EAST MON INDUSTRIAL HOLDINGS LIMITED

REPORT

on

GROUND INVESTIGATION

At

NEWHOUSE PARK PLOT 2

CHEPSTOW

OCTOBER 2002

REPORT NO: 20749

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1.0 INTRODUCTION

This investigation was carried out on the instructions of WS Atkins Consultants Limited on behalf of East Mon Industrial Holdings Limited. The purpose of the work was to investigate ground conditions and provide information for the design of cut and fill and bunding works at the site of a proposed industrial development. This report details the work carried out both on site and in the laboratory and gives factual information including trial pit and borehole logs and laboratory test results.

The ground investigation has been carried out using the techniques of rotary drilling and machine excavated trial pitting. Whilst every attempt is made to record full details of the strata encountered in the boreholes and trial pits, boring, excavation and sampling techniques will inevitably lead to disturbance, mixing or loss of material in some soils and rocks.

The investigation has been carried out in accordance with the recommendations of BS5930: 1999 *Code of Practice for Site Investigations*. A comprehensive desk study, other than an inspection of geological maps, has not been requested or undertaken as part of this investigation. The chemical testing of samples of soil and water for toxic contamination has not formed part of this investigation. Similarly no testing has been undertaken to detect the presence of gas in the ground.

All information given in this report is based on the ground conditions encountered during the site work, and on the results of laboratory and field tests performed during the investigation. However, there may be conditions at the site which have not been taken into account, such as unpredictable soil strata and water conditions between or below boreholes and trial pits. It should be noted that groundwater levels vary due to seasonal or other effects and may at times differ to those measured during the investigation.

This report was prepared by Structural Soils Ltd for the sole and exclusive use of East Mon Industrial Holdings Ltd in response to particular instructions. Any other parties using the information contained in this report do so at their own risk and any duty of care to those parties is excluded.

2.0 SITE DESCRIPTION

2.1 Location and Topography

The site, which is known as Newhouse Park Plot 2, Chepstow is situated off Junction 2 of the M48 motorway in South Wales and may be reached via an access road leading from that junction. The British National Grid Reference of the site is ST 53259150.

The site is currently farmland, surfaced in grass and used for the grazing of cattle. The section designated as Plot 2 is roughly rectangular in shape, spanning approximately 300m from east to west and 200m from north to south. The site generally slopes gently downward to the south and south-west. The site is bounded to the north by a wooded slope beyond which lies the M48 motorway. The southern site boundary is formed by the site access road, and beyond this is another plot of open land containing several ditches. Further to the south and south-west are several warehouses and other plots of farmland.

Another plot of farmland, identified as Plot 3 on plans provided by the Engineer forms the eastern boundary of the site. There is a generally north-south trending stream running through the middle of this plot.

2.2 Geology

The Geological Survey of Great Britain (sheet 250, scale 1:50,000) shows the site to be underlain by soils of the Mercia Mudstone Group which are of Triassic age. These deposits typically comprise red-brown mudstones which weather to a clay.

2.3 Groundwater

The Groundwater Vulnerability Map of the Southern Cotswolds (Sheet 37, scale 1:100,000) shows the site to lie on a non aquifer. These are formations that are generally regarded as containing insufficient quantities of groundwater. However groundwater flow through such rocks, although imperceptible, does take place and needs to be considered in assessing the risk associated with persistent pollutants.

3.0 FIELDWORK

22 no machine dug trial pits were completed between the 9 and 13 of September 2002 and 3 no. rotary core boreholes on the 28 and 29 October 2002 at locations shown on the enclosed plan. The positions were selected by WS Atkins and set out by Structural Soils Ltd.

The trial pits were excavated using a tracked mechanical excavator and were approximately 1.2m x 4.0m in plan area and up to 5.9m deep. The trial pits encountered grass and topsoil over typically firm to stiff clays and silts (Superficial Deposits) and then stiff red clays and weak mudstones (Mercia Mudstone Group). Hand vane tests were carried out in the cohesive strata in the trial pits and disturbed samples were taken and returned to the laboratory for testing. Sampling and testing details were specified by WS Atkins. On completion the trial pits were backfilled with arisings.

