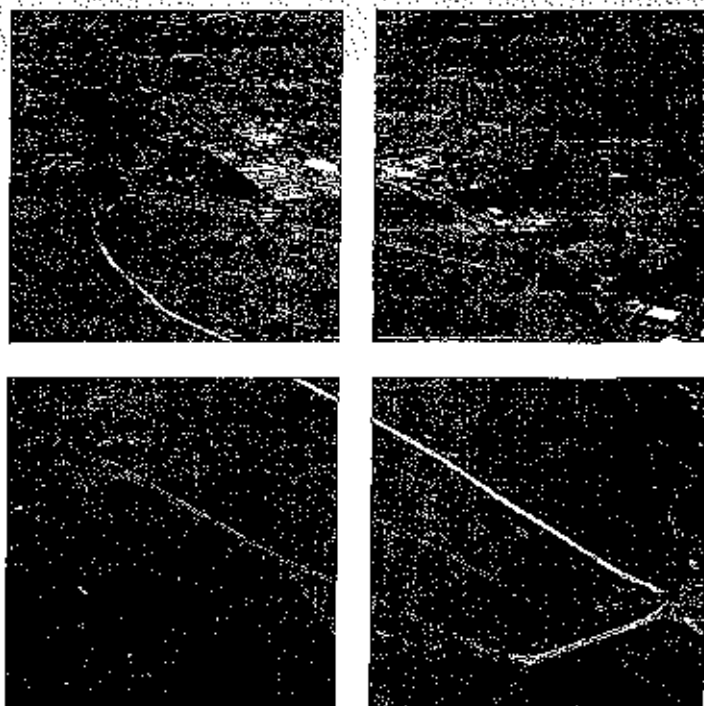




IMC Consulting Engineers



Brown Lees Development
Environmental Site Investigation
Factual and Interpretative Report

for



IMC Consulting Engineers
PO Box 18, Common Road, Huthwaite
Sutton-in-Ashfield, Nottinghamshire, NG17 2NS

**BROWN LEES DEVELOPMENT
ENVIRONMENTAL SITE INVESTIGATION
FACTUAL AND INTERPRETATIVE REPORT
for
ADVANTAGE WEST MIDLANDS**

**IMC Consulting Engineers
PO Box 18
Common Road
Sutton-in-Ashfield
Nottinghamshire
NG17 2NS**

D5249A

March 2001

Prepared By	Checked By	Verified By	Status	Date	Issue No.
SDC / DH			Draft		1

This is a controlled copy

The conclusions reached are those which can be reasonably determined from the sources of information referred to in the report and from our knowledge of current professional practice and standards. Any limitations resulting from the data are identified where possible but both these and our conclusions may require amendment should additional information become available. The report is only intended for use in the stated context and should not be used otherwise.

Advantage West Midlands

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1.0 INTRODUCTION

IMC Consulting Engineers (IMC) were instructed by Advantage West Midlands (AWM) to carry out a site investigation of the former Victoria Colliery, Biddulph. The site has been subject to opencast coal extraction as the 'Brownlees' site.

A Phase 1 desk study investigation, including a site inspection, has been undertaken and is reported as a separate volume. This study established site history including mining aspects, and assessed the environmental setting based on regulatory authority records and other sources.

Phase 2 intrusive site investigations were subsequently carried out, based on the Desk Study findings. The objectives of the investigation were:

- Excavation of trial pits on an approximate 50m centred grid, logged to BS5930:1999, and obtaining samples of soils and groundwater if encountered for contamination testing. Approximately 36 trial pits are anticipated.
- Selected soil and water samples to be tested for contamination, including loss on ignition and leachability testing to assess potential for combustion and groundwater pollution. Testing to be specified based on potential historical contamination and site observations.
- In situ CBR testing to be carried out at approximate 50 m intervals along the centre line of the proposed road.
- Preparation of factual and interpretative reports, including recommendations for any necessary remedial works or building specification requirements.
- Further Phase 2 geotechnical and previous mining legacy investigations are to be undertaken. This will include the drilling of cable percussive and potentially rotary boreholes to assess the geotechnical conditions of the site and the presence of any unrecorded shallow mineworkings. During this investigation an assessment of any gas contamination should also be made.

2.0 SITE LOCATION

The site is located to the west of the A527 (Tunstall Road) and to the south of Brown Lees Road, south of Biddulph, Stoke on Trent. It is centred at National Grid Reference 387863 355465, as shown in Figure 1.

The area to the southeast, southwest and south is Adopted Green Belt Land under the City of Stoke-on-Trent Plan 2001, Staffordshire Moorlands Local Plan and the Newcastle-under-Lyme Local Plan.

5.0 FIELD INVESTIGATIONS

5.1 Site Investigation Design

The extent of the site investigation, together with the number and location of trial pits and in situ California Bearing Ratio tests (CBR), was determined by IMC following consultation with Staffordshire County Council with regard to their requirements for highway design. The locations of the trial pits is given in Figure 2 (IMC drawing No D5249/05). All exploratory excavations were logged on site to BS5930, 1999.

The field investigations were undertaken between the 20th and 23rd February 2001. All positions were set out on site prior to any invasive works by MS Surveys and the position of the settlement markers were marked on site by Staffordshire Moorland District Council. Prior to any invasive works, positions were checked against services plans and a check was made for unmarked services using a cable avoidance tool (CAT).

5.2 Trial Pits

Forty trial pits were excavated using a JCB 3CX. Soil samples were obtained from trial pit excavations for contamination testing. Routine samples were taken by the Site Engineer, in plastic snap top tubs of 1.0 litre capacity. Glass jars were available on site for sampling any materials where contamination by potentially volatile organic species was suspected.

Samples were taken to represent each visually discrete horizon within the trial pit, including made ground and natural materials. Sample locations within the excavation are shown in the trial pit logs. Photographs of the site and the trial pits are shown in Appendix C.

Details of each trial pit are shown on Figures 4 to 42.

5.3 California-Bearing Ratio Tests

Twenty California Bearing Ratio (CBR) tests were carried out by Construction Materials Testing Ltd of Derby along the line of the proposed adopted access road into the site (see Figure 43, IMC Drawing No D5249/06). Additional CBR tests were also carried out in the service yards of the proposed development units.

The results of the testing are reported in Appendix B.

5.4 Geology

5.4.1 Made Ground

The whole site is currently vegetated and covered with between 0.1m (TP23) and 0.75m (TP2) of topsoil at an average thickness of 0.30 m. The topsoil is characteristically a soft to firm brown CLAY with some fine angular gravel of limestone, shale brick and quartz.

All trial pits encountered opencast backfill, mostly to their full depth except those listed in section 5.4.3. The opencast backfill is generally a dark grey to black CLAY with much

angular fine to coarse gravel and cobble size fragments of mudstone, sandstone, coal and shale. Occasional large boulders of backfill material was encountered at depth within the trial pits which could be not excavated with as JCB 3CX. Occasional deposits of some soft black clay of coal fines, ash and slag were also encountered in the trial pits along with "waste" material such as timber, concrete posts and plastic.

The distribution of the made ground was across the whole of the site and was not confined to the areas of excavation associated with the open cast operations. This would seem indicate that there has also been considerable reprofiling of the whole area during the life time of the colliery and the subsequent opencast excavation. Colliery spoil and open cast backfill has been used to change the natural ground level across the whole of the site to allow the ongoing development of the colliery.

5.4.2 Foundations

In situ foundations were encountered in TP39 with a red brick wall at 1.8 m in Face A of the trial pit (see photographs, Appendix C) and a concrete base at 3.50 m. This would seem to confirm the conclusions from the Desk Study that the demolition of the colliery took place with all walls and footings removed to 200 mm below ground level and that any underground structures were left in situ and filled.

The presence of former foundations remaining in situ should be investigated further as part of any geotechnical investigation into the site and the extent of any reclamation and remediation required will depend on the detailed design of the proposed developments.

5.4.3 Natural Ground

Natural superficial deposits were encountered in six trial pits (TP1, 2, 4, 7, 19 and 20). These trial pits are located in the northern and north eastern corner of the site. These trial pits indicate that the natural superficial deposits consist primarily of a soft to firm olive brown mottled sandy CLAY.

Bedrock was not encountered in any of the trial pits excavate and no investigation was carried out as part of this study for the presence of unrecorded shallow mineworkings that could be present in the north eastern corner of the site where the outcrop of the Bowling Alley and Holly Lane coal seams.

The presence of shallow mineworkings in these seams should be investigated further as part of any geotechnical investigation into the site and the extent of any reclamation and remediation required will depend on the detailed design of the individual units.

5.4.4 Soil Bund

Trial pits TP11 and TP16 were excavated in the flanks of a bund in the north eastern corner of the site. These trial pits were excavated to the existing ground level of the surrounding site and the pits indicate that the bund is constructed of approximately 0.4 m of topsoil overlying opencast backfill.

5.5 Groundwater

Groundwater was only encountered in nine of the forty trial pits excavated across the site. These water strikes are described as "seepages or slight seepages" and are considered to be localised perched water present within the fill.

6.0 LABORATORY TESTING

6.1 Chemical Testing

Analysis was carried out on behalf of IMC by Ecos Environmental. The laboratory has UKAS / NAMAS accreditation for tests related to soils and water for contamination and follows similar audit procedures for tests which are not included in this accreditation.

The general scope of the testing was indicated by AWM in their site investigation tender, although IMC were given freedom to vary the testing regime and selection of samples based on ground conditions encountered. Details of test suites and scheduling are shown in Table 2.

A total of 55 solids samples were scheduled for a routine inorganics test suite, suite A1. Samples which indicated some evidence of possible contamination by organic materials were also scheduled for Suite A2. Nine samples selected to be representative of the general material types encountered were subjected to leachability testing, using the 'NRA R&D Note 301 leachate extraction. Eight samples which indicated a range of residual coal content were tested for gross Calorific Value, used as a site-specific correlation with loss on ignition data to assess combustibility hazard.

Two water samples were obtained from trial pits, and these were also scheduled for analysis.

Analysis results supplied by Ecos are presented in Appendix B. Test methods used and the scope of NAMAS accreditation are included in their report.

7.0 CONTAMINATION INVESTIGATION : DESIGN AND PRINCIPLES

7.1 Investigation Design

The investigation was undertaken in accordance with the requirements of the AWM contract.

Figure 2 shows the locations of IMC trial pits and boreholes.

7.2 The Risk Assessment Approach

In March 2000 the Department of the Environment, Transport and the Regions issued a Circular (2/2000) entitled 'Contaminated Land: Environmental Protection Act 1990: Part IIA'. The Circular included as Annex 3 'Statutory Guidance on the Definition of Contaminated Land'.

The approach of the UK Government as presented in the Circular is that the definition and assessment of 'contaminated land' should be based on:-

- a) a "suitable for use" approach
- b) a risk assessment appraisal method

In order for a contaminant to present a risk, the presence of the following must be established:-

- a) a contaminant, a substance which has the potential to cause harm or pollution of waters.
- b) a receptor or target, something which may be adversely affected by the contaminant. This may include plants and animals (including man), building materials and controlled waters.
- c) a pathway by which the receptor could be exposed to the contaminant.

The use of a risk-based assessment has several advantages over the use of generic 'trigger values' as has commonly been the practice in the past. It allows site-specific factors to be considered, and may therefore permit less conservative contaminant concentration criteria to be adopted. It is also more flexible, permitting re-evaluation should circumstances or knowledge change.

Adopting a risk assessment approach does not preclude the use of some form of threshold trigger concentrations as a first stage in the assessment. Such criteria should be chosen to reflect an acceptable level of risk associated with the particular contaminant. Where concentrations are below these "acceptable" levels, then there is no necessity to pursue the existence of valid pathways to the at-risk receptor.

In the context of this report, the identification of 'contamination' does not necessarily imply that the land falls within the statutory definition of 'contaminated land'.

7.3 Pathways and Receptors Available

It is understood that proposals for the site include industrial units, with associated roadways, hardstanding and possible some landscaped areas.

Risks may exist to numerous receptors during the development works and subsequent use of the site. The more significant of these include:-

- Hazards to construction workers and other contractors due to skin contact, inhalation and/or ingestion of contaminated material.
- Hazards to users of the site post-development
- Pollution of controlled waters by leaching of soluble contaminants or run-off water containing sediments.

- Hazards to persons outside the site, for example by airborne escape of material.
- Damage to building materials or services.
- Adverse effects on plant growth.

It is not to be inferred from the above that these risks are considered significant, merely that, given the presence of contaminants at concentrations above 'no effect' levels, these potential risks require assessment.

7.4 Preliminary Contamination Assessment Criteria

Site-specific contamination criteria were determined for the preliminary assessment of analytical results. These were derived from various sources, including the Interdepartmental Committee on the Redevelopment of Contaminated Land (ICRCL) guidance notes and Building Research Establishment data. It should be noted that revised UK government 'Guideline Values' are anticipated in the near future, derived using a more rigorous risk-based assessment method than the existing ICRCL trigger concentrations.

The assessment criteria, and their derivation, are presented in Table 4

7.5 Sensitivity of Controlled Waters

The geology, hydrology and hydrogeology of the site were described in the Desk Study report, and summarised as follows:

- A number of water courses / ditches exist within the site, one of which discharges southward toward Brindley Ford where it is classed as Grade D under the Environment Agency GQA scheme.
- The site is located on a minor aquifer, with overlying soils given the interim classification of High leaching potential. It is not within a Groundwater Protection Zone.
- No licensed surface water or groundwater abstractions are recorded within 500 metres of the site.

8.0 ASSESSMENT OF CONTAMINATION

8.1 Soils

Concentrations of phytotoxic metals (copper and zinc) were very rarely encountered at concentrations in excess of the ICRCL threshold trigger concentration (TTC). One of 55 samples exceeded the copper TTC, and two the zinc TTC. Maximum concentrations were less than a factor of three greater than the TTC. It is not considered that these results indicate any significant risk due of phytotoxicity.

Sulphate (water soluble) determinations were carried out on 55 samples. Twelve of the 55 exceeded the threshold specified in BRE Digest 363 for potential sulphate attack of concrete. Of these, 10 were within Class 2; 1 Class 3, and 1 Class 5. Guidance in the Digest suggests that the site should be classified based on the mean of the highest 20% of samples tested. The single result at Class 5 is however regarded as anomalous, and a site classification of Class 2 is considered suitable. The potential for sulphate attack is minimised due to the absence of groundwater encountered in most trial pits.

Correlation between **loss on ignition (LoI)** and **calorific value (CV)** data shows that the tentative 7MJ/kg threshold for potential combustibility included in ICRCL 61/84, 1986, is approximately equivalent to a LoI of 30%. Allowing a 5% LoI safety margin, 10 of 55 samples indicated a LoI in excess of 25%, and are consequently considered potentially combustible. One additional sample of a coal gravel horizon (TP15/3) was tested for CV only, and found to be potentially combustible at a CV of 12.9MJ/kg. In most cases, the trial pit logs indicate that the LoI is consistent with the presence of coal residues within the made ground. However, in two cases (TP4/2 and 25/3) the material is described as [road surface] scalplings, with some potential for combustibility due to the inclusion of tars. Sample TP20/3 comprised limestone chippings, the LoI result giving a false indication of combustibility in this case due to decomposition of the limestone on heating.

The material identified as being potentially combustible was located beneath a variable thickness of lower coal content cover. This was less than 1.0 metre thickness in places, but not less than 0.5m. At some locations (eg. TP15) the coal was present as horizons of clean coal. A combustion risk is therefore considered to exist in localised areas. Guidance in ICRCL 61/84 suggests that potentially combustible fill should be capped with about 1 metre of a non-combustible material, though a reduced thickness may suffice where the site will not be disturbed. The risk associated with residual coal in made ground is increased where the combustible matter may be subject to heating, for example by surface fires or overheating electrical services.

Removal of all combustible materials from the near-surface of the site to a depth of 1 metre may not be practicable. However, post-development, the likelihood of surface fires or major heat sources is small, and access of air to the combustible ground would be reduced due to hard cover surfaces. The 1 metre of non-combustible cover suggested in ICRCL 61/84 can include the thickness of floor slabs, hardstanding, road base material and other materials, which would be anticipated to be present post development. As a consequence, it is suggested that at least the upper 0.5m of ground within the development platform should comply with the 7MJ/kg criterion, risk being further reduced by compaction (exclusion of oxygen). Where services trenches encounter material which is suspected to contain a significant coal content, they should be excavated over-depth and backfilled with clean inert material to avoid close contact of the combustible material with potential heat sources. Any material dark grey to black in appearance should be regarded as potentially combustible.

Test results and trial pit logs do not indicate any instances where material proven to be combustible, or considered likely to be on the basis of inspection, occur within 0.5 metre of the existing ground level. However, if levels are changed during the development, it is possible that material presenting a greater combustion risk may become exposed. In this case, levels should be reduced by at least 0.5m below the platform level, and a capping of inert material placed and compacted.

Leachability test results have been compared with the Leachate Quality Threshold (LQT) specified in the Environment Agency 'Interim Guidance on the Disposal of "Contaminated Soils", 1997'. All results with the exception of a single leachable sulphate (TP20/2) were within the LQT criteria. No significant indication of potential for pollution of controlled waters was therefore indicated.

[NB- Sample TP25/4 was scheduled for Suite A2 organics analysis due to identification of a "tarry odour". Results are currently awaited]

8.2 Groundwater

Two samples of groundwater were recovered from trial pits (TP's 4 and 20) and tested for contamination. Results were compared with the maximum acceptable concentrations in the Water Supply (Water Quality) Regulations 1989.

All results with the exception of sulphate and conductivity for TP20 were within Water Supply standards for the parameters tested. Sulphate in TP20, at 1543mg/l, was within BRE Digest 363 Class 3 with regard to potential for sulphate attack of concrete. It is notable that 3 of 4 soil samples tested from TP20 indicated elevated sulphate concentrations at BRE Class 2, suggesting that groundwater at this location might be uncharacteristically high in sulphate. As groundwater was absent from all but two pits, it is not considered necessary to increase the sulphate protection class from the Class 2 proposed above.

8.3 Waste Classification

There is no generally applicable standard for acceptability of waste materials at disposal facilities, each site operating within specific conditions with regard to the types of waste acceptable. However, at sites licensed only to accept uncontaminated inert materials, the guidelines specified by the former GLC are commonly applied, only materials within the 'typical values for uncontaminated soils' being acceptable. Several results for cadmium, and less frequently mercury, pH, phenols and PAHs, were found to exceed these criteria. However, leachability results were almost all within the Environment Agency Leachate Quality Threshold specified in 'Interim Guidance on the Disposal of "Contaminated Soils"', and it is likely that should the disposal of material from site be required, most disposal sites would regard soils as uncontaminated.

An appropriate description of any materials for disposal should be supplied to the disposal site operator in accordance with the Duty of Care Regulations.

8.4 Surface Waters

No samples from surface water bodies were recovered during the investigation.

9.0 PAVEMENT DESIGN

Twenty in situ California Bearing Ratio Tests were carried out along the line of the proposed access road as indicated on Figure 2 at approximate 50 m intervals. The results of the tests are given in Appendix B. It is understood that Staffordshire County Council have already

carried out a detailed design of the road scheme for the site, however the exact details of the construction of the road are not known.

The CBR values for all the tests average at 2.3 % at an average moisture content of 15 % for all tests carried out along proposed adopted access road to the development. Therefore as a conservative design approach the CBR value used for the assessment of the construction of the road should be 2%. The DoI Design Manual for Roads and Bridges (HD 25/94) indicates that this CBR value would require a pavement design with a capping layer of either 600 mm or 350 mm with a 150 mm sub-base. If the road is to be designed and constructed by another party other than the adopting authority, then the pavement design should be checked with them to ensure that this meets their individual specifications.

10.0 CONCLUSIONS

10.1 Contamination

- Significant contamination identified in made ground at the Brownlees site was restricted to moderately widespread sulphates, with potential for damage to concrete, and the presence of combustible material
- Protection from sulphate attack should be included in the foundation specification, by the use of a concrete specification to BRE Class 2 requirements.
- Combustible material was identified at several locations, though no evidence of combustible ground within 0.5m of the existing ground level was identified. Post-development, the risk of external heat sources which might initiate combustion is considered small. It is suggested that a minimum cover thickness of 0.5 metres of inert fill is retained between any potentially combustible material and the development platform level, which would be anticipated to increase to 0.8 metres or more when floor slabs, hard cover, road base material and other surface materials are applied. This should be confirmed as acceptable by the local authority building control regulator before proceeding.
- No significant contamination of groundwater was identified, though elevated sulphate concentration at one location confirms the requirement for concrete protection.
- A gas risk investigation will be required.

