damp light brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)	2.60	44.78		
			?Moderately weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	2.80	44.58		
			End of trial pit at 2.80 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Difficult to excavate below 2.6m.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP145

DATE 12 Apr 02 Co-ords 446925E 404300N Sheet 1 of 1

Ground Level 49.7mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
1D	0.20		MADE GROUND: ?Firm moist brown slightly sandy clay with some rootlets. (TOPSOIL)	0.30	49.41		
2D	0.40		MADE GROUND: ?Dense dry grey/brown very clayey sandy angular fine to coarse gravel of coal, red shale and mudstone. (COLLIERY SPOIL - MIXED)			▼	
3B	0.60			1.40	48.31		
			?Dense damp orange-brown very clayey gravely fine to coarse SAND. Gravel is angular fine to coarse of sandstone. (WEATHERED ACKWORTH ROCK)	1.80	47.91		
			End of trial pit at 1.80 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: Slight seepage in coal pockets/bands at 0.5m.
3. Backfill: Trial pit backfilled with arisingson completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP146

DATE 12 Apr 02 Co-ords 446981E 404312N Sheet 1 of 1

Ground Level 48.5mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: ?Firm moist brown sandy clay with some rootlets. *(TOPSOIL)*	0.30	48.20		
1D	0.40		MADE GROUND: ?Dense dry grey/brown very clayey angular fine to coarse gravel of coal, red shale and mudstone. *(COLLIERY SPOIL - MIXED)*	0.60	47.90	▼	
2B	0.50			0.65	47.85		
3D	0.60-0.65		MADE GROUND: ?Dense black very sandy angular fine to coarse gravel of coal. (COLLIERY SPOIL - COAL)				
			?Dense damp orange-brown clayey slightly gravely fine to coarse SAND. Gravel is angular fine to coarse of sandstone. (WEATHERED ACKWORTH ROCK)	1.90	46.60		
			?Dense damp light brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)	2.20	46.30		
			?Moderately weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	2.50	46.00		
			End of trial pit at 2.50 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: Seepage at 0.6m.
3. Difficult to excavate below 2.2m.
4. Backfill: Trial pit backfilled witharisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP147

DATE 12 Apr 02 Co-ords 447057E 404341N Sheet 1 of 1

Ground Level 51.5mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
1D	0.30		MADE GROUND: ?Loose dry grey/brown very clayey angular fine to coarse gravel of coal, red shale and mudstone. Occasional timber, plastic and brick (10%). (COLLIERY SPOIL - MIXED)				
2B	0.40						
				2.00	49.50		
			MADE GROUND: ?Loose dry grey very clayey angular fine to coarse gravel of coal, red shale and mudstone. Occasional timber, plastic and brick (10%). Armoured cable at 2.2m. (COLLIERY SPOIL - MIXED)				
				3.00	48.50		
3D	3.20		Stiff moist light brown and grey mottled CLAY. (WEATHERED MIDDLE COAL MEASURES)				
				3.30	48.20		
			?Dense damp orange-brown very clayey slightly gravely fine to coarse SAND. Gravel is angular fine to coarse of sandstone. (WEATHERED MIDDLE COAL MEASURES)	3.40	48.10		
			End of trial pit at 3.40 m				

Remarks

1. Stability: Slight spalling of sides during excavation.
2. Groundwater: None encountered.
3. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE *Goldthorpe Colliery*

TP148

DATE 12 Apr 02 Co-ords 447144E 404312N Sheet 1 of 1

Ground Level 46.2mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: ?Dense dry grey sandy angular fine to coarse gravel of coal and mudstone. (COLLIERY SPOIL - COAL)	0.10	46.05		
1D	0.30		?Dense damp orange-brown slightly clayey gravely fine to coarse SAND. Gravel is angular fine to coarse of sandstone. (WEATHERED ACKWORTH ROCK)	0.50	45.65		
			?Dense damp orange-brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)	1.00	45.15		
			?Moderately weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	1.20	44.95		
			End of trial pit at 1.20 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Difficult to excavate below 1.0m.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP149

DATE 12 Apr 02 Co-ords 447055E 404299N Sheet 1 of 1

Ground Level 47.6mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: ?Dense dry grey sandy angular fine to coarse gravel of coal and mudstone. (COLLIERY SPOIL - COAL)	0.15	47.41		
			?Dense damp orange-brown slightly clayey gravely fine to coarse SAND. Gravel is angular fine to coarse of sandstone. (WEATHERED ACKWORTH ROCK)	0.90	46.66		
			?Dense damp orange-brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)	1.10	46.46		
			?Moderately weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	1.20	46.36		
			End of trial pit at 1.20 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Difficult to excavate below 1.1m.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE *Goldthorpe Colliery*

TP150

DATE 12 Apr 02 Co-ords 447000E 404288N Sheet 1 of 1

Ground Level 47.5mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: ?Dense dry grey sandy angular fine to coarse gravel of coal and mudstone. (COLLIERY SPOIL - COAL)	0.25	47.28		
1D	0.40		?Dense damp orange-brown slightly clayey gravely fine to coarse SAND. Gravel is angular fine to coarse of sandstone. (WEATHERED ACKWORTH ROCK)	0.50	47.03		
			?Dense damp light orange-brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)	1.80	45.73		
			?Moderately weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	2.00	45.53		
			End of trial pit at 2.00 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Difficult to excavate below 1.8m.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP151

DATE 15 Apr 02 Co-ords 447070E 404201N Sheet 1 of 1

Ground Level 44.2mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 5mm and 7mm diameter steel at 150 x 200mm spacing.	0.30	43.87		
			MADE GROUND: Loose dry light brown sandy angular fine to coarse gravel of limestone. (SUB-BASE)	0.45	43.72		
1D	0.60		MADE GROUND: ?Dense dry grey/brown sandy angular fine to coarse gravel of coal, red shale and mudstone. Occasional bricks (COLLIERY SPOIL - MIXED)				
			?Dense damp orange-brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)	1.80	42.37	▼	
			End of trial pit at 2.70 m	2.70	41.47		

Remarks

1. Stability: Trial pit stable.
2. Groundwater: Inflow at 2.5m.
3. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP152

DATE 15 Apr 02 Co-ords 447097E 404234N Sheet 1 of 1

Ground Level 44.0mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
1D	0.30		MADE GROUND: ?Dense dry grey/black angular fine to coarse gravel of coal and mudstone. (COLLIERY SPOIL - COAL)	1.20	42.76		
			?Dense damp orange-brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)	2.80	41.16	▼	
			?Moderately weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	3.00	40.96		
			End of trial pit at 3.00 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: Inflow at 2.8m.
3. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE *Goldthorpe Colliery*

TP153

DATE 15 Apr 02 Co-ords 447038E 404248N Sheet 1 of 1

Ground Level 45.7mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: ?Dense dry grey/black angular fine to coarse gravel of coal and mudstone. (COLLIERY SPOIL - COAL)	0.20	45.47		
			?Dense damp dark orange-brown very gravely fine to coarse SAND. Gravel is angular fine to coarse of sandstone. (WEATHERED ACKWORTH ROCK)	0.40	45.27		
			?Dense damp orange-brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)				
				2.50	43.17	▼	
			?Moderately weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)				
				2.80	42.87		
			End of trial pit at 2.80 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: Inflow at 2.5m.
3. Difficult to excavate below 2.5m.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE *Goldthorpe Colliery*

TP154

DATE 15 Apr 02 Co-ords 447081E 404159N Sheet 1 of 1

Ground Level 43.7*mAOD* Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
1D	0.40		MADE GROUND: ?Loose dry grey slightly sandy angular fine to coarse gravel of coal, red shale, sandstone and mudstone. Occasional bricks, concrete and scrap metal (5%). (COLLIERY SPOIL - MIXED)	1.70	41.96		
			MADE GROUND: ?Dense dry grey slightly clayey angular fine to coarse gravel of mudstone. Rare scrap metal. (COLLIERY SPOIL - MIXED)	2.50	41.16		
			?Dense damp orange-brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)	3.00	40.66	▼	
			?Moderately weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	3.30	40.36		
			End of trial pit at 3.30 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: Inflow at 3.0m.
3. Difficult to excavate below 3.0m.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT *Ben Bailey Homes / Ogden Group*

SITE Goldthorpe Colliery

TP155

DATE 15 Apr 02 Co-ords 447100E 404099N Sheet 1 of 2

Ground Level 44.0mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
1D	0.30		MADE GROUND: ?Loose dry grey slightly sandy angular fine to coarse gravel of coal, red shale, sandstone and mudstone. Occasional bricks, concrete and scrap metal (5%). (COLLIERY SPOIL - MIXED)	0.50	43.46		
			MADE GROUND: ?Loose dry red-orange slightly sandy angular fine to coarse gravel of red shale. (COLLIERY SPOIL - RED SHALE)				
			Cont...				

Remarks

1. Stability: Trial pit unstable, continuous collapse during excavation.
2. Groundwater: None encountered.
3. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP155

DATE 15 Apr 02 Co-ords 447100E 404099N Sheet 2 of 2

Ground Level 44.0mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: ?Loose dry red-orange slightly sandy angular fine to coarse gravel of red shale. (COLLIERY SPOIL - RED SHALE)	4.10	39.86		
			End of trial pit at 4.10 m				

Remarks

1. Stability: Trial pit unstable, continuous collapse during excavation.
2. Groundwater: None encountered.
3. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP156

DATE 15 Apr 02 Co-ords 447074E 404124N Sheet 1 of 2

Ground Level 44.0mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
1D	0.20		MADE GROUND: ?Loose dry grey slightly clayey sandy angular fine to coarse gravel of coal, red shale, brick, concrete, sandstone and mudstone. (COLLIERY SPOIL - MIXED)	1.30	42.66		
			MADE GROUND: ?Loose dry grey slightly clayey angular fine to coarse gravel of mudstone with occasional cobbles. (COLLIERY SPOIL - MIXED)	3.50	40.46		
			?Stiff moist grey/black CLAY with occasional decomposed plant remains. Natural organic odour. (RELICT TOPSOIL)	3.70	40.26		
		V= 120kPa (3.80m)	Stiff dry grey-green CLAY with occasional decomposed *Cont...*				

Remarks

1. *Stability: Trial pit unstable to 1.3m.*
2. Groundwater: None encountered.
3. Vane tests at 3.8 and 4.3m carried out on excavated material.
4. *Backfill: Trial pit backfilled with arisings on completion.*

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP156

DATE 15 Apr 02 Co-ords 447074E 404124N Sheet 2 of 2

Ground Level 44.0mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			plant remains. Natural organic odour. (WEATHERED MIDDLE COAL MEASURES)	4.20	39.76		
		V= 82kPa (4.30m)	Stiff dry grey and orange-brown mottled slightly gravely CLAY. Gravel is subangular fine to coarse of mudstone. (WEATHERED MIDDLE COAL MEASURES)	4.40	39.56		
			End of trial pit at 4.40 m				

Remarks

1. Stability: Trial pit unstable to 1.3m.
2. Groundwater: None encountered.
3. Vane tests at 3.8 and 4.3m carried out on excavated material.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP157

DATE 15 Apr 02 Co-ords 446977E 404127N Sheet 1 of 1

Ground Level 47.2mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: ?Loose dry red-brown sandy angular fine to coarse gravel of red shale. Occasional cobbles of concrete and brick. *(COLLIERY SPOIL - RED SHALE)*				
1D	0.50			1.30	45.87		
			MADE GROUND: ?Loose dry red-orange angular fine to coarse gravel of red shale. (COLLIERY SPOIL - RED SHALE)	2.50	44.67		
2D	2.60	V= 70kPa (2.80m)	Firm dry light brown and grey mottled slightly sandy CLAY. *(WEATHERED MIDDLE COAL MEASURES)*	3.10	44.07		
			?Weak light brown with occasional orange-brown iron staining fine to medium grained SANDSTONE. (MIDDLE COAL MEASURES)	3.30	43.87		
			End of trial pit at 3.30 m				

Remarks

1. Stability: Trial pit unstable to 2.5m.
2. Groundwater: None encountered.
3. Vane test at 2.8m carried out on excavated material.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP158

DATE 15 Apr 02 Co-ords 446953E 404124N Sheet 1 of 1

Ground Level 47.9mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
1D	0.30		MADE GROUND: ?Loose dry grey clayey angular fine to coarse gravel of mudstone with some bricks. (COLLIERY SPOIL - MIXED)	0.90	46.95		
2D	1.20		Firm dry light brown and grey mottled slightly sandy CLAY. (WEATHERED MIDDLE COAL MEASURES)	1.60	46.25		
			?Dense damp orange-brown clayey gravely fine to coarse SAND. Gravel is subangular fine to coarse of sandstone. (WEATHERED MIDDLE COAL MEASURES)	2.00	45.85		
			?Dense damp orange-brown very clayey fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED MIDDLE COAL MEASURES)	2.30	45.55		
		V= 84kPa (2.40m)	Stiff moist orange-brown and grey mottled slightly gravely CLAY. Gravel is angular fine to coarse of mudstone. (WEATHERED MIDDLE COAL MEASURES)	3.00	44.85		
			?Moderately weak orange-brown with occasional brown iron staining fine to medium grained SANDSTONE. (MIDDLE COAL MEASURES)	3.20	44.65		
			End of trial pit at 3.20 m				

Remarks

1. Stability: Trial pit unstable to 0.9m.
2. Groundwater: None encountered.
3. Vane test at 2.4m carried out on excavated material.
4. Difficult to excavate below 3.0m.
5. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP159

DATE 15 Apr 02 Co-ords 446881E 404106N Sheet 1 of 2

Ground Level 49.3mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
1D	0.20		MADE GROUND: ?Loose dry grey and light brown sandy angular fine to coarse gravel of mudstone and limestone. Occasional bricks and brick fragments. (COLLIERY SPOIL -MIXED)				
				1.50	47.76		
2D	1.60		MADE GROUND: ?Loose dry red-brown sandy angular fine to coarse gravel of red shale. Occasional cobbles of concrete and brick. (COLLIERY SPOIL - RED SHALE)				
				3.50	45.76		
			MADE GROUND: ?Firm dry red-brown and grey very gravely clay. Gravel angular fine to coarse of mudstone and red shale. (COLLIERY SPOIL - MIXED) *Cont...*	4.00	45.26		

Remarks

1. Stability: Trial pit unstable to 3.5m.
2. Groundwater: None encountered.
3. Vane test at 4.1m carried out on excavated material.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP159

DATE 15 Apr 02 Co-ords 446881E 404106N Sheet 2 of 2

Ground Level 49.3mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
		V= 60kPa (4.10m)	MADE GROUND: ?Firm dry red-brown and grey very gravely clay. Gravel angular fine to coarse of mudstone and red shale. (COLLIERY SPOIL - MIXED)	4.00	45.26		
			Firm moist grey-green mottled grey slightly sandy slightly gravely CLAY. Gravel is angular fine to medium of sandstone. (WEATHERED MIDDLE COAL MEASURES)	4.60	44.66		
			End of trial pit at 4.60 m				

Remarks

1. Stability: Trial pit unstable to 3.5m.
2. Groundwater: None encountered.
3. Vane test at 4.1m carried out on excavated material.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP160

DATE 15 Apr 02 Co-ords 446833E 404137N Sheet 1 of 2

Ground Level 47.9mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
1D	0.20		MADE GROUND: ?Stiff dry light brown mottled grey slightly gravely clay. Gravel angular to subangular fine to coarse of mudstone. (COLLIERY SPOIL - MIXED)	0.60	47.25		
2D	0.80		MADE GROUND: ?Dense damp dark grey clayey angular fine to coarse gravel of mudstone. Rare tar covered gravel. (COLLIERY SPOIL - MIXED)	1.20	46.65		
			?Firm moist orange-brown and grey mottled slightly sandy slightly gravely CLAY. Gravel is angular fine to coarse of sandstone. (WEATHERED MIDDLE COAL MEASURES)	2.10	45.75		
3D	2.20	V= 94kPa	Stiff moist orange-brown and grey mottled CLAY. (WEATHERED MIDDLE COAL MEASURES)				
4B	2.40	(2.30m)		3.20	44.65		
			?Dense damp orange-brown slightly clayey sandy angular fine to coarse GRAVEL of sandstone. (WEATHERED MIDDLE COAL MEASURES)				
			Cont...				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Vane test at 2.3m carried out on excavated material.
4. Backfill: Trialpit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP160

DATE 15 Apr 02 Co-ords 446833E 404137N Sheet 2 of 2

Ground Level 47.9mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			?Dense damp orange-brown slightly clayey sandy angular fine to coarse GRAVEL of sandstone. (WEATHERED MIDDLE COAL MEASURES)				
			End of trial pit at 4.40 m	4.40	43.45		

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Vane test at 2.3m carried out on excavated material.
4. Backfill: Trialpit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP161

DATE 15 Apr 02 Co-ords 446693E 404143N Sheet 1 of 2

Ground Level 46.0mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
1D	0.20		MADE GROUND: ?Firm dry light brown sandy clay with some rootlets. (TOPSOIL)	0.40	45.57		
2D 3B	0.60 0.70		MADE GROUND: ?Firm moist grey/brown slightly sandy gravely clay. Gravel is angular fine to coarse of brick, mudstone, red shale and coal. (COLLIERY SPOIL - MIXED)	2.60	43.37		
			MADE GROUND: ?Loose dry red-brown clayey angular *fine to coarse gravel of red shale and mudstone.* (COLLIERY SPOIL - RED SHALE)	3.90	42.07		
			Cont...	4.00	41.97		

Remarks

1. Stability: Trial pit unstable to 2.6m, slight spalling of sides during excavation.
2. Groundwater: None encountered.
3. Vane test at 4.1m carried out on excavated material.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP161

DATE 15 Apr 02 Co-ords 446693E 404143N Sheet 2 of 2

Ground Level 46.0mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
		V= 120kPa (4.10m)	*Stiff moist grey and green mottled CLAY* with occasional decomposed plant remains. Natural organic odour. (RELICT TOPSOIL)	4.00	41.97		
			?Stiff moist grey mottled brown slightly gravely CLAY. Gravel is angular fine to coarse of sandstone and mudstone. (WEATHERED MIDDLE COAL MEASURES)	4.40	41.57		
			End of trial pit at 4.40 m				

Remarks

1. Stability: Trial pit unstable to 2.6m, slight spalling of sides during excavation.
2. Groundwater: None encountered.
3. Vane test at 4.1m carried out on excavated material.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP162

DATE 15 Apr 02 Co-ords 446652E 404151N Sheet 1 of 2

Ground Level 46.1mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
1D	0.10		MADE GROUND: ?Firm dry light brown sandy clay with some rootlets. (TOPSOIL)	0.30	45.82		
2D	0.50		MADE GROUND: ?Loose dry red-brown clayey angular fine to coarse gravel of mudstone. Occasional timber. (COLLIERY SPOIL - MIXED)				
3B	0.80			1.00	45.12		
			MADE GROUND: ?Loose dry red-orange angular fine to coarse gravel of red shale and mudstone. (COLLIERY SPOIL - RED SHALE)				
			Cont...	3.90	42.22		
				4.00	42.12		

Remarks

1. *Stability: Trial pit unstable to 3.9m, slight spalling of sides during excavation.*
2. Groundwater: None encountered.
3. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP162

DATE 15 Apr 02 Co-ords 446652E 404151N Sheet 2 of 2

Ground Level 46.1mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
4D	4.10		?Stiff moist grey and green mottled CLAY with occasional decomposed plant remains. Natural organic odour. (RELICT TOPSOIL)	4.00	42.12		
			?Stiff moist light brown mottled grey-green slightly gravely CLAY. Gravel is angular fine to coarse of sandstone. (WEATHERED MIDDLE COAL MEASURES)	4.40	41.72		
			End of trial pit at 4.40 m				

Remarks

1. Stability: Trial pit unstable to 3.9m, slight spalling of sides during excavation.
2. Groundwater: None encountered.
3. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP163

DATE 15 Apr 02 Co-ords 446835E 404205N Sheet 1 of 1

Ground Level 48.5mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: ?Firm dry light brown sandy clay with some rootlets. (TOPSOIL)	0.10	48.41		
			?Dense damp orange-brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)				
			?Moderately weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	1.20	47.31		
			End of trial pit at 2.10 m	2.10	46.41		

Remarks

1. Stability: Trial pit stable.
2. *Groundwater: None encountered.*
3. Difficult to excavate below 1.2m.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP164

DATE 15 Apr 02 Co-ords 447110E 404141N Sheet 1 of 1

Ground Level 42.6mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
1D	0.20		MADE GROUND: ?Dense damp dark grey/black clayey angular fine to coarse gravel of mudstone and coal. Rare brick and scrap metal. (COLLIERY SPOIL - MIXED)	0.60	41.97		
2D	0.80		MADE GROUND: ?Loose dry grey angular fine to coarse gravel of mudstone . Occasional cobbles of sandstone and mudstone. (COLLIERY SPOIL - MIXED)	2.10	40.47		
3D	2.20		?Soft moist grey/brown sandy CLAY. (RELICT TOPSOIL)	2.30	40.27	▼	
4D	2.50		?Loose wet orange-brown slightly clayey fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)	3.60	38.97		
			End of trial pit at 3.60 m				

Remarks

1. Stability: Trial pit unstable from 0.6 to 3.6m, continuous collapse between 2.3 and 3.6m during excavation.
2. Groundwater: Inflow at 2.3m.
3. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
Wheeled 360 degree excavator with 0.8m wide straight edged bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP165

DATE 26 Apr 02 Co-ords 446976E 404144N Sheet 1 of 1

Ground Level 47.4mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey reinforced concrete. Reinforcement is 1 layer of 5 and 7mm diameter steel at 150 x 200mm spacing.	0.30	47.11		
1D	0.50		MADE GROUND: Red angular fine to coarse gravel of red shale. (SUB-BASE)	0.40	47.01		
2D	0.80		MADE GROUND: ?Firm light orange-brown mottled grey gravelly clay. Gravel is angular fine to coarse of brick and concrete.				
3D	1.65		?Firm moist grey-green/black CLAY with occasional decomposed plant remains. Natural organic odour. (RELICT TOPSOIL)	1.60 1.70	45.81 45.71		
4D	2.00		?Firm moist grey-green slightly sandy CLAY. (WEATHERED MIDDLE COAL MEASURES)	2.50	44.91		
			?Firm orange-brown and grey mottled very gravelly CLAY. Gravel is angular fine to coarse of sandstone with occasional cobbles. (WEATHERED MIDDLE COAL MEASURES)	3.00	44.41		
			?Weak orange-brown fine to medium grained SANDSTONE. (MIDDLE COAL MEASURES)	3.10	44.31		
			End of trial pit at 3.10 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
JCB 3CX with 0.6m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP166

DATE 26 Apr 02 Co-ords 447003E 404046N Sheet 1 of 1

Ground Level 47.0mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: ?Firm moist brown slightly sandy clay with occasional rootlets. (TOPSOIL)	0.10	46.87		
1D	0.70		MADE GROUND: Damp grey very clayey angular fine to coarse gravel of mudstone and coal with occasional angular cobbles of mudstone. Rare timber and fragments of conveyer belt. (COLLIERY SPOIL - MIXED)	1.80	45.17		
2D	2.00		MADE GROUND: ?Stiff moist dark grey very gravelly clay. Gravel is angular fine to coarse of mudstone. Occasional timber and scrap metal. (COLLIERY SPOIL - MIXED)	2.10	44.87		
			End of trial pit at 2.10 m				

Remarks

1. *Stability: Trial pit stable.*
2. Groundwater: None encountered.
3. Trial pit backfilled with arisings on completion.

Equipment/Methods JCB 3CX with 0.6m wide toothed bucket.	Logged by	JOB	FIGURE
	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP167

DATE 26 Apr 02 Co-ords 447018E 404052N Sheet 1 of 1

Ground Level *45.9mAOD* Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
1D	0.20		MADE GROUND: ?Firm moist brown slightly sandy clay *with occasional rootlets. (TOPSOIL)*	0.30	45.61		
			MADE GROUND: Damp grey and red clayey angular fine to coarse gravel of mudstone, red shale and coal. (COLLIERY SPOIL - MIXED)				
2D	1.00						
			End of trial pit at 2.90 m	2.90	43.01		

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
JCB 3CX with 0.6m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP169

DATE 26 Apr 02 Co-ords 446853E 404138N Sheet 1 of 1

Ground Level 48.2mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
1D	0.30		MADE GROUND: Damp dark grey clayey slightly sandy angular fine to coarse gravel of mudstone and brick. (COLLIERY SPOIL - MIXED)				
2D	1.00						
				2.40	45.82		
		V= 55kPa (2.50m)	Firm moist orange-brown and grey mottled CLAY. (WEATHERED MIDDLE COAL MEASURES)	2.60	45.62		
			End of trial pit at 2.60 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Vane test at 2.5m carried out on excavated material.
4. Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
JCB 3CX with 0.6m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP170

DATE 26 Apr 02 Co-ords 446835E 404117N Sheet 1 of 1

Ground Level 46.5mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: ?Firm moist brown slightly sandy clay with occasional rootlets. (TOPSOIL)	0.20	46.32		
			MADE GROUND: Damp dark grey clayey angular fine to coarse gravel of mudstone and coal with occasional bricks. (COLLIERY SPOIL - MIXED)				
1D	1.00						
				1.80	44.72		
2D	1.90		?Firm moist orange-brown mottled grey slightly sandy CLAY. Locally very sandy. (WEATHERED MIDDLE COAL MEASURES)	2.00	44.52		
		V= 90kPa (2.10m)	Stiff moist light orange-brown mottled grey slightly sandy gravelly CLAY. Gravel is angular to subangular fine to coarse of sandstone. (WEATHERED MIDDLE COAL MEASURES)	2.50	44.02		
			End of trial pit at 2.50 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Vane test at 2.1m carried out on excavated material.
4. Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
JCB 3CX with 0.6m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT *Ben Bailey Homes / Ogden Group*

SITE Goldthorpe Colliery

TP171

DATE 26 Apr 02 Co-ords 446816E 404149N Sheet 1 of 1

Ground Level 47.8mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: ?Firm moist brown slightly sandy clay with occasional rootlets. (TOPSOIL)	0.10	47.72		
1D	0.50		MADE GROUND: Dry dark grey clayey angular fine to coarse gravel of mudstone and coal. (COLLIERY SPOIL - MIXED)				
				1.20	46.62		
2D	1.50		?Firm moist dark orange-brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is angular to subangular fine to coarse of sandstone. (WEATHERED MIDDLE COAL MEASURES)	1.60	46.22		
			?Stiff moist orange-brown and grey mottled CLAY. (WEATHERED MIDDLE COAL MEASURES)				
			End of trial pit at 2.50 m	2.50	45.32		

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
JCB 3CX with 0.6m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP172

DATE 29 Apr 02 Co-ords 446788E 404184N Sheet 1 of 1

Ground Level 47.7mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: ?Firm moist brown slightly sandy clay with occasional rootlets. (TOPSOIL)	0.10	47.58		
1D	0.50		MADE GROUND: Damp grey and red slightly clayey angular fine to coarse gravel of mudstone and red shale. (COLLIERY SPOIL - MIXED)				
		V= 120kPa (1.00m)	Stiff moist light brown mottled grey CLAY. (WEATHERED MIDDLE COAL MEASURES)	0.90	46.78		
			?Moderatley weak grey-brown thinly laminated fine to medium grained SANDSTONE. (MIDDLE COAL MEASURES)	2.00	45.68		
			End of trial pit at 2.30 m	2.30	45.38		

Remarks

1. *Stability: Trial pit stable.*
2. Groundwater: None encountered.
3. Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
JCB 3CX with 0.6m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP174

DATE 29 Apr 02 Co-ords 446744E 404109N Sheet 1 of 1

Ground Level 44.5mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: ?Firm moist brown slightly sandy clay with occasional rootlets. (TOPSOIL)	0.10	44.39		
1D	0.50		MADE GROUND: Damp grey sandy angular fine to coarse gravel of mudstone, ash and coal with occasional bricks. (COLLIERY SPOIL - MIXED)				
				0.90	43.59		
			?Moderatley weak orange-brown thinly laminated fine to medium grained SANDSTONE. (MIDDLE COAL MEASURES)				
				1.50	42.99		
			End of trial pit at 1.50 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
JCB 3CX with 0.6m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP175

DATE 29 Apr 02 Co-ords 446681E 404123N Sheet 1 of 1

Ground Level 45.2mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: ?Firm moist brown slightly sandy clay with occasional rootlets. (TOPSOIL)	0.30	44.90		
1D	0.40		MADE GROUND: Damp red-grey angular fine to coarse gravel of mudstone, ash and red shale. (COLLIERY SPOIL - MIXED)				
2D	1.20						
				3.00	42.20		
			?Firm moist orange-brown and grey mottled CLAY. (WEATHERED MIDDLE COAL MEASURES)	3.20	42.00		
			End of trial pit at 3.20 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
JCB 3CX with 0.6m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP176

DATE 29 Apr 02 Co-ords 446637E 404137N Sheet 1 of 2

Ground Level 45.5mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: ?Firm moist brown slightly sandy clay with occasional rootlets. (TOPSOIL)	0.20	45.35		
1D	0.30		MADE GROUND: Damp dark grey clayey angular fine to coarse gravel of mudstone, ash, coal and red shale. Rare timber. (*COLLIERY SPOIL - MIXED*)				
2D	1.10						
3D	2.50					▼	
			Cont...	4.00	41.55		

Remarks

1. Stability: Trial pit unstable to 4.0m depth.
2. Groundwater: Seepage at 3.7m depth.
3. Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
JCB 3CX with 0.6m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP176

DATE 29 Apr 02 Co-ords 446637E 404137N Sheet 2 of 2

Ground Level 45.5mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Damp dark grey clayey angular fine to coarse gravel of mudstone, ash, coal and red shale. Rare timber. (COLLIERY SPOIL - MIXED)	4.00	41.55		
			?Firm moist grey-green CLAY with occasional decomposed plant remains. Natural organic odour. (RELICT TOPSOIL)	4.20	41.35		
			End of trial pit at 4.20 m				

Remarks

1. Stability: Trial pit unstable to 4.0m depth.
2. Groundwater: Seepage at 3.7m depth.
3. Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
JCB 3CX with 0.6m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

TP179

DATE 29 Apr 02 Co-ords 447141E 404241N Sheet 1 of 1

Ground Level 43.7mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
1D	0.20		MADE GROUND: Damp black sandy angular fine to coarse gravel of mudstone and coal. (COLLIERY SPOIL - MIXED)				
				0.40	43.26		
			MADE GROUND: Damp black/dark grey very clayey angular to subangular fine to coarse gravel of mudstone and coal. Rare timber. (COLLIERY SPOIL - MIXED)				
2D	0.90						
3D	1.20						
				1.80	41.86		
			Damp orange-brown very clayey fine to coarse SAND. (WEATHERED ACKWORTH ROCK)				
				2.20	41.46		
			Damp orange-brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)			▼	
				3.10	40.56		
			End of trial pit at 3.10 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: Inflow at 2.7m depth.
3. Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
JCB 3CX with 0.6m wide toothed bucket.	ASw	2500	

APPENDIX E
BOREHOLE LOGS

BOREHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

BH101

DATE 10 April 02 to 11 April 02

Co-ords 446648 E 404191 N

Ground Level 56.8 mAOD

Sheet 1 of 2

Scale 1:50

sample no & type	depth (m)	casing depth (m)	U100 SPT & N value	well/ backfill	description	depth (m)	level (m)	ground water	legend
1D	0.30				MADE GROUND: ?Medium dense red angular gravel sized shale (moderately weak mudstone) *fragments with a little firm clay matrix.* (COLLIERY SPOIL - RED SHALE)				
2D	1.30								
3D	2.30					2.30	54.54		
					MADE GROUND: ?Medium dense black sand and gravel sized coal fragments with occasional sandstone gravel and cobbles <100mm. (COLLIERY SPOIL - COAL)				
4D	3.00-3.45		S=5			3.00	53.84		
					MADE GROUND: Firm red brown clay with many angular gravel sized red shale fragments. (COLLIERY SPOIL - RED SHALE)				
5D	4.00					4.00	52.84		
					MADE GROUND: ?Medium dense red angular gravel sized shale (moderately weak mudstone) fragments with some sand sized fragments. (COLLIERY SPOIL - RED SHALE). .				
6D	5.00				. Below 5.0m, with occasional cobbles <100mm.				
7D	6.00-6.45		S=8						
8D	7.00								
9D	8.00				*Continued on next sheet*				

Remarks

1. Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.
2. Groundwater was not apparent during boring.
3. The borehole was advanced by chiselling from 11.5m to 11.8m (0.25 hrs).