The rotary cored boreholes were drilled using a Comacchio tracked rotary drilling rig and were taken to between 6.0m and 6.5m depth. BH1 was drilled using window sampling techniques to 1m depth and BH2 and 3 were drilled using rotary open hole techniques to 2.0m depth. The boreholes were then progressed deeper using rotary coring techniques. The boreholes encountered similar strata to the trial pits. On completion the holes were backfilled with bentonite pellets and the undisturbed cores were then returned to the laboratory for logging and testing.

Photographs were taken of both the rotary core samples and the trial pit excavations and these are included in Appendix D of this report.

A survey was made of the ground levels at all of the exploratory hole locations, and these levels are shown on the exploratory hole logs.

4.0 LABORATORY TESTING

The following laboratory tests were carried out on samples unless indicated otherwise generally in accordance with BS1377: 1990, *Methods of test for soils for civil engineering purposes*, parts 1 to 8. Where non-standard procedures have been undertaken, this will be recorded on the report sheet. The results are reported in tabular and/or graphical form included as Appendix C of this report.

The laboratory tests were scheduled by the Engineer on samples returned to the company's laboratory in Bristol.

4.1 Moisture Content

39 no. moisture contents were undertaken using the oven-drying method in accordance with BS1377: Part 2: 1990. The results are tabulated in the Summary of Classification Tests.

4.2 Liquid Limit, Plastic Limit and Plasticity Index

16 no. liquid and plastic limit tests were performed in accordance with BS1377: Part 2: 1990. The results are tabulated in an A Line Plot (in accordance with BS5930: 1999) and the Summary of Classification Tests. 7 no. samples were pre-sieved prior to testing to remove the coarse fraction of the samples.

4.3 Particle Size Distribution

9 no. particle size distribution tests were undertaken by sieving in accordance with BS1377: Part 2: 1990, and 9 no. particle size distribution tests were undertaken by sedimentation analysis using the hydrometer method, in accordance with BS1377: Part 2: 1990. The results are represented graphically as particle size distribution curves and in tabular format.

4.4 Dry Density/Moisture Content Relationship

3 no. dry density/moisture content relationship tests were undertaken in accordance with BS1377: Part 4: 1990 to determine the maximum dry density and optimum moisture

content. 2 no. tests were carried out in a standard mould using a 2.5kg rammer and 1 no. test in a CBR mould. The results are presented graphically as dry density/moisture content curves together with values of maximum dry density and optimum moisture content identified from the plot.

4.5 Moisture Condition Value (MCV)

13 no. moisture condition value tests were undertaken in accordance with BS1377: Part 4: 1990, on soil in its *natural*, or *as received* moisture content. The results are tabulated in the Summary of Classification Tests.

4 no. moisture condition value/moisture content relationship tests were undertaken in accordance with BS1377: Part 4: 1990. The results are represented graphically showing the relationship between change in moisture content and MCV.

4.6 Chemical Analyses

6 no. samples of soils were tested to determine their pH values, total acid soluble sulphate (SO_4) and water soluble sulphate contents in accordance with BS1377: Part 3: 1990 clause 5.

The results are tabulated in the Summary of Chemical Analysis.

4.7 Point Load Index

22 no. point load index determinations were carried out using a mix of axial and diametral tests in accordance with ISRM (1985).

STRUCTURAL SOILS LIMITED

M. Cross

Mandy Cross BSc Env.Biol.

A R Handcock MA CEng MICE CGeol FGS

5.0 REFERENCES

5.1 BS 5930: 1999 *Code of Practice for Site Investigations*

5.2 BS 1377:1990 *Methods of Test for Soils for Civil Engineering Purposes*

5.3 Geological Survey of Great Britain sheet 250, scale 1:50,000

5.4 *NRA Groundwater Vulnerability Map of the Southern Cotswolds* sheet 37, scale 1:100,000.