10.2 Geological and Mining

- The trial pits confirmed the anticipated geology with the site comprising opencast backfill with natural superficial deposits encountered in only a few excavations. Localised perched water tables with minor flows of groundwater were encountered in several of the pits.
- The trial pits confirmed the presence of some in situ foundation remaining after the demolition of the Victoria Colliery Buildings.
- No investigation was carried out as part of this fieldwork for the presence of shallow mineworkings associated with the Holly Lane and Bowling Alley coal seams.
- The presence of former foundations remaining in situ and unrecorded shallow mineworkings should be investigated further as part of any geotechnical investigation into the site and the extent of any reclamation and remediation required will depend on the detailed design of the individual units.

10.3 Pavement Design

- The CBR tests indicate that a design CBR value to be used for the construction of the road should be 2%. The DOT Design Manual for Roads and Bridges (HD 25/94)

indicates that this CBR value would require a pavement design with a capping layer of either 600 mm or 350 mm with a 150 mm sub-base. If the road is to be constructed by another party than the adopting authority then the pavement design should be checked with them to ensure that this meets their individual specifications.

11.0 REFERENCES

1. BS 5930 - Code of Practice for Site Investigations (1999).

TABLES

Advantage West Midlands

Table 2

Analytical Suites

Suite A1: Metals (total) As, Cd, Cr, Pb, Hg, Cu, Ni, Zn. Sulphate water sol.(2:1 extract), pH, Loss on ignition at 815C, chloride

Suite A2: Phenol index, PAH (total), TPH (IR)

Suite A3: Leachate extraction (NRA R&D Note 301) Leachate analysis as water suite.

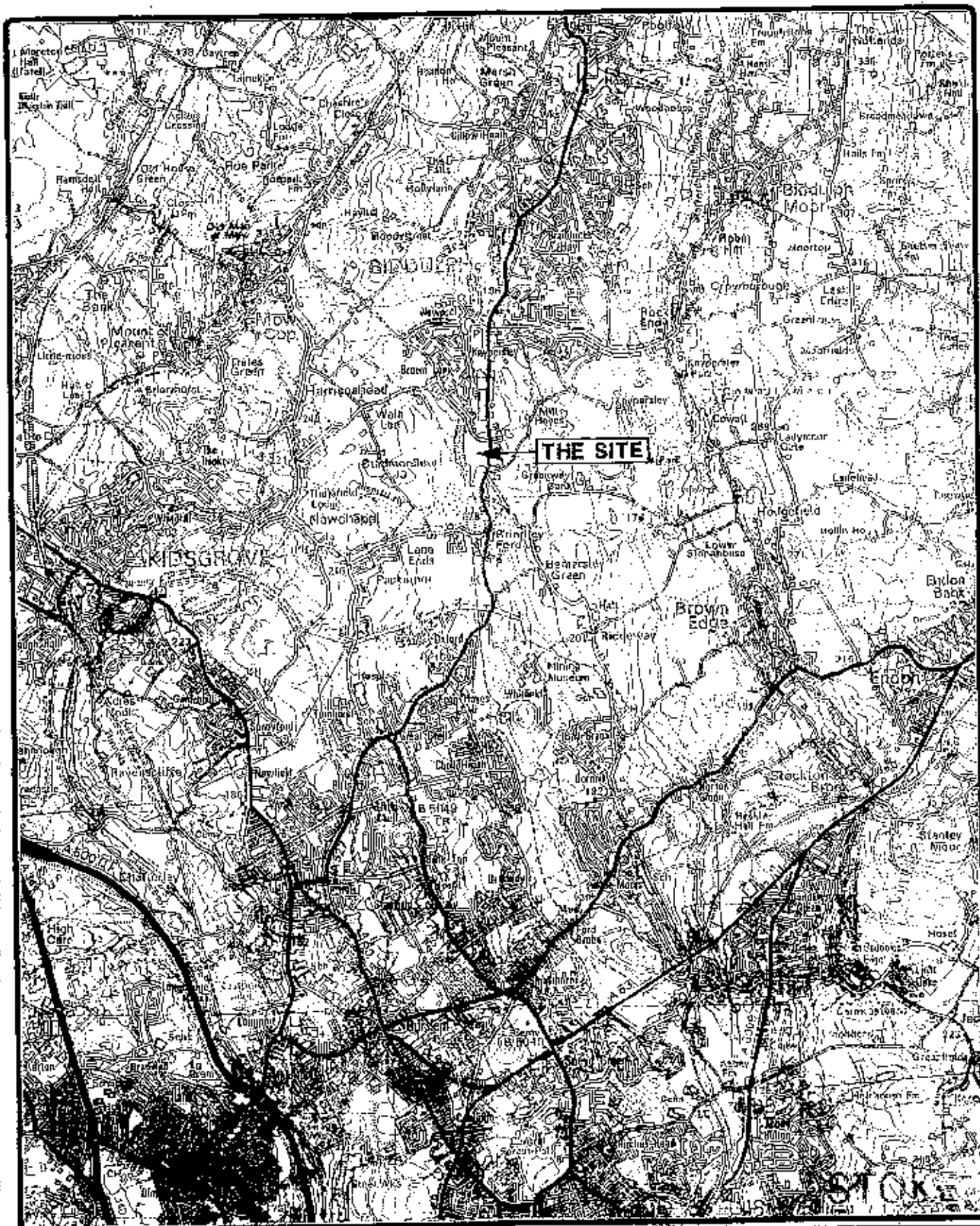
CV: Calorific Value (gross)

Water: Metals (dissolved): As, Cd, Cr, Pb, Hg, Cu, Ni, Zn, Fe. Sulphate, pH, conductivity, chloride, ammoniacal nitrogen

Parameter	Criterion	Origin
pH	Minimum 5	1
Arsenic	40 mg/kg	1
Cadmium	15 mg/kg	1
Chromium (total)	1000 mg/kg	1
Mercury	20 mg/kg	1
Lead	2000 mg/kg	1
Copper	130 mg/kg	2
Nickel	70 mg/kg	2
Zinc	300 mg/kg	2
Sulphate (water soluble)	1.2 g/l SO ₄	3
Total Petroleum Hydrocarbons	5000 mg/kg	4
Phenols (total)	5 mg/kg	1
PAH (total)	1000 mg/kg	1
Chloride	100 mg/kg	5
Loss on ignition	30%	6
Calorific Value	7MJ/kg	7

- 1 - ICRL 59/83 2nd Edition, Threshold Trigger Concentration, open space / landscape
- 2 - ICRL 59/83 2nd Edition, Threshold Trigger Concentration, where plants are to be grown.
- 3 - Building Research Establishment, Digest 363.
- 4 - Dutch Intervention Value, 'mineral oil'.
- 5 - German Gas and Water Association (in BRE Digest 255)
- 6 - Approximately equivalent to 7MJ/kg CV (see text)
- 7 - ICRL 61/84, 1986

FIGURES



PROJECT **Brown Lees Development**

ENGINEER **DH**



TITLE
SITE LOCATION PLAN
Scale 1:50,000

TRACED BY **JG**

CHECKED BY **CH**

DATE **FEBRUARY 2001**

APPROVED BY

DRG. No.



Trial Pit Record

TP1

Date Excavated
Date Backfilled

11
11

Sheet 1 of 1

Client: Advantage West Midlands Co-ordinates: 387785.30 mE
Site: Brown Lees 955721.50 mN
Location: Biddulph, Stoke-on-Trent Ground Level: 200.00 mOD

Excavated by: JCB 3CX Width: 0.60 m Length: 2.40 m Depth: 2.75 m

Level (m AOD)	Stratum Base	Key	Description (Face A)	No	Type	Depth	Field Records
				01	D	0.00 - 0.15	
198.75	0.25		Soft to firm, very slightly damp, brown clay TOPSOIL with much fine to coarse sub-angular gravel of limestone and shale (Replaced Soil)				
			MADE GROUND consisting of dark grey to black CLAY with much coarse angular gravel of poorly weathered nodular spots of black shale. Some cobbles of black shale. Occasional pockets of soft light grey seal earth clay. Horizon shows clear layering of spoil.				
				02	D	0.90 - 1.10	
198.10	1.80		Sandstone boulder 0.5m diameter				
				03	D	2.30 - 2.40	
197.70	2.30		Firm, very slightly damp brown, slightly silty CLAY. Slightly mottled. Rootlet remains common.				
				04	D	2.50 - 2.75	
197.25	2.75		Trial pit complete at 2.75 m				

Remarks

- 1 Groundwater: None
- 2 Stability of faces: Good
- 3 Support used: None

Scale 1:25

Logged By TN

Fig No 3



Trial Pit Record

TP2

Date Excavated
Date Backfilled

11
11

Sheet 1 of 1

Client	Advantage West Midlands	Co-ordinates	367826.40mE
Site	Brown Lees		355714.60mN
Location	Biddulph, Stoke-on-Trent	Ground Level	201.70 mOD
Excavated by	JCB 3CX	Width	0.60 m
		Length	2.40 m
		Depth	2.00 m

Level (m AOD)	Stratum Base	Key	Description (Face A)	Samples			Field Records
				No	Type	Depth	
			Dark brown, damp, slightly cohesive TOPSOIL. Much gravel in the top 10cm (Replaced Soil).	01	D	0.00 - 0.10	
	(0.75)						
200.85	0.75		Fine to soft very slightly damp green silty CLAY.	02	D	0.75 - 0.85	
200.85	0.85		Firm, very slightly damp, yellowish brown CLAY. Many pockets of orange silt. Occasional gravel of mudstone, quartz and sub-rounded pebbles.	03	D	0.85 - 1.20	
	(0.20)						
200.65	1.15		Loose light greenish grey clayey fine grained SAND.				
	(0.35)						
200.20	1.50		Stiff, orange brown, mottled, sandy CLAY with gravel of weathered carbonaceous material. Occasional well rounded pebbles.				
	(0.50)			04	D	1.70 - 1.90	
199.70	2.00		Trial pit complete at 2.00 m				

Remarks

1. Groundwater: None
2. Stability of faces: Good
3. Support used: None

Trial pit location was moved 5m to the south of the pegged position to avoid power cables underground.

Scale 1:25

Logged By TN

Fig No 4



Trial Pit Record

TP3

Date Excavated
Date Backfilled

//
//

Sheet 1 of 1

Client: Advantage West Midlands Co-ordinates: 387782 00 mE
Site: Brown Lees 355671 90 mN
Location: Biddulph, Stoke-on-Trent Ground Level: 200.50 mOD

Excavated by: JCB 3CX Width: 0.60 m Length: 2.40 m Depth: 2.85 m

Level (m AOD)	Stratum Base	Key	Description (Face A)	Samples			Field Records
				No	Type	Depth	
	(0.35)		Soft, brown clay TOPSOIL with some gravel sized pieces of brick and coal (Replaced Soil).	01	D	0.00 - 0.20	
200.15	0.35		MADE GROUND consisting of light to dark grey, fine to coarse, sub-angular GRAVEL comprising shale with thin micaceous lamellae, fine grained sandstone and colliery spoil.	02	D	0.35 - 0.60	
	(1.05)						
199.10	1.40		MADE GROUND consisting of firm, very slightly damp, dark brown CLAY with much fine to coarse, sub-angular gravel of coal, sandstone, and dark grey shale. Rootlets common.	03	D	1.40 - 1.70	
198.75	1.75		MADE GROUND consisting of dark grey to brown, fine to coarse, sub-angular GRAVEL of colliery spoil, thinly laminated micaceous sandstone and black to dark grey shale.				
	(1.10)						
197.65	2.85		Trial pit complete at 2.85 m				

Remarks:
1 Groundwater: None
2 Stability of faces: Good
3 Support used: None

Scale: 1:25
Logged By: TN
Fig No: 5



Trial Pit Record

TP4

Date Excavated 11
Data Backfilled 11

Sheet 1 of 1

Client Advantage West Midlands Co-ordinates 387829.80 mE
Site Brown Lees 366671.80 mN
Location Biddulph, Stoke-on-Trent Ground Level 201.40 mOD

Excavated by JCB 8CX Width 0.80 m Length 2.40 m Depth 1.60 m

Level (m AOD)	Stratum Base	Key	Description (Face A)	Samples			Field Records
				No	Type	Depth	
	(0.20)		Soft light brown gravelly clay TOPSOIL (Replaced Soil)	01	D	0.00 - 0.20	
201.20	0.20		MADE GROUND consisting of firm, dark brown, gravelly CLAY. Gravel comprises fine to coarse, sub-angular to sub-rounded limestone and quartz.	02	D	0.20 - 0.30	
	(0.30)						
200.80	0.50		MADE GROUND consisting of loose wet black GRAVEL of former road plantings.	03	D	0.50 - 0.70	
	(0.20)						
200.70	0.70		Firm, very slightly damp, orange brown, CLAY with occasional well rounded pebbles. Clay mottled with light greenish grey sand. Rootlets common (Natural Ground).	04	W	0.70	
	(0.90)						
				05	D	1.20 - 1.60	
999.20	1.60		Trial pit complete at 1.60 m				

Remarks
Groundwater: Seepage at base of road planning horizon @ 0.7m.
Stability of faces: Good
Support used: None

Scale 1:25

Logged By TN

Fig No 6

100



Trial Pit Record

TP7

Date Excavated
Date Backfilled//
//

Sheet 1 of 1

Client Advantage West Midlands Co-ordinates 387888 80 mE

Site Brown Lees 365626 30 mN

Location Biddulph, Stoke-on-Trent Ground Level 202 10 mOD

Excavated by JCB 3CX Width 0.60 m Length 2.40 m Depth 1.70 m

Level (m AOD)	Stratum Base	Key	Description (Face A)	Samples			Field Records
				No	Type	Depth	
			Light orange to dark brown, friable, clayey TOPSOIL with many well rounded pebbles (Replaced Soil)	01	D	0.00 - 0.15	
	(0.35)			02	D	0.20 - 0.35	
201.75	0.35		MADE GROUND consisting of loose, black, fine to coarse, sub-angular to sub-rounded GRAVEL of road plantings, bricks and broken paving slab	03	D	0.35 - 0.50	
	(0.35)						
201.40	0.70		Soft, very slightly damp, yellowish brown CLAY with much mottling of greenish grey silty sand	04	W	1.00	
	(1.00)			05	D	1.10 - 1.50	
200.40	1.70		Trial pit complete at 1.70 m				

Remarks

1. Groundwater: 1.0m. Ocherous water emanating from cable conduit

2. Stability of faces: Good

3. Support used: None

4. Discovery of building sand lead to suspicion of unmarked cable way. Pit moved 2m north-wards. Cable was then uncovered running north to south with earthing strap. Moved 2m west and continued.

Scale 1:25

Logged By TN

Fig No 9



Trial Pit Record

TP8

Date Excavated
Date Backfilled

11
11

Sheet 1 of 1

Client: Advantage West Midlands Co-ordinates: 387769 00 mE

Site: Brown Lees 365572 50 mN

Location: Biddulph, Stoke-on-Trent Ground Level: 200.50 mOD

Excavated by: JCB 3CX Width: 0.60 m Length: 2.20 m Depth: 2.40 m

Level (m AOD)	Stratum	Key	Description (Face A)	Samples		Field Records
	Base			No	Type	Depth

200.30	0.20		Firm, light brown clayey TOPSOIL with many well rounded pebbles (Replaced Soil).	01	D	0.00 - 0.20
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			MADE GROUND consisting of firm, dark grey CLAY with much gravel of collary spoil comprising of mudstone, sandstone and shale. Cobbles and boulders of black mudstone and greenish grey laminated sandstone.			
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				02	D	0.40 - 1.00
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198.10	2.40			03	D	2.10 - 2.40
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Trial pit complete at 2.40 m

Remarks

1 Groundwater: None
2 Stability of faces: Good
3 Support used: None

Scale: 1:25

Logged By: TN

Fig No

10



TP9

Date Excavated
Date Backfilled

Sheet 1 of 1

Client **Advantage West Midlands**

Co-ordinates 387840 10 mE

Site: Brown Lees

955572 50 mN

Location Edduloh, Stoke-on-Trent

Ground Level	202.40	tnOD
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Excavated by JCB 3CX

Width 0.60 m Length 2.50 m Depth 3.20 m

Level	Stratum
-------	---------

Key

Description (Face A)

Samples

Field Records

 $\lim AOD$

Base

(0.20)

Bolt. Light orange brown clayey TOPSOIL with much fine to coarse sub-angular gravel of shale, sandstone and well rounded pebbles.

No	Type	Depth
01	D	0.00 - 0.15

0

□

0.04, 0.15

02 D 030 - 120

03: D 2 90 - 3.20

199 20

320

Printed on 06/06/2015 at 3:22 pm

References

1	Groundwater :	None
2	Stability of faces :	Good
3	Support used :	None

Scale 1:25

Logged By TN

b. Fig No 11



Trial Pit Record

TP10

Date Excavated //
Date Backfilled //

Sheet 1 of 1

Client Advantage West Midlands Co-ordinates 367920 90 mE

Site Brown Lees 355574.10 mN

Location Biddulph, Stoke-on-Trent Ground Level 203.20 mOD

Excavated by JCB 3CX Width 0.60 m Length 2.10 m Depth 3.60 m

Level (m AOD)	Stratum Base	Key	Description (Face A)	Samples			Field Records
				No.	Type	Depth	
	(0.20)		Soft to firm, brown to dark brown clayey TOPSOIL with some gravel of mudstone and well rounded pebbles (Replaced Soil)	01	D	0.00 - 0.10	
203.00	0.20		MADE GROUND consisting of loose dry to very slightly damp, coarse GRAVEL of red shale				
	(1.25)			02	D	0.20 - 1.45	
201.75	1.45		MADE GROUND consisting of soft, damp, black amorphous CLAY (Coal Wastery Fines)	03	D	1.45 - 1.65	
	(0.85)						
200.90	2.33		MADE GROUND consisting of firm, olive brown, gravelly CLAY. Cobbles and boulders (0.5m) of mudstone and sandstone. Occasional quartz pebbles				
	(1.30)						
				04	D	3.00 - 3.40	
199.60	3.60		Trial pit complete at 3.60 m				

Remarks

1. Groundwater: Slight water ingress from 1.45m
2. Stability of faces: Poor in red shale, good otherwise.
3. Support Used: None

Not possible to advance trial pit any deeper than 3.6m due to obstruction

280 Scale 1:25

Logged By TN

Fig No 12



Trial Pit Record

TP11A

Date Excavated 23/02/2001
Date Backfilled 23/02/2001

Sheet 1 of 1

Client Advantage West Midland Co-ordinates mE
Site Brown Lees mN
Location Biddulph, Stoke-on-Trent Ground Level mOD

Excavated by JCB 3CX Width 0.60 m Length 3.10 m Depth 2.40 m

Level (m AOD)	Stratum Base	Key	Description (Face A)	Samples			Field Records
				No	Type	Depth	
			Soft to firm, very slightly damp, purple brown, gravelly clay TOPSOIL with many quartz pebbles (Replaced Soil)	01	D	0.00 - 0.40	
	0.50		MADE GROUND consisting of dense, compacted, layered, fine to coarse sub-angular GRAVEL of colluvial spoil comprising weathered dark grey mudstone and occasional layers of coal-rich material.				
				02	D	0.50 - 2.00	
	1.90						
	2.40		Trial pit complete at 2.40 m				

Remarks

- 1 Groundwater: None
- 2 Stability of faces: Good
- 3 Support used: None

Trial pit excavated in side of soil mound and terminated at base of mound

Scale 1:25

Logged By TN

Fig No

13



Trial Pit Record

TP12

Date Excavated //
Date Backfilled //

Sheet 1 of 1

Client Advantage West Midlands Co-ordinates 387763.70 mE
Site Brown Lees 355516.30 mN
Location Biddulph, Stoke-on-Trent Ground Level 200.30 mOD
Excavated by JCB 3CX Width 0.60 m Length 2.50 m Depth 2.80 m

Level (m AOD)	Stratum Base	Key	Description (Face A)	Samples			Field Records
				No	Type	Depth	
200.10	0.20		Soil damp, light orange brown clay TOPSOIL with much coarse gravel of black and dark grey shale and light grey sandstone. Occasional quartz pebble	01	D	0.00 - 0.15	
			MADE GROUND consisting of soft, dark grey CLAY with much fine to coarse sub-angular gravel of well compacted colliery spoil comprising of shale and sandstone	02	D	0.20 - 0.78	
				03	D	2.00 - 2.30	
197.60	2.80		Trial pit complete at 2.80 m				