Equipment/Methods	Logged by	JOB	FIGURE
Cable percussion boring rig equipped with 150mm diameter tools and casing.	RJH	2500	

BOREHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

BH101

DATE 10 April 02 to 11 April 02

Co-ords 446648 E 404191 N

Ground Level 56.8 mAOD

Sheet 2 of 2

Scale 1:50

sample no & type	depth (m)	casing depth (m)	U100 SPT & N value	well/ backfill	description	depth (m)	level (m)	ground water	legend
9D	8.00				MADE GROUND: ?Medium dense red angular gravel sized shale (moderately weak mudstone) fragments with some sand sized fragments. (COLLIERY SPOIL - RED SHALE). . Below 5.0m, with occasional cobbles <100mm.	9.00	47.84		
10D	10.00		S=31		MADE GROUND: ?Dense red locally off white angular gravel sized shale fragments. (COLLIERY SPOIL - RED SHALE)				
11D	11.00								
12D	11.50		S=31			11.70	45.14		
13D	12.40	51/225mm	(5,7,9		?Firm grey CLAY. (WEATHERED MIDDLE COAL MEASURES)	12.60	44.24		
					Very stiff / hard light orange brown and light grey mottled CLAY. (MIDDLE COAL MEASURES)	12.80	44.04		
					End of borehole at 12.80 m				

Remarks

1. Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.
2. Groundwater was not apparent during boring.
3. The borehole was advanced by chiselling from 11.5m to 11.8m (0.25 hrs).

Equipment/Methods	Logged by	JOB	FIGURE
Cable percussion boring rig equipped with 150mm diameter tools and casing.	RJH	2500	

BOREHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

BH102

DATE 12 April 02 Co-ords 446691 E 404187 N Sheet 1 of 2

Ground Level 55.4 mAOD Scale 1:50

sample no & type	depth (m)	casing depth (m)	U100 SPT & N value	well/ backfill	description	depth (m)	level (m)	ground water	legend
					TOPSOIL (drillers description)	0.40	55.02		
1D	0.50				MADE GROUND: ?Medium dense grey, red and black angular gravel sized shale, mudstone and coal fragments with a little clayey matrix. (COLLIERY SPOIL - MIXED)				
2D	1.50								
3D	2.50								
4D	3.10-3.55		S=5						
5D	4.00					4.00	51.42		
6D	5.00				MADE GROUND: ?Medium dense grey angular gravel and cobble sized shale fragments. (COLLIERY SPOIL - RED SHALE). . Below 5.0m, with rare gravel sized red shale and coal fragments.				
7D	6.10-6.55		S=17			6.10	49.32		
8D	7.00				MADE GROUND: ?Medium dense red angular gravel sized mudstone and shale fragments with a little sand sized fragments. (COLLIERY SPOIL - RED SHALE)				
9D	8.00				*Continued on next sheet*				

Remarks

1. Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.
2. Groundwater was not apparent during boring.

Equipment/Methods	Logged by	JOB	FIGURE
Cable percussion boring rig equipped with 150mm diameter tools and casing.	RJH	2500	

BOREHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

BH102

DATE 12 April 02 Co-ords 446691 E 404187 N Sheet 2 of 2

Ground Level 55.4 mAOD Scale 1:50

sample no & type	depth (m)	casing depth (m)	U100 SPT & N value	well/ backfill	description	depth (m)	level (m)	ground water	legend
9D	8.00				MADE GROUND: ?Medium dense red angular gravel sized mudstone and shale fragments with a little sand sized fragments. (COLLIERY SPOIL - RED SHALE)				
10D	9.00								
11D	9.60					9.50	45.92		
12D	10.10-10.55		S=25		Very stiff indistinctly fissured light orange brown and light grey mottled CLAY. (WEATHERED MIDDLE COAL MEASURES)				
						10.45	44.97		
					Very weak grey and black mottled MUDSTONE. (MIDDLE COAL MEASURES)	10.55	44.87		
					End of borehole at 10.55 m				

Remarks

1. Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.
2. Groundwater was not apparent during boring.

Equipment/Methods	Logged by	JOB	FIGURE
Cable percussion boring rig equipped with 150mm diameter tools and casing.	RJH	2500	

BOREHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

BH103

DATE 17 April 02 Co-ords 446901 E 404094 N Sheet 1 of 1

Ground Level 49.4 mAOD Scale 1:50

sample no & type	depth (m)	casing depth (m)	U100 SPT & N value	well/ backfill	description	depth (m)	level (m)	ground water	legend
1B	0.00-0.50				MADE GROUND: ?Dense brown angular gravel and cobble sized brick, concrete and sandstone fragments with some matrix of dry friable silt and sand. (COLLIERY SPOIL -MIXED)	0.50	48.92		
2B	0.50-1.00								
3D	1.00-1.45		S=14		MADE GROUND: ?Firm to stiff dark grey and black clay with some gravel sized coal fragments. (COLLIERY SPOIL - COAL)	1.50	47.92		
4B	1.50-2.00				MADE GROUND: Black gravel sized carbonaceous mudstone / coal fragments with some sand sized fragments. (COLLIERY SPOIL - COAL)				
5D	2.00-2.45		S=16						
6B	2.50-3.00								
7D	3.00-3.45		S=25						
8B	3.50-4.00				MADE GROUND: ?Firm grey and brown clay with some gravel sized mudstone fragments and occasional brick gravel and cobbles. (COLLIERY SPOIL - MIXED)	3.50	45.92		
9D	4.00-4.45		S=20						
10B	4.50-5.00				Firm brown very silty CLAY. (WEATHERED MIDDLE COAL MEASURES)	4.50	44.92		
11D	5.00-5.45		S=6						
12B	5.50-6.00								
13B	6.00-6.40				Very weak grey MUDSTONE / SILTSTONE. (MIDDLE COAL MEASURES)	6.00	43.42		
						6.40	43.02		
					End of borehole at 6.40 m				

Remarks

1. Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.
2. Groundwater was not apparent during boring.
3. The borehole was advanced by chiselling from 1.5m to 1.7m (0.5 hrs) and from 3.7m to 5.5m (0.5hrs).

Equipment/Methods	Logged by	JOB	FIGURE
Cable percussion boring rig equipped with 150mm diameter tools and casing.	RJH	2500	

BOREHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

BH104

DATE 30 April 02 Co-ords 446985 E 404056 N Sheet 1 of 2

Ground Level 47.2 mAOD Scale 1:50

sample no & type	depth (m)	casing depth (m)	U100 SPT & N value	well/ backfill	description	depth (m)	level (m)	ground water	legend
					TOPSOIL (Drillers description)	0.35	46.82		
1D	0.50		S=15		MADE GROUND: ?Loose brown angular gravel sized mudstone, coal and brick fragments with some firm clay matrix. (COLLIERY SPOIL - MIXED)				
2D	1.50		S=12		MADE GROUND: ?Loose grey and black angular gravel sized mudstone and coal fragments with some stiff clay matrix. Rare plastic bag fragments. (COLLIERY SPOIL - MIXED)	1.50	45.67		
3D	2.60		S=9		MADE GROUND: ?Loose grey and brown angular gravel sized mudstone, coal and red shale fragments with a little stiff (friable) clay matrix. (COLLIERY SPOIL - MIXED)	2.50	44.67		
4D	3.55		S=4						
5D	4.50		S=9						
6D	5.55		S=16			5.50	41.67		
7D	6.50		S=11		MADE GROUND: ?Loose (dry) angular grey, brown and light orange brown angular gravel sized mudstone and siltstone fragments. (COLLIERY SPOIL - MIXED)				
8D	6.80					6.70	40.47		
9D	7.15		S=16		Very stiff indistinctly fissured light grey and orange brown mottled slightly sandy CLAY with rare fine gravel sized siltstone lithorelicts. (WEATHERED MIDDLE COAL MEASURES)				
					Continued on next sheet	8.00	39.17		

Remarks

1. Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.
2. Groundwater was not apparent during boring.

Equipment/Methods	Logged by	JOB	FIGURE
	RJH	2500	

BOREHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

BH104

DATE 30 April 02 Co-ords 446985 E 404056 N Sheet 2 of 2

Ground Level 47.2 mAOD Scale 1:50

sample no & type	depth (m)	casing depth (m)	U100 SPT & N value	well/ backfill	description	depth (m)	level (m)	ground water	legend
10D	8.10		50/60mm (25		Very stiff indistinctly fissured light grey and orange brown mottled slightly sandy CLAY with rare fine gravel sized siltstone lithorelicts. (WEATHERED MIDDLE COAL MEASURES)	8.00	39.17		
					Light brown SILTSTONE and SANDSTONE. Recovered as gravel sized fragments. (MIDDLE COAL MEASURES0	8.25	38.92		
					End of borehole at 8.25 m				

Remarks

1. *Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.*
2. Groundwater was not apparent during boring.

Equipment/Methods	Logged by	JOB	FIGURE
	RJH	2500	

BOREHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

BH105

DATE 30 April 02 Co-ords 447063 E 404068 N Sheet 1 of 1

Ground Level 45.4 mAOD Scale 1:50

sample no & type	depth (m)	casing depth (m)	U100 SPT & N value	well/ backfill	description	depth (m)	level (m)	ground water	legend
1D	0.40		S=26		MADE GROUND: Loose red angular gravel sized shale fragments with a little sand sized matrix. (COLLIERY SPOIL - RED SHALE). . . Below 2.6m, with occasional grey angular gravel sized mudstone fragments.				
2D	1.40		S=15						
3D	2.60		S=22						
4D	3.60		S=12			3.80	41.55		
					MADE GROUND: Loose black angular gravel sized coal and grey shale fragments. (COLLIERY SPOIL - MIXED)				
5D	4.55		S=21						
6D	5.50		S=19			5.50	39.85		
					MADE GROUND: ?Medium dense grey angular gravel sized mudstone fragments with occasional gravel sized red shale and coal fragments. (COLLIERY SPOIL- MIXED)				
7D	6.20					6.20	39.15		
					Stiff to very stiff brown and grey mottled CLAY. (WEATHERED MIDDLE COAL MEASURES)				
8D	6.70		S=26						
						7.15	38.20		
					End of borehole at 7.15 m				

Remarks

1. Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.
2. A slight groundwater seepage was encountered at 6.2m.

Equipment/Methods	Logged by	JOB	FIGURE
Cable percussion boring rig equipped with 150mm diameter tools and casing.	RJH	2500	

APPENDIX F
PROBEHOLE LOGS

PROBEHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

PH101

DATE 16 April 02 Co-ords 446806E 404285N Sheet 1 of 2

Ground Level 50.3mAOD Scale 1:100

sample no & type	depth (m)	casing depth (m)	well/ backfill	description	depth (m)	level (m)	ground water	legend
				Over burden (drillers description)	2.00	48.30		
				SANDSTONE & MUDSTONE (drillers description)				
				Continued on next sheet				

Remarks

1. Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.
2. Groundwater was encountered at approximately 15m.

Equipment/Methods	Logged by	JOB	FIGURE
Mustang tracked drilling rig equipped with 100mm tri-cone bit and air flush.	EL	2500	

PROBEHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

PH101

DATE 16 April 02 Co-ords 446806E 404285N Sheet 2 of 2

Ground Level 50.3mAOD Scale 1:100

sample no & type	depth (m)	casing depth (m)	well/ backfill	description	depth (m)	level (m)	ground water	legend
				SANDSTONE & MUDSTONE (drillers description)				
					30.00	20.30		
				End of probehole at 30.00 m				

Remarks

1. Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.
2. Groundwater was encountered at approximately 15m.

Equipment/Methods	Logged by	JOB	FIGURE
Mustang tracked drilling rig equipped with 100mm tri-cone bit and air flush.	EL	2500	

PROBEHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

PH102

DATE 16 April 02 Co-ords 446988E 404300N Sheet 1 of 2

Ground Level 48.1mAOD Scale 1:100

sample no & type	depth (m)	casing depth (m)	well/ backfill	description	depth (m)	level (m)	ground water	legend
				Over burden (drillers description)	2.00	46.09		
				SANDSTONE & MUDSTONE (drillers description)				
				Continued on next sheet				

Remarks

1. Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.
2. Groundwater was encountered at approximately 10m.

Equipment/Methods	*Logged by*	JOB	FIGURE
Mustang tracked drilling rig equipped with 100mm tri-cone bit and air flush.	EL	2500	

PROBEHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

PH102

DATE 16 April 02 Co-ords 446988E 404300N Sheet 2 of 2

Ground Level 48.1mAOD Scale 1:100

sample no & type	depth (m)	casing depth (m)	well/ backfill	description	depth (m)	level (m)	ground water	legend
				SANDSTONE & MUDSTONE (drillers description)				
				End of probehole at 30.00 m	30.00	18.09		

Remarks

1. Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.
2. Groundwater was encountered at approximately 10m.

Equipment/Methods	Logged by	JOB	FIGURE
Mustang tracked drilling rig equipped with 100mm tri-cone bit and air flush.	EL	2500	

PROBEHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

PH103

DATE 16 April 02 Co-ords 447107E 404304N Sheet 1 of 2

Ground Level 46.7mAOD Scale 1:100

sample no & type	depth (m)	casing depth (m)	well/ backfill	description	depth (m)	level (m)	ground water	legend
				Over burden (drillers description)	1.70	44.99		
				SANDSTONE & MUDSTONE (drillers description)				
				Continued on next sheet				

Remarks

1. Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.
2. Groundwater was encountered at approximately 14.5m.

Equipment/Methods	Logged by	JOB	FIGURE
Mustang tracked drilling rig equipped with 100mm tri-cone bit and air flush.	EL	2500	

PROBEHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

PH103

DATE 16 April 02 Co-ords 447107E 404304N Sheet 2 of 2

Ground Level 46.7mAOD Scale 1:100

sample no & type	depth (m)	casing depth (m)	well/ backfill	description	depth (m)	level (m)	ground water	legend
				SANDSTONE & MUDSTONE (drillers description)				
				End of probehole at 30.00 m	30.00	16.69		

Remarks

1. Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.
2. Groundwater was encountered at approximately 14.5m.

Equipment/Methods	Logged by	JOB	FIGURE
Mustang tracked drilling rig equipped with 100mm tri-cone bit and air flush.	EL	2500	

PROBEHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

PH104

DATE 16 April 02 Co-ords 447076E 404185N Sheet 1 of 2

Ground Level 44.0mAOD Scale 1:100

sample no & type	depth (m)	casing depth (m)	well/ backfill	description	depth (m)	level (m)	ground water	legend
				Over burden (drillers description)				
					3.00	41.01		
				SANDSTONE & MUDSTONE (drillers description)				
					11.50	32.51		
				COAL (drillers description)	11.80	32.21		
				SANDSTONE & MUDSTONE (drillers description)				
				Continued on next sheet				

Remarks

1. Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.
2. Groundwater was not apparent during drilling.

Equipment/Methods	Logged by	JOB	FIGURE
Mustang tracked drilling rig equipped with 100mm tri-cone bit and air flush.	EL	2500	

PROBEHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

PH104

DATE 16 April 02 Co-ords 447076E 404185N Sheet 2 of 2

Ground Level 44.0mAOD Scale 1:100

sample no & type	depth (m)	casing depth (m)	well/ backfill	description	depth (m)	level (m)	ground water	legend
				SANDSTONE & MUDSTONE (drillers description)				
					24.60	19.41		
				COAL (drillers description)	24.80	19.21		
				MUDSTONE (drillers description)				
					30.00	14.01		
				End of probehole at 30.00 m				

Remarks

1. Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.
2. Groundwater was not apparent during drilling.

Equipment/Methods	Logged by	JOB	FIGURE
Mustang tracked drilling rig equipped with 100mm tri-cone bit and air flush.	EL	2500	

PROBEHOLE LOG

AIG CONSULTANTS

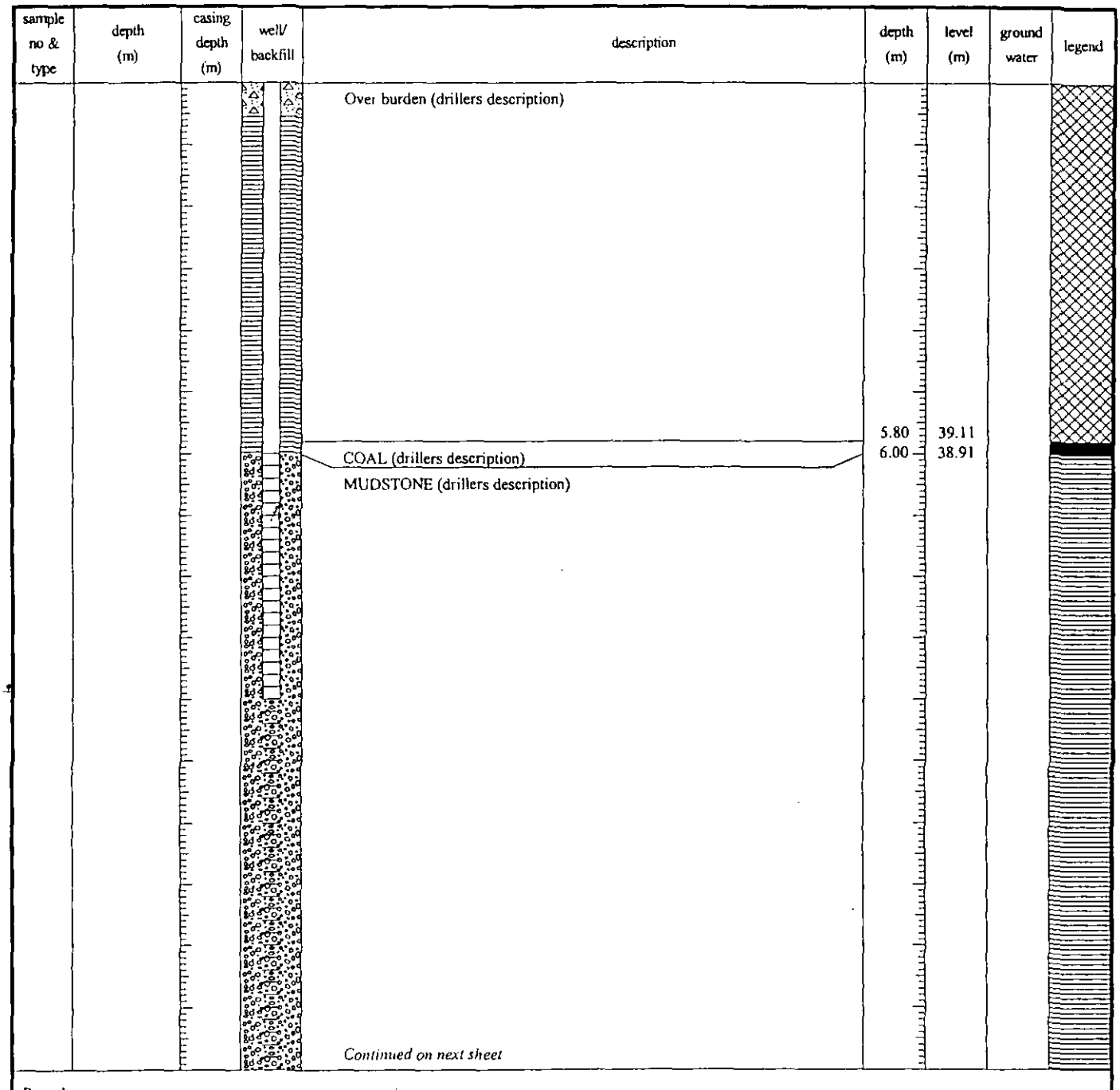
CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

PH105

DATE 17 April 02 Co-ords 447055E 404080N Sheet 1 of 2

Ground Level 44.9mAOD Scale 1:100



Remarks

1. Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.
2. Groundwater was encountered at approximately 26.5m.

Equipment/Methods	Logged by	JOB	FIGURE
Mustang tracked drilling rig equipped with 100mm tri-cone bit and air flush.	EL	2500	

PROBEHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

PH105

DATE 17 April 02 Co-ords 447055E 404080N Sheet 2 of 2

Ground Level 44.9mAOD Scale 1:100

sample no & type	depth (m)	casing depth (m)	well/ backfill	description	depth (m)	level (m)	ground water	legend
				MUDSTONE (drillers description)				
					18.00	26.91		
				COAL (drillers description)	18.30	26.61		
				MUDSTONE (drillers description)				
					30.00	14.91		
				End of probehole at 30.00 m				

Remarks

1. Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.
2. Groundwater was encountered at approximately 26.5m.

Equipment/Methods	Logged by	JOB	FIGURE
Mustang tracked drilling rig equipped with 100mm tri-cone bit and air flush.	EL	2500	

PROBEHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

PH106

DATE 17 April 02 Co-ords 446872E 404131N Sheet 1 of 2

Ground Level 48.3mAOD Scale 1:100

sample no & type	depth (m)	casing depth (m)	well/ backfill	description	depth (m)	level (m)	ground water	legend
				Over burden (drillers description)				
					3.60	44.68		
				COAL (drillers description)	3.90	44.38		
				SANDSTONE & MUDSTONE (drillers description)				
				Continued on next sheet				

Remarks

1. Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.
2. Groundwater was encountered at approximately 27m.

Equipment/Methods	Logged by	JOB	FIGURE
Mustang tracked drilling rig equipped with 100mm tri-cone bit and air flush.	EL	2500	

PROBEHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

PH106

DATE 17 April 02 *Co-ords* 446872E 404131N Sheet 2 of 2

Ground Level 48.3mAOD Scale 1:100

sample no & type	depth (m)	casing depth (m)	well/ backfill	description	depth (m)	level (m)	ground water	legend
				SANDSTONE & MUDSTONE (drillers description)				
				End of probehole at 30.00 m	30.00	18.28		

Remarks

1. Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.
2. Groundwater was encountered at approximately 27m.

Equipment/Methods	Logged by	JOB	FIGURE
Mustang tracked drilling rig equipped with 100mm tri-cone bit and air flush.	EL	2500	

PROBEHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

PH107

DATE 17 April 02 Co-ords 446637E 404154N Sheet 1 of 2

Ground Level 46.3mAOD Scale 1:100

sample no & type	depth (m)	casing depth (m)	well/ backfill	description	depth (m)	level (m)	ground water	legend
				Over burden (drillers description)	3.80	42.46		
				SANDSTONE & MUDSTONE (drillers description)				
				Continued on next sheet				

Remarks

1. *Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.*
2. Groundwater was encountered at approximately 18m.

Equipment/Methods	Logged by	JOB	FIGURE
Mustang tracked drilling rig equipped with 100mm tri-cone bit and air flush.	EL	2500	

PROBEHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

PH107

DATE 17 April 02 Co-ords 446637E 404154N Sheet 2 of 2

Ground Level 46.3mAOD Scale 1:100

sample no & type	depth (m)	casing depth (m)	well/ backfill	description	depth (m)	level (m)	ground water	legend
				SANDSTONE & MUDSTONE (drillers description)				
				End of probehole at 30.00 m	30.00	16.26		

Remarks

1. Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.
2. Groundwater was encountered at approximately 18m.

Equipment/Methods	Logged by	JOB	FIGURE
Mustang tracked drilling rig equipped with 100mm tri-cone bit and air flush.	EL	2500	

PROBEHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

PH108

DATE 17 April 02 Co-ords 446732E 404148N Sheet 1 of 1

Ground Level 46.2mAOD Scale 1:100

sample no & type	depth (m)	casing depth (m)	well/ backfill	description	depth (m)	level (m)	ground water	legend
				Over burden (drillers description)				
					2.50	43.73		
				MUDSTONE (drillers description)				
					10.00	36.23		
				End of probehole at 10.00 m				

Remarks

1. Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.
2. Groundwater was not apparent during drilling.

Equipment/Methods	Logged by	JOB	FIGURE
Mustang tracked drilling rig equipped with 100mm tri-cone bit and air flush.	EL	2500	

PROBEHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

PH109

DATE 17 April 02 Co-ords 446837E 404213N Sheet 1 of 1

Ground Level 48.8mAOD Scale 1:100

sample no & type	depth (m)	casing depth (m)	well/ backfill	description	depth (m)	level (m)	ground water	legend
				Over burden (drillers description)	2.00	46.84		
				SANDSTONE & MUDSTONE (drillers description)				
				End of probehole at 10.00 m	10.00	38.84		

Remarks

1. Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.
2. *Groundwater was not apparent during drilling*

Equipment/Methods
Mustang tracked drilling rig equipped with 100mm tri-cone bit and air flush.

Logged by	JOB	FIGURE
EL	2500	

PROBEHOLE LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

PH110

DATE 17 April 02 Co-ords 446956E 404204N Sheet 1 of 1

Ground Level 47.9mAOD Scale 1:100

sample no & type	depth (m)	casing depth (m)	well/ backfill	description	depth (m)	level (m)	ground water	legend
				Over burden (drillers description)				
					4.00	43.86		
				SANDSTONE & MUDSTONE (drillers description)				
					10.00	37.86		
				End of probehole at 10.00 m				

Remarks

1. Prior to drilling a Cable Avoidance Tool (CAT) survey was carried out.
2. Groundwater was not apparent during drilling.

Equipment/Methods	Logged by	JOB	FIGURE
Mustang tracked drilling rig equipped with 100mm tri-cone bit and air flush.	EL	2500	

APPENDIX G
SOAKAWAY PIT LOGS

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE *Goldthorpe Colliery*

SW101

DATE 1 May 02 Co-ords 447102E 404265N Sheet 1 of 1

Ground Level 45.3mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Damp black angular fine to coarse gravel of mudstone and coal. (COLLIERY SPOIL - MIXED)	0.30	44.96		
			Damp orange-brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)	2.00	43.26		
			?Weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	2.40	42.86		
			End of trial pit at 2.40 m				

Remarks

1. *Stability: Trial pit stable.*
2. Groundwater: None encountered.
3. Soakaway test carried out in trial pit.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
JCB 3CX with 0.3m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

SW102

DATE 1 May 02 Co-ords 447022E 404237N Sheet 1 of 1

Ground Level 46.1mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Damp black angular fine to coarse gravel of mudstone and coal. (COLLIERY SPOIL - MIXED)	0.50	45.63		
			Damp orange-brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)	2.00	44.13		
			?Weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	2.30	43.83		
			End of trial pit at 2.30 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Soakaway test carried out in trial pit.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
JCB 3CX with 0.3m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

SW103

DATE 1 May 02 Co-ords 447057E 404270N Sheet 1 of 1

Ground Level 46.1mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Damp black angular fine to coarse gravel of mudstone and coal. (COLLIERY SPOIL - MIXED)	0.20	45.93		
			Damp orange-brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)				
				1.90	44.23		
			?Weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	2.00	44.13		
			End of trial pit at 2.00 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Soakaway test carried out in trial pit.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
JCB 3CX with 0.3m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

SW104

DATE 1 May 02 Co-ords 447025E 404304N Sheet 1 of 1

Ground Level 48.0mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Damp black angular fine to coarse gravel of mudstone and coal. (COLLIERY SPOIL - MIXED)	0.10	47.92		
			Damp orange-brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)				
				1.80	46.22		
			?Weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	1.90	46.12		
			End of trial pit at 1.90 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Soakaway test carried out in trial pit.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
JCB 3CX with 0.3m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

SW105

DATE 1 May 02 Co-ords 446960E 404282N Sheet 1 of 1

Ground Level 47.8mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Damp black angular fine to coarse gravel of mudstone and coal. (COLLIERY SPOIL - MIXED)	0.70	47.14		
			Damp orange-brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)	2.00	45.84		
			?Weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	2.30	45.54		
			End of trial pit at 2.30 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Soakaway test carried out in trial pit.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
JCB 3CX with 0.3m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE *Goldthorpe Colliery*

SW106

DATE 2 May 02 Co-ords 446924E 404251N Sheet 1 of 1

Ground Level 48.2mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 8mm diameter steel at 200 x 200mm spacing.				
				0.50	47.74		
			MADE GROUND: Light brown and red angular fine to coarse gravel of limestone and red shale. (SUB-BASE)	0.70	47.54		
			Damp orange-brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)				
				2.20	46.04		
			?Weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	2.40	45.84		
			End of trial pit at 2.40 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Soakaway test carried out in trial pit.
4. Backfill: Trial pit backfilled with arisings on completion

Equipment/Methods	Logged by	JOB	FIGURE
JCB 3CX with 0.3m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

SW107

DATE 2 May 02 Co-ords 446904E 404271N Sheet 1 of 1

Ground Level 48.8mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 8mm diameter steel at 200 x 200mm spacing.				
				0.40	48.42		
			MADE GROUND: Light brown and red angular fine to coarse gravel of limestone and red shale. (SUB-BASE)	0.50	48.32		
			Damp orange-brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)				
				2.00	46.82		
			?Weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	2.15	46.67		
			End of trial pit at 2.15 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Soakaway test carried out in trial pit.
4. Backfill: *Trial pit backfilled with arisings on completion.*

Equipment/Methods	Logged by	JOB	FIGURE
JCB 3CX with 0.3m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

SW108

DATE 2 May 02 Co-ords 446849E 404245N Sheet 1 of 1

Ground Level 48.9mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 8mm diameter steel at 200 x 200mm spacing.	0.20	48.65		
			MADE GROUND: Light brown and red angular fine to coarse gravel of limestone and red shale. (SUB-BASE)	0.40	48.45		
			Damp orange-brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)	1.80	47.05		
			?Weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	1.90	46.95		
			End of trial pit at 1.90 m				

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Soakaway test carried out in trial pit.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods	Logged by	JOB	FIGURE
JCB 3C with 0.3m wide toothed bucket.	ASw	2500	

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

SW109

DATE 2 May 02 Co-ords 446849E 404281N Sheet 1 of 1

Ground Level 49.7mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey unreinforced concrete.	0.15	49.60		
			MADE GROUND: Light brown and red angular fine to coarse gravel of limestone and red shale. (SUB-BASE)	0.40	49.35		
			Damp orange-brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)				
			?Weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	2.00	47.75		
			End of trial pit at 2.35 m	2.35	47.40		

Remarks

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Soakaway test carried out in trial pit.
4. Backfill: Trial pit backfilled with arisings on completion.

Equipment/Methods
JCB 3C with 0.3m wide toothed bucket.