5.5 International Society for Rock Mechanics (1981) *Rock characterisation, testing and monitoring: ISRM suggested methods*

APPENDIX A

(i) Site Location Plan

(ii) Exploratory Location Plan

Reproduced from the 1 : 50 000. Ordnance Survey NO. 172 map with the permission of the Controller of Her Majesty's Stationery Office © Crown Copyright

Structural Soils

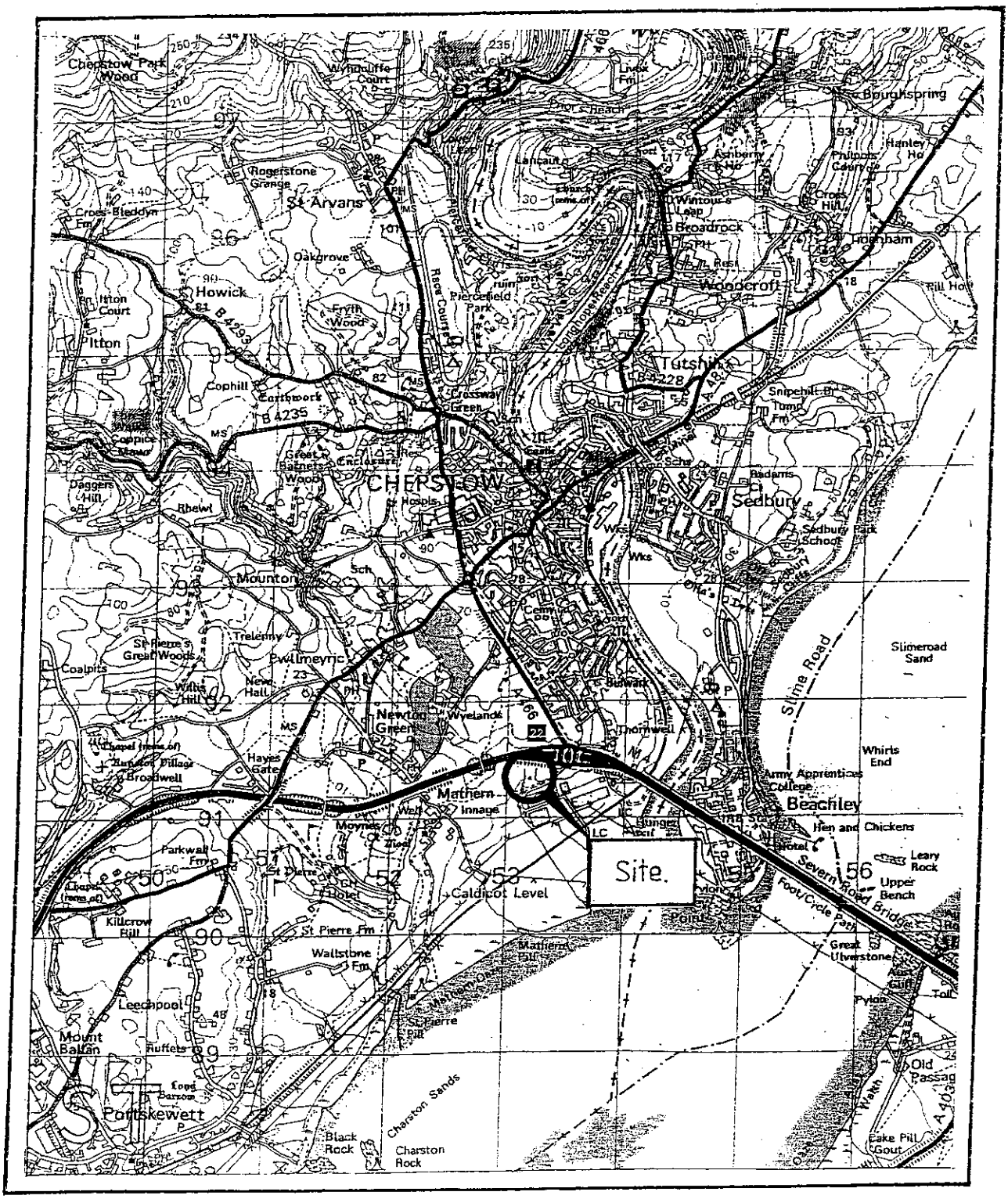
JOB NO.: 20749.

GRID REF: ST.532.913.