Remarks
1 Groundwater: None
2 Stability of faces: Good
3 Support used: None

Scale 1:25
Logged By TN
Fig No 14



IMC

Trial Pit Record

TP13

Date Excavated
Date Backfilled11
11

Sheet 1 of 1

Client: Advantage West Midlands Co-ordinates: 387824.70 mE
 Site: Brown Lees 355514.60 mN
 Location: Biddulph, Stoke-on-Trent Ground Level: 202.10 mOD

Excavated by: JCB 3CX Width: 0.60 m Length: 2.60 m Depth: 3.60 m

Level (m AOD)	Stratum Base	Key	Description (Face A)	Samples		Field Records
				No	Type	

				No	Type	Depth	
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201.95	0.15		Brown clayey TOPSOIL, mottled by organic material. Fine to coarse gravel of mudstone and well rounded pebbles (Replaced Soil)	01	D	0.00 - 0.10	
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MADE GROUND consisting of dark grey CLAY with much fine to coarse sub-angular collery spoil of laminated mudstone and sandstone

02	D	0.20 - 1.50	
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03	D	1.60 - 3.60	
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198.60	3.60		
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Trial pit complete at 3.60 m

Remarks

1. Groundwater: None
2. Stability of faces: Good
3. Support used: None

340	Boils	1:25
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Logged By	TN
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Fig No	15
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Trial Pit Record

TP15

Date Excavated
Date Backfilled

Sheet 1 of 1

Client: Advantage West Midlands Co-ordinates: 387950.40 mE
Title: Brown Lees 355527.80 mN
Location: Biddulph, Stoke-on-Trent Ground Level: 204.00 mOD

Excavated by: JCB 3CX Width: 0.60 m Length: 2.70 m Depth: 3.70 m

Level (m AOD)	Stratum Base	Key	Description (Face A)	Samples			Field Records
				No	Type	Depth	
203.80	0.20		Firm, dark olive brown clay TOPSOIL with much fine to coarse gravel of mudstone and rounded quartz pebbles (Replaced Soil)	01	D	0.00 - 0.20	
	(0.50)		MADE GROUND consisting of dark greyish brown CLAY with much fine to coarse sub-angular gravel of red and black shale, limestone, sandstone and chert.	02	D	0.20 - 0.60	
203.30	0.70		MADE GROUND consisting of dense, well compacted and layered light to dark grey GRAVEL of colliery spoil comprising of mudstone and fine coal	03	D	0.80 - 1.10	
	(2.20)			04	D	0.80 - 2.80	
201.10	2.90		MADE GROUND consisting of soft, orange brown slightly silty CLAY with much fine to coarse, tabular gravel of sandstone. Gravel becomes more coarse with depth with clay content decreasing. Cobbles common. Pieces of odourless contorted wood.	05	D	2.50 - 3.20	
	(0.80)						
200.30	3.70		Trial pit complete at 3.70 m				

Remarks:
Groundwater: 2.9m Water seeping into trial pit
Stability of faces: Good
Support used: None

Scale: 1:25
Logged By: TN
Fig No: 17



Trial Pit Record

TP16A

Date Excavated 23/02/2001
Date Backfilled 23/02/2001

Sheet 1 of 1

Client Advantage West Midlands Co-ordinates mE
Site Brown Lees mN
Location Biddulph, Stoke-on-Trent Ground Level mOD

Excavated by JOB 3CX Width 0.60 m Length 3.00 m Depth 3.50 m

Level Stratum Key Description (Face A) Samples No Type Depth Field Records

(m AOD) Base Key Description (Face A) Samples No Type Depth Field Records

(0.40)

0.40

Soft to firm, dry to very slightly damp, dark brown clay TOPSOIL, with many rounded pebbles (Replaced Soil).

01 D 0.00 - 0.40

MADE GROUND consisting of firm, light to dark grey CLAY with much gravel of coarser spoil comprising highly weathered mudstone and diatom layers of coal rich material.

(3.10)

3.50

02 D 1.60 - 1.70

Trial pit complete at 3.50 m

Remarks

- 1 Groundwater: None
- 2 Stability of face: Good
- 3 Support used: None

Trial pit excavated inside of soil mound and terminated at base of mound

Scale 1:25

Logged By TN

Fig No

18

b Fig No 19



Trial Pit Record

TP18

Date Excavated 22/02/2001
Date Backfilled 22/02/2001

Sheet 1 of 1

Client Advantage West Midlands Co-ordinates 887821.60 mE

Site Brown Lees 355474.60 mN

Location Biddulph, Stoke-on-Trent Ground Level 201.60 mOD

Excavated by JCB 3CX Width 0.80 m Length 2.40 m Depth 3.30 m

Level (m AOD)	Stratum Base	Key	Description (Face A)	Samples No	Type	Depth	Field Records
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201.72	0.18		Firm, light to medium brown, greyish clay TOPSOIL with some gravel comprising fine to coarse, sub-angular sandstone and mudstone with many well rounded pebbles. Weak covering of sward grass	01	D	0.00 - 0.10	
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			MADE GROUND consisting of firm, dark brownish grey CLAY with much gravel of coarsey spoil comprising black mudstone and light grey sandstone. Many boulders of sandstone (300mm diam) Soft black CLAY of coal washing deposits at 2.5m.				
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				02	D	0.30 - 1.00	
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(3 12)

				03	D	2.20 - 3.30	
--	--	--	--	----	---	-------------	--

198.60 3.30 Trial pit complete at 3.30 m

Remarks
Groundwater: None
Stability of faces: Good
Support used: None

Scale 1:25

Logged By TN

Fig No 20



Trial Pit Record

TP19

Date Excavated: / /
Date Backfilled: / /

Sheet 1 of 1

Client: Advantage West Midlands
Site: Brown Lees
Location: Biddulph, Stoke-on-Trent
Co-ordinates: 387893 60 mE
355482 60 mN
Ground Level: 203.50 mOD

Excavated by: JCB 3CX Width: 0.60 m Length: 2.40 m Depth: 3.30 m

Level: (m AOD) Stratum: Base Key Description (Face A) Samples: No Type Depth Field Records

(0.20) Firm, dark brown clay TOPSOIL (Replaced Soil) 01 D 0.00 - 0.15

203.30 0.20 MADE GROUND consisting of soft, dark gray CLAY with much fine to coarse sub-angular gravel of black to dark gray mudstone and coal.

02 D 0.20 - 1.70

(3.00)

03 D 2.30 - 3.00

200.30 3.20 Firm, mottled, brown CLAY with much fine, light grey to black organic material and chert (Natural Ground) 04 D 3.20 - 3.30
200.20 3.20 (not pit complete at 3.30 m)

Remarks

- 1 Groundwater: None
- 2 Stability of faces: Good
- 3 Support used: None

Scale: 1:25
Logged By: TN
Fig No: 21



Trial Pit Record

TP20

Date Excavated
Date Backfilled11
11

Sheet 1 of 1

Client Advantage West Midlands

Co-ordinates 387950.90 mE

Site Brown Lees

355487.30 mN

Location Biddulph, Stoke-on-Trent

Ground Level 204.50 mOD

Excavated by JCB 3CX

Width 0.60 m Length 2.60 m Depth 3.00 m

Level (m AOD)	Stratum Base	Key	Description (Face A)	Samples			Field Records
				No	Type	Depth	
			Firm, damp, dark brown clay TOPSOIL with much fine to coarse sub-angular gravel of mudstone and quartz (Replaced Soil).	01	D	0.00 - 0.10	
204.30	0.20		MADE GROUND consisting of loose dark grey gravel of foundry slag				
	(0.50)			02	D	0.20 - 0.70	
203.60	0.70		MADE GROUND consisting of loose damp pink GRAVEL of limestone chippings.				
	(0.45)			03	D	0.70 - 1.10	
203.05 203.34	1.15 1.18		Geo-textile membrane. MADE GROUND consisting of loose, damp grey GRAVEL of colliery spoil including mudstones, sandstone and coal.				
	(0.89)			04	D	1.20 - 2.00	
202.45	2.05		MADE GROUND consisting of silt to firm black to dark brown silty clay comprising former coal washery fines.	05 06	D W	2.10 - 2.20 2.20	
	(0.65)						
201.60	2.70		Firm olive grey to dark grey CLAY occasionally mottled light grey.	07	D	2.70 - 2.80	
201.70	2.80		Soft very highly damp olive brown sandy CLAY	08	D	2.80 - 3.00	
	(0.90)						
201.50	3.00		Total pit complete at 3.00 m				

Remarks

- 1 Groundwater : 2.25m Water seepage into trial pit.
- 2 Stability of faces : Trial pit discontinued beyond 3m due to collapse of material from 2m
- 3 Support used : None

Scale 1:25

Logged By TN

Fig No

22



Trial Pit Record

TP21

Date Excavated

11

Date Backfilled

11

Sheet 1 of 1

Client Advantage West Midland Co-ordinates 386003.70 mE
Site Brown Lees 355489.70 mN
Location Biddulph, Stoke-on-Trent Ground Level 204.40 mOD

Excavated by JCB 3CX Width 0.60 m Length 2.40 m Depth 2.10 m

Level (m AOD)	Stratum Base	Key	Description (Face A)	Samples			Field Records
				No	Type	Depth	
204.20	0.20		Firm, orange brown clay TOPSOIL with many well rounded pebbles (Replaced Soil).	01	D	0.00 - 0.15	
	0.70		MADE GROUND consisting of firm very slightly damp dark olive brown CLAY	02	D	0.20 - 0.90	
203.50	0.90		MADE GROUND consisting of firm, dark grey CLAY with much fine to coarse sub-angular gravel of red shale, black shale, slag and brick.	03	D	0.90 - 1.10	
203.30	1.10		MADE GROUND consisting of firm very slightly damp dark olive brown CLAY				
	0.45						
202.85	1.55		MADE GROUND consisting of soft, orange brown very sandy CLAY becoming more sandy with depth	04	D	1.55 - 2.10	
	0.55						
202.30	2.10		Trial pit complete at 2.10 m				

Remarks:
Groundwater: Seepage at 1.8m
Stability of faces: Generally good but poor in basal sand
Support used: None

Scale 1:25
Logged By TN

Fig No 23



Trial Pit Record

TP23

Date Excavated 23/02/2001
Date Backfilled 23/02/2001

Sheet 1 of 1

Client Advantage West Midlands Co-ordinates 387838.70 mE
Site Brown Lees 355421.70 mN
Location Blidulph, Stoke-on-Trent Ground Level 201.40 mOD

Excavated by JCB 3CX Width 0.60 m Length 3.00 m Depth 3.20 m

Level (m AOD)	Stratum	Key	Description (Face A)	Samples			Field Records
				No	Type	Depth	
201.30	0.10		Soft to firm, dark brown clay TOPSOIL with standing water and moderate sward (Replanted Soil).	01	D	0.00 - 0.10	
	(0.40)		MADE GROUND consisting of light to medium brown, gravelly CLAY. Gravel comprises fine to coarse, sub-angular weathered red shale and some dark grey shale.	02	D	0.10 - 0.50	
200.90	0.50		MADE GROUND consisting of dark grey CLAY with much fine to coarse, sub-angular gravel or collary spoil comprising of dark grey mudstone. Occasional large boulders up to 0.8m diameter.				
	(0.90)			03	D	0.50 - 1.20	
200.00	1.40		MADE GROUND consisting of soft, very slightly damp, light brown mottled light grey CLAY with patches of black carbonaceous material. Much fine to coarse, sub-angular gravel or collary spoil. Pockets of dark olive brown, crumbly loam soil.	04	D	1.40 - 1.60	
	(0.60)						
199.20	2.20		MADE GROUND consisting of dark grey CLAY with much fine to coarse, sub-angular gravel or collary spoil comprising of dark grey mudstone. Occasional large boulders up to 0.8m diameter.				
	(1.00)						
198.20	3.20		Trial pit complete at 3.20 m				

Remarks
1. Groundwater: None
2. Stability of faces: Good
3. Support used: None

Trial pit moved 5m east due to ditch

Scale 1:25

Logged By TN

Fig No

25



Trial Pit Record

TP24

Date Excavated 23/02/2001
Date Backfilled 23/02/2001

Sheet 1 of 1

Client Advantage West Midlands Co-ordinates 387916 90 mE
Site Brown Lees 355430 80 mN
Location Biddulph, Stoke-on-Trent Ground Level 203.40 mOD

Excavated by JCB 3CX Width 0.60 m Length 2.40 m Depth 3.50 m

Level (m AOD)	Stratum Base	Key	Description (Face A)	Samples			Field Records
				No	Type	Depth	
203.25	0.15		Firm, dark brown clay TOPSOIL with much fine to coarse sub-angular gravel of dark grey mudstone and well rounded quartz pebbles.	01	D	0.00 - 0.15	
			MADE GROUND consisting of dark grey, dry to very slightly damp CLAY with much fine to coarse, sub-angular gravel of colliery spoil. Occasional cobbles of mudstone and sandstone.				
				02	D	0.20 - 1.20	
				03	D	1.40 - 2.60	
200.00	3.40						
199.95	3.50		MADE GROUND consisting of firm mottled light grey to reddish brown CLAY of highly weathered mudstone. Trial pit complete at 3.50 m				

Remarks
Groundwater: None
Stability of faces: Good
Support used: None

Scale 1:25

Logged By TN

Fig No 26



Trial Pit Record

TP26

Date Excavated 23/02/2001
Date Backfilled 23/02/2001

Sheet 1 of 1

Client Advantage West Midlands Co-ordinates 387761 50 mE
Site Brown Lees 355370 70 mN
Location Biddulph, Stoke-on-Trent Ground Level 200.30 mOD

Excavated by JCB 3CX Width 0.20 m Length 2.40 m Depth 3.20 m

Level (m AOD)	Stratum Base	Key	Description (Face A)	Samples			Field Records
				No	Type	Depth	
(0.20)			Soil: very slightly damp, light crumbly brown clay TOPSOIL with thin sward (Replaced Soil)	01	D	0.00 - 0.20	
200.10	0.20		MADE GROUND consisting of dark to medium grey CLAY with much fine to coarse, sub-angular gravel of collary spoil comprising weathered dark gray sandstone				
				02	D	0.20 - 1.60	
(2.00)							
				03	D	1.60 - 3.20	
197.10	3.20		Trial pit complete at 3.20 m				

Remarks
Groundwater: None
Stability of faces: Good
Support used: None

Trial pit moved 8m away from fence but normal to fence line

Scale 1:25

Logged By JN

Fig No

28



Trial Pit Record

TP27

Date Excavated
Date Backfilled

23/02/2001
23/02/2001

Sheet 1 of 1

Client: Advantage West Midlands
Site: Brown Lees
Location: Biddulph, Stoke-on-Trent
Co-ordinates: 387843 90 mE
Ground Level: 201.10 mOD

Excavated by: JCB 3CX Width: 0.60 m Length: 2.40 m Depth: 3.80 m

Level (m AOD)	Stratum Base	Key	Description (Face A)	Samples			Field Records
				No	Type	Depth	
			Soft, wet, brown clay TOPSOIL with well rounded pebbles and a weak sward (Replaced Soil)	01	D	0.00 - 0.25	
200.75	0.35		MADE GROUND consisting of soft to firm, dark grey CLAY with much gravel of millery spoil comprising coarse sub-angular gravel of weathered black mudstone.	02	D	0.35 - 0.80	
200.30	0.80		MADE GROUND consisting of soft light grey to black CLAY with some gravel of deeply weathered grey mudstone.				
199.60	1.90		MADE GROUND consisting of firm, brown mottled orange brown and light grey gravelly CLAY. Gravel comprises fine to coarse sub-angular weathered dark grey mudstone.	03	D	1.50 - 2.00	
198.26	2.85		MADE GROUND consisting of soft brown CLAY mottled with orange brown clay with some to much gravel of mudstone.				
187.80	3.80		Trial pit complete at 3.80 m				

Remarks:
Groundwater: Water seepage at 1.5m. Not sampled.
Stability of faces: Good
Support used: None

Scale: 1:25

Logged By: TN

Fig No: 29

30



Trial Pit Record

TP29

Date Excavated 23/02/2001
Date Backfilled 23/02/2001

Sheet 1 of 1

Client Advantage West Midlands Co-ordinates 387986.60 mE
Site Brown Lees 355392.40 mN
Location Biddulph, Stoke-on-Trent Ground Level 204.70 mOD

Excavated by JCB 3CX Width 0.60 m Length 2.40 m Depth 2.80 m

Level (m AOD)	Stratum Base	Key	Description (Face A)	Samples			Field Records
				No.	Type	Depth	
			Firm, damp orangey brown clay TOPSOIL. Good coverage of sward (Replaced Soil).	01	D	0.00 - 0.30	
204.00	0.70		MADE GROUND consisting of soft, dark grey to black organic CLAY with much fine to coarse, sub-angular gravel of colluvial spall comprising of black to dark grey mudstone, coal and occasional scoria.				
				02	D	0.70 - 2.80	
201.90	2.80		Trial pit complete at 2.80 m				

Remarks
1. Groundwater: None
2. Stability of faces: Good
3. Support used: None

Obstruction at 2.8m precluding deeper excavation.

Scale 1:25

Logged By TN

Fig No

31

Trial pit moved 5m south along fence and 5m east of fence line to avoid existing monitoring equipment.



Trial Pit Record

TP31

Date Excavated
Date Backfilled23/02/2001
23/02/2001

Sheet 1 of 1

Client: Advantage West Midlands Co-ordinates: 387846.60 mE
Site: Brown Lees 355325.00 mN
Location: Biddulph, Stoke-on-Trent Ground Level: 200.10 mOD

Excavated by: JCB 3CX Width: 0.60 m Length: 2.80 m Depth: 3.20 m

Level (m AOD)	Stratum Base	Key	Description (Face A)	Samples		Field Records
				No	Type	Depth
	(0.30)		Soil, very slightly damp, brown to orangey brown clay TOPSOIL with rounded pebbles of quartz and occasional fine to coarse sub-rounded mudstone pebbles (Replaced Soil)	01	D	0.00 - 0.20
199.80	0.30		MADE GROUND consisting of dense compacted, dark grey colliery spoil			
				02	D	0.30 - 0.90
	(3.90)					
				03	D	2.00 - 3.10
196.60	3.20		Trial pit completed at 3.20 m			

Remarks:
Groundwater: None
Stability of faces: Good
3 Support used: None

Obstruction (boulder) at 3.2m precluding deeper excavation

Scale: 1:25

Logged By: TN

Fig No

33



Trial Pit Record

TP32

Date Excavated
Date Backfilled23/02/2001
23/02/2001

Sheet 1 of 1

Client: Advantage West Midlands Co-ordinates: 387920 80 mE
Site: Brown Lees 355330.30 mN
Location: Biddulph, Stoke-on-Trent Ground Level: 200.90 mOD
Excavated by: JOB 3CX Width: 0.60 m Length: 2.30 m Depth: 2.30 m

Level (m AOD)	Stratum Base	Key	Description (Face A)	Samples		Field Records
				No.	Type	
200.70	0.20		Firm damp brown clay TOPSOIL with many rounded pebbles (Replaced Soil).	01	D	0.00 - 0.10
	0.20		MADE GROUND consisting of dark grey to brown CLAY with much fine to coarse sub-angular gravel of colliery spoil			
	(0.80)					
199.90	1.00		MADE GROUND consisting of damp, wet, black to dark grey GRAVEL of colliery spoil with traces of paraffin odour. Common rubbish including cloth, pipe and wire	02	D	1.00 - 1.90
	(0.60)					
199.30	1.60		MADE GROUND consisting of light grey waxy weathered spatearth CLAY			
	(0.20)					
199.10	1.80		MADE GROUND consisting of dark brown to greyish CLAY with much fine to coarse gravel of colliery spoil. Much rubbish including pipe, brick, steel, cable, rods, plastic, tin cans.	03	D	1.70 - 2.00
	(0.60)					
180.80	2.30		Trial pit complete at 2.30 m			

Remarks:
Groundwater: None
Stability of faces: Poor below 1m
S. Support used: None
Unable to advance beyond 2.3m due to deep poor stability (1-2.3m)