Logged by ASw

JOB 2500

FIGURE

TRIAL PIT LOG

AIG CONSULTANTS

CLIENT Ben Bailey Homes / Ogden Group

SITE Goldthorpe Colliery

SW110

DATE 2 May 02 Co-ords 446796E 404292N Sheet 1 of 1

Ground Level 50.2mAOD Scale 1:25

sample no & type	depth (m)	in-situ test	description	depth (m)	level (m)	ground water	legend
			MADE GROUND: Grey reinforced concrete. Reinforcement 1 layer of 5mm diameter steel at 150 x 150mm spacing.	0.20	50.04		
			MADE GROUND: Light brown and red angular fine to coarse gravel of limestone and red shale. (SUB-BASE)	0.40	49.84		
			Damp orange-brown fine to coarse SAND and angular to subangular fine to coarse GRAVEL of sandstone. (WEATHERED ACKWORTH ROCK)	2.00	48.24		
			?Weak orange-brown fine to coarse grained SANDSTONE. (ACKWORTH ROCK)	2.10	48.14		
			End of trial pit at 2.10 m				

Remarks:

1. Stability: Trial pit stable.
2. Groundwater: None encountered.
3. Hakaway test carried out in trial pit.
4. Backfill: Trial pit backfilled with arisings on completion

Equipment/Methods	Logged by	JOB	FIGURE
JCB 3C with 0.3m wide toothed bucket.	ASw	2500	

APPENDIX H
SOAKAWAY TEST RESULTS

SOIL INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365: 1991

Client: Ben Bailey Homes / Ogden Group
Job Name: Goldthorpe Colliery
Job No.: 2500

AIG CONSULTANTS LTD

Trial Pit No.	SW10
Test No.	1

Time	Elpsed Time	Depth to water form ground level	
	(min)	(m)	(mm)
	0	1.40	1400
	5	1.41	1410
	15	1.48	1480
	25	1.52	1520
	35	1.58	1580
	45	1.60	1600
	55	1.63	1630
	65	1.65	1650
	75	1.67	1670
	85	1.69	1690
	95	1.70	1700
	105	1.73	1730
	115	1.75	1750
	125	1.78	1780
	135	1.80	1800
	145	1.89	1890
	155	1.95	1950
	165	2.10	2100
	175	2.19	2190
	185	2.25	2250
	195	2.25	2250
	205	2.40	2400

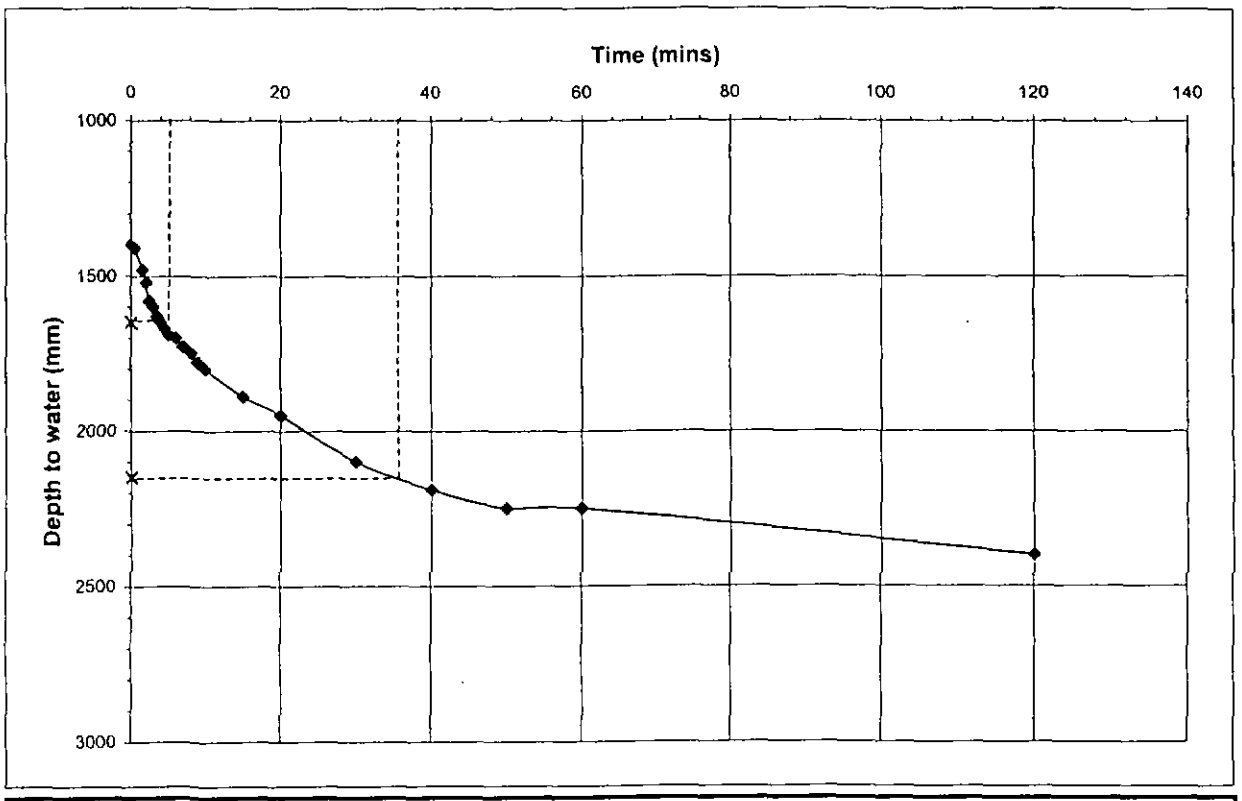
Soakaway Dimensions		(m)	(mm)
Length	=	2.20	2200
Width	=	0.30	300
Depth	=	2.40	2400

Effective depth (empty)		mm	m
75%	=	2150.0	2.15
50%	=	1900.0	1.90
25%	=	1650.0	1.65

Depth at start of test (mm)	=	1400
Depth at end of test (mm)	=	2400

Base area of pit	=	0.66
a_{p50} - 50% internal surface area inc. base	=	3.16
V_{p75-25} - Volume 75 - 25%	=	0.33

Read from the graph:		
$t_{p\,75}$ (min)	=	41
$t_{p\,25}$ (min)	=	136



Soil infiltration rate, f, (m/s) =	5.43908E-05	(normal test)
Soil infiltration rate, f, (m/s) =	*1.63E-05*	*(pit filled with stone)*

SOIL INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365: 1991

Client: Ben Bailey Homes / Ogden Group
Job Name: Goldthorpe Colliery
Job No.: 2500

AIG CONSULTANTS LTD

Trial Pit No.	SW102
Test No.	[illegible]

Time	Elpsed Time	Depth to water form ground level	
	(min)	(m)	(mm)
	[illegible]	[illegible]	1000
	[illegible]	[illegible]	1010
	[illegible]	[illegible]	1020
	[illegible]	[illegible]	1050
	[illegible]	[illegible]	1060
	[illegible]	[illegible]	1090
	[illegible]	[illegible]	1100
	[illegible]	[illegible]	1120
	[illegible]	[illegible]	1140
	[illegible]	[illegible]	1150
	[illegible]	[illegible]	1160
	[illegible]	[illegible]	1220
	[illegible]	[illegible]	1250
	[illegible]	[illegible]	1270
	[illegible]	[illegible]	1290
	[illegible]	[illegible]	1380
	[illegible]	[illegible]	1450
	[illegible]	[illegible]	1510
	[illegible]	[illegible]	1550
	[illegible]	[illegible]	1620
	[illegible]	[illegible]	1700
	[illegible]	[illegible]	1750
	[illegible]	[illegible]	1890
	[illegible]	[illegible]	1990
	[illegible]	[illegible]	2080
	[illegible]	[illegible]	2300

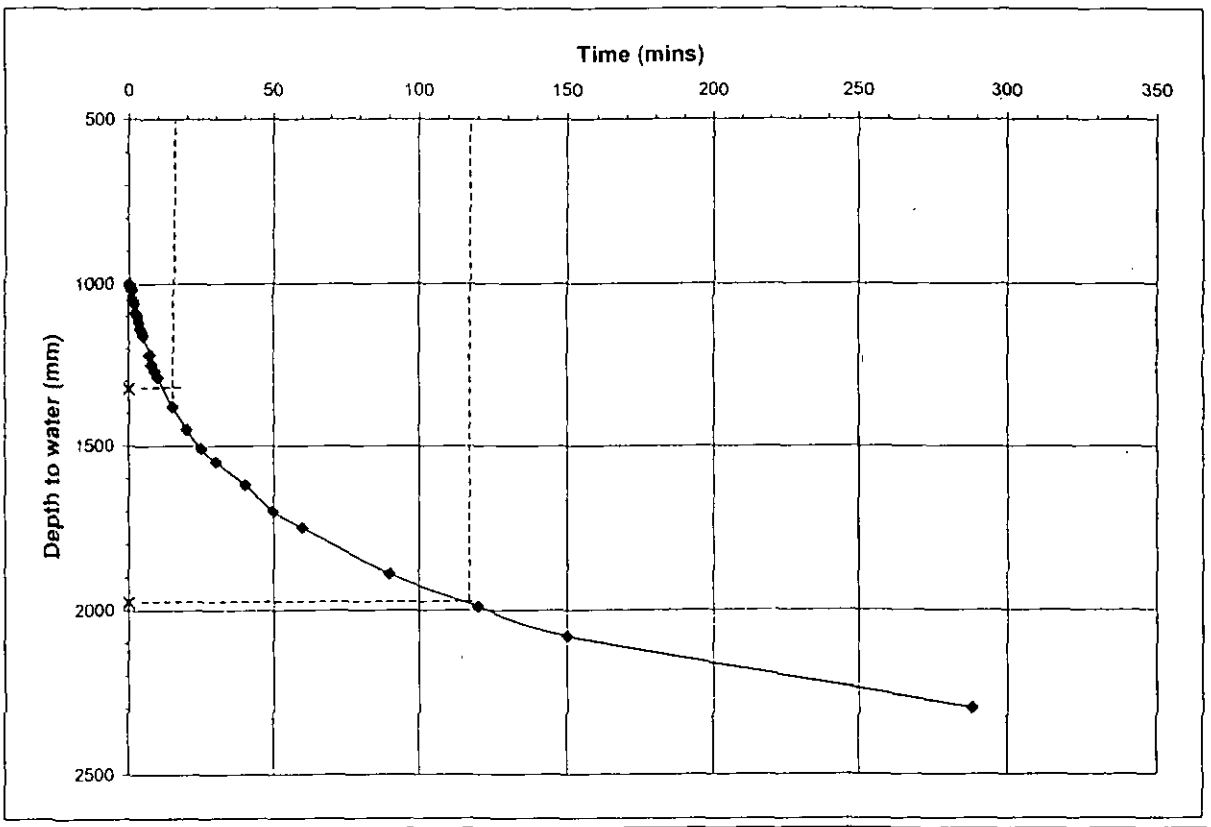
Soakaway Dimensions		(m)	(mm)
Length	=	[illegible]	2400
Width	=	[illegible]	300
Depth	=	[illegible]	2300

Effective depth (empty)		mm	m
75%	=	1975.0	1.98
50%	=	1650.0	1.65
25%	=	1325.0	1.33

Depth at start of test (mm)	=	1000
Depth at end of test (mm)	=	2300

Base area of pit	=	0.72
a_{p50} - 50% internal surface area inc. base	=	4.23
V_{p75-25} - Volume 75 - 25%	=	0.468

Read from the graph:		
$t_{p\,75}$ (min)	=	[illegible]
$t_{p\,25}$ (min)	=	[illegible]



Soil infiltration rate, f, (m/s) = 1.76E-05 (normal test)

Soil infiltration rate, f, (m/s) = 5.27E-06 (pit filled with stone)

SOIL INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365: 1991

Client: Ben Bailey Homes / Ogden Group
Job Name: Goldthorpe Colliery
Job No.: 2500

AIG CONSULTANTS LTD

Trial Pit No.	SW102
Test No.	2

Time	Elpsed Time	Depth to water form ground level	
	(min)	(m)	(mm)
	0	1.16	1160
	5	1.17	1170
	10	1.19	1190
	15	1.20	1200
	20	1.20	1200
	25	1.21	1210
	30	1.22	1220
	35	1.22	1220
	40	1.22	1220
	45	1.23	1230
	50	1.23	1230
	55	1.26	1260
	60	1.27	1270
	70	1.29	1290
	80	1.30	1300
	90	1.30	1300
	105	1.36	1360
	120	1.40	1400
	125	1.45	1450
	130	1.49	1490
	140	1.56	1560
	150	1.62	1620
	160	1.68	1680

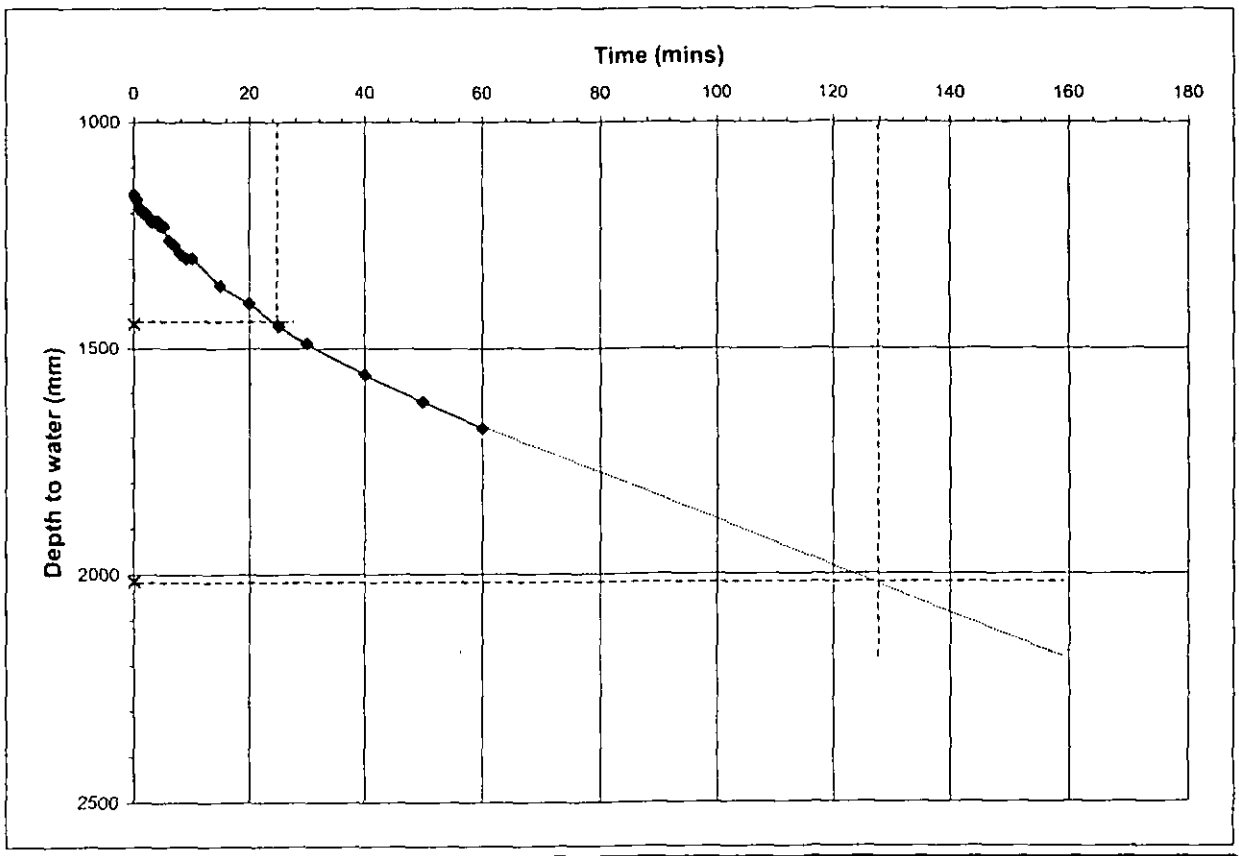
Soakaway Dimensions		(m)	(mm)
Length	=	2.40	2400
Width	=	0.30	300
Depth	=	2.30	2300

Effective depth (empty)		mm	m
75%	=	2015.0	2.02
50%	=	1730.0	1.73
25%	=	1445.0	1.45

Depth at start of test (mm)	=	1160
Depth at end of test (mm)	=	1680

Base area of pit	=	0.72
a_{p50} - 50% internal surface area inc. base	=	3.798
V_{p75-25} - Volume 75 - 25%	=	0.4104

Read from the graph:		
$t_{p\,75}$ (min)	=	26
$t_{p\,25}$ (min)	=	129



Soil infiltration rate, f, (m/s) = 1.75E-05 **(normal test)**

Note: tp25 not reached, value extrapolated from graph.

Soil infiltration rate, f, (m/s) = *5.25E-06* ***(pit filled with stone)***

SOIL INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365: 1991

Client: Ben Bailey Homes / Ogden Group
Job Name: Goldthorpe Colliery
Job No.: 2500

AIG CONSULTANTS LTD

Trial Pit No.	SW103
Test No.	1

Time	Elpsed Time	Depth to water form ground level	
	(min)	(m)	(mm)
	0	1.100	1000
	0.5	1.010	1010
	1	1.030	1030
	1.5	1.040	1040
	2	1.050	1050
	2.5	1.060	1060
	3	1.080	1080
	3.5	1.090	1090
	4	1.090	1090
	4.5	1.100	1100
	5	1.110	1110
	6	1.120	1120
	7	1.120	1120
	8	1.150	1150
	10	1.210	1210
	15	1.250	1250
	20	1.300	1300
	25	1.360	1360
	30	1.380	1380
	40	1.420	1420
	50	1.480	1480
	60	1.510	1510
	90	1.580	1580
	120	1.600	1600
	150	1.610	1610
	220	1.660	1660

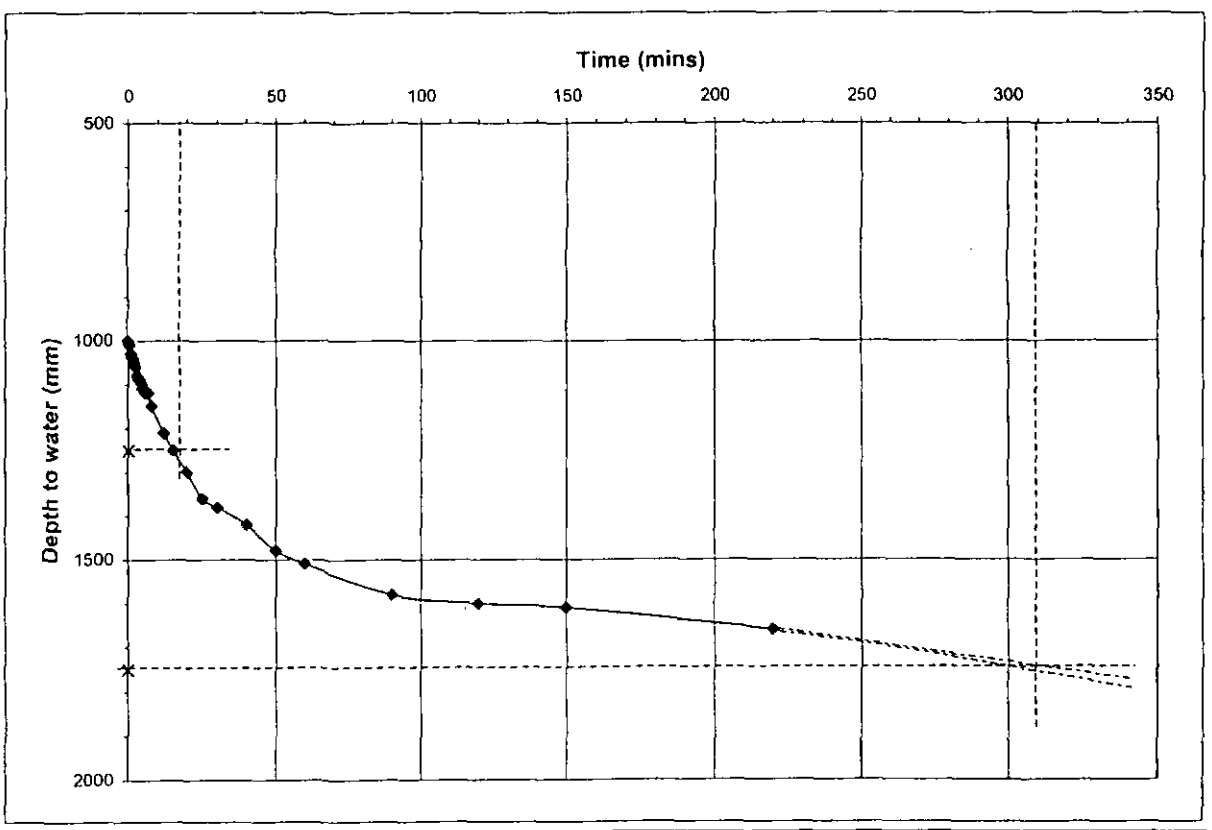
Soakaway Dimensions		(m)	(mm)
Length	=	1.90	1900
Width	=	0.30	300
Depth	=	2.00	2000

Effective depth (empty)		mm	m
75%	=	1750.0	1.75
50%	=	1500.0	1.50
25%	=	1250.0	1.25

Depth at start of test (mm)	=	1000
Depth at end of test (mm)	=	1660

Base area of pit	=	0.57
a_{p50} - 50% internal surface area inc. base	=	2.77
V_{p75-25} - Volume 75 - 25%	=	0.285

Read from the graph:		
$t_{p\,75}$ (min)	=	15
$t_{p\,25}$ (min)	=	310



Soil infiltration rate, f, (m/s) = 5.81E-06 (normal test)
Note: tp25 not reached, value extrapolated from graph.

Soil infiltration rate, f, (m/s) = 1.74E-06 (pit filled with stone)

SOIL INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365: 1991

Client: Ben Bailey Homes / Ogden Group
Job Name: Goldthorpe Colliery
Job No.: 2500

AIG CONSULTANTS LTD

Trial Pit No.	SW104
Test No.	1

Time	Elpsed Time	Depth to water form ground level	
	(min)	(m)	(mm)
	0	0.80	800
	0.5	0.80	800
	1	0.81	810
	1.5	0.81	810
	2	0.81	810
	2.5	0.81	810
	3	0.81	810
	3.5	0.81	810
	4	0.82	815
	4.5	0.82	815
	5	0.82	820
	6	0.83	830
	7	0.83	830
	8	0.85	850
	9	0.86	860
	10	0.86	860
	15	0.88	880
	20	0.90	900
	25	0.95	950
	30	0.96	960
	40	0.99	990
	50	1.01	1010
	60	1.02	1020
	90	1.09	1090
	120	1.18	1180

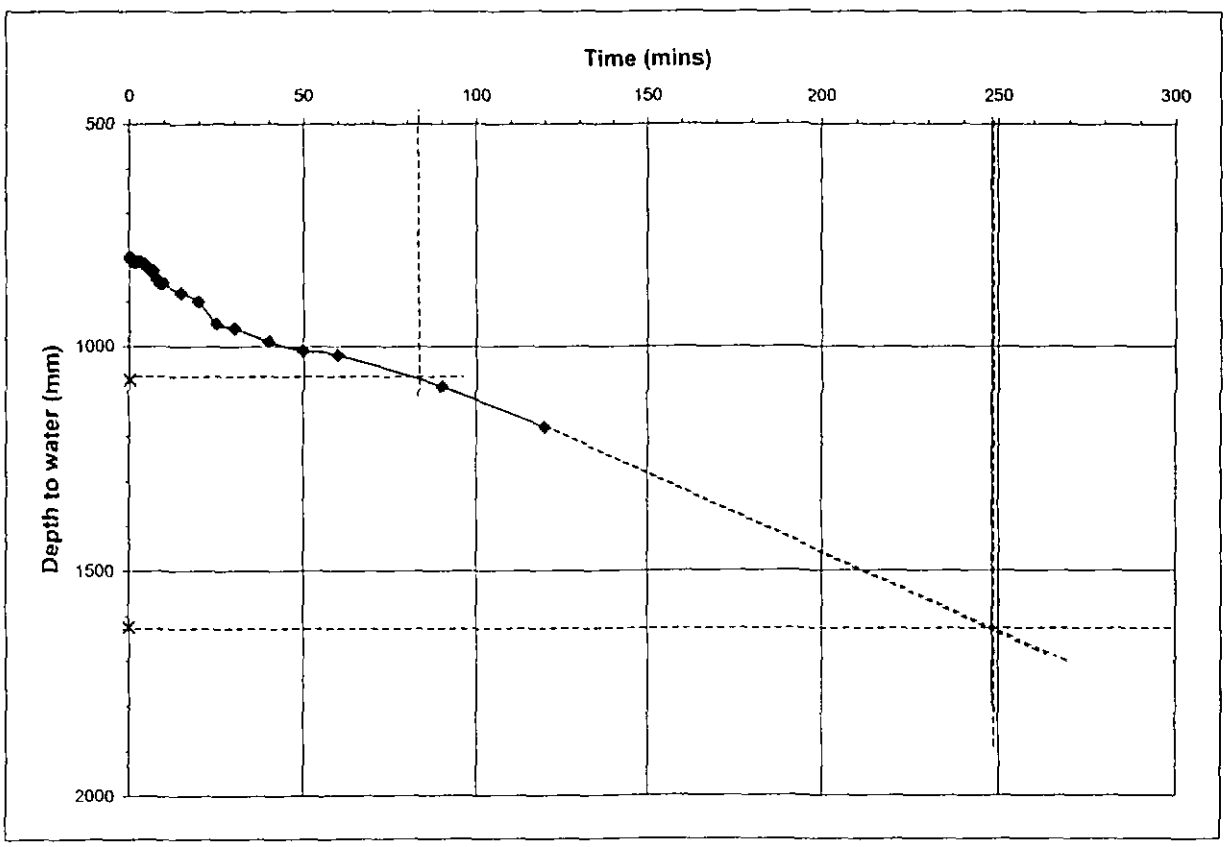
Soakaway Dimensions		(m)	(mm)
Length	=	2.30	2300
Width	=	0.30	300
Depth	=	1.90	1900

Effective depth (empty)	mm	m
75% =	1625.0	1.63
50% =	1350.0	1.35
25% =	1075.0	1.08

Depth at start of test (mm)	=	800
Depth at end of test (mm)	=	1180

Base area of pit	=	0.69
a_{p50} - 50% internal surface area inc. base	=	3.55
V_{p75-25} - Volume 75 - 25%	=	0.3795

Read from the graph:		
$t_{p\,75}$ (min)	=	85
$t_{p\,25}$ (min)	=	260



Soil infiltration rate, f, (m/s) =	1.08E-05	(normal test)
	Note: tp25 not reached, value extrapolated from graph	
Soil infiltration rate, f, (m/s) =	*3.24E-06*	*(pit filled with stone)*

SOIL INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365: 1991

Client: Ben Bailey Homes / Ogden Group
Job Name: Goldthorpe Colliery
Job No.: 2500

AIG CONSULTANTS LTD

Trial Pit No.	SW105
Test No.	1

Time	Elpsed Time	Depth to water form ground level	
	(min)	(m)	(mm)
	0	1.30	1300
	0.5	1.32	1320
	1.25	1.35	1350
	1.5	1.36	1360
	2	1.37	1370
	2.5	1.38	1380
	3	1.39	1390
	3.5	1.40	1400
	4	1.41	1410
	4.5	1.42	1420
	5	1.43	1430
	6	1.45	1450
	7	1.47	1470
	8	1.49	1490
	9	1.50	1500
	10	1.51	1510
	15	1.57	1570
	20	1.62	1620
	25	1.66	1660
	30	1.70	1700
	45	1.79	1790
	60	1.82	1820
	80	1.87	1870
	90	1.99	1990
	106	2.02	2020

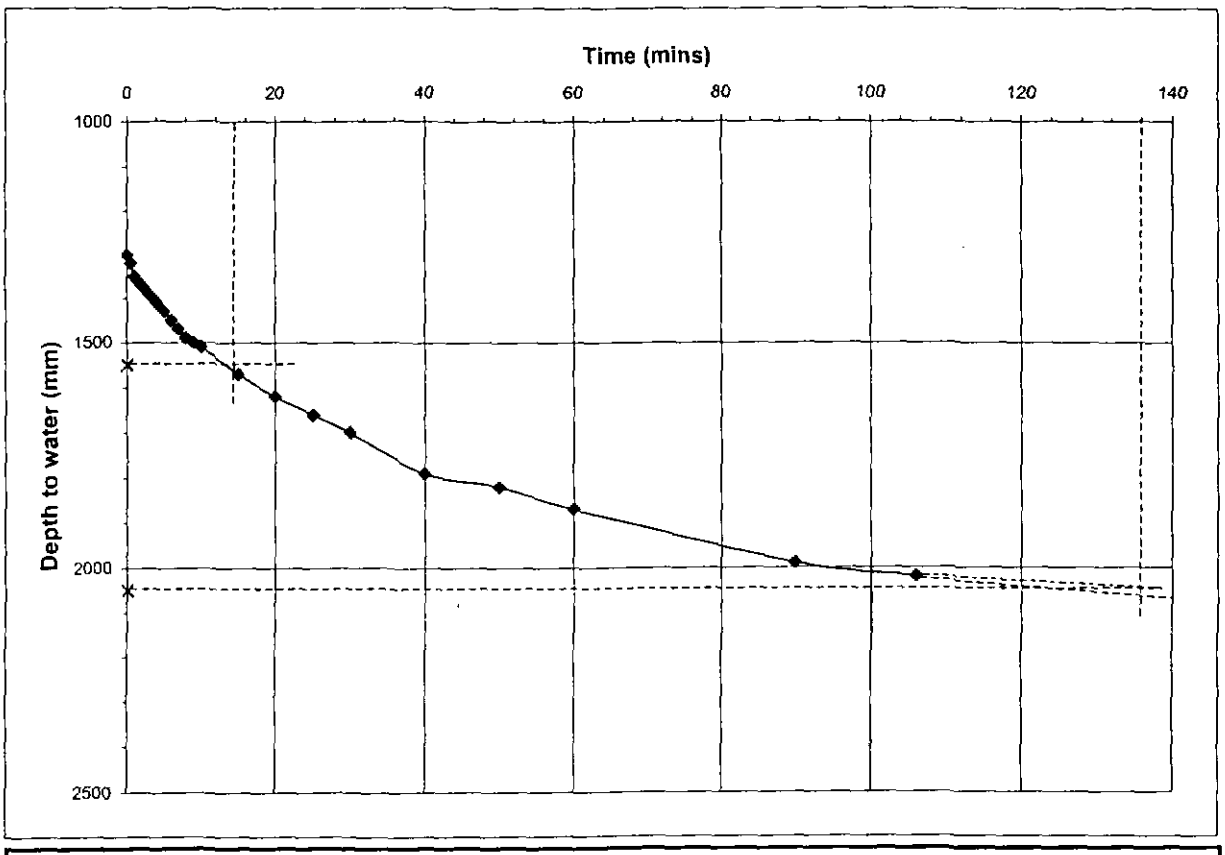
Soakaway Dimensions		(m)	(mm)
Length	=	2.30	2300
Width	=	0.30	300
Depth	=	2.30	2300

Effective depth (empty)	mm	m
75%	= 2050.0	2.05
50%	= 1800.0	1.80
25%	= 1550.0	1.55

Depth at start of test (mm)	=	1300
Depth at end of test (mm)	=	2020

Base area of pit	=	0.69
a_{p50} - 50% internal surface area inc. base	=	3.29
V_{p75-25} - Volume 75 - 25%	=	0.345

Read from the graph:		
$t_{p\,75}$ (min)	=	14
$t_{p\,25}$ (min)	=	136



Soil infiltration rate, f, (m/s) = 1.43E-05 (normal test)

Note: tp25 not reached, value extrapolated from graph

Soil infiltration rate, f, (m/s) = 4.30E-06 (pit filled with stone)

SOIL INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365: 1991

Client: Ben Bailey Homes / Ogden Group
Job Name: Goldthorpe Colliery
Job No.: 2500

AIG CONSULTANTS LTD

Trial Pit No.	SW106
Test No.	[illegible]

Time	Elpsed Time	Depth to water form ground level	
	(min)	(m)	(mm)
	0	1.45	1450
	0.5	1.50	1500
	1	1.70	1700
	1.5	1.78	1780
	2	1.87	1870
	2.5	1.88	1880
	3	1.95	1950
	3.5	1.96	1960
	4	2.00	2000
	4.5	2.04	2040
	5	2.05	2050
	6	2.10	2100
	7	2.15	2150
	8	2.18	2180
	9	2.20	2200
	10	2.21	2210
	15	2.34	2340
	20	2.40	2400