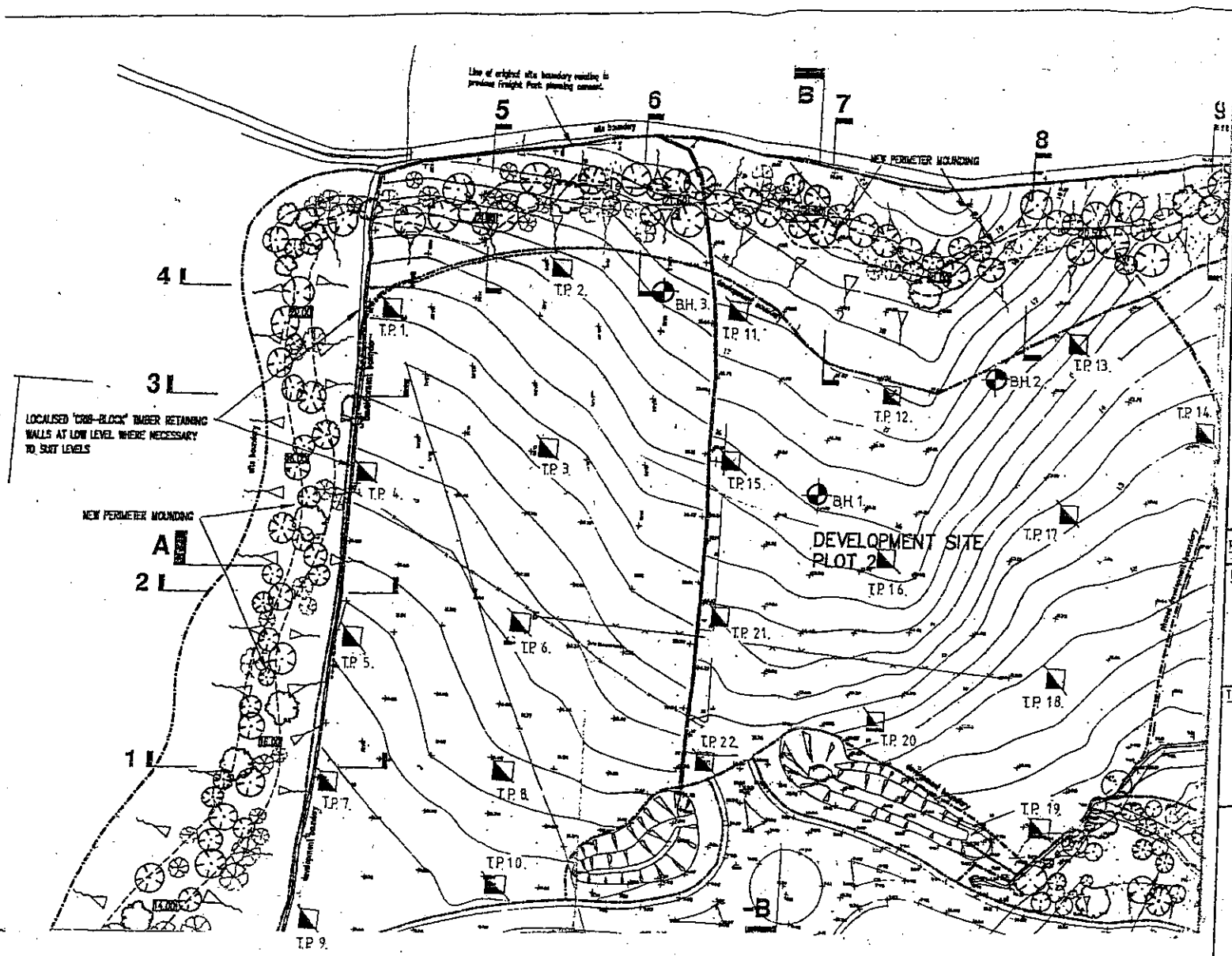
DRAWN: D.M.M.

DATE: 18:11:2002

SITE LOCATION PLAN.



Site :- Chepstow.



N

KEY

Borehole.

Trial Pit.

Rev.	Description.	Made.	Appd.	Date.

PROJECT.

CHEPSTOW.

TITLE.

Exploratory Hole Location Plan.

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Drawn.	Checked.	Approved.
D. M. M.		