Scale: 1:25

Logged By: TN

Fig No

34



Trial Pit Record

TP34

Date Excavated 23/02/2001
Date Backfilled 23/02/2001

Sheet 1 of 1

Client Advantage West Midland Co-ordinates 387810 10 mE

Site Brown Lees 355267.80 mN

Location Biddulph, Stoke-on-Trent Ground Level 194.10 mOD

Excavated by JCB 3CX Width 0.60 m Length 2.10 m Depth 3.40 m

Level (m AOD)	Stratum Base	Key	Description (Face A)	Sample No	Type	Depth	Field Records
			Soft, brown to orange brown clay TOPSOIL with rounded pebbles and fine to coarse angular gravel mudstone (Replaced Soil).	01	D	0.00 - 0.10	
193.76	0.35		MADE GROUND consisting of soft to firm, gray brown to orange brown mottled CLAY with much fine to coarse gravel of collary spoil comprising of weathered mudstone. Large boulders between 1.5-2m				
				02	D	0.40 - 1.50	
				03	D	2.00 - 3.00	
				04	D	3.00 - 3.40	
190.70	3.40		Trial pit complete at 3.40 m				

Remarks
Groundwater : None
Stability of faces : Good
Support used : None

Scale 1:25

Logged By TN

Fig No

36



Trial Pit Record

TP35

Date Excavated 23/02/2001
Date Backfilled 23/02/2001

Sheet 1 of 1

Client Advantage West Midlands Co-ordinates 387894.40 mE

Site Brown Lees 355273.20 mN

Location Biddulph, Stoke-on-Trent Ground Level 196.70 mOD

Excavated by JCB 3CX Width 0.60 m Length 2.40 m Depth 3.20 m

Level Stratum Key Description (Face A) Samples No. Type Depth Field Records

(m AOD)	Stratum	Base	Key	Description (Face A)	No.	Type	Depth	Field Records
196.55	0.15			Soft, dark brown clay TOPSOIL with much fine to coarse, sub-angular gravel comprising of black weathered mudstone (Replaced Soil).	01	D	0.00 - 0.15	
	(0.55)			MADE GROUND consisting of soft, dark brown to olive brown CLAY with much fine to coarse, sub-angular gravel of colliery spoil comprising of weathered mudstone.	02	D	0.20 - 0.70	
196.00	0.70			MADE GROUND consisting of soft, orangey brown mottled grey CLAY with many pebbles.	03	D	0.70 - 0.90	
196.40	0.90			MADE GROUND consisting of soft to firm, yellowish orangey brown CLAY.	04	D	0.90 - 1.10	
195.60	1.10			MADE GROUND consisting of soft to firm, dark grey to black CLAY with much fine to coarse, sub-angular gravel of colliery spoil. Occasional cobbles of mudstone.				
	(2.10)							
					05	D	2.00 - 3.20	
193.50	3.20							

Trial pit complete at 3.20 m

Remarks
Groundwater: None
Stability of faces: Good
Support used: NoneScale 1:25
Logged By TN

Fig No 37



Trial Pit Record

TP36

Date Excavated 29/02/2001
Date Backfilled 29/02/2001

Sheet 1 of 1

Client Advantage West Midland Co-ordinates 387881.10 mE

Site Brown Lees 355276.80 mN

Location Biddulph, Stoke-on-Trent Ground Level 198.20 mOD

Excavated by JCB 3CX Width 0.60 m Length 2.40 m Depth 3.20 m

Level (m AOD)	Stratum Base	Key	Description (Face A)	Sample No.	Type	Depth	Field Records
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197.90	0.30		Soft, brown to dark brown, slightly sandy slightly gravelly clay TOPSOIL (Replaced Soil)	01	D	0.00 - 0.30	
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197.90	0.30		MADE GROUND consisting of soft to firm, dark grey to brown CLAY with much fine to coarse, sub-angular gravel of colliery spoil comprising of mudstone and shale. Some rubble of timber, concrete posts and plastic. 2.4m Traces of black to dark brown clay grade coal weathery lagoon settlement deposits. No distinct horizon				
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195.60	2.60		MADE GROUND consisting of soft, wet, dark grey, sandy CLAY with much fine to coarse sub-angular gravel of foundry ash and slag. Solid obstruction at 3.2m				
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	0.60			03	D	2.60 - 3.20	
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195.00	3.20		Trial pit complete at 3.20 m				
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Remarks	Wet at 2.6m but no seepage.	Scale	1:25
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Groundwater	Poor below 0.7m	Logged By	TN
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Stability of faces	None	Fig No	38
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Support used			
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TP37

Sheet 1 of 1

Location	Biddulph, Stoke-on-Trent	Ground Level	190.10	mOD
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Excavated by JOB 3CX Width 0.60 m Length 2.40 m Depth 3.60 m

Level	Stratum	Key	Description (Face A)	Samples			Field Records
(m AOD)	Base			No.	Type	Depth	
188.50	0.50		Soft to firm, very slightly damp, orange brown to light brown gravelly clay TOPSOIL. Weak grass covering with poor drainage (Replaced Soil)	01	D	0.00 - 0.20	
(0.50)							
187.50	2.50		MADE GROUND consisting of dark grey brown CLAY with much fine to coarse sub-angular colliery spoil of mudstone and sandstone. Occasional cobbles of sandstone.	02	D	0.60 - 2.00	
(0.50)							
187.10	3.00		MADE GROUND consisting of dark grey brown CLAY with many pockets of soft to firm pale orange brown clay. Much fine to coarse sub-angular gravel of colliery spoil of mudstone and sandstone.				
(0.60)							
186.50	3.60		MADE GROUND consisting of dark grey brown CLAY with much fine to coarse sub-angular colliery spoil of mudstone and sandstone. Occasional cobbles of sandstone.				
(0.60)							
186.50	3.60		Test pit complete at 3.60 m				

Remarks	
Groundwater:	None
Stability of Ince.	Good
Support used:	None

Scale 1.25

Logged By TN

Fig No **39**



TP38

Sheet 1 of 1

Excavated by JCB 30X Width 0.60 m Length 2.80 m Depth 3.55 m

Soil Type	Depth
01 D	000 - 010

Soft, dark brown clay TOPSOIL with some fine to coarse, sub-angular gravel at

193.70	0.20	MADE GROUND consisting of dark brown to grey brown CLAY with much fine to coarse sand and gravel and of weathered mudstone.
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02 D 0.50 + 2.80

Time at pit complete at 3.55 m

Remarks:		Bores	1225
Groundwater:	None		
Stability of faces:	Good	6	Logged By
Support used:	None		TN

Scale 1-76

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 104

Figure 1

40



Trial Pit Record

TP39

Date Excavated 23/02/2001
Date Backfilled 23/02/2001

Sheet 1 of 1

Client Advantage West Midlands Co-ordinates 387943 00 mE

Site Brown Lees 355230.30 mN

Location Biddulph, Stoke-on-Trent Ground Level 196.70 mOD

Excavated by JCB 3CX Width 0.60 m Length 2.60 m Depth 3.60 m

Level (m AOD)	Stratum Base	Key	Description (Face A)	Samples			Field Records
				No	Type	Depth	
(0.35)			Soft, very slightly damp brown clay TOPSOIL with much fine to coarse angular gravel of mudstone.	01	D	0.00 - 0.20	
196.35	0.35		MADE GROUND consisting of soft, black to dark brown CLAY with much fine to coarse, sub-angular gravel of mudstone. At 1m deep many boulders up to 1m diameter.	02	D	0.55 - 0.80	
(1.45)							
194.90	1.80		MADE GROUND consisting of soft, brown to dark brown mottled CLAY with much fine to coarse, sub-angular gravel of sandstone, brick, mudstone, slag and limestone aggregate. Obstruction at 1.8m in face A of a red brick wall.				
(1.70)							
193.20	3.50			03	D	2.80 - 3.60	
193.10	3.60		Top of concrete foundation to a brick wall. Trial pit complete at 3.60 m				

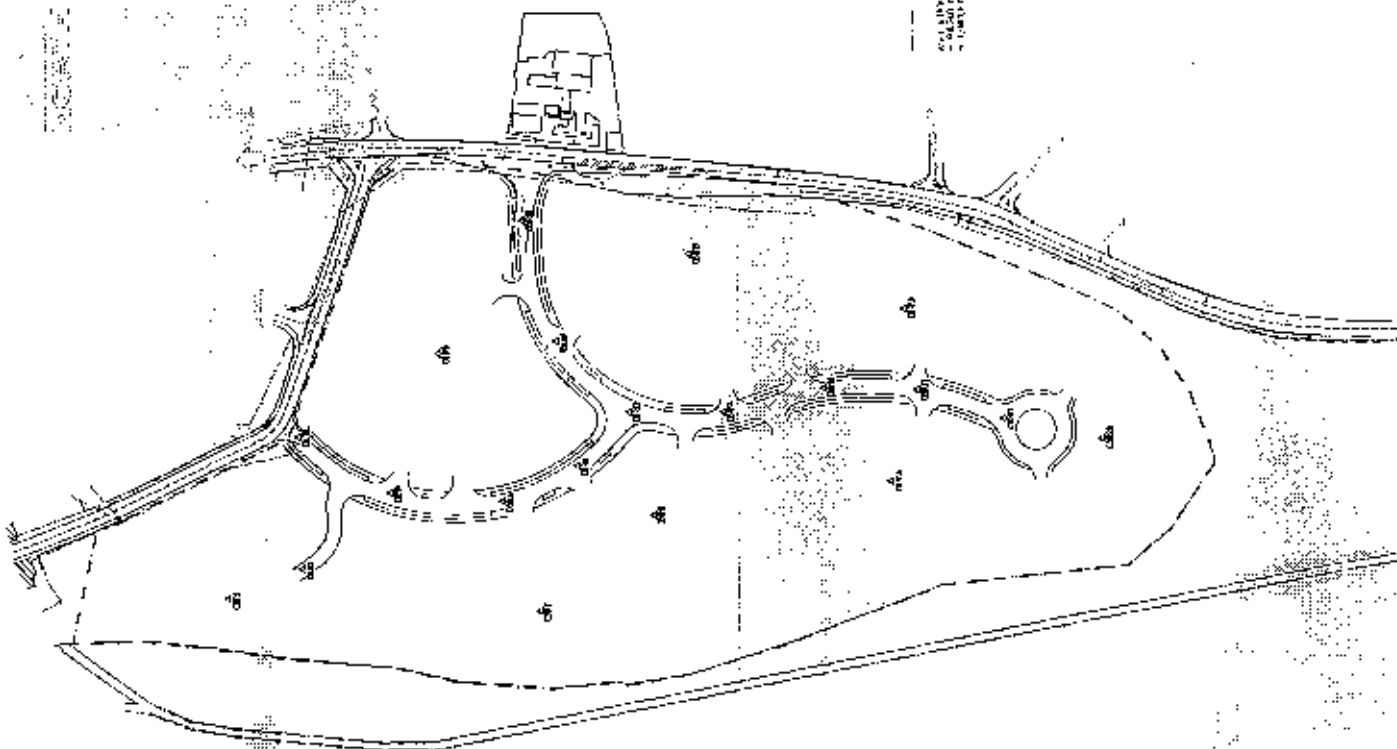
Remarks
Groundwater: None
Stability of faces: Good
Support used: None

Scale 1:25

Logged By TN

Fig No 41

FIGURE 2



PROPOSED 20' EASEMENT
EXISTING EASEMENT FOR 10' WIDE
EASEMENT FOR 10' WIDE
EASEMENT FOR 10' WIDE

DATE	10/10/10	BY	J. J. J.	APP. REVISION	
DESCRIPTION	PROPOSED DEVELOPMENT				

Advantage
West Midlands
The Development Agency

PROJECT
BROWN LEES DEVELOPMENT

PROJECT TITLE
**CALIFORNIA BEARING RATIO
LOCATION PLAN**

DATE	10/10/10	BY	J. J. J.	APP. REVISION	
DESCRIPTION	PROPOSED DEVELOPMENT				

IMC
IMC Consulting Engineers
The City of London
100 Broad Street
London EC4A 3DF
Tel: 020 7424 1000
Fax: 020 7424 1001
Email: info@imc.co.uk
www.imc.co.uk

APPENDICES

APPENDIX A

Chemical Analysis Results

Ecos Environmental Report Nos.

R01/0621 Soils

R01/0628 Waters



0618
0618 SI

What's so special about a UKAS report or certificate?

- Accreditation of testing is granted by the United Kingdom Accreditation Service (UKAS).
- It's your assurance that the work has been carried out to the highest standards.
- The laboratory issuing the test report has been stringently assessed by independent experts.
- You are assured that the agreed or specified methods and procedures have been followed.
- Measurements are traceable to national and international standards.

Comments:

Tests marked † in this report are not included in the UKAS Accreditation Schedule for the testing laboratory. However, with the continuing development of our QC protocols, these tests will be included in the near future.

Any opinions and interpretations expressed herein are outside the scope of the testing laboratory's UKAS Accreditation.

The Coefficient of Variation CV_T (where $CV_T = \text{standard deviation}/\text{mean} \times 100$) is better than 15%

All analysis carried out using ECoS standard methods unless otherwise agreed
The test results in this report refer only to the actual samples on which testing has been performed.

Date submitted for analysis : 27/02/01

Your Job/Order Number : D5249C/400846

Analyst(s) : NB DS PB ELD MRH NSP AA SPA

Approved signatories: J R Brown, G Ewbank, E Dewell

Signature : *R. Munn*

Report date : 6 March 2001



SOIL

ANALYTE	METHOD OF DETECTION	LIMIT OF DETECTION
Arsenic	ICP-OES	1.0 mg/kg
Cadmium	ICP-OES	0.2 mg/kg
Chromium (total)	ICP-OES	0.2 mg/kg
Lead	ICP-OES	0.5 mg/kg
Mercury	ICP-OES	1.0 mg/kg
Copper	ICP-OES	0.2 mg/kg
Nickel	ICP-OES	0.2 mg/kg
Zinc	ICP-OES	0.2 mg/kg
Sulphate (water soluble)	HPLC-IC	0.001 g/l
Loss on Ignition	Gravimetry	0.01 %
Chloride	HPLC-IC	1 mg/kg
pH	Aqualyser	N/A
Arsenic (leachable)	AAS-HYDRIDE	1.0 ug/l
Cadmium (leachable)	GF-AAS	0.1 ug/l
Chromium (leachable)	ICP-OES	0.01 mg/l
Lead (leachable)	ICP-OES	0.03 mg/l
Mercury (leachable)	AAS-HYDRIDE	0.1 ug/l
Copper (leachable)	ICP-OES	0.01 mg/l
Nickel (leachable)	ICP-OES	0.01 mg/l
Zinc (leachable)	ICP-OES	0.01 mg/l
Iron (leachable)	ICP-OES	0.03 mg/l
Chloride (leachable)	HPLC-IC	1 mg/l
Sulphate (leachable)	HPLC-IC	1 mg/l
pH (leachable)	Aqualyser	N/A
Conductivity (leachable)	Aqualyser	10 uS/cm @25C
Ammoniacal Nitrogen (leach)	Colorimetry	0.1 mg/l as N
Phenols	Colorimetry	1.0 mg/kg
PAH (total)	HPLC-UV	10 mg/kg
TPH	Infra-red	1 mg/kg
Calorific Value	Bomb Calorimetry	0.1 MJ/kg

The Calorific value analysis in this report has been sub-contracted.

IMC Consulting Engineers Limited - Brown Lees Development

ANALYTES	UNITS	TP1/2 (0.90 - 1.00m)	TP2/1 (0.00 - 0.10m)	TP3/2 (0.35 - 0.70m)	TP3/3 (1.40 - 1.70m)	TP4/2 (0.50 - 0.70m)	TP4/5 (1.20 - 1.50m)	TP5/2 (0.30 - 1.30m)	TP6/2 (0.50 - 1.60m)	TP7/3 (0.50 - 0.50m)	TP8/2 (0.40 - 1.00m)	TP9/2 (0.30 - 1.30m)	TP10/2 (0.20 - 1.45m)
		S0105483	S0105484	S0105485	S0105486	S0105487	S0105488	S0105489	S0105490	S0105491	S0105492	S0105493	S0105494
Arsenic	mg/kg	13.3	15.4	10.0	6.2	7.1	1.3	1.3	6.7	10.8	11.7	6.2	18.3
Cadmium	mg/kg	0.7	1.1	1.5	0.6	1.0	1.2	0.9	1.0	1.0	0.4	0.6	0.3
Chromium (Total)	mg/kg	22.9	20.7	35.0	19.7	8.9	32.5	22.6	23.3	9.7	19.5	19.4	47.9
Lead	mg/kg	15.1	25.4	<0.5	<0.5	60.7	<0.5	<0.5	<0.5	102.2	<0.5	<0.5	<0.5
Mercury	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	<1.0
Copper	mg/kg	37.2	33.2	38.5	39.6	324.1	16.7	34.8	48.0	89.9	56.6	31.1	40.4
Nickel	mg/kg	33.4	10.2	39.5	24.7	31.8	17.8	28.2	30.6	18.4	29.8	28.8	33.5
Zinc	mg/kg	122.2	120.9	133.6	61.2	230.0	57.1	138.0	122.3	148.6	98.2	119.5	38.4
Sulphate (water soluble)	g/l	0.288	0.061	0.372	0.037	0.069	0.037	0.334	0.261	0.133	0.295	0.219	1.698
Loss on Ignition	%	12.06	11.40	10.35	11.21	71.26	5.89	11.93	12.68	22.20	11.74	8.62	4.15
Chloride	mg/kg	7	8	17	3	6	8	4	4	4	6	3	2
pH	N/A	7.0	7.7	7.2	6.3	7.7	5.1	7.1	7.1	7.9	6.9	7.0	7.0
Arsenic (leachable)	ug/l	<1.0	#	#	#	#	#	#	<1.0	#	#	#	#
Cadmium (leachable)	ug/l	<0.1	#	#	#	#	#	#	<0.1	#	#	#	#
Chromium (leachable)	mg/l	<0.01	#	#	#	#	#	#	<0.01	#	#	#	#
Lead (leachable)	mg/l	<0.03	#	#	#	#	#	#	<0.03	#	#	#	#
Mercury (leachable)	ug/l	<0.1	#	#	#	#	#	#	<0.1	#	#	#	#
Copper (leachable)	mg/l	<0.01	#	#	#	#	#	#	<0.01	#	#	#	#
Nickel (leachable)	mg/l	<0.01	#	#	#	#	#	#	<0.01	#	#	#	#
Zinc (leachable)	mg/l	<0.01	#	#	#	#	#	#	<0.01	#	#	#	#

Results for soil samples expressed as dry weight
 Samples submitted for leachate determination were prepared using ISO4484 accredited methodology where appropriate
 # - Analyte not requested
 Report No. R01/0621
 Page 4 of 13

Summary Of Results **IMC Consulting Engineers Limited - Brown Lees Development**

ANALYTES	UNITS	TP1/2 (0.30 - 1.00m)	TP2/1 (0.00 - 0.10m)	TP3/2 (0.35 - 0.70m)	TP3/3 (1.40 - 1.70m)	TP4/2 (0.50 - 0.70m)	TP4/5 (1.20 - 1.60m)	TP5/2 (0.30 - 1.30m)	TP6/2 (0.50 - 1.60m)	TP7/3 (0.35 - 0.50m)	TP8/2 (0.40 - 1.00m)	TP9/2 (0.30 - 1.30m)	TP10/2 (0.20 - 1.45m)
		S0105483	S0105484	S0105485	S0105486	S0105487	S0105488	S0105489	S0105490	S0105491	S0105492	S0105493	S0105494
Iron (leachable)	mg/l	<0.03	#	#	#	#	#	#	<0.03	#	#	#	#
Chloride (leachable)	mg/l	<1	#	#	#	#	#	#	<1	#	#	#	#
Sulphate (leachable)	mg/l	16	#	#	#	#	#	#	21	#	#	#	#
pH (leachable)	n/A	6.7	#	#	#	#	#	#	6.9	#	#	#	#
Conductivity (leachable)	uS/cm @25C	76	#	#	#	#	#	#	91	#	#	#	#
Ammoniacal Nitrogen (leach)	mg/l as N	<0.1	#	#	#	#	#	#	<0.1	#	#	#	#
Calorific Value	MJ/kg	#	#	1.086	#	#	#	#	#	#	#	#	#
Phenols	mg/kg	#	#	#	#	<1.0	#	#	#	<1.0	#	#	#
PAH (total)	mg/kg	#	#	#	#	<10	#	#	#	863	#	#	#
TPH	mg/kg	#	#	#	#	7	#	#	#	64	#	#	#

Results for soil samples expressed as dry weight.
 Samples submitted for leachate determination were prepared using agreed procedures and analysed using UKAS accredited methodology where appropriate.
 # : Analyte not requested