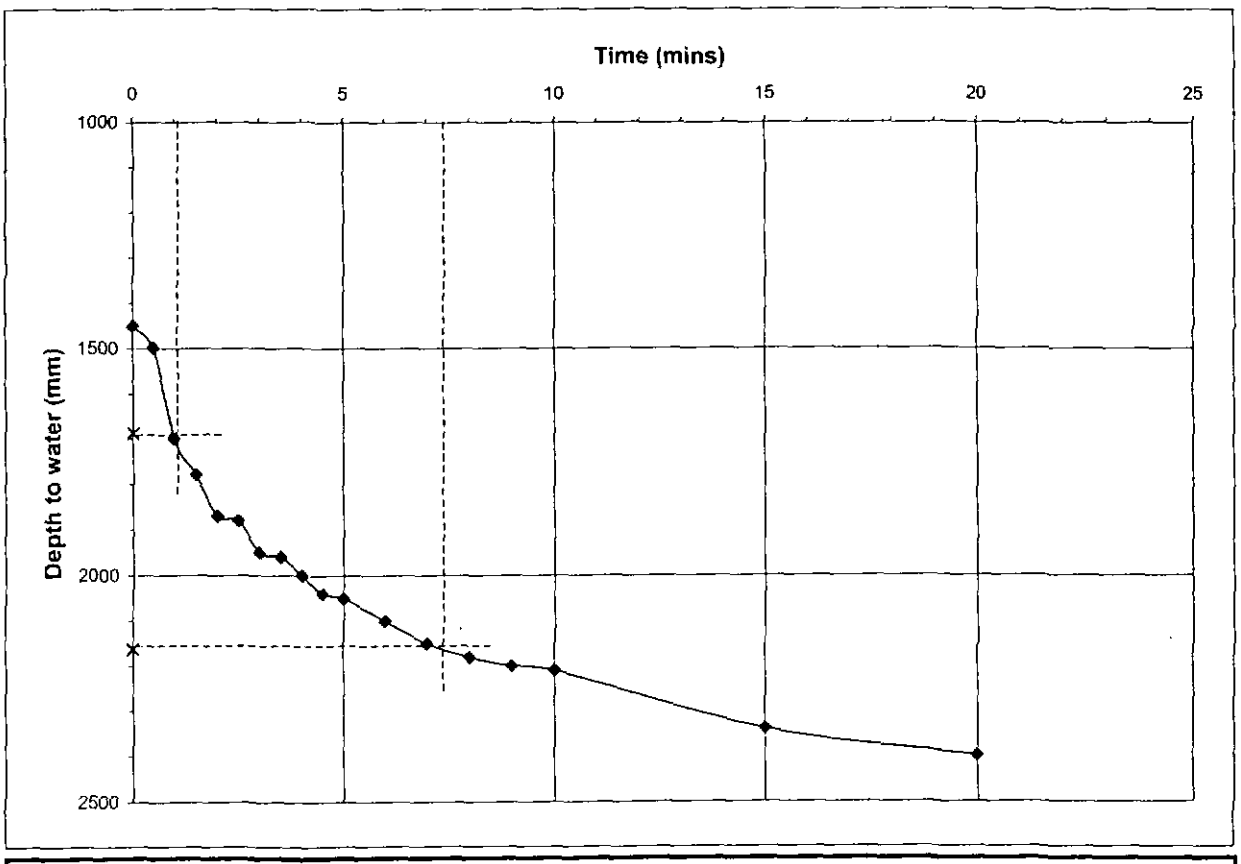
Soakaway Dimensions		(m)	(mm)
Length	=	2.00	2000
Width	=	0.30	300
Depth	=	2.40	2400

Effective depth (empty)		mm	m
75%	=	2162.5	2.16
50%	=	1925.0	1.93
25%	=	1687.5	1.69

Depth at start of test (mm)	=	1450
Depth at end of test (mm)	=	2400

Base area of pit	=	0.6
a_{p50} - 50% internal surface area inc. base	=	2.785
V_{p75-25} - Volume 75 - 25%	=	0.285

Read from the graph:		
$t_{p\,75}$ (min)	=	[illegible]
$t_{p\,25}$ (min)	=	[illegible]



Soil infiltration rate, f, (m/s) = 2.84E-04 **(normal test)**

Soil infiltration rate, f, (m/s) = *8.53E-05* ***(pit filled with stone)***

SOIL INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365: 1991

Client: Ben Bailey Homes / Ogden Group
Job Name: Goldthorpe Colliery
Job No.: 2500

AIG CONSULTANTS LTD

Trial Pit No.	SW106
Test No.	2

Time	Elpsed Time	Depth to water form ground level	
	(min)	(m)	(mm)
	0	1.40	1400
	0.5	1.47	1470
	1	1.55	1550
	1.5	1.65	1650
	2	1.70	1700
	2.5	1.78	1780
	3	1.80	1800
	3.5	1.85	1850
	4	1.89	1890
	4.5	1.92	1920
	5	1.97	1970
	6	2.00	2000
	7	2.05	2050
	8	2.09	2090
	9	2.14	2140
	10	2.15	2150
	15	2.24	2240
	20	2.32	2320
	25	2.40	2400

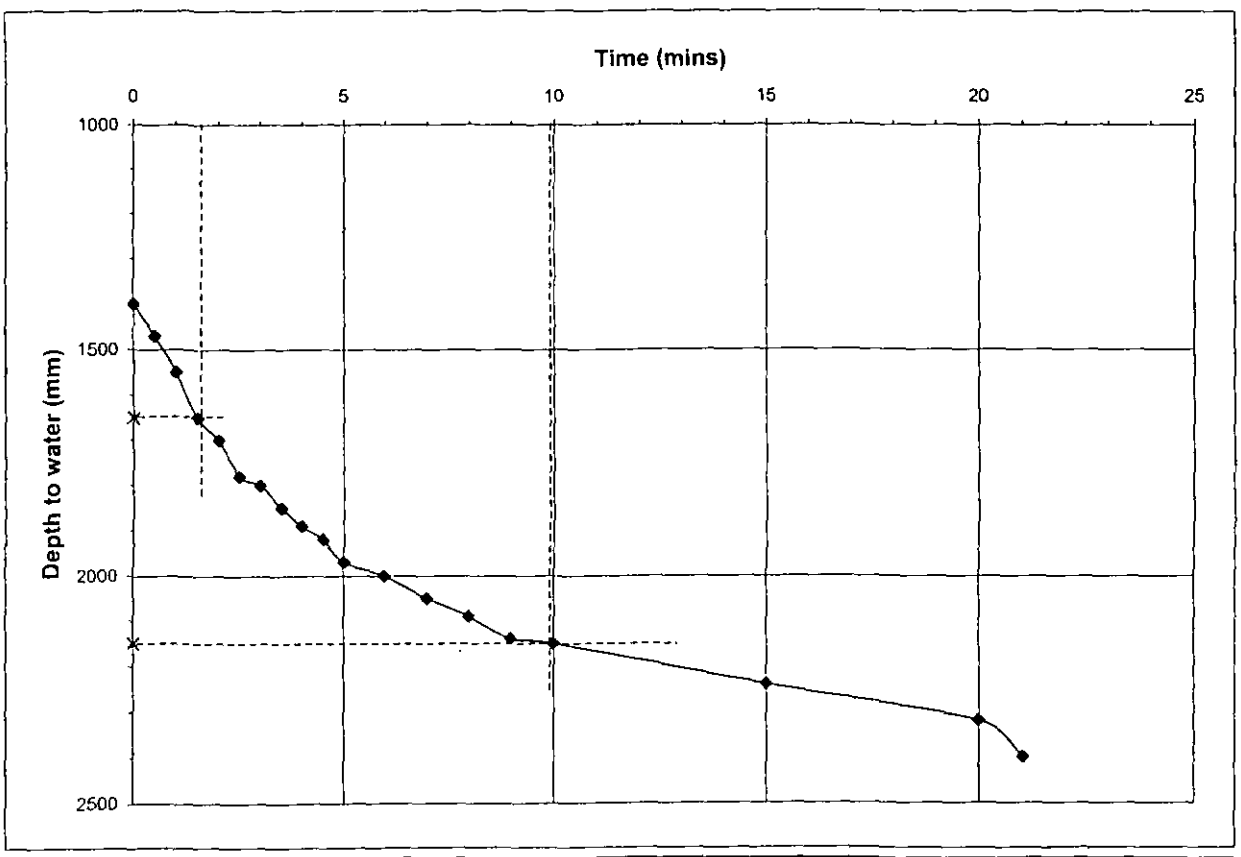
Soakaway Dimensions		(m)	(mm)
Length	=	2.00	2000
Width	=	0.30	300
Depth	=	2.40	2400

Effective depth (empty)		mm	m
75%	=	2150.0	2.15
50%	=	1900.0	1.90
25%	=	1650.0	1.65

Depth at start of test (mm)	=	1400
Depth at end of test (mm)	=	2400

Base area of pit	≈	0.6
a_{p50} - 50% internal surface area inc. base	≈	2.9
V_{p75-25} - Volume 75 - 25%	≈	0.3

Read from the graph:		
$t_{p\,75}$ (min)	=	15
$t_{p\,25}$ (min)	=	10



Soil infiltration rate, f, (m/s) =	2.03E-04	(normal test)
Soil infiltration rate, f, (m/s) =	*6.09E-05*	*(pit filled with stone)*

SOIL INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365: 1991

Client: Ben Bailey Homes / Ogden Group
Job Name: Goldthorpe Colliery
Job No.: 2500

AIG CONSULTANTS LTD

Trial Pit No.	SW107
Test No.	[illegible]

Time	Elpsed Time	Depth to water form ground level	
	(min)	(m)	(mm)
	[illegible]	[illegible]	1100
	[illegible]	[illegible]	1100
	[illegible]	[illegible]	1110
	[illegible]	[illegible]	1120
	[illegible]	[illegible]	1130
	[illegible]	[illegible]	1150
	[illegible]	[illegible]	1150
	[illegible]	[illegible]	1160
	[illegible]	[illegible]	1170
	[illegible]	[illegible]	1170
	[illegible]	[illegible]	1180
	[illegible]	[illegible]	1190
	[illegible]	[illegible]	1200
	[illegible]	[illegible]	1210
	[illegible]	[illegible]	1220
	[illegible]	[illegible]	1240
	[illegible]	[illegible]	1270
	[illegible]	[illegible]	1310
	[illegible]	[illegible]	1350
	[illegible]	[illegible]	1370
	[illegible]	[illegible]	1420
	[illegible]	[illegible]	1460
	[illegible]	[illegible]	1500
	[illegible]	[illegible]	1670
	[illegible]	[illegible]	1700
	[illegible]	[illegible]	1750
	[illegible]	[illegible]	1760

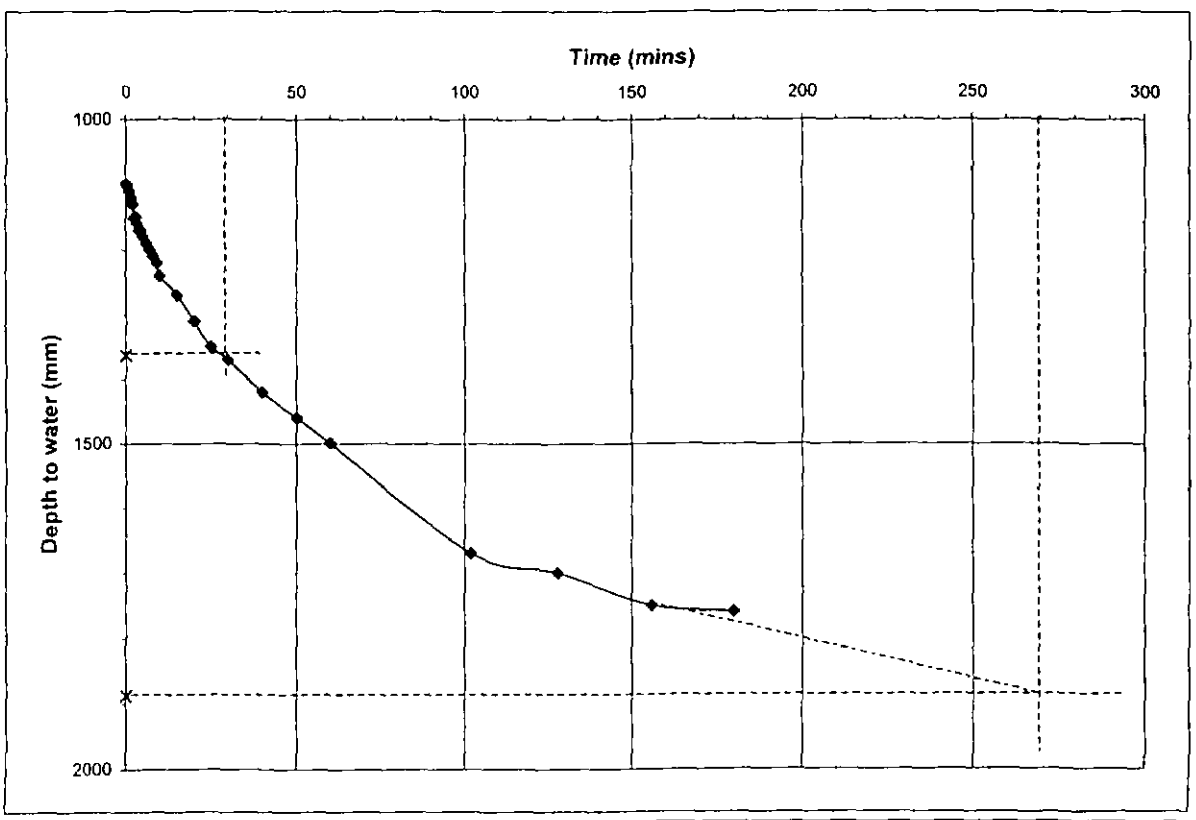
Soakaway Dimensions		(m)	(mm)
Length	=	[illegible]	1700
Width	=	[illegible]	300
Depth	=	[illegible]	2150

Effective depth (empty)		mm	m
75%	=	1887.5	1.89
50%	=	1625.0	1.63
25%	=	1362.5	1.36

Depth at start of test (mm)	=	1100
Depth at end of test (mm)	=	1760

Base area of pit	=	0.51
a_{p50} - 50% internal surface area inc. base	=	2.61
V_{p75-25} - Volume 75 - 25%	=	0.26775

Read from the graph:		
$t_{p\,75}$ (min)	=	[illegible]
$t_{p\,25}$ (min)	=	[illegible]



Soil infiltration rate, f, (m/s) = 7.09E-06 (normal test)

Note: tp25 not reached, value extrapolated from curve.

Soil infiltration rate, f, (m/s) = 2.13E-06 (pit filled with stone)

SOIL INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365: 1991

Client: Ben Bailey Homes / Ogden Group
Job Name: Goldthorpe Colliery
Job No.: 2500

AIG CONSULTANTS LTD

Trial Pit No.	SW108
Test No.	[illegible]

Time	Elpsed Time	Depth to water form ground level	
	(min)	(m)	(mm)
	[illegible]	0.90	900
	[illegible]	0.90	900
	[illegible]	0.91	910
	[illegible]	0.94	940
	[illegible]	0.96	960
	[illegible]	0.97	970
	[illegible]	0.98	980
	[illegible]	0.98	980
	[illegible]	0.99	990
	[illegible]	0.99	990
	[illegible]	1.00	1000
	[illegible]	1.01	1010
	[illegible]	1.02	1020
	[illegible]	1.03	1030
	[illegible]	1.04	1040
	[illegible]	1.05	1050
	[illegible]	1.09	1090
	[illegible]	1.13	1130
	[illegible]	1.17	1170
	[illegible]	1.20	1200
	[illegible]	1.26	1250
	[illegible]	1.29	1290
	[illegible]	1.35	1350
	[illegible]	1.44	1440
	[illegible]	1.47	1470
	[illegible]	1.59	1590
	[illegible]	1.65	1650

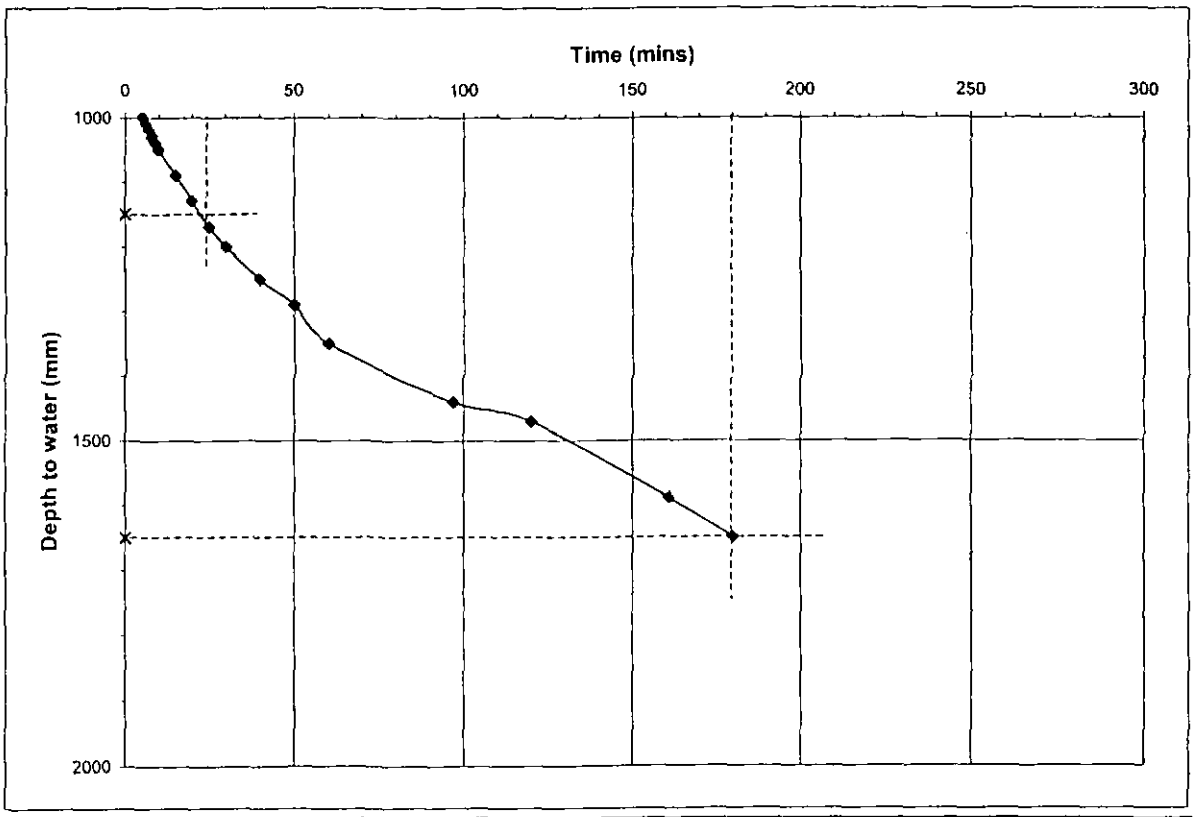
Soakaway Dimensions		(m)	(mm)
Length	=	2.00	2000
Width	=	0.30	300
Depth	=	1.90	1900

Effective depth (empty)		mm	m
75%	=	1650.0	1.65
50%	=	1400.0	1.40
25%	=	1150.0	1.15

Depth at start of test (mm)	=	*900*
Depth at end of test (mm)	=	1650

Base area of pit	=	0.6
a_{p50} - 50% internal surface area inc. base	=	2.9
V_{p75-25} - Volume 75 - 25%	=	0.3

Read from the graph:		
$t_{p\,75}$ (min)	=	[illegible]
$t_{p\,25}$ (min)	=	[illegible]



Soil infiltration rate, f, (m/s) = 1.09E-05 (normal test)

Soil infiltration rate, f, (m/s) = 3.27E-06 (pit filled with stone)

SOIL INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365: 1991

Client: Ben Bailey Homes / Ogden Group
Job Name: Goldthorpe Colliery
Job No.: 2500

AIG CONSULTANTS LTD

Trial Pit No.	SW109
Test No.	[illegible]

Time	Elpsed Time	Depth to water form ground level	
	(min)	(m)	(mm)
	0	1.357	1350
	0.5	1.367	1360
	1	1.367	1360
	1.5	1.377	1370
	2	1.389	1390
	2.5	1.411	1410
	3	1.42	1420
	3.5	1.45	1450
	4	1.459	1460
	4.5	1.477	1470
	5	1.501	1500
	6	1.515	1510
	7	1.535	1530
	9	1.593	1590
	10	1.611	1610
	15	1.708	1700
	20	1.801	1800
	25	1.865	1860
	34	1.941	1940
	40	1.991	1990
	55	2.041	2040
	62	2.041	2040
	90	2.151	2150
	120	2.201	2200
	150	2.301	2300

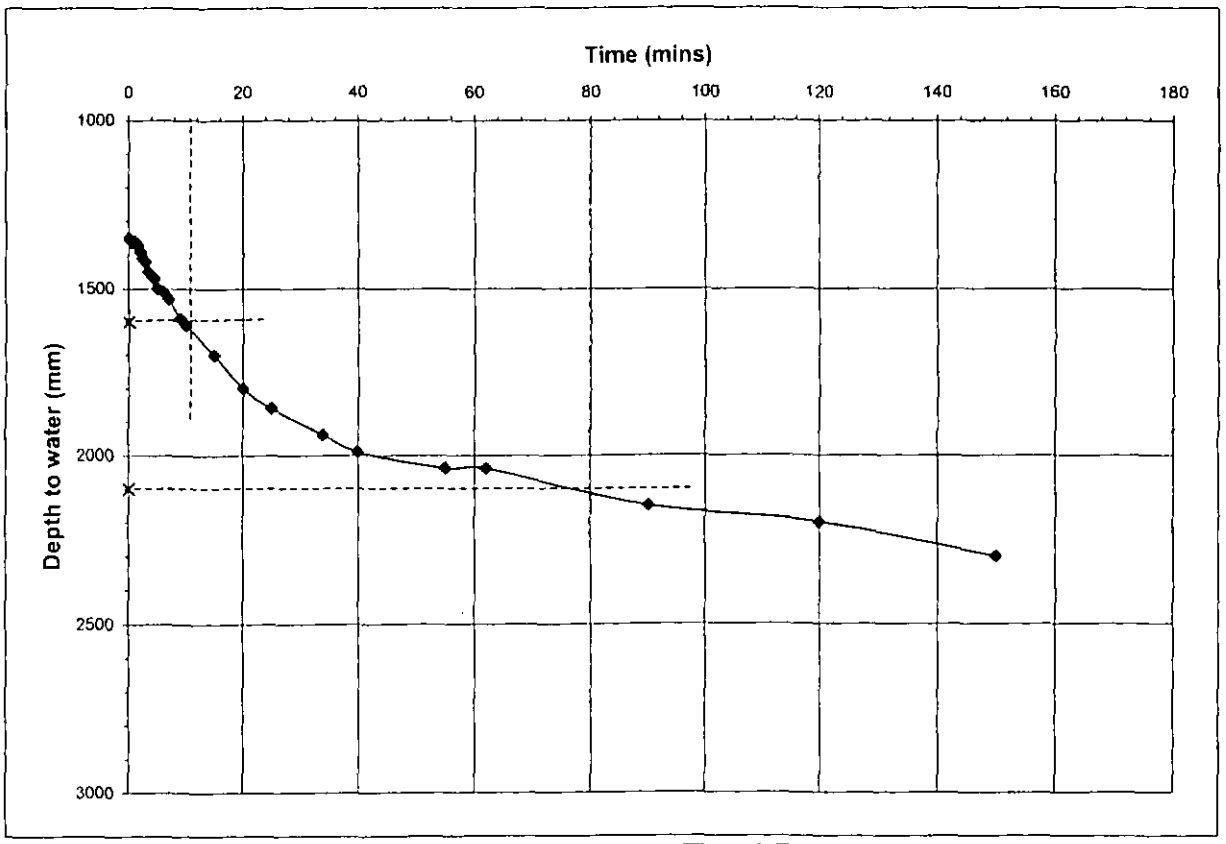
Soakaway Dimensions		(m)	(mm)
Length	=	1.70	1700
Width	=	0.30	300
Depth	=	2.35	2350

Effective depth (empty)		mm	m
75%	=	2100.0	2.10
50%	=	1850.0	1.85
25%	=	1600.0	1.60

Depth at start of test (mm)	=	1350
Depth at end of test (mm)	=	2300

Base area of pit	=	0.51
a_{p50} - 50% internal surface area inc. base	=	2.51
V_{p75-25} - Volume 75 - 25%	=	0.255

Read from the graph:		
$t_{p\,75}$ (min)	=	10
$t_{p\,25}$ (min)	=	80



Soil infiltration rate, f, (m/s) =	2.42E-05	(normal test)
Soil infiltration rate, f, (m/s) =	*7.26E-06*	*(pit filled with stone)*

SOIL INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365: 1991

Client: Ben Bailey Homes / Ogden Group
Job Name: Goldthorpe Colliery
Job No.: 2500

AIG CONSULTANTS LTD

Trial Pit No.	SW110
Test No.	[illegible]

Time	Elpsed Time	Depth to water form ground level	
	(min)	(m)	(mm)
	[illegible]	[illegible]	1300
	[illegible]	[illegible]	1390
	[illegible]	[illegible]	1450
	[illegible]	[illegible]	1500
	[illegible]	[illegible]	1550
	[illegible]	[illegible]	1580
	[illegible]	[illegible]	1600
	[illegible]	[illegible]	1630
	[illegible]	[illegible]	1660
	[illegible]	[illegible]	1680
	[illegible]	[illegible]	1690
	[illegible]	[illegible]	1740
	[illegible]	[illegible]	1760
	[illegible]	[illegible]	1780
	[illegible]	[illegible]	1800
	[illegible]	[illegible]	1810
	[illegible]	[illegible]	1910
	[illegible]	[illegible]	1990
	[illegible]	[illegible]	1990
	[illegible]	[illegible]	2020
	[illegible]	[illegible]	2060
	[illegible]	[illegible]	2100

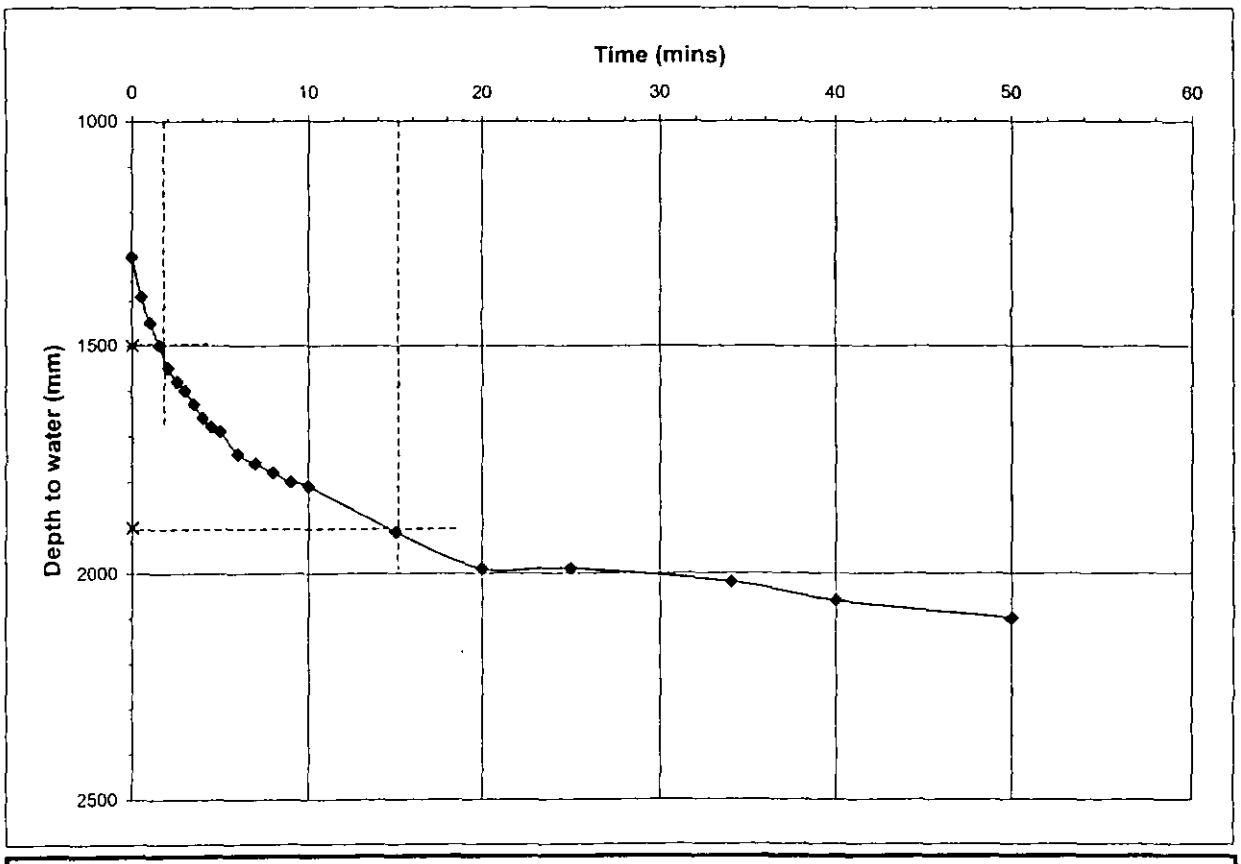
Soakaway Dimensions		(m)	(mm)
Length	=	[illegible]	2100
Width	=	[illegible]	300
Depth	=	[illegible]	*2100*

Effective depth (empty)		mm	m
75%	=	1900.0	1.90
50%	=	1700.0	1.70
25%	=	1500.0	1.50

Depth at start of test (mm)	=	1300
Depth at end of test (mm)	=	2100

Base area of pit	=	0.63
a_{p50} - 50% internal surface area inc. base	=	2.55
V_{p75-25} - Volume 75 - 25%	=	0.252

Read from the graph:		
$t_{p\,75}$ (min)	=	[illegible]
$t_{p\,25}$ (min)	=	[illegible]



Soil infiltration rate, f, (m/s) = 1.27E-04 (normal test)

Soil infiltration rate, f, (m/s) = 3.80E-05 (pit filled with stone)

SOIL INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365: 1991

Client: Ben Bailey Homes / Ogden Group
Job Name: Goldthorpe Colliery
Job No.: 2500

AIG CONSULTANTS LTD

Trial Pit No.	SW110
Test No.	2

Time	Elpsed Time	Depth to water form ground level	
	(min)	(m)	(mm)
	0	1.10	1100
	0.5	1.18	1180
	1	1.24	1240
	1.5	1.29	1290
	2	1.33	1330
	2.5	1.38	1380
	3	1.42	1420
	3.5	1.46	1460
	4	1.50	1500
	4.5	1.53	1530
	5	1.55	1550
	6	1.60	1600
	7	1.62	1620
	8	1.66	1660
	9	1.69	1690
	10	1.70	1700
	15	1.80	1800
	20	1.85	1850
	25	1.95	1950
	34	1.98	1980
	40	1.99	1990
	50	2.00	2000
	60	2.10	2100