Scale.	Date.
N. T. S.	18 : 11 : 2002.

Drawing No.	Figure.	Revision.
20749.		

APPENDIX B

(i) Key to Borehole and Trial Pit Logs

(ii) Borehole Logs

(iii) Trial Pit Logs

KEY TO BOREHOLE AND TRIAL PIT LOGS

SAMPLING

U	Undisturbed driven tube sample - 102mm diameter, 450 mm long. Number of blows indicated.
P	Undisturbed pushed piston sample - 102mm diameter, 1000mm long.
U+, P+	No recovery in undisturbed sample.
D	Small disturbed sample.
B	Bulk disturbed sample.
W	Water Sample.
CS	Core sample taken from rotary core for laboratory testing.
C	Core run.
VL	Vial Sample

IN-SITU TESTING

SPT	Standard Penetration Test using split spoon sampler.
CPT	Standard Penetration Test using a solid 60 degree cone.
	The N Value is the number of blows required to complete a test drive of 300mm after a seating drive of 150mm or 25 blows. Where the full test drive was not completed, a linearly extrapolated N value (N*) is given and prefixed by *.
HP	Hand Penetrometer Test. Value given as shear strength cu, in kPa.
V	Field Vane Test. Vane shear strength, cu, is quoted in kPa.
k	Permeability Test. Permeability is quoted exponentially eg. 1.2E-07 m/s.
G	Gas Test

DRILLING RECORDS

W	Water flush returns estimated percentage
TCR	Total Core Recovery, %
SCR	Solid Core Recovery, %
RQD	Rock Quality Designation, %
If	Fracture spacing, mm. Where variable, the minimum, average and maximum spacing may be quoted. NI - non intact core. NA - not applicable.

WATER COLUMN SYMBOLS

	First water strike, second water strike etc.
	Standing water level following first strike, standing water level following second strike etc.
	Seepage

INSTRUMENTATION SYMBOLS

 Arisings

 Gravel filter

 Sand filter

 Bentonite seal

 Bentonite cement grout

 Concrete

 Solid pipe

 Slotted pipe

 Piezometer tip

 Stopcock cover

 Upstand cover

NOTES:

1. All soil and rock descriptions and legends in general accordance with BS5930:1999.
2. All lengths used to determine rock core mechanical properties taken along the centre line of the core. Obvious induced fractures have been ignored.
3. The assessment of solid core is based on lengths that show a full diameter and not necessarily a full circumference.
4. Material types divided by a broken line (- - -) indicates an unclear boundary.

STRUCTURAL SOILS

ROTARY BOREHOLE LOG

Contract	Client	Borehole No
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	BH1

Job No	Start / End	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	Start 28.10.02 End 28.10.02	16.37		1 of 1

Drilling Records			Mechanical Log				Instrumentation	Description of Strata	Depth (Thickness)	Legend
Depth	Test	W	TCR	SCR	RQD	If (mm)				
0.00-1.00		1	100					Grass over TOPSOIL	0.25	
								Firm to stiff very closely fissured reddish brown CLAY with occasional green/grey mottling and fine rootlets. (Superficial Deposits)	0.50	
1.00-2.50		1	97	60	0	20 40 90		Firm to stiff very closely fissured reddish brown occasionally grey mottled CLAY with frequent fine to medium subangular lithorelicts of weak mudstone and siltsone. (Mercia Mudstone Group Zone III)	1.00	
						NI		Moderately weak to moderately strong reddish brown mottled green/grey SILTSTONE, partially weathered, very closely to closely spaced fractures, locally extremely close. Fractures are generally horizontal, some tight and some infilled with clay and mudstone fragments and stained black. (Mercia Mudstone Group Zone II)		
2.50-4.00			90	55	7	<20 30 110		... At 4.25-5m becomes a strong green/grey SILTSTONE with closely spaced fractures infilled with clay. Fractures are tight and subhorizontal. ... 2.1-2.75m is non intact. ... no recovery at 4-4.3m	(4.30)	
4.00-5.50			80	55	37	NR 25 70 140			5.30	
						NA		Very soft reddish brown mottled green/grey CLAY with frequent lithorelicts of weak fine - medium subangular mudstone and occasional weak fine grey siltstone. (Mercia Mudstone Group Zone III)	(0.70)	
5.50-6.00			60	0	0	NR NA		... No recovery (driller recorded very soft CLAY) at 5.5-5.7m Rotary borehole terminated at 6.00 m depth.	6.00	

General Remarks

1. Borehole progressed using window sampling techniques to 1.0m depth.
2. Groundwater struck at 1.2m, rising to 0.9m
3. Hole backfilled with bentonite pellets on completion.