Summary Of Results IMC Consulting Engineers Limited - Brown Lees Development

ANALYTES	UNITS	TP10/3 (1.45 - 1.65m)	TP11/2 (0.50 - 2.00m)	TP12/2 (0.20 - 0.75m)	TP13/2 (0.20 - 1.50m)	TP14/2 (0.20 - 1.30m)	TP15/4 (0.30 - 2.90m)	TP15/3 (0.80 - 1.10m)	TP16/2 (1.60 - 1.70m)	TP17/2 (0.20 - 1.10m)	TP17/3 (1.10 - 1.40m)	TP18/2 (0.20 - 1.00m)	TP18/3 (2.20 - 3.30m)
		S0105495	S0105497	S0105498	S0105500	S0105501	S0105502	S0105503	S0105506	S0105507	S0105508	S0105509	S0105510
Mercury (leachable)	ug/l	#	#	<0.1	#	#	#	#	#	#	#	#	#
Copper (leachable)	mg/l	#	#	<0.01	#	#	#	#	#	#	#	#	#
Nickel (leachable)	(mg/l)	#	#	<0.01	#	#	#	#	#	#	#	#	#
Zinc (leachable)	mg/l	#	#	<0.01	#	#	#	#	#	#	#	#	#
Iron (leachable)	mg/l	#	#	<0.03	#	#	#	#	#	#	#	#	#
Chloride (leachable)	mg/l	#	#	<1	#	#	#	#	#	#	#	#	#
Sulphate (leachable)	mg/l	#	#	95	#	#	#	#	#	#	#	#	#
pH (leachable)	M/A	#	#	6.7	#	#	#	#	#	#	#	#	#
Conductivity (leachable)	uS/cm @25C	#	#	203	#	#	#	#	#	#	#	#	#
Ammoniacal Nitrogen (leach)	mg/l as N	#	#	0.1	#	#	#	#	#	#	#	#	#

Results for sp11 samples expressed as dry weight.
Samples submitted for leachate determination were prepared using agreed procedures and analysed using UNOS accredited methodology where appropriate.
: Analyte not requested

Summary of Results **IMC Consulting Engineers Limited - Brown Lees Development**

ANALYTES	UNITS	TP19/3 (0.20 - 1.70m)	TP20/2 (0.20 - 0.70m)	TP20/3 (0.70 - 1.10m)	TP20/4 (1.20 - 2.00m)	TP20/5 (2.10 - 2.20m)	TP21/3 (0.90 - 1.10m)	TP22/2 (0.20 - 0.65m)	TP22/3 (0.65 - 3.00m)	TP23/1 (0.10 - 0.50m)	TP23/3 (0.50 - 1.20m)	TP24/2 (0.20 - 1.20m)	TP25/3 (0.55 - 0.90m)
		S0105511	S0105512	S0105513	S0105514	S0105515	S0105516	S0105517	S0105518	S0105519	S0105520	S0105521	S0105522
Arsenic	mg/kg	2.9	6.7	<1.0	3.4	24.3	16.4	4.2	<1.0	<1.0	7.1	9.2	<1.0
Cadmium	mg/kg	<0.2	1.9	6.9	1.8	3.8	1.3	0.6	0.7	<0.2	1.3	0.9	2.1
Chromium (total)	mg/kg	24.9	11.7	4.6	6.6	12.1	13.9	20.9	19.2	15.3	28.4	20.9	12.4
Lead	mg/kg	<0.5	9.2	64.6	23.3	255.2	47.8	<0.5	<0.5	<0.5	<0.5	5.5	<0.5
Mercury	mg/kg	<1.0	<1.0	<1.0	<1.0	1.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Copper	mg/kg	31.1	32.3	15.1	45.2	114.9	60.5	25.5	32.7	32.1	38.5	31.9	<0.2
Nickel	mg/kg	30.7	14.9	10.2	13.4	59.8	13.6	21.3	27.1	15.3	33.4	30.1	4.4
Zinc	mg/kg	106.4	162.5	59.8	150.6	562.5	179.1	119.8	107.8	43.9	115.3	213.1	42.2
Sulphate (water soluble)	g/l	0.229	1.957	0.441	1.774	1.522	0.698	0.379	0.426	0.365	8.100	0.447	0.144
Loss on Ignition	%	9.04	18.23	41.41	27.99	25.39	7.71	7.88	10.65	6.80	10.31	9.70	39.06
Chloride	mg/kg	4	5	7	12	84	16	9	3	4	4	6	10
pH	N/A	6.5	8.2	8.6	8.1	7.6	7.4	5.8	7.3	6.9	7.7	7.5	8.6
Arsenic (leachable)	ug/l	<1.0	<1.0	#	#	#	#	#	#	#	#	#	#
Cadmium (leachable)	ug/l	<0.1	<0.1	#	#	#	#	#	#	#	#	#	#
Chromium (leachable)	mg/l	<0.01	<0.01	#	#	#	#	#	#	#	#	#	#
Lead (leachable)	ug/l	<0.03	<0.03	#	#	#	#	#	#	#	#	#	#
Mercury (leachable)	ug/l	<0.1	<0.1	#	#	#	#	#	#	#	#	#	#
Copper (leachable)	mg/l	<0.01	<0.01	#	#	#	#	#	#	#	#	#	#
Nickel (leachable)	mg/l	<0.01	<0.01	#	#	#	#	#	#	#	#	#	#
Zinc (leachable)	mg/l	<0.01	<0.01	#	#	#	#	#	#	#	#	#	#

Results for soil samples expressed as dry weight
 Samples submitted for leachate determination were prepared using agreed procedures and analysed using UKAS accredited methodology where appropriate
 # : Analyze not requested
 Report No. R01/D621
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IMC Consulting Engineers Limited - Brown Lees Development

ANALYTES	UNITS	TP25/4 (0.90 - 1.10m)	TP26/2 (0.20 - 1.60m)	TP27/2 (0.35 - 0.80m)	TP28/2 (0.20 - 0.90m)	TP29/2 (0.70 - 2.80m)	TP30/2 (0.40 - 1.00m)	TP31/1 (0.00 - 0.20m)	TP31/2 (0.30 - 0.90m)	TP32/2 (1.00 - 1.60m)	TP32/3 (1.70 - 2.00m)	TP33/2 (0.50 - 1.80m)	TP34/2 (0.40 - 1.50m)
		S0105524	S0105527	S0105528	S0105529	S0105530	S0105531	S0105532	S0105533	S0105534	S0105536	S0105537	S0105538
Arsenic	mg/kg	1.3	<1.0	15.2	5.5	24.0	10.1	3.4	2.5	13.9	15.6	15.6	8.9
Cadmium	mg/kg	3.7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.5	<0.2
Chromium (total)	mg/kg	8.0	17.1	25.7	17.9	8.4	23.1	21.8	23.6	21.3	15.2	8.2	16.7
Lead	mg/kg	24.6	2.0	21.6	<0.5	59.9	<0.5	<0.5	<0.5	86.2	162.3	27.3	4.8
Mercury	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Copper	mg/kg	9.3	34.8	59.8	19.2	79.2	49.8	23.9	34.4	66.0	106.8	84.5	36.4
Nickel	mg/kg	7.1	23.5	34.2	19.4	17.2	31.3	19.3	27.0	22.2	18.7	43.7	23.7
Zinc	mg/kg	123.1	119.2	187.6	76.9	140.5	150.6	78.1	130.5	251.3	173.3	154.4	146.8
Sulphate (water soluble)	g/l	1.832	0.448	0.943	0.192	1.359	1.199	0.061	0.288	0.266	0.640	1.868	1.440
Loss on Ignition	%	24.43	11.08	15.77	6.34	27.97	10.82	6.68	9.28	15.39	16.25	21.67	10.10
Chloride	mg/kg	12	5	10	10	55	7	3	5	11	19	26	6
pH	N/A	8.9	6.9	7.0	7.2	6.1	6.2	8.0	7.5	7.9	8.2	6.8	7.1
Arsenic (leachable)	ug/l	#	#	#	#	<1.0	#	#	#	1.3	#	#	#
Cadmium (leachable)	ug/l	#	#	#	#	<0.1	#	#	#	<0.1	#	#	#
Chromium (leachable)	mg/l	#	#	#	#	0.01	#	#	#	<0.01	#	#	#
Lead (leachable)	mg/l	#	#	#	#	<0.03	#	#	#	<0.03	#	#	#
Mercury (leachable)	ug/l	#	#	#	#	<0.1	#	#	#	<0.1	#	#	#
Copper (leachable)	mg/l	#	#	#	#	<0.01	#	#	#	<0.01	#	#	#
Nickel (leachable)	mg/l	#	#	#	#	<0.01	#	#	#	<0.01	#	#	#
Zinc (leachable)	mg/l	#	#	#	#	0.02	#	#	#	<0.01	#	#	#

Results for soil samples expressed as dry weight
 Samples submitted for leachate determination were prepared using UKAS accredited methodology where appropriate
 # : Analyte not requested
 Report No. R01/0621
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Summary Of Results IMC Consulting Engineers Limited - Brown Lees Development

ANALYTES	UNITS	TP25/4 (0.50 - 1.10m)	TP26/2 (0.20 - 1.60m)	TP27/2 (0.35 - 0.80m)	TP28/2 (0.20 - 0.90m)	TP29/2 (0.70 - 2.80m)	TP30/2 (0.40 - 1.00m)	TP31/1 (0.00 - 0.20m)	TP31/2 (0.30 - 0.90m)	TP32/2 (1.00 - 1.60m)	TP32/3 (1.70 - 2.00m)	TP33/2 (0.50 - 1.80m)	TP34/2 (0.40 - 1.50m)
		S0105524	S0105527	S0105528	S0105529	S0105530	S0105531	S0105532	S0105533	S0105534	S0105536	S0105537	S0105538
Iron (leachable)	mg/l	#	#	#	#	<0.03	#	#	#	<0.03	#	#	#
Chloride (leachable)	mg/l	#	#	#	#	4	#	#	#	<1	#	#	#
Sulphate (leachable)	mg/l	#	#	#	#	96	#	#	#	12	#	#	#
pH (leachable)	N/A	#	#	#	#	6.6	#	#	#	8.3	#	#	#
Conductivity (leachable)	uS/cm @25C	#	#	#	#	264	#	#	#	121	#	#	#
Ammoniacal Nitrogen (leach)	mg/l as N	#	#	#	#	<0.1	#	#	#	<0.1	#	#	#
Phenols	mg/kg	#	#	#	#	<1.0	#	#	#	<1.0	#	#	#
PAH (total)	mg/kg	#	#	#	#	15	#	#	#	24	#	#	#
TPH	mg/kg	#	#	#	#	<1	#	#	#	572	#	#	#
Calorific Value	KJ/kg	#	#	#	#	5.130	#	#	#	#	#	#	#

Results for soil samples expressed as dry weight
 Samples submitted for leachate determination were prepared using agreed procedures and analysed using IMVAS accredited methodology where appropriate
 # : Analyte not requested

Summary Of Results **IMC Consulting Engineers Limited - Brown Lees Development**

ANALYTES	UNITS	TP35/2 (0.20 - 0.70m)	TP36/2 (0.30 - 2.00m)	TP36/3 (2.60 - 3.20m)	TP37/2 (0.50 - 2.00m)	TP38/2 (0.50 - 2.80m)	TP39/2 (0.35 - 0.80m)	TP40/1 (0.00 - 0.50m)	TP40/2 (0.50 - 1.20m)		
		S0105539	S0105540	S0105541	S0105542	S0105543	S0105544	S0105545	S0105546		
Arsenic	mg/kg	8.9	11.4	16.9	<1.0	4.2	<1.0	3.4	8.9	#	#
Cadmium	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	#	#
Chromium (total)	mg/kg	16.6	22.6	<0.2	20.3	18.5	11.5	25.6	16.1	#	#
Lead	mg/kg	<0.5	32.8	111.9	<0.5	<0.5	12.1	<0.5	<0.5	#	#
Mercury	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	#	#
Copper	mg/kg	37.4	64.8	118.0	47.9	47.7	26.0	19.1	42.7	#	#
Nickel	mg/kg	27.9	40.9	16.5	28.6	25.7	11.1	18.7	26.9	#	#
Zinc	mg/kg	142.5	156.5	301.6	110.4	78.9	48.1	61.2	107.0	#	#
Sulphate (water soluble)	g/l	2.367	1.024	0.767	0.113	0.115	0.838	0.169	1.552	#	#
Loss on Ignition	%	10.33	14.81	20.79	11.42	10.50	21.43	5.76	10.83	#	#
Chloride	mg/kg	3	8	12	4	3	9	2	3	#	#
pH	N/A	6.7	7.7	7.8	7.1	7.3	5.5	7.4	7.3	#	#
Arsenic (leachable)	ug/l	#	<1.0	#	#	#	#	#	<1.0	#	#
Cadmium (leachable)	ug/l	#	<0.1	#	#	#	#	#	<0.1	#	#
Chromium (leachable)	mg/l	#	<0.01	#	#	#	#	#	0.01	#	#
Lead (leachable)	ug/l	#	<0.03	#	#	#	#	#	<0.03	#	#
Mercury (leachable)	ug/l	#	<0.1	#	#	#	#	#	<0.1	#	#
Copper (leachable)	mg/l	#	<0.01	#	#	#	#	#	<0.01	#	#
Nickel (leachable)	mg/l	#	<0.01	#	#	#	#	#	<0.01	#	#
Zinc (leachable)	mg/l	#	<0.01	#	#	#	#	#	<0.01	#	#

Results for soil samples expressed as dry weight
 Samples submitted for leachate determination were prepared using agreed procedures and analysed using UKAS accredited methodology where appropriate
 # : Analyte not requested
 Report No. R01/0621

Summary Of Results
IMC Consulting Engineers Limited - Brown Lees Development

ANALYTES	UNITS	TP35/2 (0.20 - 0.70m)	TP36/2 (0.70 - 2.00m)	TP36/3 (2.00 - 3.20m)	TP37/2 (0.60 - 2.00m)	TP38/2 (0.50 - 2.80m)	TP39/2 (0.35 - 0.80m)	TP40/1 (0.00 - 0.50m)	TP40/2 (0.60 - 1.20m)		
Iron (leachable)	mg/l	#	<0.03	#	#	#	#	#	<0.03	#	#
Chloride (leachable)	mg/l	#	<1	#	#	#	#	#	<1	#	#
Sulphate (leachable)	mg/l	#	122	#	#	#	#	#	106	#	#
pH (leachable)	N/A	#	7.5	#	#	#	#	#	7.0	#	#
Conductivity (leachable)	uS/cm @25C	#	332	#	#	#	#	#	280	#	#
Ammoniacal Nitrogen (leach)	mg/l as N	#	<0.1	#	#	#	#	#	0.1	#	#
Phenols	mg/kg	#	<1.0	#	#	#	#	#	#	#	#
PAH (total)	mg/kg	#	89	#	#	#	#	#	#	#	#
TPH	mg/kg	#	1	#	#	#	#	#	#	#	#
Calorific Value	kJ/kg	#	#	#	0.567	#	#	#	#	#	#

Results for soil samples expressed as dry weight
Samples submitted for leachate determination were prepared using agreed procedures and analysed using ISO5 accredited methodology where appropriate
: Analyte not requested

**Analytical Test Report
For**

**IMC CONSULTING ENGINEERS LIMITED
PO Box 18
Common Road
Huthwalte
Sutton-In-Ashfield
Notts
NG17 2NS**

PROJECT ID: BROWN LEES DEVELOPMENT

Report No.: R01/0628

**Copies To:
Mr J Froggatt
File**





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0618 SI

What's so special about a UKAS report or certificate?

- Accreditation of testing is granted by the United Kingdom Accreditation Service (UKAS).
- It's your assurance that the work has been carried out to the highest standards.
- The laboratory issuing the test report has been stringently assessed by independent experts.
- You are assured that the agreed or specified methods and procedures have been followed.
- Measurements are traceable to national and international standards.

Comments:

Tests marked † in this report are not included in the UKAS Accreditation Schedule for the testing laboratory. However, with the continuing development of our QC protocols, these tests will be included in the near future.

Any opinions and interpretations expressed herein are outside the scope of the testing laboratory's UKAS Accreditation.

The Coefficient of Variation CV_T (where $CV_T = \text{standard deviation}/\text{mean} \times 100$) is better than 15%

All analysis carried out using ECoS standard methods unless otherwise agreed
The test results in this report refer only to the actual samples on which testing has been performed.

Date submitted for analysis : 27/02/01

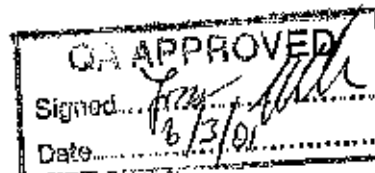
Your Job/Order Number : D5249C/400846

Analyst(s) : MRH NB DS ELD

Approved signatories: J R Brown, G Ewbank, E Dewell

Signature : *R. Minn*

Report date : 6 March 2001



WATER

ANALYTE	METHOD OF DETECTION	LIMIT OF DETECTION
Arsenic	AAS-HYDRIDE	1.0 ug/l
Cadmium	GF-AAS	0.1 ug/l
Chromium	ICP-OES	0.01 mg/l
Lead	ICP-OES	0.03 mg/l
Mercury	AAS-HYDRIDE	0.1 ug/l
Copper	ICP-OES	0.01 mg/l
Nickel	ICP-OES	0.01 mg/l
Iron	ICP-OES	0.03 mg/l
Sulphate	HPLC-IC	1 mg/l
Chloride	HPLC-IC	1 mg/l
pH	Aqualyser	N/A
Conductivity	Aqualyser	10 uS/cm @25C
Ammoniacal Nitrogen	Colorimetry	0.1 mg/l as N
Zinc	ICP-OES	0.01 mg/l

Summary Of Results

+ +

† . Analyte not requested

APPENDIX B
CALIFORNIA BEARING RATIO TEST RESULTS



CONSTRUCTION MATERIALS TESTING LIMITED

PRIME PARKWAY, PRIME ENTERPRISE PARK
DERBY DE1 3QB

Tel: 01332 383333

Fax: 01332 602607

Client:

IMC Consulting Engineers Limited
PO Box 18
Common Road
Sutton in Ashfield
Nottinghamshire
NG17 2NS



Originator:

S Croxford

Date:

23rd February 2001

Order Ref:

D5249/B

Lab Ref:

18656

Site:

Tunstall Road
Brown Lees

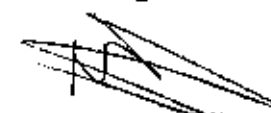
Requirements:

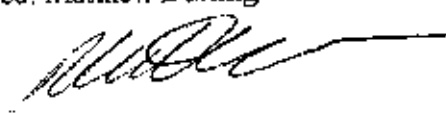
To attend the above site on 22nd February 2001 and determine the insitu CBR value in accordance with BS 1377: 1990: Part 9: Clause 4.3 in 20 No locations specified and recorded by the client

Results:

The individual result sheets are appended

Construction Materials Testing Limited


Signed: Matthew Durling


Checked and Approved by: Richard Cartlidge





CONSTRUCTION MATERIALS TESTING LIMITED

PRIME PARKWAY, PRIME ENTERPRISE PARK
DERBY DE1 3QB

Tel: 01332 383333

Fax: 01332 602607

Test Certificate

California Bearing Ratio

Client: IMC Consulting Site: Tunstall Road
Brown Lees

Test No.: 1

Date of Test: 22.2.01

Type: Insitu

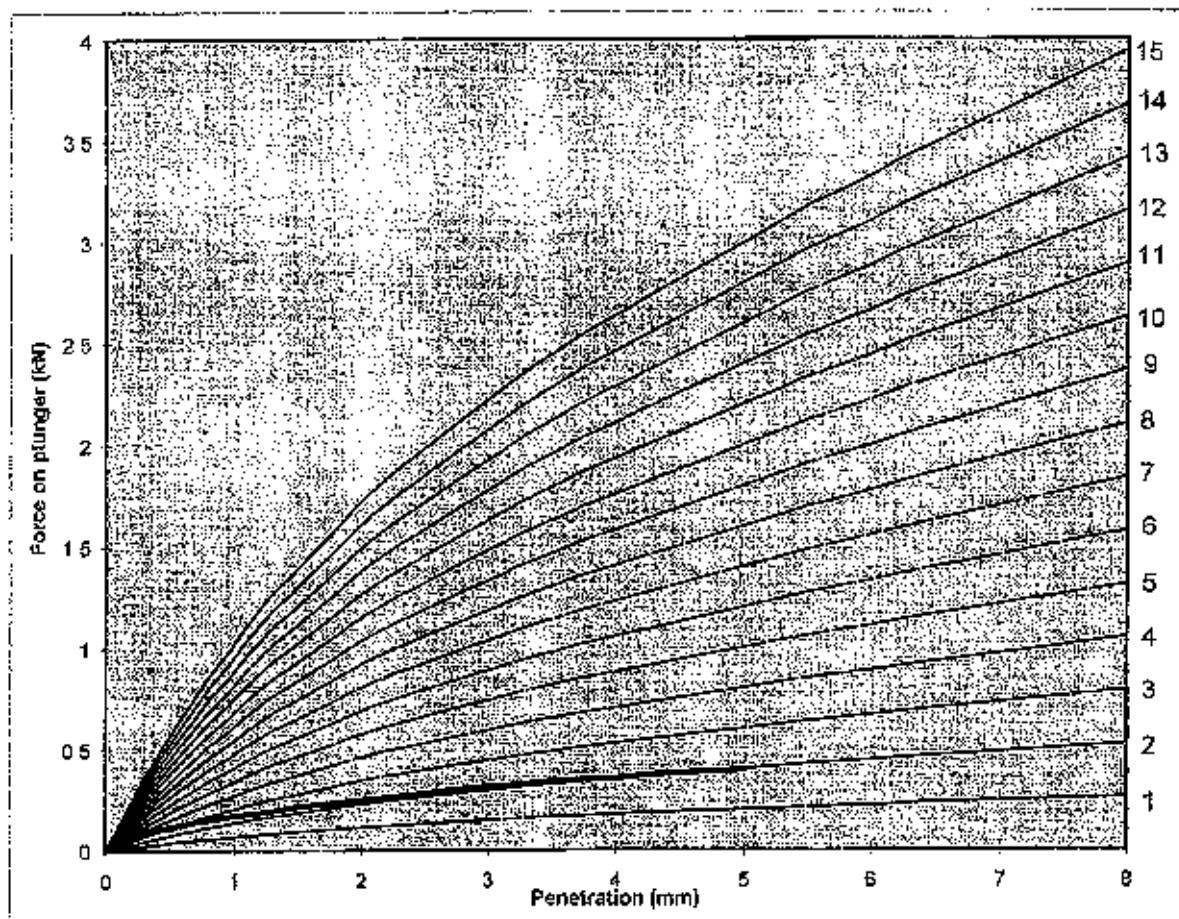
Weather: Dry

Soil Type: Grey brown CLAY with occasional mudstone

Moisture Content %: 19.0

Dry Density: n/a

Lab Ref. 18656



CBR% at 2.5mm =	2.1
CBR% at 5.0mm =	2.0

Remarks: Tested in accordance with BS1377: 1990 Part 9: Clause 4.3
Particles greater than 20mm present: None
Surcharge used: 18 kg

Signed:

Print:

M. Durling



CONSTRUCTION MATERIALS TESTING LIMITED

PRIME PARKWAY, PRIME ENTERPRISE PARK
DERBY DE1 3QB

Tel: 01332 383333
Fax: 01332 602607

Test Certificate

California Bearing Ratio

Client: IMC Consulting

Site: Tunstall Road
Brown Lees

Test No.: 3

Date of Test: 22 2 01

Type: Insitu

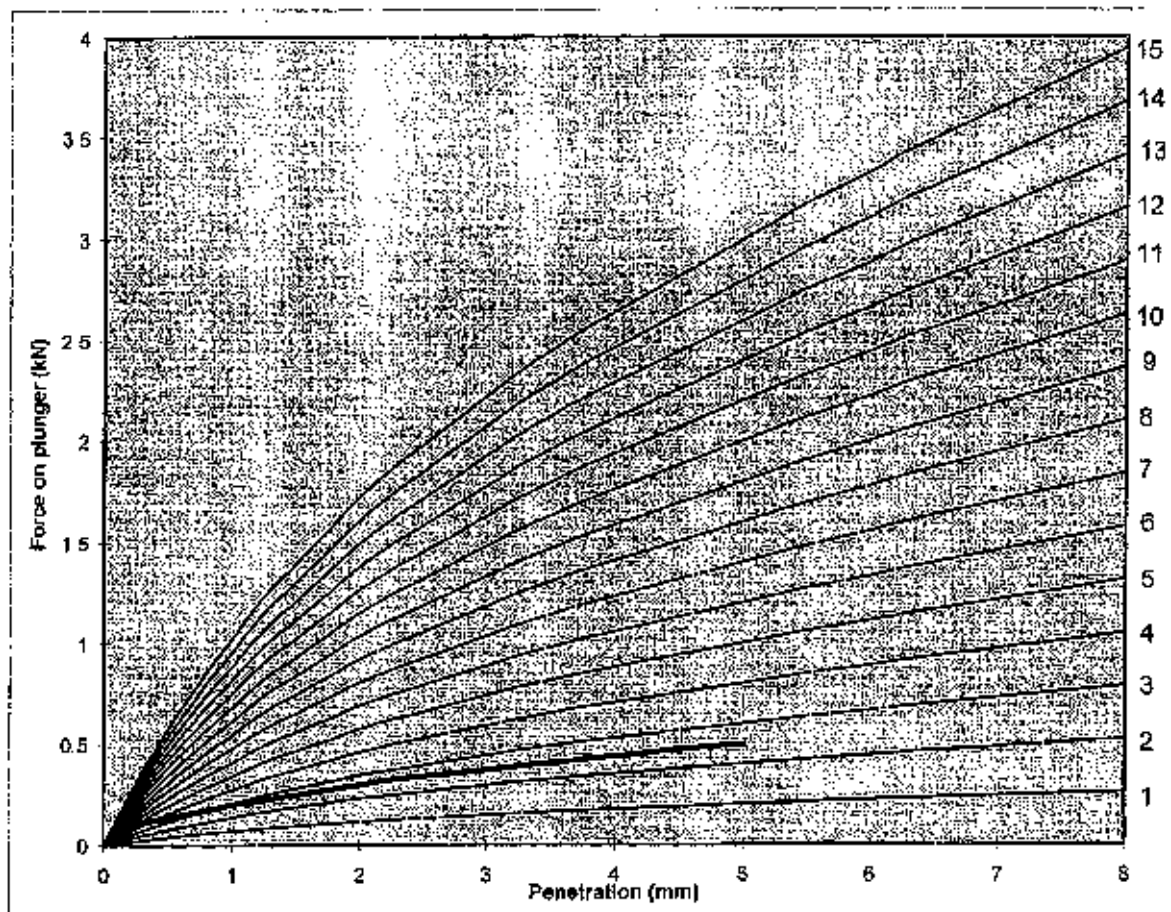
Weather: Dry

Soil Type: Grey brown CLAY with occasional mudstone

Moisture Content %: 17.0

Dry Density: n/a

Lab Ref. 18656



CBR% at 2.5mm =	2.6
CBR% at 5.0mm =	2.5

Remarks: Tested in accordance with BS1377: 1990 Part 9: Clause 4.3
Particles greater than 20mm present: None
Surcharge used: 18 kg

Signed:
Print: M. Durling



CONSTRUCTION MATERIALS TESTING LIMITED

PRIME PARKWAY, PRIME ENTERPRISE PARK
DERBY DE1 3QB

Tel: 01332 383333
Fax: 01332 602607

Test Certificate

California Bearing Ratio

Client: IMC Consulting

Site: Tunstall Road
Brown Lees

Test No.: 4

Date of Test: 22.2.01

Type: Insitu

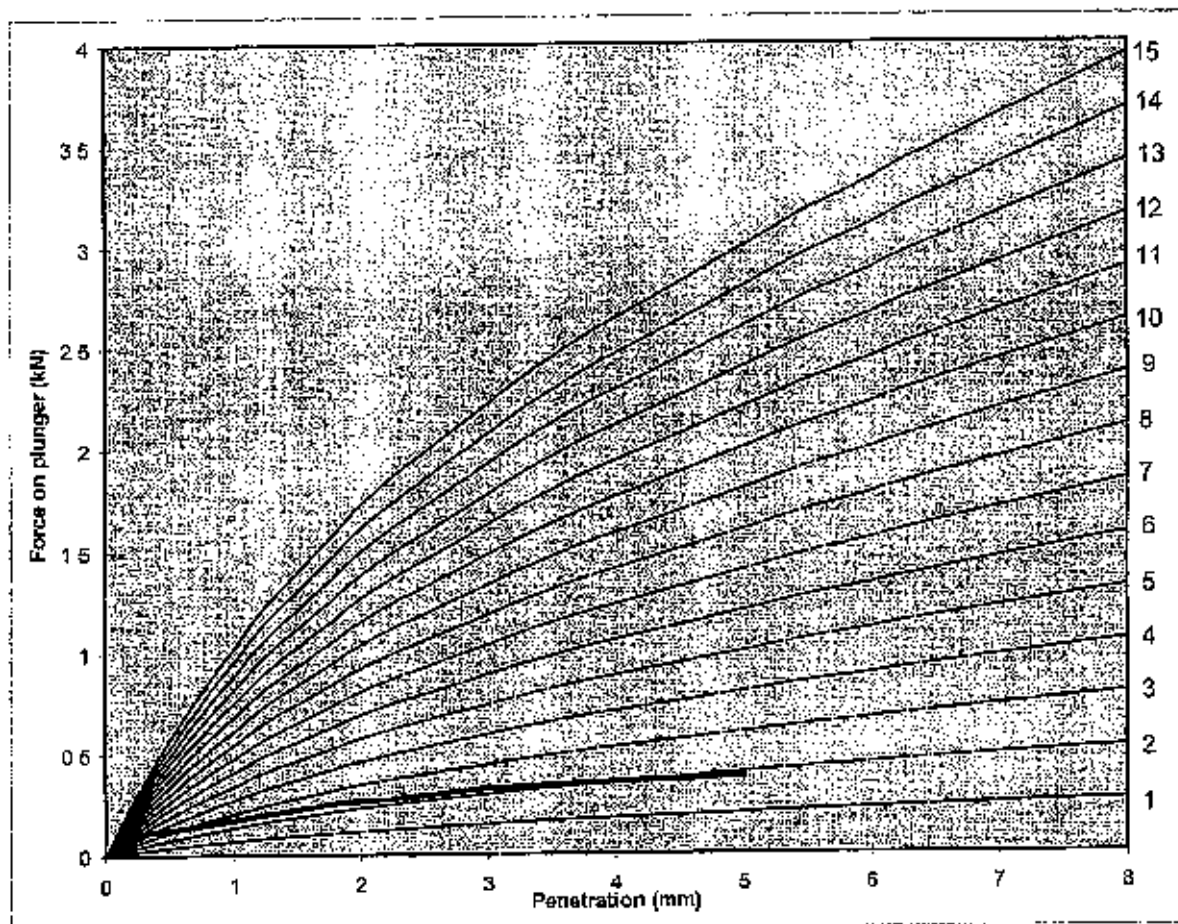
Weather: Dry

Soil Type: Orange brown CLAY with occasional mudstone

Moisture Content %: 13.0

Dry Density: n/a

Lab Ref.: 18656



CBR% at 2.5mm =	2.2
CBR% at 5.0mm =	1.9

Remarks: Tested in accordance with BS1377: 1990 Part 9: Clause 4.3
Particles greater than 20mm present: None
Surcharge used: 18 kg

Signed:
Print: M. Darling



CONSTRUCTION MATERIALS TESTING LIMITED

PRIME PARKWAY, PRIME ENTERPRISE PARK
DERBY DE1 3QB

Tel: 01332 383333

Fax: 01332 602607

Test Certificate

California Bearing Ratio

Client: IMC Consulting

Site: Tunstall Road
Brown Lees

Test No.: 5

Date of Test: 22 2 01

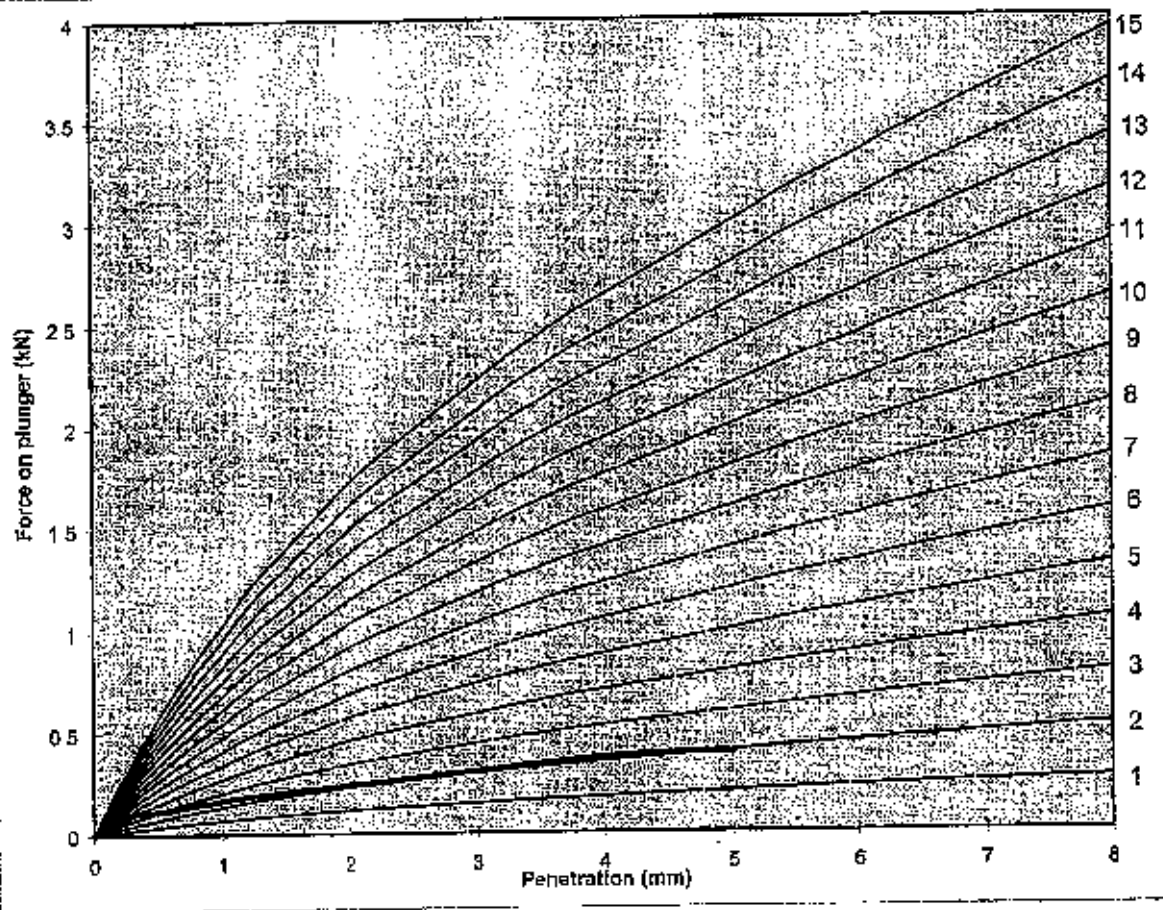
Type: Insitu

Weather: Dry

Soil Type: Medium brown, grey veined CLAY with occasional mudstone Moisture Content %: 13.0

Dry Density: n/a

Lab Ref. 18656



CBR% at 2.5mm =	2.1
CBR% at 5.0mm =	2.0

Remarks: Tested in accordance with BS1377: 1990 Part 9: Clause 4.3
 Particles greater than 20mm present: None
 Surcharge used: 18 kg

Signed:
 Print: M. Durling



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PRIME PARKWAY, PRIME ENTERPRISE PARK
DERBY DE1 3QB

Tel: 01332 383333

Fax: 01332 602607

Test Certificate

California Bearing Ratio

Client: IMC Consulting

Site: Tunstall Road
Brown Lees

Test No.: 8

Date of Test: 22.2.01

Type: Insitu

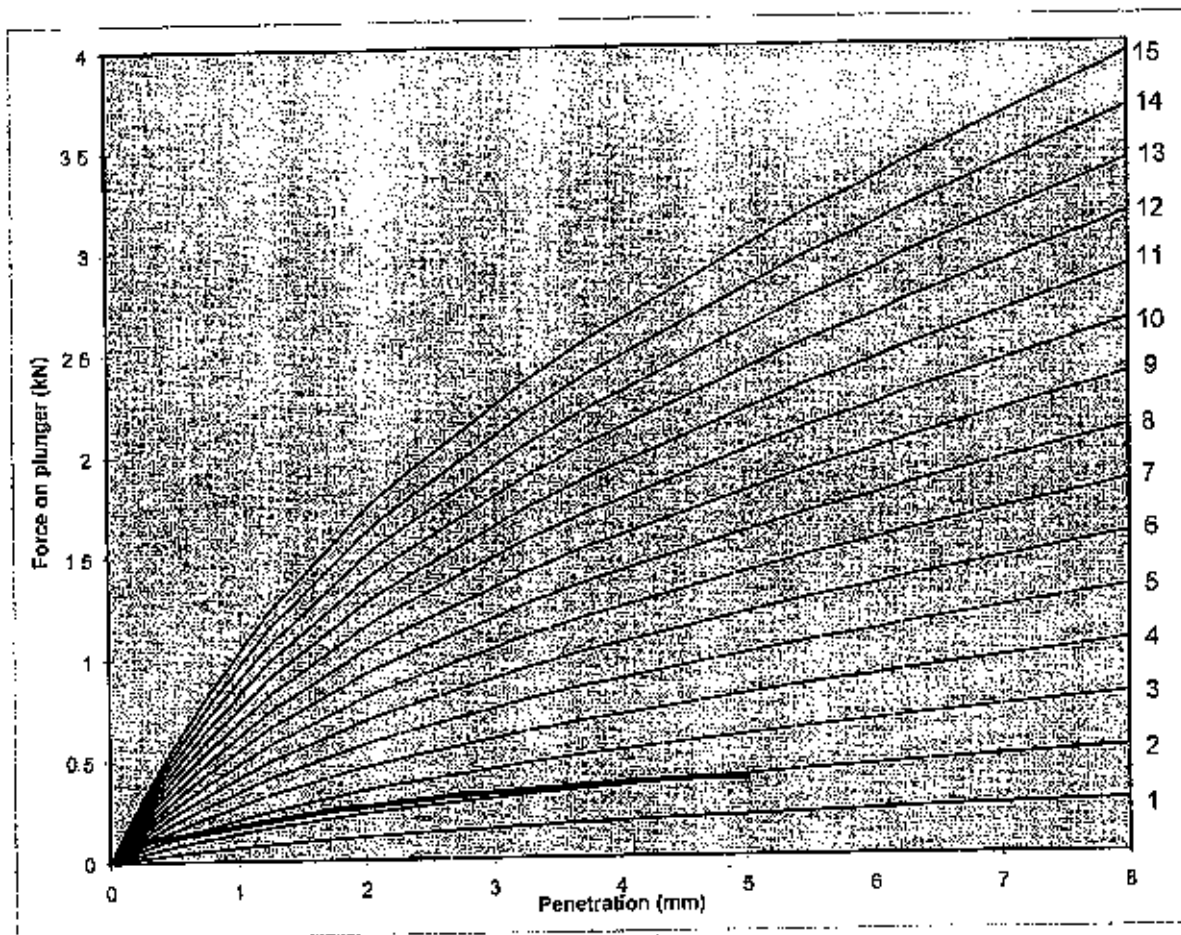
Weather: Dry

Soil Type: Orange brown CLAY

Moisture Content %: 14.0

Dry Density: n/a

Lab Ref. 18656



CBR% at 2.5mm =	2.2
CBR% at 5.0mm =	1.9

Remarks: Tested in accordance with BS1377: 1990 Part 9: Clause 4.3
 Particles greater than 20mm present: None
 Surcharge used: 18 kg