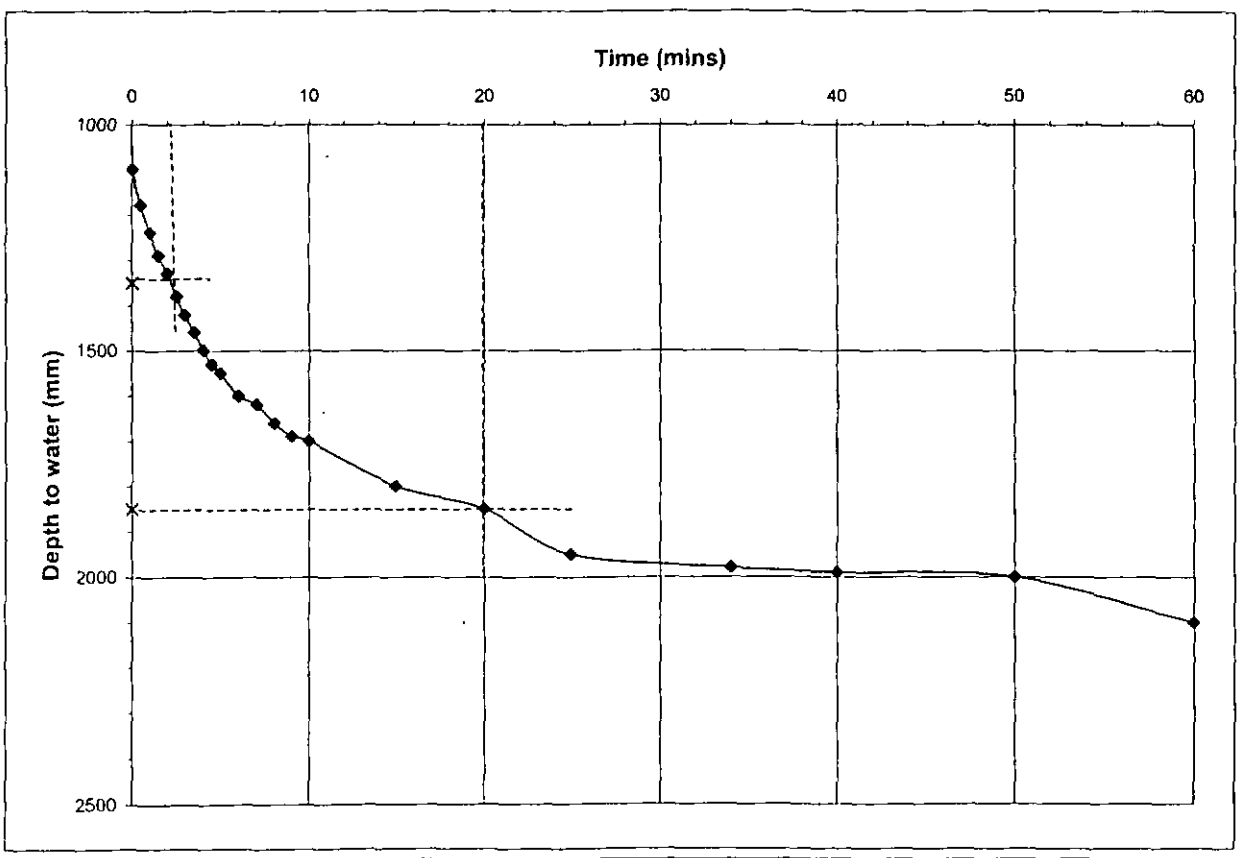
Soakaway Dimensions		(m)	(mm)
Length	=	2.10	2100
Width	=	0.30	300
Depth	=	2.10	2100

Effective depth (empty)		mm	m
75%	=	1850.0	1.85
50%	=	1600.0	1.60
25%	=	1350.0	1.35

Depth at start of test (mm)	=	1100
Depth at end of test (mm)	=	2100

Base area of pit	=	0.63
a_{p50} - 50% internal surface area inc. base	=	3.03
V_{p75-25} - Volume 75 - 25%	=	0.315

Read from the graph:		
$t_{p\,75}$ (min)	=	2
$t_{p\,25}$ (min)	=	20



Soil infiltration rate, f, (m/s) =	9.63E-05	(normal test)
Soil infiltration rate, f, (m/s) =	*2.89E-05*	*(pit filled with stone)*

APPENDIX I
MONITORING RESULTS

AIG Consultants

Gas Monitoring Results

Job Title:	Job No:
Goldthorpe Colliery, Goldthorpe	2500
Client:	**Sheet :** 1 of 1

Date:	25-Apr-02 (Visit 1)	Arr Time:	10:25	Dep Time:	12:10	Operator:	Gareth Shaw

Gas Monitoring Results:

Ambient Concentration (% Volume):	CH_4:	ND	CO_2:	ND	O_2:	21.3

Monitoring Point		Gas Concentration							Gas Flow Rate	Remarks
		Highest			Steady			(Lowest)		
Ref:	GWL	CH_4		CO_2	CH_4		CO_2	O_2		
	(m) bgl	% lel	% v/v	(%)	% lel	% v/v	(%)	(%)	litre/hr	
PH101	NR	ND	ND	3.8	ND	ND	3.8	16.2	0.8	
PH102	4.41	ND	ND	2.7	ND	ND	2.7	16.8	0.1	
PH103	3.89	ND	ND	0.5	ND	ND	0.5	19.8	0.8	
PH104	9.53	ND	ND	1.9	ND	ND	1.9	14.5	0.0	
PH105	9.00	ND	ND	2.4	ND	ND	2.4	15.9	0.0	
PH106	9.68	ND	ND	ND	ND	ND	ND	21.0	0.4	
PH107	4.26	ND	ND	2.8	ND	ND	2.8	17.5	1.0	
PH108	6.56	ND	ND	4.2	ND	ND	4.2	17.5	0.0	
PH109	4.83	ND	ND	2.0	ND	ND	2.0	16.1	0.0	
PH110	2.74	ND	ND	0.8	ND	ND	0.8	20.0	0.4	

Notes

Equipment Used:	Calibration	Key
Gas Data LMSX Infra red analyser	Last date	POS - Positive Flow
Geotechnical Instruments Dipmeter	01.02.01	NEG - Negative Flow
		ND - None Detected
		NR - Not Recorded

Barometric Pressure Trend:	Falling				
Start of Visit:	1016mb	End of Visit:	1015mb	Intermediate Readings:	NR
Weather Conditions:	Warm, sunny, windy				
Surface Ground Conditions:	Dry			Temp:	NR

Remarks:
PH101 cap could not be removed so no ground water level was taken.

Checked:	Approved:

AIG

Consultants

Gas Monitoring Results

Job Title:	*Job No:*
Goldthorpe Colliery, Goldthorpe	2500
Client:	Sheet : 1 of 1

Date:	24-May-02 (Visit 2)	Arr Time:	09:50	Dep Time:	11:00	Operator:	Gareth Shaw

Gas Monitoring Results:

Ambient Concentration (% Volume):	CH_4:	0.0	CO_2:	0.0	O_2:	21.1

Monitoring Point		Gas Concentration							Gas Flow Rate	Remarks
		Highest			Steady			(Lowest)		
Ref:	GWL	CH_4		CO_2	CH_4		CO_2	O_2		
	(m) bgl	% lel	% v/v	(%)	% lel	% v/v	(%)	(%)	litre/hr	
PH101	NR	ND	ND	0.4	ND	ND	0.4	20.8	0.1	
PH102	4.43	ND	ND	0.2	ND	ND	0.2	20.2	0.2	
PH103	3.93	ND	ND	0.9	ND	ND	0.9	19.7	0.0	
PH104	9.54	ND	ND	8.9	ND	ND	8.9	1.7	0.0	
PH105	7.02	ND	ND	0.2	ND	ND	0.2	20.5	0.0	
PH106	3.20	ND	ND	5.8	ND	ND	5.8	6.9	0.2	
PH107	9.64	ND	ND	0.1	ND	ND	0.1	20.6	-0.6	
PH108	4.26	ND	ND	2.2	ND	ND	2.2	18.6	0.3	
PH109	8.54	ND	ND	2.1	ND	ND	2.1	7.1	0.1	
PH110	5.29	ND	ND	2.0	ND	ND	2.0	18.9	0.2	

Notes

Equipment Used:	Calibration	Key
Gas Data LMSX Infra red analyser	Last date	POS - Positive Flow
Geotechnical Instruments Dipmeter	01.02.01	NEG - Negative Flow
		ND - None Detected
		NR - Not Recorded

Barometric Pressure Trend:	Steady				
Start of Visit:	986mb	End of Visit:	985mb	Intermediate Readings:	NR
Weather Conditions:	Cool, overcast, sunny spells, windy				
Surface Ground Conditions:	Wet			Temp:	NR

Remarks:

PH101 cap could not be removed so no ground water level was taken.

Checked:	Approved:

APPENDIX J
GEOTECHNICAL TEST RESULTS

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Trial Pit *Number*	Sample *Number*	Depth *m*	Description of Sample
102		9.60	Brown mottled grey slightly sandy silty CLAY.
102		3.00	Pale brown gravelly slightly sandy very silty CLAY.
106		2.70	Brown gravelly slightly sandy very silty CLAY.
111		1.50	Brown mottled grey gravelly slightly sandy very silty CLAY.
117		1.40	Brown very gravelly slightly sandy very silty CLAY (weathered mudstone).
119		1.50	Brown mottled grey very gravelly slightly sandy very silty CLAY (weathered mudstone).
122		1.80	Brown mottled grey silty CLAY.
123		0.70	Brown mottled grey slightly sandy silty CLAY.
124		1.60	Brown mottled grey slightly sandy silty CLAY.
134		0.40	Pale brown slightly sandy very silty CLAY.
135		4.10	Brownish grey very silty CLAY.
140		2.60	Brown slightly gravelly slightly sandy silty CLAY.
158		1.20	Pale brown gravelly slightly sandy very silty CLAY.
160		2.40	Brown mottled grey slightly sandy silty CLAY.
164		2.50	Pale brown very gravelly SAND.

THYSSEN GEOTECHNICAL

Compiled by	Date	Checked by	Date	Approved by	Date
	7/5/02		7/5/02		7/5/02

GOLDTHORPE COLLIERY.

Contract No NL220597

RECEIVED

SUMMARY OF SOIL CLASSIFICATION TESTS

(B.S. 1377 : PART 2 : 1990)

Trial Pit Number	Sample Number	Depth m	Moisture Content % Clause 3.2	Bulk Density Mg/m^3 Clause 7.2	Dry Density Mg/m^3 Clause 7.2	Particle Density Mg/m^3 Clause 8.	Liquid Limit % Clause 4.3/4.4	Plastic Limit % Clause 5.	Plasticity Index % Clause 6.	% Passing .425mm	Remarks
102		9.60	21				55	24	31	100	High plasticity CH.
102		3.00	23				53	22	31	89	High plasticity CH.
106		2.70	16				54	23	31	84	High plasticity CH.
111		1.50	25				57	25	32	89	High plasticity CH.
117		1.40	25				64	28	36	70	High plasticity CH.
119		1.50	18				56	23	33	71	High plasticity CH.
122		1.80	27				60	27	33	100	High plasticity CH.
123		0.70	29				56	25	31	100	High plasticity CH.
124		1.60	25				58	25	33	100	High plasticity CH.
134		0.40	35				61	27	34	100	High plasticity CH.
135		4.10	24				53	22	31	100	High plasticity CH.
140		2.60	32				57	22	35	96	High plasticity CH.
158		1.20	19				56	25	31	83	High plasticity CH.
160		2.40	25				58	26	32	96	High plasticity CH.
164		2.50	23					NP			

SYMBOLS : NP : Non Plastic * : Liquid Limit and Plastic Limit Wet Sieved.

THYSSEN GEOTECHNICAL

Compiled by	Date	Checked by	Date	Approved by	Date
	7/5/02		7/5/02		7/5/02

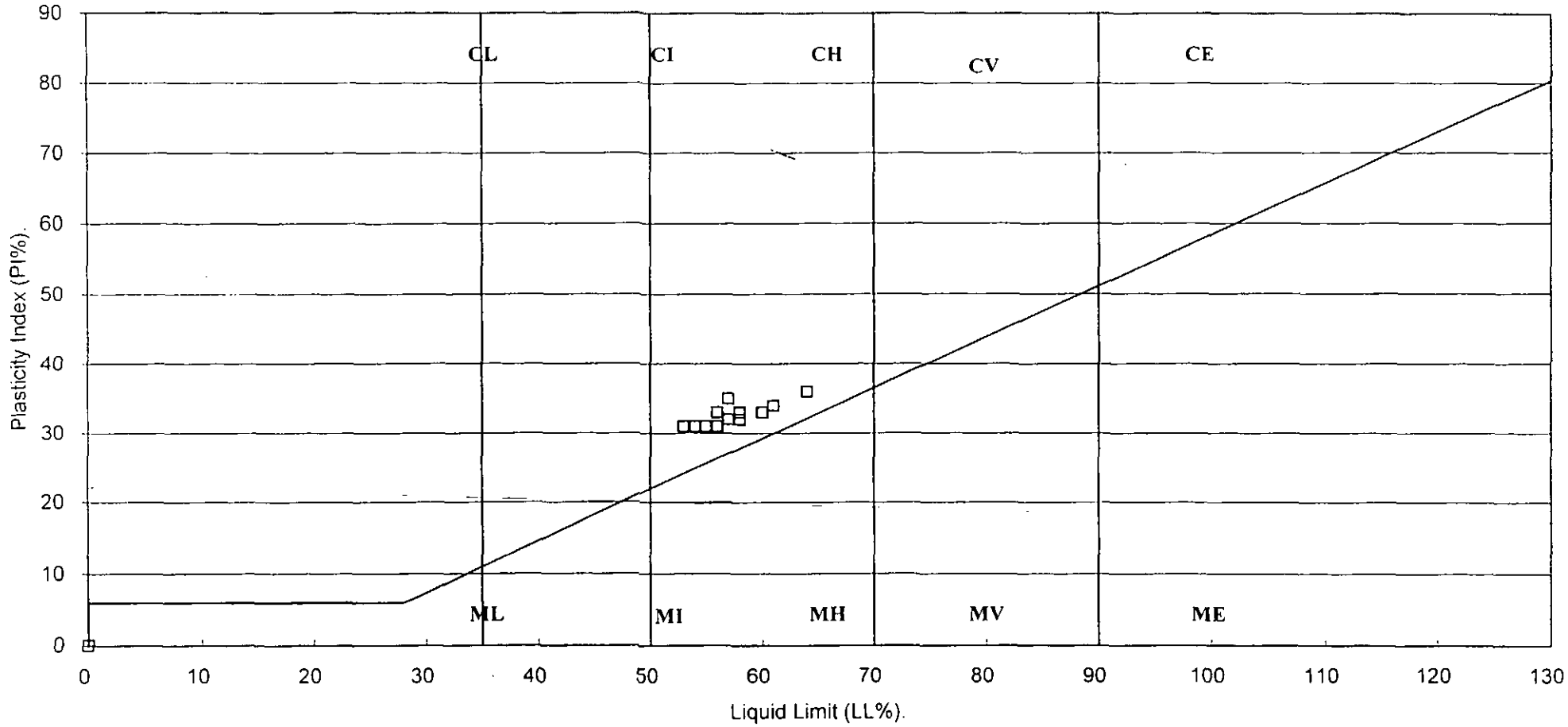
GOLDTHORPE COLLIERY.

Contract No NL220597

Figure:

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

(B.S.5930 : 1999)



	Compiled by	Date	Checked by	Date	Approved by	Date
THYSSEN GEOTECHNICAL		7/5/02		7/5/02		7/5/02
	GOLDTHORPE COLLIERY.				Contract No NL220597	
					Figure:	

GOLDTHORPE COLLIERY
Summary of Chemical Analyses
BS 1377 : Part 3 : 1990

Borehole or Trial Pit	Depth (m)	Sample Number	Sample Type	Laboratory Reference Number	Test 3 Organic Content	Test 4 Loss on Ignition	Test 5.5 Sulphate Content Soil SO_3 (SO_4)	Test 5.5 Sulphate Content 2:1 Water:Soil extract SO_3 (SO_4)	Test 5.5 Sulphate Content Groundwater SO_3 (SO_4)	Test 6.3 Carbonate Content (as CO_2)	Test 7.2/7.3 Chloride Content (as Cl) Soil	Test 7.2/7.3 Chloride Content (as Cl) Groundwater	Test 9 pH Value	1 pH Value
					% Dry mass	% Dry mass	% Dry mass	g/l	g/l	% Dry mass	% Dry mass	g/l		
TP 102	3.00			04875/1				0.36 (0.44)					7.5	
TP 102	9.60			04875/2				0.75 (0.90)					7.7	
TP 111	1.50			04875/3				0.29 (0.35)					7.4	
TP 120	1.4			04875/4				0.10 (0.12)					7.5	
TP 124	1.60			04875/5				0.10 (0.12)					7.5	
TP 125	0.80			04875/6				0.08 (0.10)					7.8	
TP 133	0.60			04875/7				0.07 (0.08)					7.8	
TP 135	4.10			04875/8				0.14 (0.17)					7.3	
TP 142	0.50			04875/9				0.51 (0.61)					5.3	

Approved By: R Lan
Date: 9/5/02

Client Reference: NL220597
Laboratory Reference: 04875

DERWENTSIDE ENVIRONMENTAL TESTING SERVICES LIMITED

APPENDIX K
CHEMICAL TESTING RESULTS

ALcontrol Laboratories Certificate ID : 49445292/S/0/0

Environmental Laboratory - Templeborough House
Accredited Test Procedures

Method Ref.	Technique
R2.3.2	Colorimetric
R2.4.2	Colorimetric
R2.5.1	Colorimetric
R2.7.3	Colorimetric
R2.8.2	Colorimetric
R2.21.2	Colorimetric
R3.2	Titrimetric
R3.3	Electrochemical
R3.4.1/A	Ion selective electrode
R3.5.1	Ion selective electrode
R3.6	Ion selective electrode
R3.7.1	Gravimetric
R3.8	Gravimetric
R4.1	Titrimetric
R5.1	Electrochemical (dissolved oxygen probe)
R5.2	Dichromate oxidation / colorimetric
R5.5	Ion chromatography
R6.13.2	Colorimetric
R7.2	Infra-red spectrometry
R7.4.1	Gravimetric
R7.9	Gas chromatography - mass spectrometry
R7.12.1	Chemical oxidation / infra-red spectrometry
R7.22	Gas chromatography - flame ionisation detector
R7.25	Gas chromatography - flame ionisation detector
R7.30	Gas chromatography - mass spectrometry
R7.40	Gas chromatography - mass spectrometry
R8B	Inductively coupled plasma
R9A	Atomic fluorescence spectrometry
R9B	Atomic fluorescence spectrometry
R11.1	Gravimetric
R11.2	Gravimetric
R11.3	Gravimetric
R11.7	Gravimetric
R12.1	Respiration inhibition
R12.2.1a	Nitrification inhibition
R12.3	Microtox

UKAS TESTING
TESTING
No. 0995

ALcontrol Laboratories

Certificate of Analysis

Job Reference: 2500
Site Name: Goldthorpe Colliery
Receipt Date: 14/05/02
Report Date: 24/05/02
Laboratory Address: Templeborough House,
Mill Close, Rotherham, S60 1BZ

AIG Consultants Ltd.
AIG House
Audby Lane
Wetherby
LS22 7RD

Volatile Organics

		Laboratory Number	49445297	49445298	49445303	49445304	49445307	49445309	49445327
		Sampling Date	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02
		Sample Point	TP107 1 0.7	TP109 1 1.0	TP118 1 0.3	TP116 2 1.3	TP121 1 0.3	TP124 1 0.5	TP160 2 0.8
Method Code	***Units***	***Determinands***							
R7.9	ug/kg	Benzene (DSB)	< 22	< 23	< 23	< 23	< 22	< 24	< 22
R7.9	ug/kg	Toluene (DSB)	< 22	< 23	< 23	< 23	< 22	< 24	< 22
R7.9	ug/kg	Ethyl benzene (DSB)	< 22	< 23	< 23	< 23	< 22	< 24	< 22
R7.9	ug/kg	m,p-Xylene (DSB)	< 22	< 23	< 23	< 23	< 22	< 24	< 22
R7.9	ug/kg	o-Xylene (DSB)	< 22	< 23	< 23	< 23	< 22	< 24	< 22

Steve Scott, Laboratory Manager

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AIG House
Audby Lane
Wetherby
LS22 7RD

Soil, Leachate & Water Analysis

		Laboratory Number	49445292	49445293	49445294	49445297	49445298	49445299	49445303
		Sampling Date	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02
		Sample Point	TP101 1 0.5	TP101 4 3.0	TP102 1 0.6	TP107 1 0.7	TP109 1 1.0	TP110 1 1.0	TP116 1 0.3
Method Code	***Units***	***Determinands***							
R9B	ug/l	Arsenic (leach)	< 0.8			2	< 0.8		4.6
R8B	mg/l	Cadmium(leach)	< 0.0002			0.0003	0.0003		< 0.0002
R8B	mg/l	Chromium(leach)	< 0.002			< 0.002	< 0.002		< 0.002
R8B	*mg/l*	Lead(leach)	*< 0.005*			*< 0.005*	*< 0.005*		*< 0.005*
R9A	ug/l	Mercury (leach)	< 0.05			< 0.05	< 0.05		< 0.05
R9B	*mg/l*	*Copper(leach)*	*0.01*			*0.024*	*0.017*		*0.005*
R8B	mg/l	Nickel(leach)	< 0.005			0.019	0.473		< 0.005
R8B	mg/l	Zinc (leach)	0.01			0.05	0.06		< 0.01
R8B	mg/kg	Arsenic (soil)	21.8	14.5	58	22.6	63.3	45	86.7
R8B	mg/kg	Cadmium (soil)	0.15	0.21	0.29	1	0.16	0.27	0.92
R8B	mg/kg	Chromium (soil)	27.5	32.5	30.9	25.6	20.4	25.4	55.7
R8B	mg/kg	Lead (soil)	34	37.2	25.7	31.9	28	49.3	134
R*	mg/kg	Mercury (soil)	< 0.10	< 0.10	< 0.10	0.11	0.16	0.1	0.11
R*	mg/kg	Selenium (soil)	0.82	< 0.40	< 0.40	< 0.40	2.08	< 0.40	1.48
R8B	mg/kg	Copper (soil)	49.3	19.6	107	58.5	57.8	55	210
R8B	mg/kg	Nickel (soil)	45.5	24.3	72	41.2	37.1	33.3	127
*R*8B*	mg/kg	Zinc (soil)	75.1	104	41.6	179	56.3	49	540
R*8B	mg/kg	Boron (soil) (water sol)	< 1.27	< 1.27	< 1.27	< 1.27	2.33	< 1.27	< 1.27
*R**	*mg/kg*	*Copper (Available)*							
R*	mg/kg	Nickel (Available)							
R*	mg/kg	Zinc (Available)							
R*	mg/kg	Toluene extract (ASE)	533	< 500	< 500	1090	2650	656	3770
R*	mg/kg	Gasoline Range Organics				< 5.0	< 5.0		< 5.0
R7.25	mg/kg	Lubricating Range Org				93.6	292		187
R7.25	mg/kg	Total Petroleum hydro-c				283	502		968
R7.25	mg/kg	Diesel Range Organics				214	409		676

Steve Scott, Laboratory Manager

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ALcontrol Laboratories — Certificate of Analysis

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Report Date: 24/05/02
Laboratory Address: Templeborough House, Mill Close, Rotherham, S60 1BZ

AIG Consultants Ltd.
AIG House
Audby Lane
Wetherby
LS22 7RD

Soil, Leachate & Water Analysis

		Laboratory Number	49445304	49445305	49445306	49445307	49445308	49445309	49445310
		Sampling Date	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02
		Sample Point	TP116 2 1.3	TP117 2 1.3	TP119 1 0.5	TP121 1 0.3	TP123 1 0.2	TP124 1 0.5	TP127 1 0.3
Method Code	*Units*	*Determinands*							
R9B	ug/l	Arsenic (leach)	19.3			0.8		< 0.8	
R8B	mg/l	Cadmium(leach)	< 0.0002			< 0.0002		< 0.0002	
R8B	mg/l	Chromium(leach)	< 0.002			< 0.002		< 0.002	
R8B	mg/l	Lead(leach)	< 0.005			< 0.005		< 0.005	
R9A	ug/l	Mercury (leach)	< 0.05			< 0.05		< 0.05	
R8B	mg/l	Copper(leach)	0.013			0.005		0.006	
R8B	mg/l	Nickel(leach)	< 0.005			< 0.005		< 0.005	
R8B	mg/l	Zinc (leach)	0.09			< 0.01		< 0.01	
R8B	mg/kg	Arsenic (soil)	11.7	76.6	51	3.08	18.7	17.7	51.8
R8B	mg/kg	Cadmium (soil)	0.77	0.13	0.27	0.11	0.61	0.53	0.36
R8B	mg/kg	Chromium (soil)	16.2	37.6	35.3	9.98	19.3	17.4	41.3
R8B	mg/kg	Lead (soil)	40.6	58.5	103	5.54	61.6	53	44.2
R*	mg/kg	Mercury (soil)	< 0.10	< 0.10	0.11	< 0.10	< 0.10	< 0.10	0.17
R*	mg/kg	Selenium (soil)	< 0.40	0.7	1.37	< 0.40	< 0.40	< 0.40	< 0.40
R8B	mg/kg	Copper (soil)	21.5	37.4	88.1	9.05	28	21.8	54
R8B	mg/kg	Nickel (soil)	16.5	29.3	47.6	16	18.8	18.9	46.3
R*8B	mg/kg	Zinc (soil)	169	51	175	27.6	99.7	97.5	77.3
R*8B	mg/kg	Boron (soil) (water sol)	< 1.27	< 1.27	< 1.27	< 1.27	< 1.27	< 1.27	< 1.27
R*	mg/kg	Copper (Available)							
R*	mg/kg	Nickel (Available)							
R*	mg/kg	Zinc (Available)							
R*	mg/kg	Toluene extract (ASE)	< 500	< 500	2240	< 500	< 500	8690	< 500
R*	mg/kg	Gasoline Range Organics	< 5.0			< 5.0		< 5.0	
R7.25	mg/kg	Lubricating Range Org	< 20.0			< 20.0		< 20.0	
R7.25	mg/kg	Total Petroleum hydro-c	364			< 20.0		< 20.0	
R7.25	mg/kg	Diesel Range Organics	177			< 20.0		< 20.0	

Steve Scott, Laboratory Manager

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AIG House
Audby Lane
Wetherby
LS22 7RD

Soil, Leachate & Water Analysis

		Laboratory Number	49445311	49445313	49445314	49445315	49445316	49445317	49445319
		Sampling Date	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02
		Sample Point	TP127 2 1.0	TP132 1 0.5	TP135 2 3.8	TP136 1 0.5	TP137 1 0.3	TP141 1 0.5	TP146 1 0.4
Method Code	***Units***	***Determinands***							
R9B	ug/l	Arsenic (leach)		1.3				0.9	
R8B	*mg/l*	*Cadmium(leach)*		*< 0.0002*				*< 0.0002*	
R8B	mg/l	Chromium(leach)		< 0.002				< 0.002	
R8B	mg/l	Lead(leach)		< 0.005				< 0.005	
R9A	ug/l	Mercury (leach)		< 0.05				< 0.05	
R8B	mg/l	Copper(leach)		0.002				0.004	
R8B	mg/l	Nickel(leach)		< 0.005				< 0.005	
R8B	mg/l	Zinc (leach)		< 0.01				< 0.01	
R8B	mg/kg	Arsenic (soil)	79.7	47.1	17.2	225	20.3	24.2	63.7
R8B	*mg/kg*	*Cadmium (soil)*	*0.27*	*0.61*	*0.18*	*0.57*	*0.3*	*0.32*	*0.17*
R8B	mg/kg	Chromium (soil)	28.6	13.5	34.6	57.3	27.1	21.2	28.2
R8B	mg/kg	Lead (soil)	34.7	32.2	41	49.5	40.8	41.4	34.6
R*	mg/kg	Mercury(soil)	< 0.10	0.25	0.12	0.17	0.11	< 0.10	< 0.10
R*	mg/kg	Selenium (soil)	2.81	2.41	< 0.40	2.09	< 0.40	< 0.40	1.28
R8B	mg/kg	Copper (soil)	88.6	70.2	35.4	702	34.4	42.4	46.8
R8B	mg/kg	Nickel (soil)	39.8	26.4	31.5	132	29.9	27.1	39.3
R*8B	mg/kg	Zinc (soil)	41.3	52.7	87.2	420	101	88.2	67.5
*R*8B*	mg/kg	Boron (soil) (water sol)	< 1.27	1.29	2.23	2.59	< 1.27	1.31	2.17
R*	mg/kg	Copper (Available)							10.3
R*	mg/kg	Nickel (Available)							4.86
R*	mg/kg	Zinc (Available)							3.68
R*	mg/kg	Toluene extract (ASE)	< 500	2680	1150	< 500	< 500	631	3500
R*	mg/kg	Gasoline Range Organics							
R7.25	mg/kg	Lubricating Range Org							
R7.25	mg/kg	Total Petroleum hydro-c							
R7.25	mg/kg	Diesel Range Organics							

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Report Date: 24/05/02
Laboratory Address: Templeborough House, Mill Close, Rotherham, S60 1BZ

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Audby Lane
Wetherby
LS22 7RD

Soil, Leachate & Water Analysis

		Laboratory Number	49445321	49445322	49445323	49445325	49445326	49445327	49445328
		Sampling Date	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02
		Sample Point	TP147 1 0.3	TP151 1 0.6	TP152 1 0.3	TP158 1 0.3	TP159 1 0.2	TP160 2 0.8	TP160 3 2.2
Method Code	*Units*	*Determinands*							
R9B	ug/l	Arsenic (leach)		22.1		8.6		< 0.8	
R8B	mg/l	Cadmium(leach)		< 0.0002		< 0.0002		< 0.0002	
R8B	mg/l	Chromium(leach)		< 0.002		< 0.002		< 0.002	
R8B	mg/l	Lead(leach)		< 0.005		< 0.005		< 0.005	
R9A	ug/l	Mercury (leach)		< 0.05		< 0.05		< 0.05	
R8B	mg/l	Copper(leach)		0.008		0.004		0.006	
R8B	mg/l	Nickel(leach)		< 0.005		< 0.005		< 0.005	
R8B	mg/l	Zinc (leach)		< 0.01		< 0.01		< 0.01	
R8B	mg/kg	Arsenic (soil)		44.1	40	49.4	23.1	11.2	9.44
R8B	mg/kg	Cadmium (soil)		0.47	0.33	0.41	0.5	0.24	0.43
R8B	mg/kg	Chromium (soil)		33.9	6.7	28.9	36.2	40.5	49.4
R8B	mg/kg	Lead (soil)		34.7	27.1	28.4	33.8	32	27.8
R*	mg/kg	Mercury (soil)		0.2	0.16	< 0.10	0.14	0.14	0.17
R*	mg/kg	Selenium (soil)		1.05	3.81	0.68	0.93	< 0.40	< 0.40
R8B	mg/kg	Copper (soil)		74.9	44.7	97.2	46.2	50.9	24.2
R8B	mg/kg	Nickel (soil)		51.5	10.2	66.2	53.5	60.5	43.7
R*8B	mg/kg	Zinc (soil)		111	15.3	42.9	118	125	110
R*8B	mg/kg	Boron (soil) (water sol)		1.38	3.71	< 1.27	1.69	1.58	2.36
R*	mg/kg	Copper (Available)	13.4						
R*	mg/kg	Nickel (Available)	11.6						
R*	mg/kg	Zinc (Available)	6.27						
R*	mg/kg	Toluene extract (ASE)		< 500	2630	840	1200	< 500	< 500
R*	mg/kg	Gasoline Range Organics						< 5.0	
R7.25	mg/kg	Lubricating Range Org						< 20.0	
R7.25	mg/kg	Total Petroleum hydro-c						20.7	
R7.25	mg/kg	Diesel Range Organics						20.7	

Steve Scott, Laboratory Manager

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Wetherby
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Soil, Leachate & Water Analysis