All dimensions in metres Scale 1:50	Method Rotary Coring/WinSam	Drilled By JS	Logged By MC	Checked By

ROTARY

STRUCTURAL SOILS

ROTARY BOREHOLE LOG

Contract	Client	Borehole No
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	BH2

Job No	Start / End	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	Start 29.10.02 End 29.10.02	16.95		1 of 1

Drilling Records			Mechanical Log				Instrumentation	Description of Strata	Depth (Thickness)	Legend
Depth	Test	W	TCR	SCR	RQD	If (mm)				
								TOPSOIL (Driller's description)	0.40	
								Firm red CLAY (Driller's description)	0.80	
								Grey sandy MUDSTONE (Driller's description)	(1.20)	
									2.00	
2.00-2.50			100	0	0	NI 30 70		Weak distinctly weathered green/grey SILTSTONE. Fractures are extremely close to very closely spaced. (Mercia Mudstone Group Zone II)	2.30	
2.50-3.50			50	0	0	NR N/A		Firm to stiff reddish brown mottled green/grey extremely closely fissured CLAY with frequent very weak fine mudstone. (Mercia Mudstone Group Zone IVa-III) ... from 3.3m becomes Mercia Mudstone Group III ... No recovery at 2.5-2.75m ... becomes very soft at 2.50m.	(1.10)	
									3.40	
3.50-5.00			93	33	8	<20 40 110 NI 40 120		Moderately weak reddish brown mottled green/grey MUDSTONE, partially weathered, very closely, locally fractures are extremely close. Fractures are horizontal and infilled with clay and mudstone fragments, stained black. (Mercia Mudstone Group Zone II) ... Non intact at 4-4.2m ... from 5.7m becomes moderately strong and fractures are closely spaced, and infilled with clay and mudstone fragments.	(3.10)	
5.00-6.50			100	88	51					
		1				NI 80 160			6.50	
								Rotary borehole terminated at 6.50 m depth.		

General Remarks

1. Borehole progressed using open hole techniques to 2m depth.
2. Groundwater struck at 5.85m.
3. Hole backfilled with bentonite pellets on completion.

All dimensions in metres Scale 1:40	Method Rotary Coring/O'Hole	Drilled By JS	Logged By MC	Checked By JS

ROTARY

STRUCTURAL SOILS

ROTARY BOREHOLE LOG

Contract	Client	Borehole No
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	BH3

Job No	Start / End	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	Start 29.10.02 End 29.10.02	17.10		1 of 1

Drilling Records Depth	Test	W	Mechanical Log TCR	SCR	RQD	If (mm)	Instrumentation	Description of Strata	Depth (Thickness)	Legend
								TOPSOIL (Driller's description)	0.40	
								Firm red/grey CLAY (Driller's description)	(1.10) 1.50	
								Red/grey weathered MUDSTONE (Driller's description)	2.00	
2.00-2.50			100	0	0			Soft to firm reddish brown mottled grey CLAY with frequent lithorelicts of weak fine to medium mudstone. (Mercia Mudstone Group Zone IVa-III)	2.50	
50-4.00			100	54	17	NI 50 80		Moderately strong to moderately weak reddish brown occassionally mottled grey/green partially weathered MUDSTONE, closely spaced fractures. Fractures are generally horizontal and stained black. (Mercia Mudstone Group Zone II)	(1.20) 3.70	
4.00-5.50			70	26	20	NI 70 140		Strong grey/green partially weathered SILTSTONE with closely spaced fractures. Fractures are generally horizontal occasionally vertical, rough and black stained. (Mercia Mudstone Group Zone II) ... non intact from 4-4.15m ... No recovery from 5.1-6.5m.	(2.80) 6.50	
5.50-6.50		1	0	0	0	NR				
								Rotary borehole terminated at 6.50 m depth.		