Signed:
 Print: M. Durling



CONSTRUCTION MATERIALS TESTING LIMITED

PRIME PARKWAY, PRIME ENTERPRISE PARK
DERBY DE1 3QB

Tel: 01332 383333
Fax: 01332 602607

Test Certificate

California Bearing Ratio

Client: IMC Consulting

Site: Tunstall Road
Brown Lees

Test No.: 9

Date of Test: 22.2.01

Type: Insitu

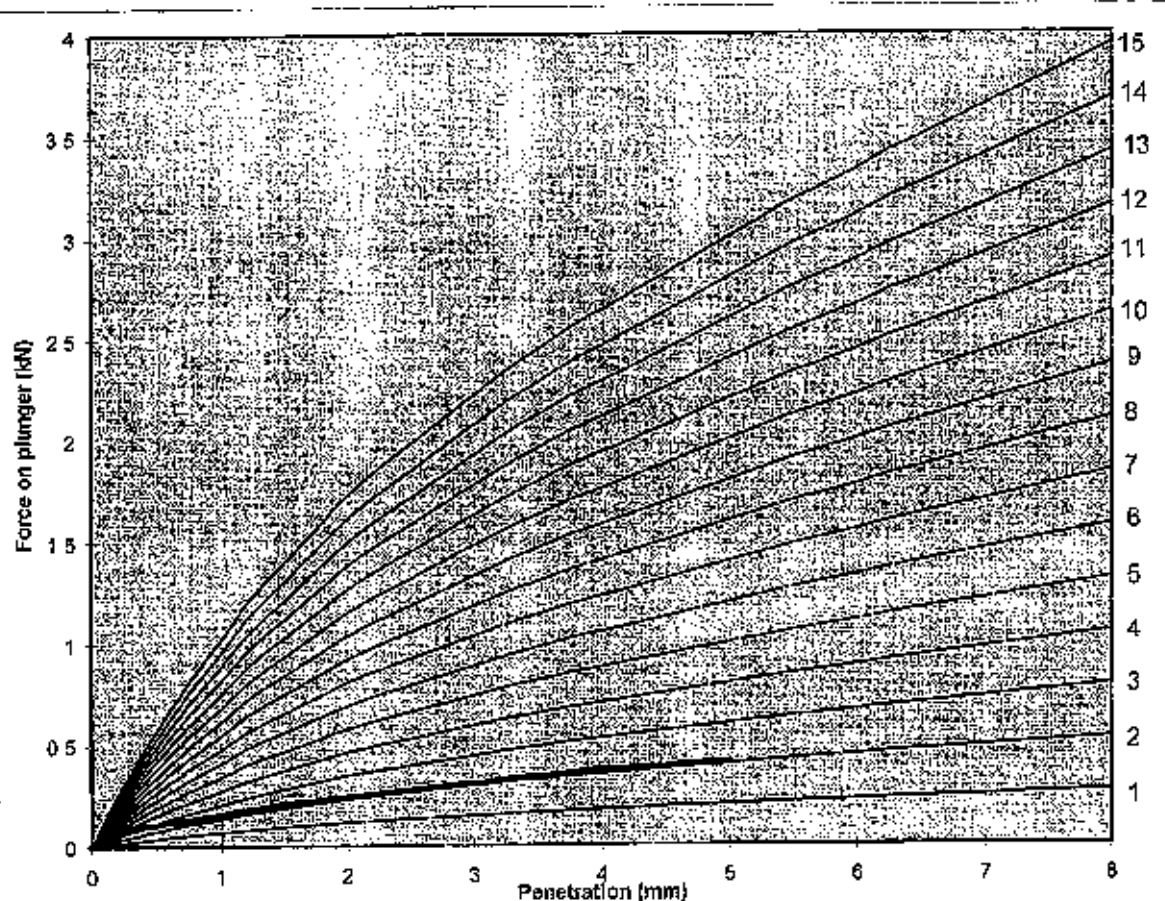
Weather: Dry

Soil Type: Medium brown CLAY with occasional mudstone

Moisture Content %: 14.0

Dry Density: n/a

Lab Ref. 18656



CBR% at 2.5mm =	2.1
CBR% at 5.0mm =	2.1

Remarks: Tested in accordance with BS1377: 1990 Part 9: Clause 4.3

Particles greater than 20mm present:

None

Surcharge used: 18 kg

Signed:

Print:

M. Durling



CONSTRUCTION MATERIALS TESTING LIMITED

PRIME PARKWAY, PRIME ENTERPRISE PARK
DERBY DE1 3QB

Tel: 01332 383333
Fax: 01332 602607

Test Certificate

California Bearing Ratio

Client: IMC Consulting

Site: Tunstall Road
Brown Lees

Test No.: 10

Date of Test: 22.2.01

Type: Insitu

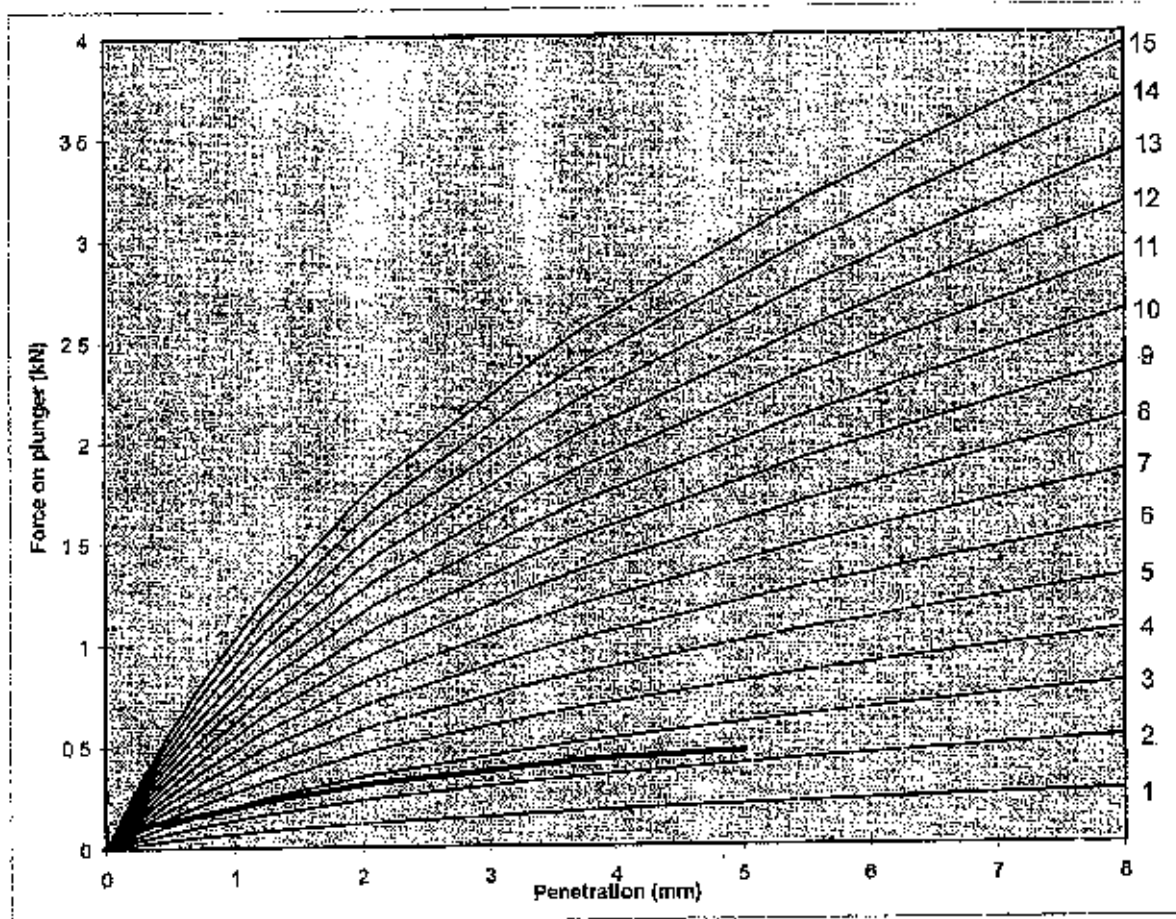
Weather: Dry

Soil Type: Grey brown CLAY with occasional ash

Moisture Content %: 20.0

Dry Density: n/a

Lab Ref. 18656



CBR% at 2.5mm =	2.6
CBR% at 5.0mm =	2.3

Remarks: Tested in accordance with BS1377: 1990 Part 9: Clause 4.3
 Particles greater than 20mm present: None
 Surcharge used: 18 kg

Signed:
 Print: M. Durling



CONSTRUCTION MATERIALS TESTING LIMITED

PRIME PARKWAY, PRIME ENTERPRISE PARK
DERBY DE1 3QB

Tel: 01332 383333
Fax: 01332 602607

Test Certificate

California Bearing Ratio

Client: IMC Consulting

Site: Tunstall Road
Brown Lees

Test No.: 11

Date of Test: 22.2.01

Type: Insitu

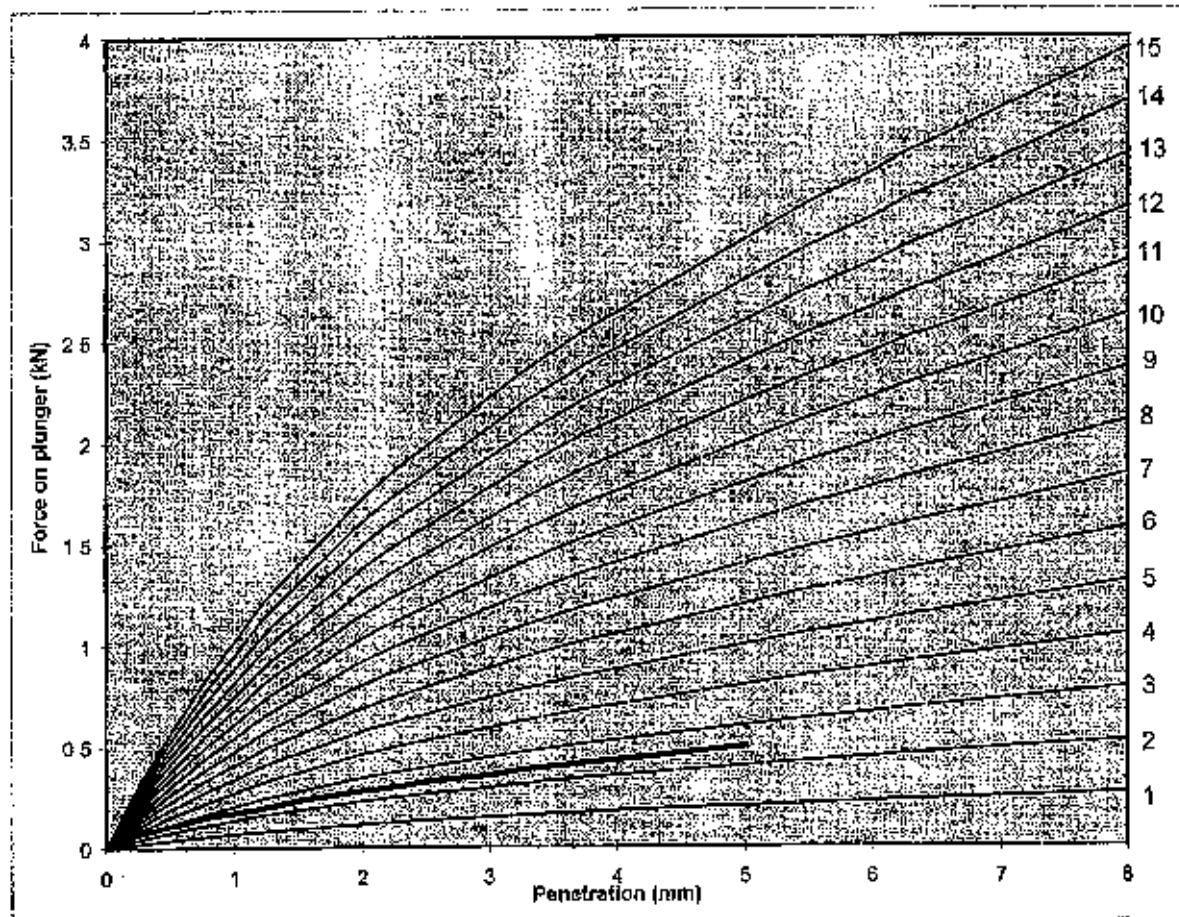
Weather: Dry

Soil Type: Medium brown CLAY with occasional fine gravel

Moisture Content %: 15.0

Dry Density: n/a

Lab Ref. 18656



CBR% at 2.5mm =	2.4
CBR% at 5.0mm =	2.5

Remarks: Tested in accordance with BS1377: 1990 Part 9: Clause 4.3
Particles greater than 20mm present: None
Surcharge used: 18 kg

Signed:
Print: M. Durling



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PRIME PARKWAY, PRIME ENTERPRISE PARK
DERBY DE1 3QB

Tel: 01332 383333
Fax: 01332 602607

Test Certificate

California Bearing Ratio

Client: IMC Consulting

Site: Tunstall Road
Brown Lees

Test No.: 12

Date of Test: 22 2 01

Type: Insitu

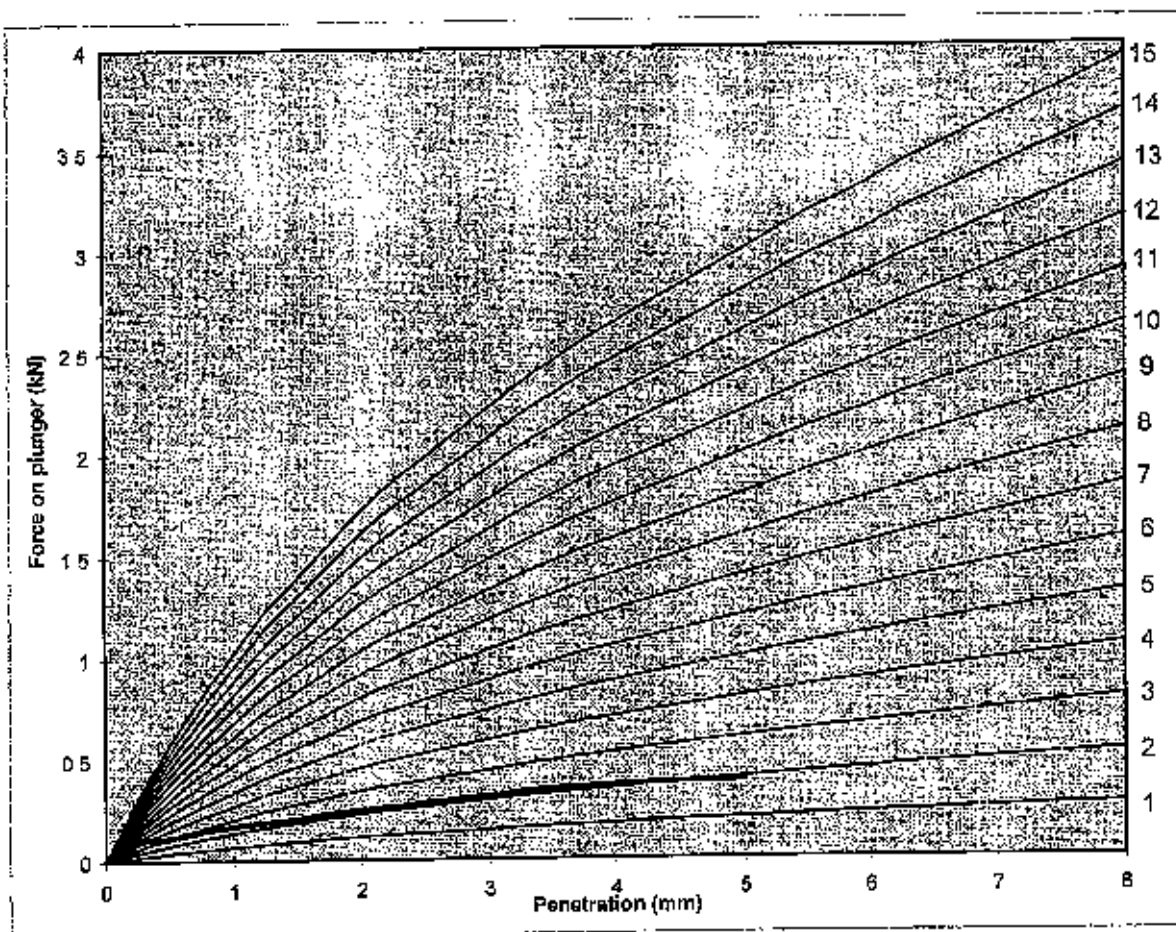
Weather: Dry

Soil Type: Medium brown CLAY with occasional mudstone

Moisture Content %: 14.0

Dry Density: n/a

Lab Ref.: 18656



CBR% at 2.5mm =	2.1
CBR% at 5.0mm =	1.9

Remarks: Tested in accordance with BS1377: 1990 Part 9: Clause 4.3
 Particles greater than 20mm present: None
 Surcharge used: 18 kg

Signed:
Print:

M. Durling



CONSTRUCTION MATERIALS TESTING LIMITED

PRIME PARKWAY, PRIME ENTERPRISE PARK
DERBY DE1 3QB

Tel: 01332 383333
Fax: 01332 602607

Test Certificate

California Bearing Ratio

Client: IMC Consulting Site: Tunstall Road
Brown Lees

Test No.: 13

Date of Test: 22.2.01

Type: Insitu

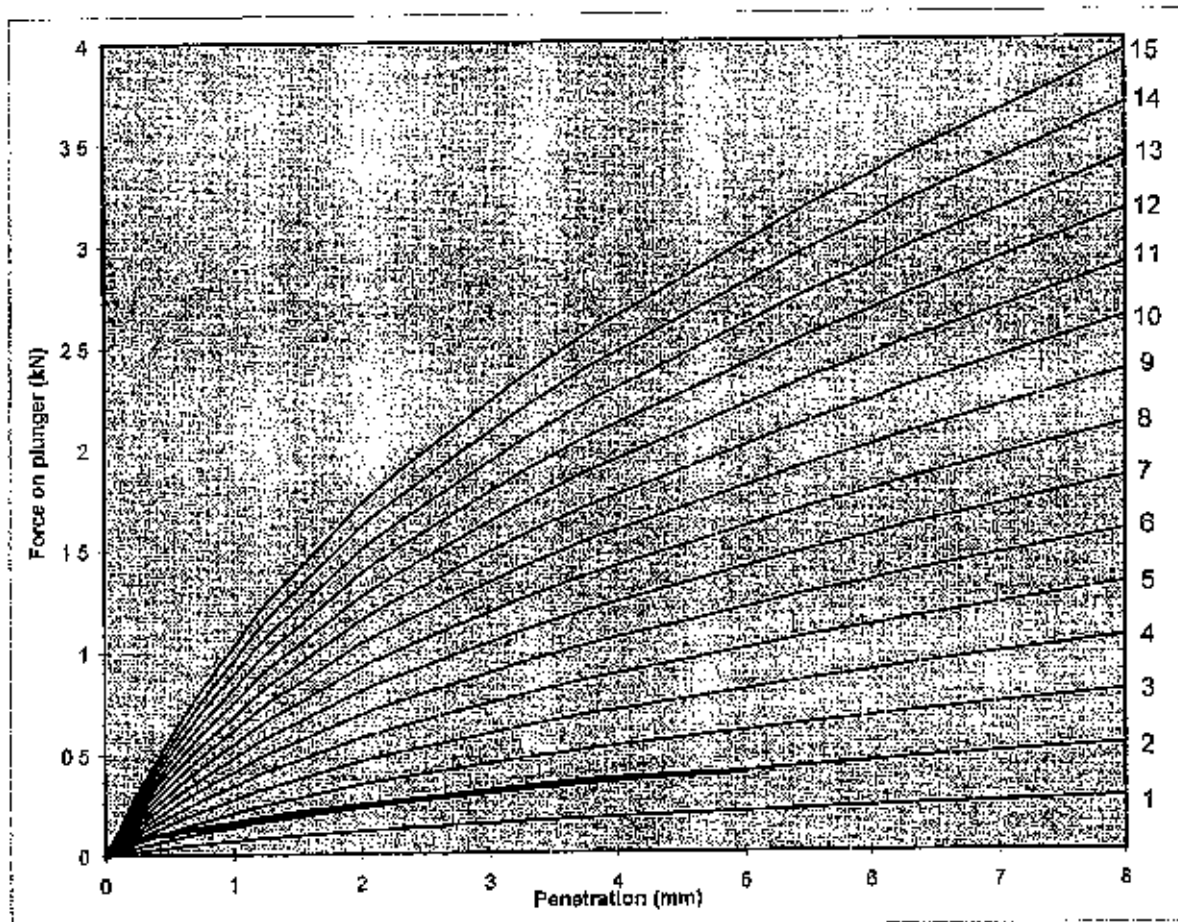
Weather: Dry

Soil Type: Medium brown CLAY with occasional mudstone

Moisture Content %: 14.0

Dry Density: n/a

Lab Ref. 18656



CBR% at 2.5mm =	2.1
CBR% at 5.0mm =	2.0

Remarks: Tested in accordance with BS1377: 1990 Part 9: Clause 4.3
Particles greater than 20mm present: None
Surcharge used: 18 kg

Signed:
Print:

M. Durling



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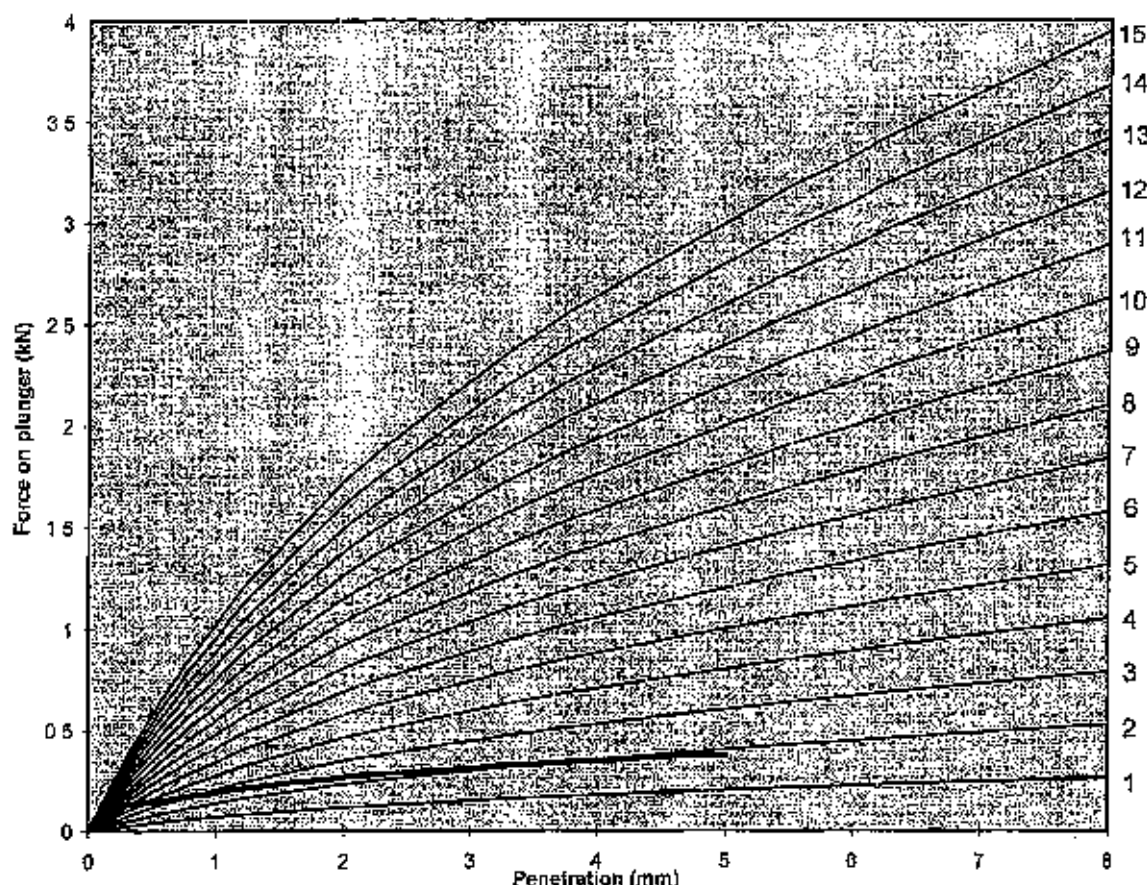
PRIME PARKWAY, PRIME ENTERPRISE PARK
DERBY DE1 3QB

Tel: 01332 383333
Fax: 01332 802607

Test Certificate

California Bearing Ratio

Client: IMC Consulting Site: Tunstall Road Brown Lees Test No.: 14
Date of Test: 22.2.01 Type: Insitu Weather: Dry
Soil Type: Medium brown CLAY with occasional mudstone Moisture Content %: 13.0
Dry Density: n/a Lab Ref. 18656



CBR% at 2.5mm =	2.2
CBR% at 5.0mm =	1.9

Remarks: Tested in accordance with BS1377: 1990 Part 9: Clause 4.3
Particles greater than 20mm present: None
Surcharge used: 18 kg

Signed:
Print: M. Daring



CONSTRUCTION MATERIALS TESTING LIMITED

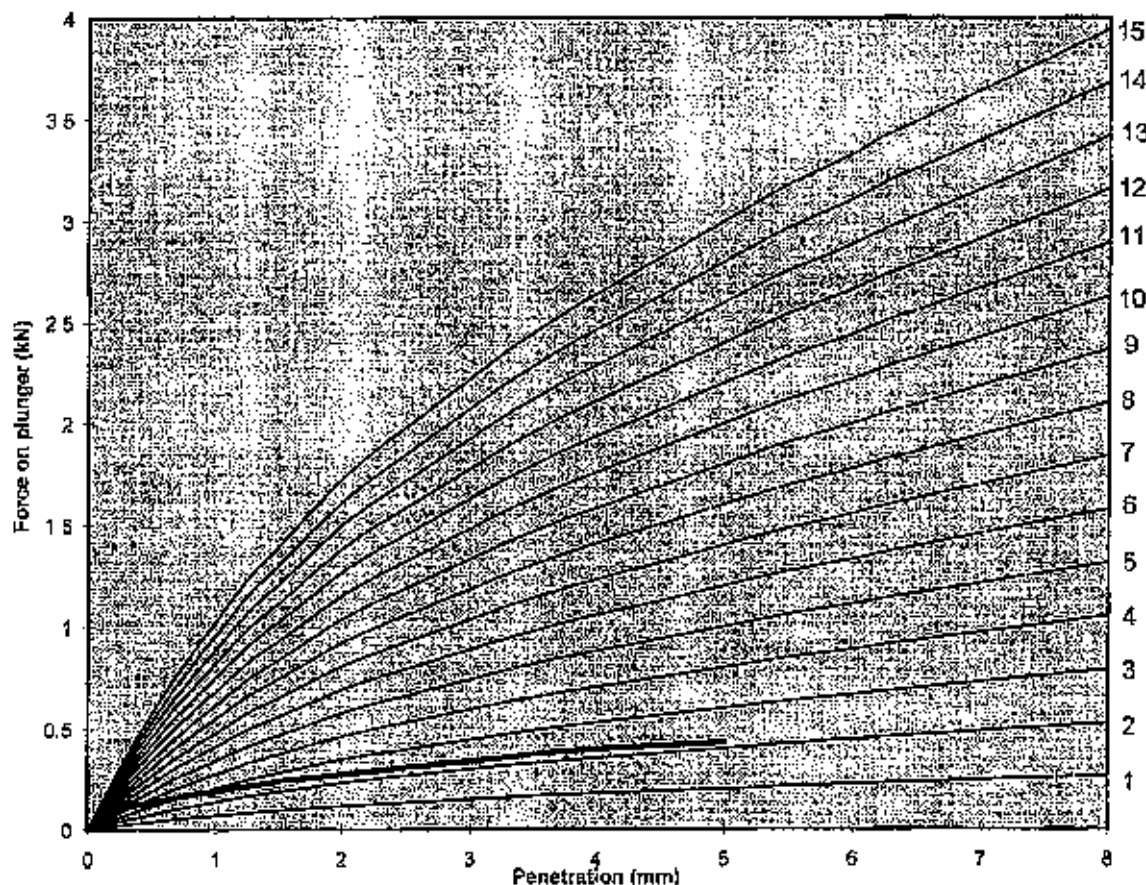
PRIME PARKWAY, PRIME ENTERPRISE PARK
DERBY DE1 3QB

Tel: 01332 383333
Fax: 01332 602607

Test Certificate

California Bearing Ratio

Client: IMC Consulting Site: Tunstall Road Brown Lees Test No.: 16
Date of Test: 22 2 01 Type: Insitu Weather: Dry
Soil Type: Medium brown CLAY with occasional mudstone Moisture Content %: 14.0
Dry Density: n/a Lab Ref. 18656



CBR% at 2.5mm =	2.3
CBR% at 5.0mm =	2.1

Remarks: Tested in accordance with BS1377: 1990 Part 9: Clause 4.3
Particles greater than 20mm present: None
Surcharge used: 18 kg

Signed:

Print:

M Durling



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PRIME PARKWAY, PRIME ENTERPRISE PARK
DERBY DE1 3QB

Tel: 01332 383333
Fax: 01332 602607

Test Certificate

California Bearing Ratio

Client: IMC Consulting

Site: Tunstall Road
Brown Lees

Test No.: 17

Date of Test: 22.2.01

Type: Insitu

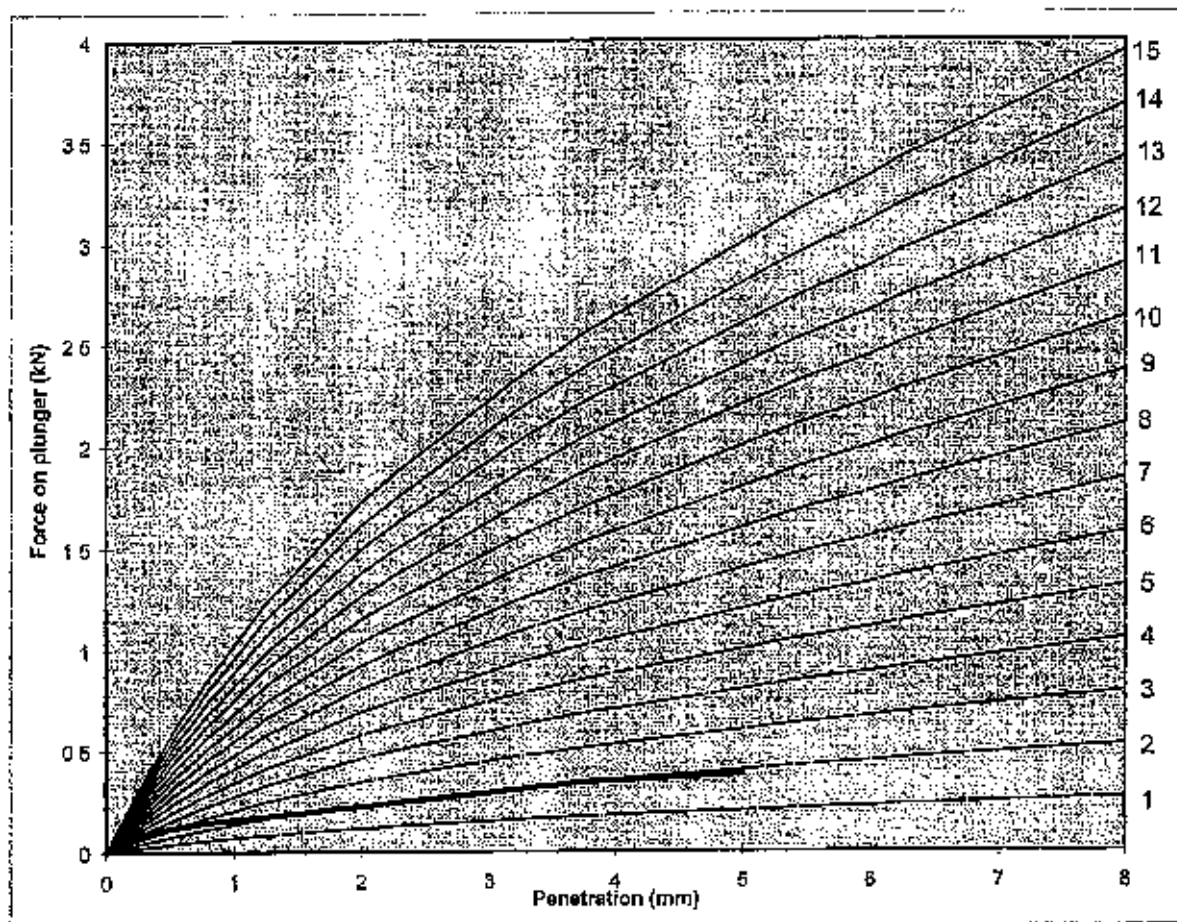
Weather: Dry

Soil Type: Red brown CLAY

Molsture Content %: 14.0

Dry Density: n/a

Lab Ref. 18656



CBR% at 2.5mm =	1.9
CBR% at 5.0mm =	1.9

Remarks: Tested in accordance with BS1377: 1990 Part 9: Clause 4.3
Particles greater than 20mm present: None
Surcharge used: 18 kg

Signed:

Print:

M Durling



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PRIME PARKWAY, PRIME ENTERPRISE PARK
DERBY DE1 3QB

Tel: 01332 383333

Fax: 01332 602607

Test Certificate

California Bearing Ratio

Client: IMC Consulting

Site: Tunstall Road
Brown Lees

Test No.: 18

Date of Test: 22 2 01

Type: Insitu

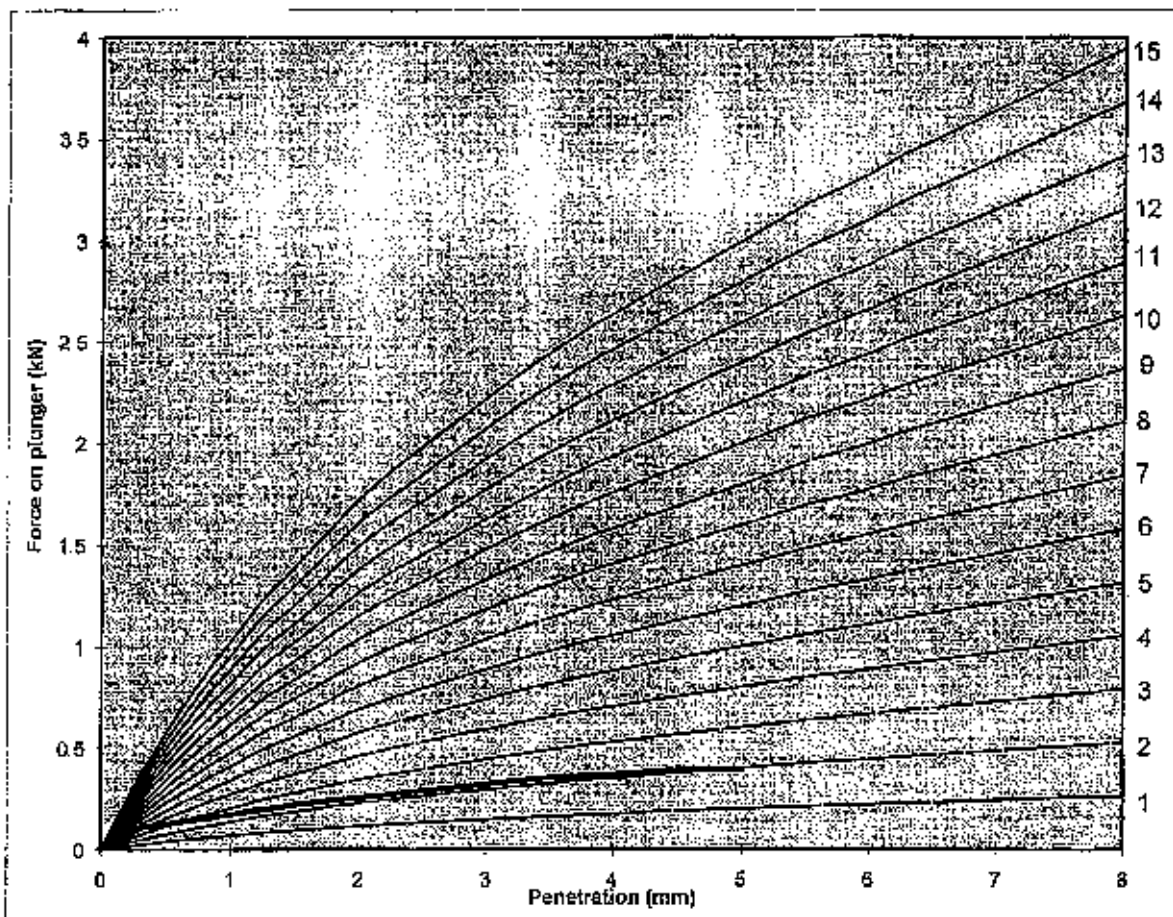
Weather: Dry

Soil Type: Grey brown CLAY

Moisture Content %: 20.0

Dry Density: n/a

Lab Ref. 18656



CBR% at 2.5mm =	2.2
CBR% at 5.0mm =	2.0

Remarks: Tested in accordance with BS1377: 1990 Part 9: Clause 4.3
 Particles greater than 20mm present: None
 Surcharge used: 18 kg

Signed:
Print:

M. Durling



CONSTRUCTION MATERIALS TESTING LIMITED

PRIME PARKWAY, PRIME ENTERPRISE PARK
DERBY DE1 3QB

Tel: 01332 383333

Fax: 01332 602607

Test Certificate

California Bearing Ratio

Client: IMC Consulting

Site: Tunstall Road
Brown Lees

Test No.: 19

Date of Test: 22.2.01

Type: Insitu

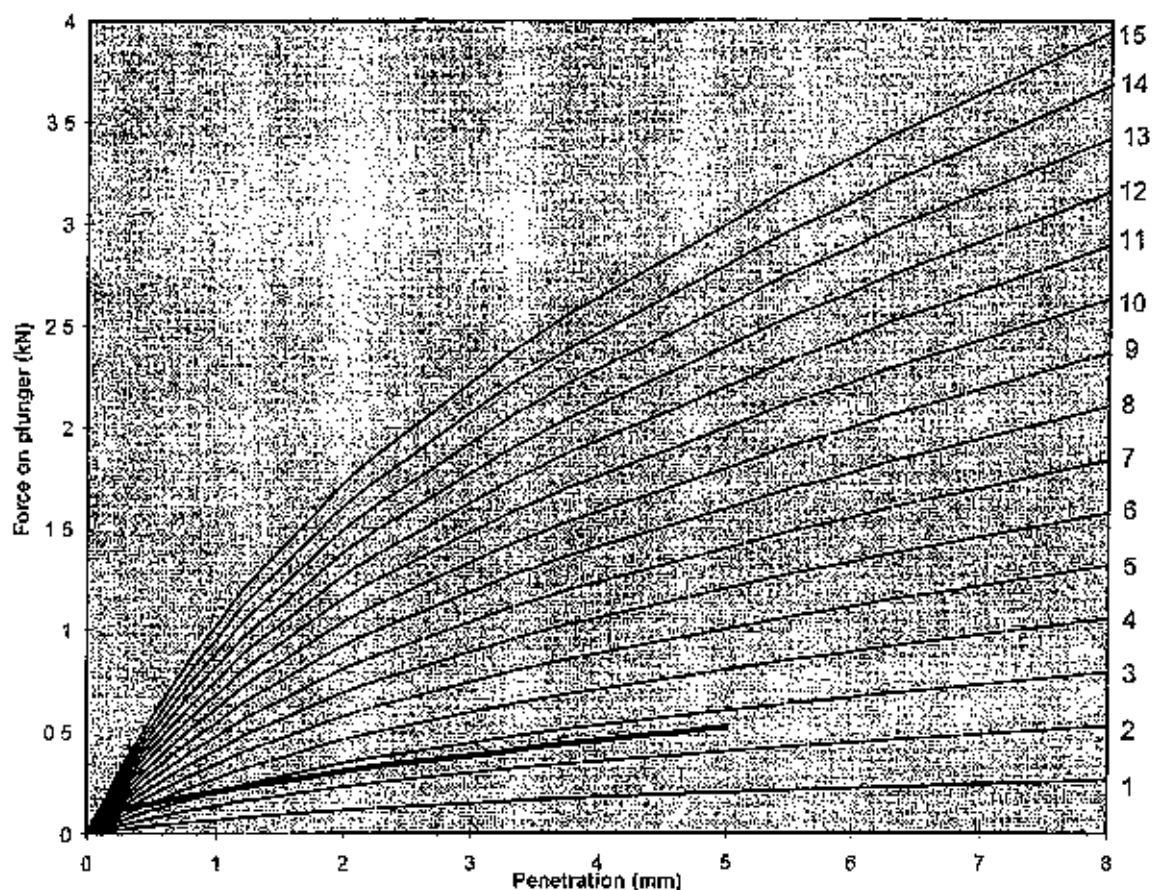
Weather: Dry

Soil Type: Grey brown CLAY with occasional mudstone

Moisture Content %: 15.0

Dry Density: n/a

Lab Ref. 18656



CBR% at 2.5mm =	2.6
CBR% at 5.0mm =	2.6

Remarks: Tested in accordance with BS1377: 1990 Part 9: Clause 4.3

Particles greater than 20mm present: None

Surcharge used: 18 kg

Signed:

Print:

M. Darling



APPENDIX C
SITE AND TRIAL PIT PHOTOGRAPHS

Trial pit photographs no longer available