		Laboratory Number	49445331	49445332	49445333	49445334	49445335	49445336	49445337
		Sampling Date	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02
		Sample Point	TP164 2 0.8	BH101 1 0.3	BH101 3 2.3	BH101 6 5.0	BH101 9 8.0	BH101 11 11.(	BH102 1 0.5
Method Code	*Units*	*Determinands*							
R9B	ug/l	Arsenic (leach)			< 0.8				
R8B	mg/l	Cadmium(leach)			< 0.0002				
R8B	mg/l	Chromium(leach)			< 0.002				
R8B	mg/l	Lead(leach)			< 0.005				
R9A	ug/l	Mercury (leach)			< 0.05				
R8B	mg/l	Copper(leach)			0.006				
R8B	mg/l	Nickel(leach)			< 0.005				
R8B	mg/l	Zinc (leach)			0.02				
R8B	mg/kg	Arsenic (soil)	11.1		29.4			5.65	
R8B	mg/kg	Cadmium (soil)	0.77		0.41			0.19	
R8B	mg/kg	Chromium (soil)	38.1		31.5			54.6	
R8B	mg/kg	Lead (soil)	34.9		32.4			19.4	
R*	mg/kg	Mercury (soil)	< 0.10		0.4			< 0.10	
R*	mg/kg	Selenium (soil)	< 0.40		1.06			< 0.40	
R8B	mg/kg	Copper (soil)	32.7		57.8			20.6	
R8B	mg/kg	Nickel (soil)	58.9		43.4			34.5	
R*8B	mg/kg	Zinc (soil)	153		60.9			30.8	
R*8B	mg/kg	Boron (soil) (water sol)	3.84		2.52			< 1.27	
R*	mg/kg	Copper (Available)		8.68	9.9	4.12	4.79	4.81	14.6
R*	mg/kg	Nickel (Available)		2.74	2.26	1.02	2.71	< 0.50	6.76
R*	mg/kg	Zinc (Available)		3.7	3.02	3.3	3.04	0.83	6.5
R*	mg/kg	Toluene extract (ASE)	< 500		4540			< 500	
R*	mg/kg	Gasoline Range Organics							
R7.25	mg/kg	Lubricating Range Org							
R7.25	mg/kg	Total Petroleum hydro-c							
R7.25	mg/kg	Diesel Range Organics							

Steve Scott, Laboratory Manager

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AIG House
Audby Lane
Wetherby
LS22 7RD

Soil, Leachate & Water Analysis

		Laboratory Number	49445338	49445339	49445341	49445342	49445343	49445344
		Sampling Date	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02
		Sample Point	BH102 2 1.5	BH102 3 2.5	BH102 5 4.0	BH102 6 5.0	BH102 8 7.0	BH102 10 9.0
Method Code	*Units*	*Determinands*						
R9B	ug/l	Arsenic (leach)				< 0.8		
R8B	mg/l	Cadmium(leach)				< 0.0002		
R8B	mg/l	Chromium(leach)				< 0.002		
R8B	mg/l	Lead(leach)				< 0.005		
R9A	ug/l	Mercury (leach)				< 0.05		
R8B	mg/l	Copper(leach)				0.006		
R8B	mg/l	Nickel(leach)				< 0.005		
R8B	mg/l	Zinc (leach)				0.01		
R8B	mg/kg	Arsenic (soil)	41.2			52		
R8B	mg/kg	Cadmium (soil)	3.06			0.12		
R8B	mg/kg	Chromium (soil)	36.6			26.7		
R8B	mg/kg	Lead (soil)	66.2			30		
R*	mg/kg	Mercury (soil)	0.33			< 0.10		
R*	mg/kg	Selenium (soil)	1			2.56		
R8B	mg/kg	Copper (soil)	48.3			51		
R8B	mg/kg	Nickel (soil)	44			32.7		
R*8B	mg/kg	Zinc (soil)	80.1			53		
R*8B	mg/kg	Boron (soil) (water sol)	< 1.27			1.46		
R*	mg/kg	Copper (Available)		8.85	11.7		3.07	1.91
R*	mg/kg	Nickel (Available)		3.18	7.56		0.65	1.11
R*	mg/kg	Zinc (Available)		5.44	4.75		4.28	3.76
R*	mg/kg	Toluene extract (ASE)	672			< 500		
R*	mg/kg	Gasoline Range Organics						
R7.25	mg/kg	Lubricating Range Org						
R7.25	mg/kg	Total Petroleum hydro-c						
R7.25	mg/kg	Diesel Range Organics						

Steve Scott, Laboratory Manager

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UKAS TESTING No 0995

ALcontrol Laboratories — Certificate of Analysis

Job Reference: 2500
Site Name: Goldthorpe Collery
Receipt Date: 14/05/02
Report Date: 24/05/02
Laboratory Address: Templeborough House,
Mill Close, Rotherham, S60 1BZ

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Wetherby
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Soil Analysis

		Laboratory Number	49445292	49445293	49445294	49445295	49445296	49445297
		Sampling Date	*25/04/02*	*25/04/02*	*25/04/02*	*25/04/02*	*25/04/02*	*25/04/02*
		Sample Point	TP101 1 0.5	TP101 4 3.0	TP102 1 0.6	TP105 1 0.3	TP106 1 0.6	TP107 1 0.7
Method Code	***Units***	***Determinands***						
R3.6	pH Units	pH (soil)	7.8	6.7	7.6			4.5
R11.3	%	Solids air dried	90.8	82.4	82	83.7	90.2	91.3
R11.1	%	Total Solids			79.5	81.1	83.9	
R*	%m/V	Phosphorus Ext (MAFF 59)						
R11.1	%	*Total Ash Solids (DSB)*			82.1	65.5	55	
R*	%m/V	Magnesium Ext (MAFF 63)						
R*	%m/V	Potassium Ext (MAFF 63)						
R*	mg/KgCaCO3	Alkalinity pH 8.3 (Soil)						
R11.7	%	Stones greater than 10mm	43.6	5.2	39.7	28.2	43.1	50.6
R3.6	pH Units	pH (filtered)	7.1					5
R*	uS/cm	Conductivity @ 20c (soil)						
R8B	% SO4	*Sulphate (soil)*	0.1	0.088	< 0.050			0.221
R5.5	g/l SO4	Sulphate (2:1 H2O ext)	0.2	0.26	0.04			0.12
R2.5.1	mg/kg	Cyanide(total) (DSB)	< 0.50	< 0.50	< 0.50			< 0.50
R*	kJ/kg	Calorific value			11300	19200	3320	
R2.21.2	mg/kg	Phenol monohydric (DSB)	< 1.50	< 1.50	< 1.50			< 1.50
R*	mg/kg	Sulphide (DSB)						
R*	mg/kg N	Nitrite (2:1 H2O ext)						
R*	mg/kg N	Nitrate (2:1 H2O ext)						

Steve Scott, Laboratory Manager

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Soil Analysis

		Laboratory Number	49445298	49445299	49445300	49445301	49445302	49445303	49445304
		Sampling Date	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02
		Sample Point	TP108 1 1.0	TP110 1 1.0	TP111 1 0.3	TP112 1 0.2	TP115 1 0.3	TP116 1 0.3	TP116 2 1.3
Method Code	***Units***	***Determinands***							
R3.6	pH Units	pH (soil)	3.9	9				7.9	6.1
R11.3	%	Solids air dried	87.3	87.7	85.5	85.8	86.3	86.5	85.8
R11.1	%	Total Solids	90.4		80.2	87.9	85.9	82.1	
R*	%m/V	Phosphorus Ext (MAFF 59)							
R11.1	%	Total Ash Solids (DSB)	62.2		23	93.1	77.4	76.4	
R*	%m/V	Magnesium Ext (MAFF 63)							
R*	%m/V	Potassium Ext (MAFF 63)							
R*	mg/KgCaCO3	Alkalinity pH 8.3 (Soil)							
R11.7	%	Stones greater than 10mm	37.9	24.4	4.9	16.4	21	16.2	18.4
R3.6	pH Units	pH (filtered)	6.4					7.5	7.1
R*	uS/cm	Conductivity @ 20c (soil)							
R8B	% SO4	Sulphate (soil)	0.669	0.344				0.149	< 0.050
R5.5	g/l SO4	Sulphate (2:1 H2O ext)	1.09	0.95				0.21	0.1
R2.5.1	mg/kg	Cyanide(total) (DSB)	< 0.50	< 0.50				< 0.50	< 0.50
R*	kJ/kg	Calorific value	14500		12700	3370	2030	988	
R2.21.2	mg/kg	Phenol monohydric (DSB)	< 1.50	< 1.50				< 1.50	< 1.50
R*	mg/kg	Sulphide (DSB)							
R*	mg/kg N	Nitrite (2:1 H2O ext)							
R*	mg/kg N	Nitrate (2:1 H2O ext)							

Steve Scott, Laboratory Manager

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Soil Analysis

		Laboratory Number	49445305	49445306	49445307	49445308	49445309	49445310
		Sampling Date	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02
		Sample Point	TP117 2 1.3	TP119 1 0.5	TP121 1 0.3	TP123 1 0.2	TP124 1 0.5	TP127 1 0.3
Method Code	***Units***	***Determinands***						
R3.6	pH Units	pH (soil)	5.9	7.2	8.2	8.2	7.6	6.8
R11.3	%	Solids air dried	86	83.4	90.9	86.4	84.5	89
R11.1	%	Total Solids					88.3	
R*	%m/V	*Phosphorus Ext (MAFF 59)*						
R11.1	%	Total Ash Solids (DSB)					91.1	
R*	%m/V	Magnesium Ext (MAFF 63)						
R*	%m/V	Potassium Ext (MAFF 63)						
R*	mg/KgCaCO3	Alkalinity pH 8.3 (Soil)						
R11.7	%	Stones greater than 10mm	13	18	0	20.1	6.3	49.2
R3.6	pH Units	pH (filtered)			6.9		7.2	
R*	uS/cm	Conductivity @ 20c (soil)						
R8B	% SO4	Sulphate (soil)	0.241	0.22	< 0.050	0.061	0.09	0.237
R5.5	g/l SO4	Sulphate (2:1 H2O ext)	0.04	0.08	< 0.02	< 0.02	0.17	0.04
R2.5.1	mg/kg	Cyanide(total) (DSB)	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
R*	kJ/kg	Calorific value					< 100	
R2.21.2	mg/kg	Phenol monohydric (DSB)	< 1.50	< 1.50	< 1.50	< 1.50	< 1.50	< 1.50
R*	mg/kg	Sulphide (DSB)						
R*	mg/kg N	Nitrite (2:1 H2O ext)						
R*	mg/kg N	Nitrate (2:1 H2O ext)						

Steve Scott, Laboratory Manager

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Soil Analysis

		Laboratory Number	49445311	49445312	49445313	49445314	49445315	49445316
		Sampling Date	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02
		Sample Point	TP127 2 1.0	TP129 1 0.4	TP132 1 0.5	TP135 2 3.8	TP136 1 0.5	TP137 1 0.3
Method Code	*Units*	*Determinands*						
R3.6	pH Units	pH (soil)	5.3		7	6.7	8	7.6
R11.3	%	Solids air dried	85.9	87.5	88.6	75.9	76.6	88.4
R11.1	%	Total Solids		88.1	86.3		70.7	
R*	%m/V	Phosphorus Ext (MAFF 59)						
R11.1	%	Total Ash Solids (DSB)		95.9	30.6		66.7	
R*	%m/V	Magnesium Ext (MAFF 63)						
R*	%m/V	Potassium Ext (MAFF 63)						
R*	mg/KgCaCO3	Alkalinity pH 8.3 (Soil)						
R11.7	%	Stones greater than 10mm	34.5	10.4	20.1	14.9	25.7	20.8
R3.6	pH Units	pH (filtered)			7.2			
R*	uS/cm	Conductivity @ 20c (soil)						
R8B	% SO4	Sulphate (soil)	0.439		0.326	0.091	0.163	< 0.050
R5.5	g/l SO4	Sulphate (2:1 H2O ext)	0.04		0.99	0.28	0.37	0.03
R2.5.1	mg/kg	Cyanide(total) (DSB)	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50
R*	kJ/kg	Calorific value		< 100	15300		4660	
R2.21.2	mg/kg	Phenol monohydric (DSB)	< 1.50		< 1.50	< 1.50	< 1.50	< 1.50
R*	mg/kg	Sulphide (DSB)						
R*	mg/kg N	Nitrite (2:1 H2O ext)						
R*	mg/kg N	Nitrate (2:1 H2O ext)						

Steve Scott, Laboratory Manager

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Soil Analysis

		Laboratory Number	49445317	49445318	49445319	49445320	49445321	49445322
		Sampling Date	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02
		Sample Point	TP141 1 0.5	TP144 1 0.5	TP146 1 0.4	TP146 3(S) 0.6	TP147 1 0.3	TP151 1 0.6
Method Code	*Units*	*Determinands*						
R3.6	pH Units	pH (soil)	7.2		4.8		5.8	8.7
R11.3	%	*Solids air dried*	87.2	89.3	88.2	75.2	87.2	85.4
R11.1	%	Total Solids		90.6		72		
R*	%m/V	Phosphorus Ext (MAFF 59)			0.0018		0.0006	
R11.1	%	Total Ash Solids (DSB)		46.9		32.7		
R*	%m/V	Magnesium Ext (MAFF 63)			0.0235		0.0658	
R*	%m/V	Potassium Ext (MAFF 63)			0.0145		0.0146	
R*	mg/KgCaCO3	Alkalinity pH 8.3 (Soil)			< 100		< 100	
R11.7	%	Stones greater than 10mm	39.5	28.8	43	10.9	42.6	41.6
R3.6	pH Units	pH (filtered)	7.6					7.5
R*	uS/cm	Conductivity @ 20c (soil)			1770		2450	
R8B	% SO4	Sulphate (soil)	0.135		< 0.050			0.67
R5.5	g/l SO4	Sulphate (2:1 H2O ext)	0.16		1.23			0.22
R2.5.1	mg/kg	Cyanide(total) (DSB)	< 0.50		< 0.50			< 0.50
R*	kJ/kg	Calorific value		21100		22900		
R2.21.2	mg/kg	Phenol monohydric (DSB)	< 1.50		< 1.50			< 1.50
R*	mg/kg	Sulphide (DSB)			< 1.0		< 1.0	
R*	mg/kg N	Nitrite (2:1 H2O ext)			2		2	
R*	mg/kg N	Nitrate (2:1 H2O ext)			< 1.00		< 1.00	

Steve Scott, Laboratory Manager

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TESTING
No. 0995
No 0996

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Soil Analysis

		Laboratory Number	49445323	49445324	49445325	49445326	49445327	49445328
		Sampling Date	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02
		Sample Point	TP152 1 0.3	TP156 1 0.5	TP158 1 0.3	TP159 1 0.2	TP160 2 0.8	TP160 3 2.2
Method Code	***Units***	***Determinands***						
R3.6	pH Units	pH (soil)	4.4		7.5	7.7	7.5	7.6
R11.3	%	Solids air dried	88	90	88.3	90.7	89.7	81.4
R11.1	%	Total Solids	89	87.4				
R*	%m/V	Phosphorus Ext (MAFF 59)						
R11.1	%	Total Ash Solids (DSB)	52.1	78.7				
R*	%m/V	Magnesium Ext (MAFF 63)						
R*	%m/V	Potassium Ext (MAFF 63)						
R*	mg/KgCaCO3	Alkalinity pH 8.3 (Soil)						
R11.7	%	Stones greater than 10mm	32.6	43.3	51.2	45.3	36.4	25.9
R3.6	pH Units	pH (filtered)			7.5		7.5	
R*	uS/cm	Conductivity @ 20c (soil)						
R8B	% SO4	Sulphate (soil)	0.198		0.675	0.071	0.067	< 0.050
R5.5	g/l SO4	Sulphate (2:1 H2O ext)	0.26		0.07	0.07	0.04	0.13
R2.5.1	mg/kg	Cyanide(total) (DSB)	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50
R*	kJ/kg	Calorific value	24800	3280				
R2.21.2	mg/kg	Phenol monohydric (DSB)	< 1.50		< 1.50	< 1.50	< 1.50	< 1.50
R*	mg/kg	Sulphide (DSB)						
R*	mg/kg N	Nitrite (2:1 H2O ext)						
R*	mg/kg N	Nitrate (2:1 H2O ext)						

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Steve Scott, Laboratory Manager

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Soil Analysis

		Laboratory Number	49445329	49445330	49445331	49445332	49445333	49445334
		Sampling Date	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02
		Sample Point	TP161 2 0.6	TP164 1 0.2	TP164 2 0.8	BH101 1 0.3	BH101 3 2.3	BH101 6 5.0
Method Code	*Units*	*Determinands*						
R3.6	pH Units	pH (soil)			7.3	7.6	7.5	5.8
R11.3	%	Solids air dried	87.6	86.8	91.5	91.6	81.5	92.7
R11.1	%	Total Solids	86	85.2			77.8	
R*	%m/V	Phosphorus Ext (MAFF 59)				0.0014	< 0.0002	0.0015
R11.1	%	Total Ash Solids (DSB)	87.7	55.6			69.1	
R*	%m/V	Magnesium Ext (MAFF 63)				0.0402	0.0341	0.0231
R*	%m/V	Potassium Ext (MAFF 63)				0.0475	0.0149	0.0467
R*	mg/KgCaCO3	Alkalinity pH 8.3 (Soil)				< 100	< 100	< 100
R11.7	%	Stones greater than 10mm	63.1	38.1	70.7	61.5	28.3	80.2
R3.6	pH Units	pH (filtered)					7.2	
R*	uS/cm	Conductivity @ 20c (soil)				112	303	51
R8B	% SO4	Sulphate (soil)			0.203		0.413	
R5.5	g/l SO4	Sulphate (2:1 H2O ext)			0.6		0.63	
R2.5.1	mg/kg	Cyanide(total) (DSB)			< 0.50		< 0.50	
R*	kJ/kg	Calorific value	9190	14100			8190	
R2.21.2	mg/kg	Phenol monohydric (DSB)			< 1.50		< 1.50	
R*	mg/kg	Sulphide (DSB)				< 1.0	< 1.0	< 1.0
R*	mg/kg N	Nitrite (2:1 H2O ext)				2	2	2
R*	mg/kg N	Nitrate (2:1 H2O ext)				< 1.00	< 1.00	5.86

Steve Scott, Laboratory Manager

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Soil Analysis

		Laboratory Number	49445335	49445336	49445337	49445338	49445339	49445340
		Sampling Date	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02
		Sample Point	BH101 9 8.0	BH101 11 11.	BH102 1 0.5	BH102 2 1.5	BH102 3 2.5	BH102 4 3.1
Method Code	*Units*	*Determinands*						
R3.6	pH Units	pH (soil)	4.5	6.8	6.2	4.9	6.6	
R11.3	%	Solids air dried	89.2	91.9	86.2	87.3	89.1	89.2
R11.1	%	Total Solids				83.5		96.1
R*	%m/V	Phosphorus Ext (MAFF 59)	0.0042	0.0024	0.0005		0.0013	
R11.1	%	Total Ash Solids (DSB)				81.5		93.6
R*	%m/V	Magnesium Ext (MAFF 63)	0.0297	0.0255	0.0498		0.0553	
R*	%m/V	Potassium Ext (MAFF 63)	0.0278	0.0445	0.0143		0.0221	
R*	mg/KgCaCO3	Alkalinity pH 8.3 (Soil)	< 100	< 100	< 100		< 100	
R11.7	%	Stones greater than 10mm	30.8	18	19.2	30.8	48.7	35.6
R3.6	pH Units	pH (filtered)						
R*	uS/cm	Conductivity @ 20c (soil)	2340	525	1040		1130	
R8B	% SO4	Sulphate (soil)		0.076		0.376		
R5.5	g/l SO4	Sulphate (2:1 H2O ext)		0.19		1.11		
R2.5.1	mg/kg	Cyanide(total) (DSB)		< 0.50		< 0.50		
R*	kJ/kg	Calorific value				1350		5360
R2.21.2	mg/kg	Phenol monohydric (DSB)		< 1.50		< 1.50		
R*	mg/kg	Sulphide (DSB)	< 1.0	< 1.0	< 1.0		< 1.0	
R*	mg/kg N	Nitrite (2:1 H2O ext)	2	2	2		2	
R*	mg/kg N	Nitrate (2:1 H2O ext)	98.2	15.1	< 1.00		3.52	

Steve Scott, Laboratory Manager

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UKAS TESTING No 0995

ALcontrol Laboratories Certificate of Analysis

Job Reference: 2500
Site Name: Goldthorpe Colliery
Receipt Date: 14/05/02
Report Date: 24/05/02
Laboratory Address: Templeborough House, Mill Close, Rotherham, S60 1BZ

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AIG House
Audby Lane
Wetherby
LS22 7RD

Soil Analysis

		Laboratory Number	49445341	49445342	49445343	49445344
		Sampling Date	25/04/02	25/04/02	25/04/02	25/04/02
		Sample Point	BH102 5 4.0	BH102 6 5.0	BH102 8 7.0	BH102 10 9.0
Method Code	*Units*	*Determinands*				
R3.6	pH Units	pH (soil)	7	5.6	6.6	7.3
R11.3	%	Solids air dried	87.8	89.1	89.7	92.2
R11.1	%	Total Solids				
R*	%m/V	Phosphorus Ext (MAFF 59)	0.0005		0.0016	0.0068
R11.1	%	Total Ash Solids (DSB)				
R*	%m/V	Magnesium Ext (MAFF 63)	0.061		0.0337	0.0465
R*	%m/V	Potassium Ext (MAFF 63)	0.0157		0.0577	0.0494
R*	mg/KgCaCO3	Alkalinity pH 8.3 (Soil)	< 100		< 100	< 100
R11.7	%	Stones greater than 10mm	23.8	27.1	38	21.4
R3.6	pH Units	pH (filtered)		6.9		
R*	uS/cm	Conductivity @ 20c (soil)	1400		582	337
R8B	% SO4	Sulphate (soil)		0.198		
R5.5	g/l SO4	Sulphate (2:1 H2O ext)		0.28		
R2.5.1	mg/kg	Cyanide(total) (DSB)		< 0.50		
R*	kJ/kg	Calorific value				
R2.21.2	mg/kg	Phenol monohydric (DSB)		< 1.50		
R*	mg/kg	Sulphide (DSB)	< 1.0		< 1.0	< 1.0
R*	mg/kg N	Nitrite (2:1 H2O ext)	2		2	2
R*	mg/kg N	Nitrate (2:1 H2O ext)	6.54		7.4	1.64

Steve Scott, Laboratory Manager

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TESTING
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ALcontrol Laboratories Certificate ID : 49445440/S/0/0

Environmental Laboratory - Templeborough House
Accredited Test Procedures

Method Ref.	Technique
R2.3.2	Colorimetric
R2.4.2	Colorimetric
R2.5.1	Colorimetric
R2.7.3	Colorimetric
R2.8.2	Colorimetric
R2.21.2	Colorimetric
R3.2	Titrimetric
R3.3	Electrochemical
R3.4.1/A	Ion selective electrode
R3.5.1	Ion selective electrode
R3.6	Ion selective electrode
R3.7.1	Gravimetric
R3.8	Gravimetric
R4.1	Titrimetric
R5.1	Electrochemical (dissolved oxygen probe)
R5.2	Dichromate oxidation / colorimetric
R5.5	Ion chromatography
R6.13.2	Colorimetric
R7.2	Infra-red spectrometry
R7.4.1	Gravimetric
R7.9	Gas chromatography - mass spectrometry
R7.12.1	Chemical oxidation / infra-red spectrometry
R7.22	Gas chromatography - flame ionisation detector
R7.25	Gas chromatography - flame ionisation detector
R7.30	Gas chromatography - mass spectrometry
R7.40	Gas chromatography - mass spectrometry
R8B	Inductively coupled plasma
R9A	Atomic fluorescence spectrometry
R9B	Atomic fluorescence spectrometry
R11.1	Gravimetric
R11.2	Gravimetric
R11.3	Gravimetric
R11.7	Gravimetric
R12.1	Respiration inhibition
R12.2.1a	Nitrification inhibition
R12.3	Microtox

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LS22 7RD

Volatile Organics

		Laboratory Number	49445440
		Sampling Date	16/05/02
		Sample Point	TP142 2 1.0
Method Code	***Units***	***Determinands***	
R7.9	ug/kg	Benzene (DSB)	< 22
R7.9	ug/kg	Toluene (DSB)	< 22
R7.9	ug/kg	Ethyl benzene (DSB)	< 22
R7.9	ug/kg	m,p-Xylene (DSB)	< 22
R7.9	ug/kg	o-Xylene (DSB)	< 22

Steve Scott, Laboratory Manager

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Report Date: 24/05/02
Laboratory Address: Templeborough House, Mill Close, Rotherham, S60 1BZ

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Soil Analysis

		Laboratory Number	49445440	49445441
		Sampling Date	16/05/02	16/05/02
		Sample Point	TP142 2 1.0	TP145 2 0.4
Method Code	***Units***	***Determinands***		
R3.6	pH Units	pH (soil)	7.3	5.2
R11.3	%	Solids air dried	91.5	88
R*	%m/V	Phosphorus Ext (MAFF 59)		0.0015
R*	%m/V	Magnesium Ext (MAFF 63)		0.0349
R*	%m/V	Potassium Ext (MAFF 63)		0.0086
R*	mg/KgCaCO3	Alkalinity pH 8.3 (Soil)		< 100
R11.7	%	Stones greater than 10mm	0	23.9
R*	uS/cm	Conductivity @ 20c (soil)		880
R8B	% SO4	Sulphate (soil)	< 0.050	
R5.5	g/l SO4	Sulphate (2:1 H2O ext)	0.07	
R2.5.1	mg/kg	Cyanide(total) (DSB)	< 0.50	
R2.21.2	mg/kg	Phenol monohydric (DSB)	< 1.50	
R*	mg/kg	Sulphide (DSB)		< 1.0
R*	mg/kg N	Nitrate (2:1 H2O ext)		< 1.00
R*	mg/kg N	Nitrite (2:1 H2O ext)		2
R8B	mg/kg	Arsenic (soil)	6.22	
R8B	mg/kg	Cadmium (soil)	0.17	
R8B	mg/kg	Chromium (soil)	9.75	
R8B	mg/kg	Lead (soil)	15.3	
R*	mg/kg	Mercury (soil)	< 0.10	
R*	mg/kg	Selenium (soil)	< 0.40	
R8B	mg/kg	Copper (soil)	16.7	
R8B	mg/kg	Nickel (soil)	17.5	
R*8B	mg/kg	Zinc (soil)	81.8	
R*8B	mg/kg	Boron (soil) (water sol)	< 1.27	
R*	mg/kg	Copper (Available)		16.6
R*	mg/kg	Nickel (Available)		10.3
R*	mg/kg	Zinc (Available)		6.04
R*	mg/kg	Toluene extract (ASE)	< 500	
R*	mg/kg	Gasoline Range Organics	< 5.0	
R7.25	mg/kg	Total Petroleum hydro-c	184	
R7.25	mg/kg	Diesel Range Organics	82.2	
R7.25	mg/kg	Lubricating Range Org	101	

Steve Scott, Laboratory Manager

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Environmental Laboratory - Templeborough House
Accredited Test Procedures

Method Ref.	Technique
R2.3.2	Colorimetric
R2.4.2	Colorimetric
R2.5.1	Colorimetric
R2.7.3	Colorimetric
R2.8.2	Colorimetric
R2.21.2	Colorimetric
R3.2	Titrimetric
R3.3	Electrochemical
R3.4.1/A	Ion selective electrode
R3.5.1	Ion selective electrode
R3.6	Ion selective electrode
R3.7.1	Gravimetric
R3.8	Gravimetric
R4.1	Titrimetric
R5.1	Electrochemical (dissolved oxygen probe)
R5.2	Dichromate oxidation / colorimetric
R5.5	Ion chromatography
R6.13.2	Colorimetric
R7.2	Infra-red spectrometry
R7.4.1	Gravimetric
R7.9	Gas chromatography - mass spectrometry
R7.12.1	Chemical oxidation / infra-red spectrometry
R7.22	Gas chromatography - flame ionisation detector
R7.25	Gas chromatography - flame ionisation detector
R7.30	Gas chromatography - mass spectrometry
R7.40	Gas chromatography - mass spectrometry
R8B	Inductively coupled plasma
R9A	Atomic fluorescence spectrometry
R9B	Atomic fluorescence spectrometry
R11.1	Gravimetric
R11.2	Gravimetric
R11.3	Gravimetric
R11.7	Gravimetric
R12.1	Respiration inhibition
R12.2.1a	Nitrification inhibition
R12.3	Microtox

ALcontrol Laboratories

Certificate of Analysis

Job Reference: 2500
Receipt Date: 16/05/02
Report Date: 22/05/02
Laboratory Address: Templeborough House,
Mill Close, Rotherham, S60 1BZ

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Wetherby
LS22 7RD

Water Analysis

		Laboratory Number	49445438	49445439
		Sampling Date	14/05/02	14/05/02
		Sample Point	Upstream	Downstream
Method Code	***Units***	***Determinands***		
R2.21.2	mg/l	Monophenol (filtered)	< 0.15	< 0.15
R2.5.1	mg/l	Cyanide (Total)(Filtered)	< 0.05	< 0.05
R3.6	pH Units	pH (filtered)	8	7.7
R5.2	mg/l O	COD (filtered)	< 17	< 17
R2.3.2	mg/l N	Nitrogen Ammoniacal	1.58	1.1
R5.5	mg/l	Sulphate	107	289
R8B	mg/l	Cadmium (filtered)	0.0006	0.0005
R8B	mg/l	Chromium (filtered)	< 0.002	< 0.002
R8B	mg/l	Lead (filtered)	< 0.005	< 0.005
R8B	mg/l	Copper (filtered)	< 0.002	0.008
R8B	mg/l	Nickel (filtered)	< 0.005	0.014
R8B	mg/l	Zinc (filtered)	0.02	0.03
R8B	mg/l	Boron (filtered)	0.08	0.15
R9B	ug/l	Arsenic (filtered)	1.28	2.1
R9A	ug/l	Mercury (filtered)	< 0.05	< 0.05
R9B	ug/l	Selenium (filtered)	< 0.75	< 0.75

Steve Scott, Laboratory Manager

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Environmental Laboratory - Templeborough House
Accredited Test Procedures

Method Ref.	Technique
R2.3.2	Colorimetric
R2.4.2	Colorimetric
R2.5.1	Colorimetric
R2.7.3	Colorimetric
R2.8.2	Colorimetric
R2.21.2	Colorimetric
R3.2	Titrimetric
R3.3	Electrochemical
R3.4.1/A	Ion selective electrode
R3.5.1	Ion selective electrode
R3.6	Ion selective electrode
R3.7.1	Gravimetric
R3.8	Gravimetric
R4.1	Titrimetric
R5.1	Electrochemical (dissolved oxygen probe)
R5.2	Dichromate oxidation / colorimetric
R5.5	Ion chromatography
R6.13.2	Colorimetric
R7.2	Infra-red spectrometry
R7.4.1	Gravimetric
R7.9	Gas chromatography - mass spectrometry
R7.12.1	Chemical oxidation / infra-red spectrometry
R7.22	Gas chromatography - flame ionisation detector
R7.25	Gas chromatography - flame ionisation detector
R7.30	Gas chromatography - mass spectrometry
R7.40	Gas chromatography - mass spectrometry
R8B	Inductively coupled plasma
R9A	Atomic fluorescence spectrometry
R9B	Atomic fluorescence spectrometry
R11.1	Gravimetric
R11.2	Gravimetric
R11.3	Gravimetric
R11.7	Gravimetric
R12.1	Respiration inhibition
R12.2.1a	Nitrification inhibition
R12.3	Microtox

UKAS TESTING
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No 0996

ALcontrol Laboratories

Certificate of Analysis

Job Reference: 2500
Site Name: Goldthorpe Colliery
Receipt Date: 16/05/02
Report Date: 24/05/02
Laboratory Address: Templeborough House,
Mill Close, Rotherham, S60 1BZ