General Remarks

1. Borehole progressed using open hole techniques to 2.0m depth.
2. Groundwater stuck at 6.0m rising to 5.8m.
4. Hole backfilled with bentonite pellets on completion.

All dimensions in metres Scale 1:50	Method Rotary Coring/O'Hole	Drilled By JS	Logged By MC	Checked By JS

ROTARY

STRUCTURAL SOILS

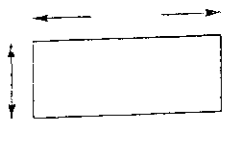
TRIAL PIT LOG

Contract	Client	Trial Pit No
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	TP1

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	09.09.02	14.58		1 of 1

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
0.00	1	B			Grass over TOPSOIL.	0.45	
0.50		HP	210kPa		Very stiff very closely to closely fissured dark brown mottled brown and grey CLAY, with occasional fine gravel size black lithorelicts of very weak mudstone. (Mercia Mudstone Group Zone IVa)		
0.55	2	B				0.90	
1.00		HP	160kPa		Very stiff fissured red/brown, mottled grey CLAY. (Mercia Mudstone Group Zone IVb)	1.50	
1.50	3	B			Stiff reddish brown mottled grey CLAY with some fine to coarse angular lithorelicts of weak mudstone. (Mercia Mudstone Group Zone III)		
1.60-1.80	4	B				2.00	
2.80-3.00	5	B			Weak closely fissured reddish brown MUDSTONE. Recovered as angular gravel and cobble size fragments with a grey silt matrix. (Mercia Mudstone Zones II and III)	(1.50)	
3.20-3.50	6	B			... becomes Zone II below 3.5m.	3.50	
					Trial pit terminated at 3.50 m depth.		

Plan (Not to Scale)



Bearing o

General Remarks

Trial pit walls stable and vertical.

No groundwater encountered.

Trial pit terminated at 3.5 m, no further progress through mudstone.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	JS

TRIALPIT

STRUCTURAL SOILS

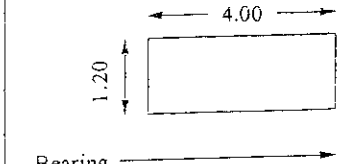
TRIAL PIT LOG

Contract	Client	Trial Pit No
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	TP2

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	09.09.02	15.56		1 of 1

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
0.00-0.30	1	B			Grass over TOPSOIL.	0.30	
0.50		V	104kPa		Stiff mottled reddish brown CLAY. Occasional fine gravel and subrounded weak mudstone. (Superficial Deposits)		
0.50-0.90	2	B				0.90	
1.00		V	159kPa		Very stiff very closely to closely fissured red/brown occasionally mottled pale grey green CLAY with occasional fine subangular to subrounded black very weak mudstone lithorelicts. (Mercia Mudstone Group Zone IVb) ... with some grey/green mottling at 2m.		
1.00-1.50	3	B				(1.40)	
2.00-2.30	4	B				2.30	
					Weak closely fissured reddish brown MUDSTONE. Recovered as angular gravel and cobble size fragments with a little matrix of silt. (Mercia Mudstone Zones II and III)	(0.70)	
2.90-3.00	5	B				3.00	
					Trial pit terminated at 3.00 m depth.		

Plan (Not to Scale)



General Remarks

Trial pit walls stable and vertical.

No groundwater encountered.

Trial pit terminated at 3.00m, no further progress through mudstone.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	JJ

TRIALPIT

STRUCTURAL SOILS

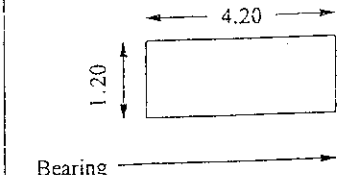
TRIAL PIT LOG

Contract	Client	Trial Pit No
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	TP3