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Soil and Water Analysis

		Laboratory Number	49445383	49445384	49445385	49445386	49445387
		Sampling Date	14/05/02	14/05/02	14/05/02	14/05/02	14/05/02
		Sample Point	TP165 1 0.50	TP165 2(S) 0.80	TP165 3 1.65	TP166 1 0.70	TP167 2 1.00
Method Code	***Units***	***Determinands***					
R3.6	pH Units	pH (soil)	8.5	8.3	7.4	4.2	4.3
R11.3	%	Solids air dried	80.2	51.6	79.1	89.9	90.1
R*	%m/V	Phosphorus Ext (MAFF 59)			0.0021		0.0015
R11.1	%	Total Solids					
R*	%m/V	Magnesium Ext (MAFF 63)			0.0152		0.0133
R*	%m/V	Potassium Ext (MAFF 63)			0.0141		0.0091
R11.1	%	Total Ash Solids (DSB)					
R*	mg/KgCaCO3	Alkalinity pH 8.3 (Soil)	< 100		< 100	< 100	< 100
R11.7	%	Stones greater than 10mm	3.1	0	10.2	31.3	32.5
R3.6	pH Units	pH (filtered)		7.5		3.8	
R*	uS/cm	Conductivity @ 20c (soil)	238		387	1570	667
R8B	% SO4	Sulphate (soil)		0.147		0.833	
R5.5	g/l SO4	Sulphate (2:1 H2O ext)		0.77		1.22	
R2.5.1	mg/kg	Cyanide(total) (DSB)		< 0.50		< 0.50	
R*	kJ/kg	Calorific value					
R2.21.2	mg/kg	Phenol monohydric (DSB)		< 1.88		< 1.50	
R*	mg/kg	Sulphide (DSB)	< 1.0		8.9	< 1.0	< 1.0
R*	mg/kg N	Nitrate (2:1 H2O ext)			< 1.00		< 1.00
R*	mg/kg N	Nitrite (2:1 H2O ext)			2		2
R9B	ug/l	Arsenic (leach)		16.4		< 0.8	
R8B	mg/l	Cadmium(leach)		< 0.0002		0.0008	
R8B	mg/l	Chromium(leach)		< 0.002		< 0.002	
R8B	mg/l	Lead(leach)		< 0.005		< 0.005	
R9A	ug/l	Mercury (leach)		< 0.05		< 0.05	
R8B	mg/l	Copper(leach)		0.014		0.024	
R8B	mg/l	Nickel(leach)		< 0.005		0.078	
R8B	mg/l	Zinc (leach)		< 0.01		0.15	
R8B	mg/kg	Arsenic (soil)		11.7		72.6	
R8B	mg/kg	Cadmium (soil)		0.15		5.08	
R8B	mg/kg	Chromium (soil)		50.3		25.3	
R8B	mg/kg	Lead (soil)		8.57		103	
R*	mg/kg	Mercury (soil)		< 0.10		0.15	
R*	mg/kg	Selenium (soil)		< 0.40		2.71	
R8B	mg/kg	Copper (soil)		120		56.3	
R8B	mg/kg	Nickel (soil)		9.81		34.8	
R*8B	mg/kg	Zinc (soil)		82.7		86.9	
R*8B	mg/kg	Boron (soil) (water sol)		< 1.27		2.15	
R*	mg/kg	Copper (Available)			30.2		12.2
R*	mg/kg	Nickel (Available)			1.77		6.33
R*	mg/kg	Zinc (Available)			14.9		4.4
R*	mg/kg	Toluene extract (ASE)		< 500		1480	

Steve Scott, Laboratory Manager

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TESTING
No. 0995
No. 0996

ALcontrol Laboratories

Certificate of Analysis

Job Reference: 2500
Site Name: Goldthorpe Colliery
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Report Date: 24/05/02
Laboratory Address: Templeborough House,
Mill Close, Rotherham, S60 1BZ

AIG Consultants Ltd.
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Soil and Water Analysis

		Laboratory Number	49445388	49445389	49445390	49445391	49445392	49445393
		Sampling Date	14/05/02	14/05/02	14/05/02	14/05/02	14/05/02	14/05/02
		Sample Point	TP168 2 2.00	TP169 1 0.30	TP170 1 1.00	TP171 1 0.50	TP172 1 0.50	TP173 1 0.30
Method Code	*Units*	*Determinands*						
R3.6	pH Units	pH (soil)	7.4	7	3.4	5	5.7	5.9
R11.3	%	Solids air dried	90.4	84.4	86.4	85.5	88.9	86
R*	%m/V	Phosphorus Ext (MAFF 59)			0.001		0.0014	
R11.1	%	Total Solids						
R*	%m/V	Magnesium Ext (MAFF 63)			0.0145		0.0266	
R*	%m/V	Potassium Ext (MAFF 63)			0.0043		0.0168	
R11.1	%	Total Ash Solids (DSB)						
R*	mg/KgCaCO3	Alkalinity pH 8.3 (Soil)	< 100	< 100	< 100	< 100	< 100	< 100
R11.7	%	Stones greater than 10mm	31	22.2	14.3	16.1	29.8	33.9
R3.6	pH Units	pH (filtered)		7.5				
R*	uS/cm	Conductivity @ 20c (soil)	1250	615	267	1400	544	481
R8B	% SO4	Sulphate (soil)		0.334				
R5.5	g/l SO4	Sulphate (2:1 H2O ext)		0.73				
R2.5.1	mg/kg	Cyanide(total) (DSB)		< 0.50				
R*	kJ/kg	Calorific value						
R2.21.2	mg/kg	Phenol monohydric (DSB)		< 1.50				
R*	mg/kg	Sulphide (DSB)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.3
R*	mg/kg N	Nitrate (2:1 H2O ext)			< 1.00		< 1.00	
R*	mg/kg N	Nitrite (2:1 H2O ext)			2		2	
R9B	ug/l	Arsenic (leach)		< 0.8				
R8B	mg/l	Cadmium(leach)		0.0002				
R8B	mg/l	Chromium(leach)		< 0.002				
R8B	mg/l	Lead(leach)		< 0.005				
R9A	ug/l	Mercury (leach)		< 0.05				
R8B	mg/l	Copper(leach)		0.008				
R8B	mg/l	Nickel(leach)		< 0.005				
R8B	mg/l	Zinc (leach)		0.03				
R8B	mg/kg	Arsenic (soil)		72.4				
R8B	mg/kg	Cadmium (soil)		1.09				
R8B	mg/kg	Chromium (soil)		51.7				
R8B	mg/kg	Lead (soil)		85.2				
R*	mg/kg	Mercury (soil)		0.94				
R*	mg/kg	Selenium (soil)		1.3				
R8B	mg/kg	Copper (soil)		126				
R8B	mg/kg	Nickel (soil)		100				
R*8B	mg/kg	Zinc (soil)		364				
R*8B	mg/kg	Boron (soil) (water sol)		3.99				
R*	mg/kg	Copper (Available)			14		18.2	
R*	mg/kg	Nickel (Available)			2.8		8.96	
R*	mg/kg	Zinc (Available)			4.05		9.1	
R*	mg/kg	Toluene extract (ASE)		573				

Steve Scott, Laboratory Manager

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TESTING
No 0995
No 0996

ALcontrol Laboratories

Certificate of Analysis

Job Reference: 2500
Site Name: Goldthorpe Colliery
Receipt Date: 16/05/02
Report Date: 24/05/02
Laboratory Address:.Templeborough House,
Mill Close, Rotherham, S60 1BZ

AIG Consultants Ltd.
AIG House
Audby Lane
Wetherby
LS22 7RD

Soil and Water Analysis

		Laboratory Number	49445394	49445395	49445396	49445397	49445398	49445399
		Sampling Date	14/05/02	14/05/02	14/05/02	14/05/02	14/05/02	14/05/02
		Sample Point	TP174 1 0.50	TP175 1 0.40	TP175 2 1.20	TP176 1 0.30	TP176 2 1.10	TP176 3 2.50
Method Code	*Units*	*Determinands*						
R3.6	pH Units	pH (soil)	7.2	6.2	5.5	4.6	3.7	3.7
R11.3	%	Solids air dried	90.7	89.8	76	87.4	85.3	85.5
R*	%m/V	Phosphorus Ext (MAFF 59)				0.0015		
R11.1	%	Total Solids	92.2	85.3	85.2	84.8	81.5	82.6
R*	%m/V	Magnesium Ext (MAFF 63)				0.0344		
R*	%m/V	Potassium Ext (MAFF 63)				0.0092		
R11.1	%	Total Ash Solids (DSB)	80.8	81.6	82.8	79.6	77.7	63
R*	mg/KgCaCO3	Alkalinity pH 8.3 (Soil)	< 100		< 100	< 100		< 100
R11.7	%	Stones greater than 10mm	37.2	53.1	17.3	32.9	18.8	11.8
R3.6	pH Units	pH (filtered)		6.9			4.2	
R*	uS/cm	Conductivity @ 20c (soil)	401		298	1660		1170
R8B	% SO4	Sulphate (soil)		0.237			1.43	
R5.5	g/l SO4	Sulphate (2:1 H2O ext)		0.07			2.36	
R2.5.1	mg/kg	Cyanide(total) (DSB)		< 0.50			< 0.50	
R*	kJ/kg	Calorific value	8470	6260	12300	10600	9530	10600
R2.21.2	mg/kg	Phenol monohydric (DSB)		< 1.50			< 1.50	
R*	mg/kg	Sulphide (DSB)	< 1.0		< 1.0	< 1.0		< 1.0
R*	mg/kg N	Nitrate (2:1 H2O ext)				< 1.00		
R*	mg/kg N	Nitrite (2:1 H2O ext)				2		
R9B	ug/l	Arsenic (leach)		1.1			< 0.8	
R8B	mg/l	Cadmium(leach)		< 0.0002			0.0015	
R8B	mg/l	Chromium(leach)		< 0.002			< 0.002	
R8B	mg/l	Lead(leach)		< 0.005			< 0.005	
R9A	ug/l	Mercury (leach)		< 0.05			< 0.05	
R8B	mg/l	Copper(leach)		0.006			0.021	
R8B	mg/l	Nickel(leach)		< 0.005			0.178	
R8B	mg/l	Zinc (leach)		< 0.01			0.43	
R8B	mg/kg	Arsenic (soil)		63.7			55.6	
R8B	mg/kg	Cadmium (soil)		0.25			0.33	
R8B	mg/kg	Chromium (soil)		43.2			28.1	
R8B	mg/kg	Lead (soil)		46.5			36.8	
R*	mg/kg	Mercury (soil)		0.16			0.52	
R*	mg/kg	Selenium (soil)		< 0.40			1.93	
R8B	mg/kg	Copper (soil)		75.4			74.7	
R8B	mg/kg	Nickel (soil)		52.6			44.1	
R*8B	mg/kg	Zinc (soil)		84.1			62.5	
R*8B	mg/kg	Boron (soil) (water sol)		< 1.27			< 1.27	
R*	mg/kg	Copper (Available)				17.2		
R*	mg/kg	Nickel (Available)				9.41		
R*	mg/kg	Zinc (Available)				17.2		
R*	mg/kg	Toluene extract (ASE)		9170			1170	

Steve Scott, Laboratory Manager

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TESTING
No 0995
No 0996

ALcontrol Laboratories — Certificate of Analysis

Job Reference: 2500
Site Name: Goldthorpe Colliery
Receipt Date: 16/05/02
Report Date: 24/05/02
Laboratory Address: Templeborough House,
Mill Close, Rotherham, S60 1BZ

AIG Consultants Ltd.
AIG House
Audby Lane
Wetherby
LS22 7RD

Soil and Water Analysis

		Laboratory Number	49445400	49445401	49445402	49445403	49445404	49445405
		Sampling Date	14/05/02	14/05/02	14/05/02	14/05/02	14/05/02	14/05/02
		Sample Point	TP177 1 0.30	TP178 2 0.50	TP178 3 1.60	TP179 1 0.20	TP179 3 1.20	TP180 1 0.30
Method Code	***Units***	***Determinands***						
R3.6	pH Units	pH (soil)	5.6	5.6	5.5	4.3	5.4	3.5
R11.3	%	*Solids air dried*	86.9	87.3	89.3	89	84.2	86.5
R*	%m/V	Phosphorus Ext (MAFF 59)		0.0005			0.0009	
R11.1	%	Total Solids						
R*	%m/V	Magnesium Ext (MAFF 63)		0.0884			0.0079	
R*	%m/V	Potassium Ext (MAFF 63)		0.0116			0.0037	
R11.1	%	Total Ash Solids (DSB)						
R*	mg/KgCaCO3	Alkalinity pH 8.3 (Soil)	< 100	< 100	< 100	< 100	< 100	
R11.7	%	Stones greater than 10mm	37.7	22.1	17.7	13.2	0	26.8
R3.6	pH Units	pH (filtered)						3.5
R*	uS/cm	Conductivity @ 20c (soil)	119	1850	2090	1870	224	
R8B	% SO4	Sulphate (soil)						0.715
R5.5	g/l SO4	Sulphate (2:1 H2O ext)						0.53
R2.5.1	mg/kg	Cyanide(total) (DSB)						< 0.50
R*	kJ/kg	Calorific value						
R2.21.2	mg/kg	Phenol monohydric (DSB)						< 1.50
R*	mg/kg	Sulphide (DSB)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
R*	mg/kg N	Nitrate (2:1 H2O ext)		< 1.00			< 1.00	
R*	mg/kg N	Nitrite (2:1 H2O ext)		2			2	
R9B	ug/l	Arsenic (leach)						< 0.8
R8B	mg/l	Cadmium(leach)						0.0006
R8B	mg/l	Chromium(leach)						< 0.002
R8B	mg/l	Lead(leach)						< 0.005
R9A	ug/l	Mercury (leach)						< 0.05
R8B	mg/l	Copper(leach)						0.053
R8B	mg/l	Nickel(leach)						0.063
R8B	mg/l	Zinc (leach)						0.18
R8B	mg/kg	Arsenic (soil)						60.4
R8B	mg/kg	Cadmium (soil)						0.13
R8B	mg/kg	Chromium (soil)						21.8
R8B	mg/kg	Lead (soil)						32.1
R*	mg/kg	Mercury (soil)						0.11
R*	mg/kg	Selenium (soil)						1.92
R8B	mg/kg	Copper (soil)						91.6
R8B	mg/kg	Nickel (soil)						21.8
R*8B	mg/kg	Zinc (soil)						44.8
R*8B	mg/kg	Boron (soil) (water sol)						< 1.27
R*	mg/kg	Copper (Available)		10.3			2.99	
R*	mg/kg	Nickel (Available)		4.76			1.3	
R*	mg/kg	Zinc (Available)		3.23			2.55	
R*	mg/kg	Toluene extract (ASE)						929

Steve Scott, Laboratory Manager

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TESTING
No 0995
No 0996

ALcontrol Laboratories — Certificate of Analysis

Job Reference: 2500
Site Name: Goldthorpe Colliery
Receipt Date: 16/05/02
Report Date: 24/05/02
Laboratory Address: Templeborough House, Mill Close, Rotherham, S60 1BZ

AIG Consultants Ltd.
AIG House
Audby Lane
Wetherby
LS22 7RD

Soil and Water Analysis

		Laboratory Number	49445406	49445407	49445408	49445409	49445410	49445411
		Sampling Date	14/05/02	14/05/02	14/05/02	14/05/02	14/05/02	14/05/02
		Sample Point	*TP181 1 0.20*	*TP181 2 1.40*	*TP182 1 0.30*	*TP182 2 1.00*	*TP183 1 0.10*	*TP183 3 2.40*
Method Code	***Units***	***Determinands***						
R3.6	pH Units	pH (soil)	2.9	4.9	3.4	4.3	5.6	5.9
R11.3	%	Solids air dried	87.8	85.1	89.7	83.7	91.7	92.6
R*	%m/V	Phosphorus Ext (MAFF 59)			0.0005			
R11.1	%	Total Solids						
R*	%m/V	Magnesium Ext (MAFF 63)			0.0134			
R*	%m/V	Potassium Ext (MAFF 63)			0.0022			
R11.1	%	Total Ash Solids (DSB)						
R*	mg/KgCaCO3	Alkalinity pH 8.3 (Soil)	< 100	< 100	< 100	< 100	< 100	< 100
R11.7	%	Stones greater than 10mm	16.7	43.1	26.2	3.9	37	32.4
R3.6	pH Units	pH (filtered)					6	
R*	uS/cm	Conductivity @ 20c (soil)	668	757	1530	393	528	1190
R8B	% SO4	Sulphate (soil)					0.152	
R5.5	g/l SO4	Sulphate (2:1 H2O ext)					0.48	
R2.5.1	mg/kg	Cyanide(total) (DSB)					< 0.50	
R*	kJ/kg	Calorific value						
R2.21.2	mg/kg	Phenol monohydric (DSB)					< 1.50	
R*	mg/kg	*Sulphide (DSB)*	*< 1.0*	*< 1.0*	*< 1.0*	*< 1.0*	*< 1.0*	*< 1.0*
R*	mg/kg N	Nitrate (2:1 H2O ext)			< 1.00			
R*	mg/kg N	Nitrite (2:1 H2O ext)			2			
R9B	ug/l	Arsenic (leach)					< 0.8	
R8B	mg/l	Cadmium(leach)					< 0.0002	
R8B	mg/l	Chromium(leach)					< 0.002	
R8B	mg/l	Lead(leach)					< 0.005	
R9A	ug/l	Mercury (leach)					< 0.05	
R8B	mg/l	Copper(leach)					0.007	
R8B	mg/l	Nickel(leach)					0.031	
R8B	mg/l	Zinc (leach)					< 0.01	
R8B	mg/kg	Arsenic (soil)					36.4	
R8B	mg/kg	Cadmium (soil)					0.2	
R8B	mg/kg	Chromium (soil)					17.5	
R8B	mg/kg	Lead (soil)					27.5	
R*	mg/kg	Mercury (soil)					< 0.10	
R*	mg/kg	Selenium (soil)					2.88	
R8B	mg/kg	Copper (soil)					90.6	
R8B	mg/kg	*Nickel (soil)*					35.2	
R*8B	mg/kg	Zinc (soil)					46.1	
R*8B	mg/kg	Boron (soil) (water sol)					1.82	
R*	mg/kg	Copper (Available)			11.7			
R*	mg/kg	Nickel (Available)			2.45			
R*	mg/kg	Zinc (Available)			3.26			
R*	mg/kg	Toluene extract (ASE)					1800	

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Steve Scott, Laboratory Manager

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TESTING
No. 0995
No. 0996
No. 2300

ALcontrol Laboratories — Certificate of Analysis

Job Reference: 2500
Site Name: Goldthorpe Colliery
Receipt Date: 16/05/02
Report Date: 24/05/02
Laboratory Address: Templeborough House, Mill Close, Rotherham, S60 1BZ

AIG Consultants Ltd.
AIG House
Audby Lane
Wetherby
LS22 7RD

Soil and Water Analysis

		Laboratory Number	49445412	49445413	49445414	49445415	49445416	49445417
		Sampling Date	14/05/02	14/05/02	14/05/02	14/05/02	14/05/02	14/05/02
		Sample Point	TP184 1 0.10	TP184 2 1.30	TP185 1 0.40	TP186 2 1.40	TP187 1 0.50	TP187 2 1.50
Method Code	*Units*	*Determinands*						
R3.8	pH Units	pH (soil)	3.4	4.9	3.5	4.8	3.5	4.6
R11.3	%	Solids air dried	87.1	84.8	88.5	87.4	92.6	92.3
R*	%m/V	Phosphorus Ext (MAFF 59)	0.0012			0.0026		
R11.1	%	Total Solids						
R*	%m/V	Magnesium Ext (MAFF 63)	0.0099			0.0213		
R*	%m/V	Potassium Ext (MAFF 63)	0.0019			0.0176		
R11.1	%	Total Ash Solids (DSB)						
R*	mg/KgCaCO3	Alkalinity pH 8.3 (Soil)	< 100	< 100	< 100	< 100	< 100	
R11.7	%	Stones greater than 10mm	18.1	31.6	45.1	22	39.6	48.6
R3.6	pH Units	pH (filtered)			3.7			6
R*	uS/cm	Conductivity @ 20c (soil)	859	2300	1100	1490	1590	
R8B	% SO4	Sulphate (soil)			0.656			0.371
R5.5	g/l SO4	Sulphate (2:1 H2O ext)			0.82			1.62
R2.5.1	mg/kg	Cyanide(total) (DSB)			< 0.50			< 0.50
R*	kJ/kg	Calorific value						
R2.21.2	mg/kg	Phenol monohydric (DSB)			< 1.50			< 1.50
R*	mg/kg	Sulphide (DSB)	< 1.0	< 1.0	< 1.0	< 1.0	1.3	
R*	mg/kg N	Nitrate (2:1 H2O ext)	< 1.00			< 1.00		
R*	mg/kg N	Nitrite (2:1 H2O ext)	2			2		
R9B	ug/l	Arsenic (leach)			< 0.8			< 0.8
R8B	mg/l	Cadmium(leach)			0.0006			0.0003
R8B	mg/l	Chromium(leach)			< 0.002			< 0.002
R8B	mg/l	Lead(leach)			< 0.005			< 0.005
R9A	ug/l	Mercury (leach)			< 0.05			< 0.05
R8B	mg/l	Copper(leach)			0.035			0.005
R8B	mg/l	Nickel(leach)			0.073			0.065
R8B	mg/l	Zinc (leach)			0.12			0.03
R8B	mg/kg	Arsenic (soil)			40.7			63.3
R8B	mg/kg	Cadmium (soil)			0.14			0.52
R8B	mg/kg	Chromium (soil)			22.8			35.9
R8B	mg/kg	Lead (soil)			29.4			35
R*	mg/kg	Mercury (soil)			< 0.10			< 0.10
R*	mg/kg	Selenium (soil)			2.09			2.47
R8B	mg/kg	Copper (soil)			71.4			63
R8B	mg/kg	Nickel (soil)			26			44.2
R*8B	mg/kg	Zinc (soil)			57.8			90.7
R*8B	mg/kg	Boron (soil) (water sol)			< 1.27			3.1
R*	mg/kg	Copper (Available)	6.59			6.58		
R*	mg/kg	Nickel (Available)	1.62			4.18		
R*	mg/kg	Zinc (Available)	1.93			2.72		
R*	mg/kg	Toluene extract (ASE)			896			656

Steve Scott, Laboratory Manager

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TESTING
No 0995
No 0996
No 2300

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ALcontrol Laboratories

Certificate of Analysis

Job Reference: 2500
Site Name: Goldthorpe Colliery
Receipt Date: 16/05/02
Report Date: 24/05/02
Laboratory Address: Templeborough House,
Mill Close, Rotherham, S60 1BZ

AIG Consultants Ltd.
AIG House
Audby Lane
Wetherby
LS22 7RD

Soil and Water Analysis

		Laboratory Number	49445418	49445419	49445420	49445421	49445422	49445423
		Sampling Date	14/05/02	14/05/02	14/05/02	14/05/02	14/05/02	14/05/02
		Sample Point	TP186 1 0.30	TP188 2 1.30	TP189 1 0.20	TP189 2 1.20	TP190 1 0.10	TP190 3 2.10
Method Code	**Units**	**Determinands**						
R3.6	pH Units	pH (soil)	4.8	5.3	3.4	6	7.1	6.7
R11.3	%	Solids air dried	89.6	90.7	88.7	92.1	88.5	89.2
R*	%m/V	Phosphorus Ext (MAFF 59)	0.0008					
R11.1	%	Total Solids						
R*	%m/V	Magnesium Ext (MAFF 63)	0.027					
R*	%m/V	Potassium Ext (MAFF 63)	0.007					
R11.1	%	Total Ash Solids (DSB)						
R*	mg/KgCaCO3	Alkalinity pH 8.3 (Soil)	< 100	< 100	< 100	< 100	< 100	< 100
R11.7	%	Stones greater than 10mm	40.5	42.9	35.8	45.4	34.1	37.9
R3.6	pH Units	pH (filtered)						
R*	uS/cm	Conductivity @ 20c (soil)	1570	1050	961	1350	2060	893
R8B	% SO4	Sulphate (soil)						
R5.5	g/l SO4	Sulphate (2:1 H2O ext)						
R2.5.1	mg/kg	Cyanide(total) (DSB)						
R*	kJ/kg	Calorific value						
R2.21.2	mg/kg	Phenol monohydric (DSB)						
R*	mg/kg	Sulphide (DSB)	< 1.0	< 1.0	< 1.0	< 1.0	1.3	< 1.0
R*	mg/kg N	Nitrate (2:1 H2O ext)	< 1.00					
R*	mg/kg N	Nitrite (2:1 H2O ext)	2					
R9B	ug/l	Arsenic (leach)						
R8B	mg/l	Cadmium(leach)						
R8B	mg/l	Chromium(leach)						
R8B	mg/l	Lead(leach)						
R9A	ug/l	Mercury (leach)						
R8B	mg/l	Copper(leach)						
R8B	mg/l	Nickel(leach)						
R8B	mg/l	Zinc (leach)						
R8B	mg/kg	Arsenic (soil)						
R8B	mg/kg	Cadmium (soil)						
R8B	mg/kg	Chromium (soil)						
R8B	mg/kg	Lead (soil)						
R*	mg/kg	Mercury (soil)						
R*	mg/kg	Selenium (soil)						
R8B	mg/kg	Copper (soil)						
R8B	mg/kg	Nickel (soil)						
R*8B	mg/kg	Zinc (soil)						
R*8B	mg/kg	Boron (soil) (water sol)						
R*	mg/kg	Copper (Available)	13.7					
R*	mg/kg	Nickel (Available)	8.27					
R*	mg/kg	Zinc (Available)	5					
R*	mg/kg	Toluene extract (ASE)						

Steve Scott, Laboratory Manager

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TESTING
No. 0995
No 0996
No 2300

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ALcontrol Laboratories — Certificate of Analysis

Job Reference: 2500
Site Name: Goldthorpe Colliery
Receipt Date: 16/05/02
Report Date: 24/05/02
Laboratory Address: Templeborough House, Mill Close, Rotherham, S60 1BZ

AIG Consultants Ltd.
AIG House
Audby Lane
Wetherby
LS22 7RD

Soil and Water Analysis

		Laboratory Number	49445424	49445425	49445426	49445427	49445428	49445429
		Sampling Date	14/05/02	14/05/02	14/05/02	14/05/02	14/05/02	14/05/02
		Sample Point	TP191 1 0.30	TP192 1 0.10	TP192 2 1.40	TP193 1 0.30	TP194 1 0.10	TP195 2 0.90
Method Code	*Units*	*Determinands*						
R3.6	pH Units	pH (soil)	4.8	3.7	5.6	3	4.9	4.1
R11.3	%	Solids air dried	91.9	84	91.5	87.7	86.2	87.5
R*	%m/V	Phosphorus Ext (MAFF 59)	0.0009	0.0012				
R11.1	%	Total Solids						
R*	%m/V	Magnesium Ext (MAFF 63)	0.0067	0.0159				
R*	%m/V	Potassium Ext (MAFF 63)	0.0028	0.003				
R11.1	%	Total Ash Solids (DSB)						
R*	mg/KgCaCO3	Alkalinity pH 8.3 (Soil)	< 100	< 100	< 100	< 100	< 100	< 100
R11.7	%	Stones greater than 10mm	42.7	10.1	44.6	31.7	27.6	26.6
R3.6	pH Units	pH (filtered)				3.2		
R*	uS/cm	Conductivity @ 20c (soil)	1290	1010	753	1910	151	2160
R8B	% SO4	Sulphate (soil)				1.9		
R5.5	g/l SO4	Sulphate (2:1 H2O ext)				1.72		
R2.5.1	mg/kg	Cyanide(total) (DSB)				< 0.50		
R*	kJ/kg	Calorific value						
R2.21.2	mg/kg	Phenol monohydric (DSB)				< 1.50		
R*	mg/kg	Sulphide (DSB)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
R*	mg/kg N	Nitrate (2:1 H2O ext)	< 1.00	3				
R*	mg/kg N	Nitrite (2:1 H2O ext)	2	2				
R9B	ug/l	Arsenic (leach)				< 0.8		
R8B	mg/l	Cadmium(leach)				0.0012		
R8B	mg/l	Chromium(leach)				0.003		
R8B	mg/l	Lead(leach)				0.01		
R9A	ug/l	Mercury (leach)				< 0.05		
R8B	mg/l	Copper(leach)				0.179		
R8B	mg/l	Nickel(leach)				0.168		
R8B	mg/l	Zinc (leach)				0.32		
R8B	mg/kg	Arsenic (soil)				77.4		
R8B	mg/kg	Cadmium (soil)				0.14		
R8B	mg/kg	Chromium (soil)				18.8		
R8B	mg/kg	Lead (soil)				30.6		
R*	mg/kg	Mercury (soil)				< 0.10		
R*	mg/kg	Selenium (soil)				3.1		
R8B	mg/kg	Copper (soil)				66.5		
R8B	mg/kg	Nickel (soil)				18.6		
R*8B	mg/kg	Zinc (soil)				35.8		
R*8B	mg/kg	Boron (soil) (water sol)				< 1.27		
R*	mg/kg	Copper (Available)	9.91	12.3				
R*	mg/kg	Nickel (Available)	4.64	2.23				
R*	mg/kg	Zinc (Available)	3.42	2.3				
R*	mg/kg	Toluene extract (ASE)				560		

Steve Scott, Laboratory Manager

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TESTING
No 0995
No. 0996
No 2300

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ALcontrol Laboratories

Certificate of Analysis

Job Reference: 2500
Site Name: Goldthorpe Colliery
Receipt Date: 16/05/02
Report Date: 24/05/02
Laboratory Address: Templeborough House, Mill Close, Rotherham, S60 1BZ

AIG Consultants Ltd.
AIG House
Audby Lane
Wetherby
LS22 7RD

Soil and Water Analysis

		Laboratory Number	49445430	49445431	49445432	49445433	49445434	49445435
		Sampling Date	14/05/02	14/05/02	14/05/02	14/05/02	14/05/02	14/05/02
		Sample Point	TP196 1 0.20	TP196 2 2.00	TP197 2 1.20	TP198 2 1.30	TP199 1 0.20	TP200 2 1.00
Method Code	*Units*	*Determinands*						
R3.6	pH Units	pH (soil)	2.9	3	5.9	7.5	7	6.7
R11.3	%	Solids air dried	89.9	92.5	89.7	88.4	89.7	91.7
R*	%m/V	Phosphorus Ext (MAFF 59)		0.0014			0.0003	
R11.1	%	Total Solids						
R*	%m/V	Magnesium Ext (MAFF 83)		0.0165			0.0264	
R*	%m/V	Potassium Ext (MAFF 83)		0.0017			0.0128	
R11.1	%	Total Ash Solids (DSB)						
R*	mg/KgCaCO3	Alkalinity pH 8.3 (Soil)	< 100	< 100	< 100	< 100	< 100	< 100
R11.7	%	Stones greater than 10mm	32.2	50.7	35.8	55.4	50.2	50.5
R3.6	pH Units	pH (filtered)	2.7		6.2			
R*	uS/cm	Conductivity @ 20c (soil)	2420	1160	1030	1610	1680	373
R8B	% SO4	Sulphate (soil)	1.64		0.245			
R5.5	g/l SO4	Sulphate (2:1 H2O ext)	< 0.02		0.67			
R2.5.1	mg/kg	Cyanide(total) (DSB)	< 0.50		< 0.50			
R*	kJ/kg	Calorific value						
R2.21.2	mg/kg	Phenol monohydric (DSB)	< 1.50		< 1.50			
R*	mg/kg	Sulphide (DSB)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
R*	mg/kg N	Nitrate (2:1 H2O ext)		< 1.00			< 1.00	
R*	mg/kg N	Nitrite (2:1 H2O ext)		2			2	
R9B	ug/l	Arsenic (leach)	21		< 0.8			
R8B	mg/l	Cadmium(leach)	0.0015		< 0.0002			
R8B	mg/l	Chromium(leach)	0.021		< 0.002			
R8B	mg/l	Lead(leach)	0.022		< 0.005			
R9A	ug/l	Mercury (leach)	< 0.05		< 0.05			
R8B	mg/l	Copper(leach)	0.341		0.004			
R8B	mg/l	Nickel(leach)	0.074		0.007			
R8B	mg/l	Zinc (leach)	0.26		0.02			
R8B	mg/kg	Arsenic (soil)	115		51.1			
R8B	mg/kg	Cadmium (soil)	0.13		0.11			
R8B	mg/kg	Chromium (soil)	20.4		24.8			
R8B	mg/kg	Lead (soil)	38.1		28.7			
R*	mg/kg	Mercury (soil)	< 0.10		< 0.10			
R*	mg/kg	Selenium (soil)	3.95		1.46			
R8B	mg/kg	Copper (soil)	56.2		54.4			
R8B	mg/kg	Nickel (soil)	13.3		33.8			
R*8B	mg/kg	Zinc (soil)	29.1		54.6			
R*8B	mg/kg	Boron (soil) (water sol)	< 1.27		2.32			
R*	mg/kg	Copper (Available)		20.1			15.7	
R*	mg/kg	Nickel (Available)		4.12			15.1	
R*	mg/kg	Zinc (Available)		3.77			29.6	
R*	mg/kg	Toluene extract (ASE)	728		745			

Steve Scott, Laboratory Manager

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TESTING
No 0995
No. 0996
No 2300

ALcontrol Laboratories — Certificate of Analysis

Job Reference: 2500
Site Name: Goldthorpe Colliery
Receipt Date: 16/05/02
Report Date: 24/05/02
Laboratory Address: Templeborough House,
Mill Close, Rotherham, S60 1BZ

AIG Consultants Ltd.
AIG House
Audby Lane
Wetherby
LS22 7RD

Soil and Water Analysis

		Laboratory Number	49445436	49445437
		Sampling Date	14/05/02	14/05/02
		Sample Point	TP201 1 1.00	TP202 1 0.10
Method Code	***Units***	***Determinands***		
R3.6	pH Units	pH (soil)	7.9	8
R11.3	%	*Solids air dried*	88.3	93.8
R*	%m/V	Phosphorus Ext (MAFF 59)		
R11.1	%	Total Solids		
R*	%m/V	Magnesium Ext (MAFF 63)		
R*	%m/V	Potassium Ext (MAFF 63)		
R11.1	%	Total Ash Solids (DSB)		
R*	mg/KgCaCO3	Alkalinity pH 8.3 (Soil)	< 100	
R11.7	%	Stones greater than 10mm	25.3	61.5
R3.6	pH Units	pH (filtered)		7
R*	uS/cm	Conductivity @ 20c (soil)	2760	
R8B	% SO4	Sulphate (soil)		0.658
R5.5	g/l SO4	Sulphate (2:1 H2O ext)		0.97
R2.5.1	mg/kg	Cyanide(total) (DSB)		< 0.50
R*	kJ/kg	Calorific value		
R2.21.2	mg/kg	Phenol monohydric (DSB)		< 1.50
R*	mg/kg	Sulphide (DSB)	5.1	
R*	mg/kg N	Nitrate (2:1 H2O ext)		
R*	mg/kg N	Nitrite (2:1 H2O ext)		
R9B	ug/l	Arsenic (leach)		< 0.8
R8B	mg/l	Cadmium(leach)		< 0.0002
R8B	mg/l	Chromium(leach)		< 0.002
R8B	mg/l	Lead(leach)		< 0.005
R9A	ug/l	Mercury (leach)		< 0.05
R8B	mg/l	Copper(leach)		0.006
R8B	mg/l	Nickel(leach)		< 0.005
R8B	mg/l	Zinc (leach)		0.01
R8B	mg/kg	Arsenic (soil)		37.4
R8B	mg/kg	Cadmium (soil)		0.45
R8B	mg/kg	Chromium (soil)		22.6
R8B	mg/kg	Lead (soil)		31.5
R*	mg/kg	Mercury (soil)		< 0.10
R*	mg/kg	Selenium (soil)		1.85
R8B	mg/kg	Copper (soil)		69.2
R8B	mg/kg	Nickel (soil)		32.8
R*8B	mg/kg	Zinc (soil)		59.5
R*8B	mg/kg	Boron (soil) (water sol)		< 1.27
R*	mg/kg	Copper (Available)		
R*	mg/kg	Nickel (Available)		
R*	mg/kg	Zinc (Available)		
R*	mg/kg	Toluene extract (ASE)		1740

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Steve Scott, Laboratory Manager

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TESTING
No 0995
No 0996
No 2300

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ALcontrol Laboratories Certificate ID : 49445395/S/1/1

Environmental Laboratory - Templeborough House
Accredited Test Procedures

Method Ref.	Technique
R2.3.2	Colorimetric
R2.4.2	Colorimetric
R2.5.1	Colorimetric
R2.7.3	Colorimetric
R2.8.2	Colorimetric
R2.21.2	Colorimetric
R3.2	Titrimetric
R3.3	Electrochemical
R3.4.1/A	Ion selective electrode
R3.5.1	Ion selective electrode
R3.6	Ion selective electrode
R3.7.1	Gravimetric
R3.8	Gravimetric
R4.1	Titrimetric
R5.1	Electrochemical (dissolved oxygen probe)
R5.2	Dichromate oxidation / colorimetric
R5.5	Ion chromatography
R6.13.2	Colorimetric
R7.2	Infra-red spectrometry
R7.4.1	Gravimetric
R7.9	Gas chromatography - mass spectrometry
R7.12.1	Chemical oxidation / infra-red spectrometry
R7.22	Gas chromatography - flame ionisation detector
R7.25	Gas chromatography - flame ionisation detector
R7.30	Gas chromatography - mass spectrometry
R7.40	Gas chromatography - mass spectrometry
R8B	Inductively coupled plasma
R9A	Atomic fluorescence spectrometry
R9B	Atomic fluorescence spectrometry
R11.1	Gravimetric
R11.2	Gravimetric
R11.3	Gravimetric
R11.7	Gravimetric
R12.1	Respiration inhibition
R12.2.1a	Nitrification inhibition
R12.3	Microtox

UKAS TESTING
TESTING
No. 0995
No. 0996
No. 2300

ALcontrol Laboratories

Certificate of Analysis

Job Reference: 2500
Site Name: Goldthorpe Colliery
Receipt Date: 16/05/02
Report Date: 30/05/02
Laboratory Address: Templeborough House,
Mill Close, Rotherham, S60 1BZ

AIG Consultants Ltd.
AIG House
Audby Lane
Wetherby
LS22 7RD

Soil, Leachate & Water Analysis

		Laboratory Number	49445395
		Sampling Date	14/05/02
		Sample Point	TP175 1 0.40
Method Code	***Units***	***Determinands***	
R3.6	pH Units	pH (soil)	6.2
R11.3	%	Solids air dried	89.8
R11.1	%	Total Solids	85.3
R11.1	%	Total Ash Solids (DSB)	81.6
R11.7	%	Stones greater than 10mm	53.1
R3.6	pH Units	pH (filtered)	6.9
R8B	% SO4	Sulphate (soil)	0.237
R5.5	g/l SO4	Sulphate (2:1 H2O ext)	0.07
R2.5.1	mg/kg	Cyanide(total) (DSB)	< 0.50
R*	kJ/kg	Calorific value	6260
R2.21.2	mg/kg	Phenol monohydric (DSB)	< 1.50
R9B	ug/l	Arsenic (leach)	1.1
R8B	mg/l	Cadmium(leach)	< 0.0002
R8B	mg/l	Chromium(leach)	< 0.002
R8B	mg/l	Lead(leach)	< 0.005
R9A	ug/l	Mercury (leach)	< 0.05
R8B	mg/l	Copper(leach)	0.006
R8B	mg/l	Nickel(leach)	< 0.005
R8B	mg/l	Zinc (leach)	< 0.01
R8B	mg/kg	Arsenic (soil)	63.7
R8B	mg/kg	Cadmium (soil)	0.25
R8B	mg/kg	Chromium (soil)	43.2
R8B	mg/kg	Lead (soil)	46.5
R*	mg/kg	Mercury (soil)	0.16
R*	mg/kg	Selenium (soil)	< 0.40
R8B	mg/kg	Copper (soil)	75.4
R8B	mg/kg	Nickel (soil)	52.6
R*8B	mg/kg	Zinc (soil)	84.1
R*8B	mg/kg	Boron (soil) (water sol)	< 1.27
R*	mg/kg	Toluene extract (ASE)	9170
R7.25	mg/kg	Total Petroleum hydro-c	246
R7.25	mg/kg	Diesel Range Organics	185
R7.25	mg/kg	Lubricating Range Org	60.8
R*	mg/kg	Gasoline Range Organics	< 5.0

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Steve Scott, Laboratory Manager

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TESTING
No 0995
No 0996
No 2300

ALcontrol Laboratories

Certificate of Analysis

Job Reference: 2500
Site Name: Goldthorpe Colliery
Receipt Date: 16/05/02
Report Date: 30/05/02
Laboratory Address: Templeborough House,
Mill Close, Rotherham, S60 1BZ

AIG Consultants Ltd.
AIG House
Audby Lane
Wetherby
LS22 7RD

Volatile Organics

		Laboratory Number	49445395
		Sampling Date	14/05/02
		Sample Point	TP175 1 0.40
Method Code	***Units***	***Determinands***	
R7.9	ug/kg	Benzene (DSB)	< 22
R7.9	ug/kg	Toluene (DSB)	< 22
R7.9	ug/kg	Ethyl benzene (DSB)	< 22
R7.9	ug/kg	m,p-Xylene (DSB)	< 22
R7.9	ug/kg	o-Xylene (DSB)	< 22

Steve Scott, Laboratory Manager

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TESTING
No 0995
No 0996
No 2300

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APPENDIX L
GROUND CONDITION SUMMARY FOR PREVIOUS INVESTIGATIONS

SUMMARY OF GROUND CONDITIONS

Interim Report on the Proposed Reclamation of Goldthorpe Mine Site to "Soft-End" Use (Moynihan). IMC Environmental Consultants for British Coal Property. December 1996.

Hole	Final Depth of Hole	Depth to Base of Made Ground	Topsoil	Concrete / Tarmac	Colliery Spoil Red Shale	Colliery Spoil Coal	Colliery Spoil Mixed	Colliery Spoil Red Shale	Relict Topsoil	Weathered Ackworth Rock	Ackworth Rock	Weathered Middle Coal Measures	Middle Coal Measures	Depth	Type
			MADE GROUND						NATURAL					ROCK HEAD	
TP1	1.5	1.2		0.23			1.2					1.5			
TP2	3	2.4		0.25			2.4					3			
TP3	1.2	0.3	0.2			0.3				1.2					
TP4	1.4	0.4		0.2			0.4			1.4					
TP5	1.5	0.8		0.1			0.15	0.8		1.5					
TP6	1.9	1					1			1.9					
TP7	1.5	0.2				0.2				1.5					
TP8	1.2	0.15				0.15				0.9	1.2			0.9	SANDSTONE
TP9	1.1	0.2					0.2		0.25	1.1					
TP10	1.1	0.25		0.15			0.25					1.1			
TP11	1.25	-		1.25 (0.26 to 1.25 Rubble)											
TP12	2.7	1.8				0.6	1.8		2	2.7					
TP13	3.4	-					3.4								
TP14	3.7	-					3.7								
TP14A	4.4	4					4					4.4			
TP15	3	2.4					2.4					3			
TP16	3.3	2.3					2.3						3.3	2.3	MUDSTONE
TP17	3.9	3.4			1		3.4					3.9			
TP17A	4.8	4.3					1.8	3.9							
TP18	3.5	2.6		0.25			2.6					3.5			
TP19	3.2	2.7					2.7			3.2					
TP20	1.5	1.2					1.2					1.5			
TP21	1.6	-	0.25				1.6								
TP22	3.6	-					3.6								
TP23	3.5	-					3.5								
TP23B	3.5	-					3.5								
TP24	1.5	-					1.5 (Conc at 1.5)								
TP24A	4.6	-					4.6								
TP25	1	-	0.1			1									
TP26	2.4	0.7					0.7			2.4					
TP27	3.4	-					3.4								
TP29	4.9	-					4.9								
TP30	1	-					1								
TP31	1	-	0.2				1								
TP32	1.2	-	0.15				1.2								
TP33	2.8	-					2.8								
TP34	2	0.15				0.15				1.5	2			1.5	SANDSTONE
TP34A	1.8	1.2					1.2			1.8					

SUMMARY OF GROUND CONDITIONS

Interim Report on the Proposed Reclamation of Goldthorpe Mine Site to "Soft-End" Use (Moynihan). IMC Environmental Consultants for British Coal Property. December 1996.

Hole	Final Depth of Hole	Depth to Base of Made Ground	Topsoil	Concrete / Tarmac	Colliery Spoil Red Shale	Colliery Spoil Coal	Colliery Spoil Mixed	Colliery Spoil Red Shale	Relict Topsoil	Weathered Ackworth Rock	Ackworth Rock	Weathered Middle Coal Measures	Middle Coal Measures	Depth	Type
			MADE GROUND						NATURAL					ROCK HEAD	
TP34B	2.6	1.8							2.1	2.6					
TP35	0.9	0.02				0.02				0.9					
TP36	1.9	-						1.9							
TP37	1.2	-	0.3				1.2								
TP38	1.2	-	0.2					1.2							
TP39	1.2	0.6					0.6 (Ash)					1.2			
TP40	0.3	-					0.3 (Conc at 0.3)								
TP41	2.8	2.4					1.2	2.4				2.8			
TP42	3.2	-						3.2							
TP42A	2.1	1.6					1.6					2.1			
TP43	2.8	2.1				0.6	2.1		2.3			2.8			
TP44	1	0.45		0.15			0.45			1					
TP45	3.5	-		0.05			0.8	3.5							
TP46	1.8	1.5				1.5				1.8					
TP46A	0.6	-					0.1	0.6							

APPENDIX M
CHEMICAL TESTING SUMMARY FOR PREVIOUS INVESTIGATIONS

SUMMARY OF GROUND CONTAMINATION

IMC Environmental Consultants. Interim Report on the Proposed Reclamation of Goldthorpe Mine Site to "Soft-End" Use (Moynihan). British Coal Property. December 1996.

Sample Location & Depth(m)	Material	Area	Contaminant Concentrations in mg/kg unless otherwise stated. Trigger Level Concentrations are Shown in Brackets												
			pH	As (10)*	Cd (3)*	Cr (600)*	Cu (130)*	Pb (500)*	Hg (1)*	Ni (70)*	Zn (300)*	Total SO_4 (2000)*	Water Soluble Sulphate (g/l) (1.2)◊	CV 2MJ/kg	DRO 500	Abestos
TP32, 0.8	COLLIERY SPOIL	2	3.6	32	-	-	-	-	-	-	-	4470				
TP34, 1.0	COLLIERY SPOIL	1	5.7	-	-	-	-	-	-	-	-	-				
TP34B, 1.9	CLAY	1	4.2	26	-	-	-	-	-	-	-	5900	2.44			
TP35, 0.9	SAND	1	5.8	-	-	-	-	-	-	-	-	-				
TP36, 0.8	COLLIERY SPOIL	1	3.7	30	-	-	-	-	-	-	-	9160	1.78	15.3		
TP37, 1.0	COLLIERY SPOIL	1	5.8	61	-	-	-	-	-	-	-	6240	2.4			
TP38, 1.0	COLLIERY SPOIL	1	5.9	35	-	-	-	-	-	-	-	4620	-			
TP42, 0.8	COLLIERY SPOIL	1	7.7	22	-	-	-	-	-	-	-			9.38		
TP43, 2.1	CLAY	1	6.8	18	-	-	-	-	-	-	-					
TP44, 0.3	RUBBLE/ SOIL FILL	1	8.5	33	-	-	-	-	-	-	-	2120	-		-	
TP45, 0.9	RUBBLE	1	6.7	23	-	-	-	-	-	-	-	6270	2.21			
TP46, 0.8	COLLIERY SPOIL	1	5.3	-	-	-	-	-	-	-	-	-				
TP46A, 0.5	COLLIERY SPOIL	1	4.8	19	-	-	-	-	-	-	-	2480	-			

Key

- Parameter tested for but found not to be in excess of relevant trigger level concentration

Parameter not tested for

Source of guidance trigger level

* ICRCL Guidance Note 59/83, Second Edition (1987)

\+ Health and Safety Executive "Protection of Waters and the General Public during the Development of Contaminated Land", HSE, 1991

◊ BRE Digest 363, Sulphate and Acid Resistance of Concrete in the Ground (1991)

\# Dutch E-3c Intervention Levels for Soil Remediation (1994)

SUMMARY OF GROUND CONTAMINATION

IMC Environmental Consultants. Interim Report on the Proposed Reclamation of Goldthorpe Mine Site to "Soft-End" Use (Moynihan). British Coal Property. December 1996.

Sample Location & Depth(m)	Material	Area	Contaminant Concentrations in mg/kg unless otherwise stated. *Trigger Level Concentrations are Shown in Brackets*													
			pH	As (10)*	Cd (3)*	Cr (600)*	Cu (130)*	Pb (500)*	Hg (1)*	Ni (70)*	Zn (300)*	Total SO_4 (2000)*	Water Soluble Sulphate (g/l) (1.2)◊	CV 2MJ/kg	DRO 500	Abestos
TP3, 0.4	CLAY	1	3.5	41	-	-	-	-	-	-	-	8490	-			
TP4, 0.7	CLAY	1	6.9	-	-	-	-	-	-	-	-	-				
TP5, 0.6	COLLIERY SPOIL	1	6.2	43	-	-	-	-	-	-	-	5630	-			ND
TP6, 0.8	COLLIERY SPOIL	1	3.2	-	-	-	-	-	-	-	-	5330	-			
TP7, 0.8	CLAY	1	6.1	-	-	-	-	-	-	-	-	-				
TP10, 0.8	CLAY	1	6.1	-	-	-	-	-	-	-	-	-				
TP12, 0.5	COLLIERY SPOIL	1		25	-	-	-	-	-	-	-	8120	2.6	19.9		
TP13, 1.0	COLLIERY SPOIL	2	4.3	-	-	-	-	-	-	-	-	6940	1.79			
TP14, 3.6	CLAY	2	6.7	-	-	-	-	-	-	-	-	-		-		
TP14A, 3.5	COLLIERY SPOIL	2	4.0	37	-	-	-	-	-	-	-	7390	1.58			
TP17A, 2.0	COLLIERY SPOIL	2	6.2	59	-	-	-	-	-	-	-	8280				
TP18, 2.9	CLAY	1	6.7	11	-	-	-	-	-	-	-	-		-	-	ND
TP19, 0.8	RUBBLE	1	8.0	29	-	-	-	-	-	-	-	9940	1.72			
TP24A, 3.2	COLLIERY SPOIL	2	7.6	26	-	-	-	-	-	-	-	3440	1.65			
TP25, 0.8	COLLIERY SPOIL	2	4.7	22	-	-	-	-	-	-	-	4330	-	-		ND
TP26, 1.5	CLAY	2	6.6	-	-	-	-	-	-	-	-	-				
TP29, 2.6	COLLIERY SPOIL	2	3.2	63	-	-	-	-	-	-	-	8550	2.26	10.5		
TP30, 0.8	COLLIERY SPOIL	2	7.0	10	-	-	-	-	-	-	-	-				
TP31, 0.8	COLLIERY SPOIL	2	6.5	54	-	-	-	-	-	-	-	3420	-			

APPENDIX N
TERMS OF REFERENCE

Ben Bailey HOMES
STYLED for LIFE
Elizabeth House, Cliff Street, Mexborough,
South Yorkshire. S64 9HQ
Telephone: 01709 586261 Fax: 01709 570006
www.ben-bailey.co.uk

FACSIMILE

Date: 1st May 2002 From: Frank Tanser

To: Mark Pettin

Company: AIG Consultants

Fax No: ~~07703 396635~~ 01937 589944 No. of Pages (Including this): 1

Re: Goldthorpe Colliery

Please go ahead with the soakaway tests as discussed at our meeting on Friday 26th April 2002.

Regards,

F. Tanser
Technical Director

AIG Consultants

Facsimile Cover Sheet

Date: 30th April 2002 **Ref:** 2500/3/rjh
Page 1 of: 2

F.A.O:	Frank Tanser	**From:**	Mark Perrin
Company:	Ben Bailey Homes	**Company:**	AIG Consultants Limited
Address:	Elizabeth House Cliff Street Mexborough South Yorkshire S64 9HQ	**Address:**	AIG House Audby Lane Wetherby West Yorkshire LS22 7RD
Fax No:	**01709 570006**	**Fax No:**	**01937 589 944**
Phone No:	01709 586261	**Phone No:**	01937 589 955

FAX MESSAGE

cc Brian Tinnion – 01302 330 777

Goldthorpe Colliery

Further to the meeting on Friday, please find enclosed our fee proposal for works associated with carrying out an assessment of soakaway feasibility within the Ackworth Rock sandstones in the northern section of the site. Soakaway testing will be carried out in at least ten pits in order to assess suitability of the ground for house and highway surface water drainage.

Many of the proposed locations are in the north of the site, and consequently break-out of concrete hardstand will be required (it is not possible to re-excavate old pits - they would be too wide and difficult to "clean-out" properly).

As you'll be aware, we have been pitting on the spoil tip area since Friday. In order to avoid delays to the existing programme, an instruction to proceed by **Wednesday 1st May** would be appreciated.

12186

OGDEN
GROUP OF COMPANIES

Boston Hall, Boston Spa, Yorkshire LS23 6AD
Telephone: 01937 541234 Fax: 01937 541472

RECEIVED 2 2 MAR 2002

Our ref: BPT.mw

21st March 2002

Mr M Perrin
AIG Consultants Limited
AIG House
Audby Lane
Wetherby
LS22 7RD

Dear Mark

RE: *Goldthorpe Colliery*

I refer to your letter of 11 February 2002 and to our more recent telephone conversation regarding the carrying out of site investigation works at Goldthorpe Colliery.

I am now pleased to confirm that we wish you to undertake the work outlined in your letter and as discussed the exact details will be confirmed at our meeting on 5 April 2002.

In the meantime please treat this letter as an instruction to commence the initial 'office' based work in order that a start on site can be made as soon as possible after 5 April 2002.

Yours sincerely
For and on behalf of
A OGDEN & SONS LTD

B P Tinnion
PROPERTY SURVEYOR

Cc T.J. Garnett Boston Hall

Our Ref: 2500\rjh
Your Ref: BPT.MW.0106

6th November 2001

Brian Tinnion
Ogden Group
Brodsworth House
Longlands Lane
Brodsworth
Doncaster South Yorkshire
DN5 7XB

Dear Brian

Goldthorpe Colliery

Further to our letter of 29th October 2001, we have now reviewed the data provided. It is understood that the site consists of a 5 adjacent parcels of land:

1. An existing industrial estate, owned by Barnsley MBC (c. 1 ha)
2. Greenfield land, owned by Yorkshire Forward, earmarked for further light industrial development (c. 2 ha)
3. Greenfield land, owned by the Ogden Group, to remain as playing fields (c. 4 ha)
4. The former main colliery site, owned by the Ogden Group, with outline planning for residential development (c. 10 ha)
5. The former main colliery spoil tip, owned by the Ogden Group, (c. 14 ha)

Existing reports suggest that there are no significant ground-related issues that might constrain development in **Parcel 2** and consequently no further investigation of this area is anticipated. There are currently no plans for significant redevelopment of **Parcels 1 and 3** and therefore no further investigation is anticipated in these areas.

Whilst there are no plans for redevelopment of **Parcel 5**, restoration of the main tip is anticipated. Cultivation, liming and fertiliser treatment of Main Tip may enable planting of shrubs and trees without the need to spread subsoil or topsoil. Treatment of the colliery spoil would probably need to be in general accordance with the Forest Research Specification used at Bentley Colliery.

The feasibility of such treatment would require analysis of near-surface samples (0.0m to 1.0m) for a special suite of determinands and assessment of the results by an ecologist. However, further to recent discussion, we understand that such an assessment is not required at present.

At this stage, we have also made no allowance for determination of the condition of a culverted section of West Moor Dyke that passes beneath Parcel 5.

Our recommendations for an appropriate site investigation are therefore essentially restricted to the proposed residential development (**Parcel 4**). The investigation is intended to satisfy

the requirements of Condition 4 of the Planning Permission; including items a) to d) outlined in your letter of 23rd October.

From a brief walkover of the site, it is apparent that about 60% of Parcel 4 is currently covered by hardstand, predominantly concrete. Ground conditions over much of this area comprise only a thin veneer (typically <1.5m) of made ground. Deeper made ground beneath Parcel 4 is associated with:

- a small spoil tip in the south-west,
- the southern margin where fill was placed to create a relatively level development platform for the former colliery and
- a small area in the south east where the main tip extends into the area of proposed residential development.

It is understood that relocation (onto\adjacent to the main tip) of the deep made ground associated with the spoil tips should be possible. Furthermore, it may be possible to "strip" any veneer of made ground and relocate this to the main tip, thereby reducing development abnormals associated with foundations and subsoil cover in proposed garden areas.

Consequently, our proposals for the investigation of **Parcel 4** include:

Supplementary Desk Study: Primarily to obtain updated desk study data, including: a detailed Environment Agency search; mine entry data from the Coal Authority; and review of radon data.

Fieldwork: We have allowed for:

Trial pitting to determine the general nature of the soils underlying the site, including the:

- nature, degree and extent of contamination;
- proportion of undesirable elements eg biodegradable matter, relict foundations, etc;
- suitability of the ground for founding structures, highway pavements, etc;
- recovery of soil samples for both chemical and geotechnical analysis.

Given that the natural strata beneath Parcel 4 are predominantly cohesive, no allowance has been made for soakaway testing (soakaway tests enable assessment of the ground for house and highway surface water drainage).

The mechanical excavator will be equipped with a breaker to enable excavation through near-surface and buried concrete slabs and obstructions. We will make every effort to compact arisings and 'sweep' them over each pit. However, you should be aware that on completion of the investigation, "graves" of spoil (each about 3m long by 1m wide) unsuitable for trafficking, will be left at each trial pit location. No allowance has been made for reinstatement of the hardstanding.

Shell & Auger boreholes to fully penetrate the made ground associated with the existing spoil tip in the west of the site.

Rotary probeholes to check for the presence of unrecorded shallow mineworkings and enable installation of gas/groundwater monitoring wells. Ten rotary probeholes are proposed and this should be sufficient to determine whether old mineworkings are present and pose a significant risk to surface stability of the site. However, if a potential risk is perceived to exist, further probeholes may be required to delineate the extent of workings in order to obtain fixed price quotations for the necessary consolidation works.

Previous site investigations have reported elevated concentrations of methane and carbon dioxide during periods of low atmospheric pressure. We have therefore allowed for the installation of wells in all of the rotary probeholes and for 10 subsequent visits over 6 months to monitor for hazardous gas.

If significant concentrations (or flows) of hazardous gas are recorded, it may be necessary to continue monitoring for a further 6 months; we will advise you of the likelihood of further monitoring as and when significant results are recorded during the initial visits.

Surface water sampling to assess the quality of water entering and leaving the site.

All trial pits and boreholes will be supervised and logged by an experienced engineering geologist. Representative soil samples of natural and man-made ground, including any contaminated samples, will be taken during the works. In-situ shear strengths of any cohesive soils encountered will be determined by the use of a hand-held shear vane.

Soils Testing: This will comprise routine geotechnical soils analysis, typical of that normally required for greenfield sites. Although no allowance has been for in-situ or laboratory CBR testing, CBR values will be estimated from the strata descriptions and classification test results, where appropriate.

Given the site's former uses, provision has been made for chemical testing of potentially contaminated samples. At this stage, we have allowed for the testing of 30 soil/fill samples, for a basic analytical suite, with leachability testing on 20 fill samples. Should more heavily contaminated areas be identified, it may be necessary to carry out additional chemical testing, *but we would not undertake any additional works without your prior consent.*

Reporting: On completion of the desk study, fieldwork and laboratory testing a bound, factual and interpretative report will be issued. This will contain detailed engineering records, laboratory test results, copies of all relevant correspondence and drawings of the site. The report will include qualitative risk assessment with respect to both controlled waters and human health. The report will also include recommendations with respect to appropriate site preparatory and remedial works, and provide foundation recommendations for domestic housing.

Timescales: With respect to timescales, fieldwork would take approximately 2 weeks. Fieldwork could be commenced within 2 weeks of receipt of your written instruction to proceed. The final report would be available within 4 weeks of fieldwork completion. A faxed report outlining our initial findings and preliminary recommendations will be provided within 3 days of fieldwork completion. Exploratory hole logs will also be made available within 3 days of fieldwork completion.

Underground Services: Utility plans are required in order to protect operatives from the hazards associated with striking buried services and avoid potentially substantial disruption\repair costs. However, we understand that with the exception of a sewer and electricity cables no live services exist on site. If you are unable to forward copies of the relevant utility plans, we will obtain the necessary plans (to include electricity, gas, water, drainage & telecom) direct from each of the utility companies.

Please note that whilst we will make every effort not to damage any private services (including review of utility plans and use of a CAT detector) AIGC cannot accept liability for damage to any underground services that are not clearly marked on statutory utility company plans.

Further to recent discussion, we are pleased to provide an overview of **AIG's capabilities** with respect to brownfield redevelopment (a brochure is also enclosed for your perusal):

AIG Consultants Ltd work extensively on a repeat basis for the majority of national housebuilders and, consequently, if AIG Consultants were engaged to carry out the site investigation and prepare the remedial strategy, the report would be in a format familiar to the housebuilders and carry a weight of credibility. The report would provide detailed and reliable information relating to foundations, levels and drainage, enabling housebuilders to establish a net value of the site without contingency.

We believe that the best approach to maximise the site's net value and simplify the disposal process would be for AIG Consultants and our sister company (AIG Remediation) to jointly prepare a fixed price remediation strategy and a list of developer abnormal build issues. We understand that Ogden may fund the remediation in order to prepare the site for the market and maximise net receipts.

Copies of our site investigation report would be forwarded to the relevant regulatory authorities (NHBC, Local Authority & the Environment Agency). The regulators would be asked to provide their comment/approval in order to enable AIGC to draft a Specification for the proposed preparatory and remedial works. Our reclamation proposals will be in line with current good practice and we would expect to obtain full regulatory approval. However, it should be borne in mind that approval of the recommended remedial and site preparatory works can take several months, and it would be prudent to allow 6 months between report submission and commencement of development.

AIG are able to deliver a development platform, with roads and sewer infrastructure, for a fixed price. Fixed price remediation projects provide housebuilders with certainty of net land value. AIG Remediation are able to commit to an "all risks", fixed price because of their confidence in the findings of AIG Consultants' site investigation. Other contractors will probably only provide a budget fixed price, subject to remeasure on completion of the works.

In-house infrastructure design and build provides savings on both preliminaries and programme. Furthermore, many groundworkers do not fully understand some of the basic principles of brownfield remediation for a residential end use (e.g. the importance of controlling sewer excavations to prevent contamination of "clean" subsoil cover and ensure minimal off-site disposal of contaminated arisings).

In-house layout design maximises development potential and can significantly reduce abnormal foundation costs, by taking account of the reported constraints associated with the ground.

In summary, there are very significant advantages in engaging AIG to provide a "one stop shop" design and remediation package. We would be happy to discuss our full range of services in further detail at an appropriate time.

Finally, you are probably aware that AIG have considerable experience of former colliery sites, most notably we have been involved with the investigation and design of remediation strategies for the Yorkshire Forward sites at Beighton, Dinnington and Kiveton as well as a Langtree Group site at Ackworth.

It is hoped the above is sufficient for your present needs, but please contact the undersigned if you require any further information.

Yours sincerely

M Perrin
for and on behalf of
AIG CONSULTANTS LIMITED