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	09.09.02	14.83		1 of 1

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
0.00-0.30	1	B			Grass over TOPSOIL.	0.35	
0.40-0.70	2	B			Firm brown slightly sandy slightly gravelly SILT. Gravel is fine to coarse subangular to subrounded quartz. (Superficial Deposits)		
0.50		V	111kPa			0.75	
0.80		V	115kPa		Stiff red/brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium subangular very weak to weak mudstone. (Superficial Deposits)		
0.80-1.30	3	B				1.40	
1.50-1.70	4	B			Firm reddish brown plastic CLAY with a little sand and fine gravel size subangular lithorelicts of very weak mudstone. (Mercia Mudstone Group Zone IVa)	1.70	
1.60		V	62kPa				
1.70-2.20	5	B			Weak very closely fissured reddish brown MUDSTONE. Recovered as coarse sized angular gravel fragments with a little matrix of silt. (Mercia Mudstone Zones II and III)	(0.80)	
					... becoming Zone II below 2.4m.	2.50	
					Trial pit terminated at 2.50 m depth.		

Plan (Not to Scale)



General Remarks

Trial pit walls stable and vertical.

No groundwater encountered.

Trial pit terminated at 2.5m. No further progress through rock.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	JJ

TRIALPIT

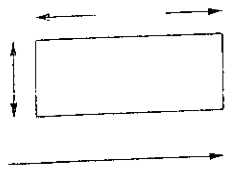
STRUCTURAL SOILS

TRIAL PIT LOG

Contract	Client	Trial Pit
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	No TP4
Job No 20749	**Date** 09.09.02	**Ground Level (m AOD)** 13.72
Co-Ordinates		**Sheet** 1 of 1

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
0.00-0.45	1	B			Grass over TOPSOIL.	0.45	
0.40		V	110kPa		Stiff brown slightly sandy gravelly CLAY. Gravel is fine to medium subangular to subrounded quartz. (Superficial Deposits)	0.95	
0.50-1.00	2	B					
1.00		V	140kPa		Stiff reddish brown slightly sandy CLAY with occasional subangular lithorelicts of very weak mudstone. (Mercia Mudstone Group Zone IVa)	1.50	
1.00-1.50	3	B					
1.50-2.00	4	B			Stiff reddish brown mottled grey CLAY with some fine to coarse angular lithorelicts of weak mudstone. (Mercia Mudstone Group Zone III)	2.00	
2.00-2.40	5	B			Weak reddish brown MUDSTONE. Recovered as angular gravel and cobble size fragments with a little matrix of silt. (Mercia Mudstone Zones II and III)	2.60	
2.50-2.60	6	B			... becoming Zone II at 2.6m.		
					Trial pit terminated at 2.60 m depth.		

Plan (Not to Scale)



General Remarks

Trial pit walls stable and vertical.

Trial pit terminated at 2.60m, no further progress through mudstone.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	JJ

TRIALPIT

STRUCTURAL SOILS

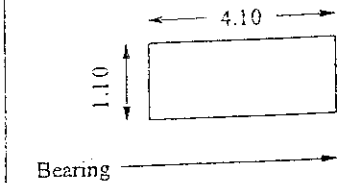
TRIAL PIT LOG

Contract	Client	Trial Pit No
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	TP5

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	09.09.02	12.18		1 of 1

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
0.00-0.30	1	B			Grass over TOPSOIL.	0.30	
0.30-0.50	2	B			Firm to stiff reddish brown slightly sandy gravelly SILT/CLAY. Gravel is fine to coarse subangular to subrounded quartz and fine subangular to subrounded weak mudstone.	0.50	
0.40		V	97kPa				
0.50		V	109kPa		Stiff reddish brown mottled grey CLAY with occasional fine lithorelicts of mudstone. (Mercia Mudstone Group Zone IVb)	0.75	
0.50-0.75	3	B					
0.80		V	81kPa		Stiff reddish brown mottled grey CLAY with some fine to coarse angular lithorelicts of weak mudstone. (Mercia Mudstone Group Zone III)	1.00	
					Weak reddish brown MUDSTONE recovered as angular gravel and cobble size fragments with a little matrix of silt. (Mercia Mudstone Zones II and III)		
1.50-1.60	4	B			... becoming pale grey green and mottled reddish brown below 1.6m.	1.65	
					Trial pit terminated at 1.65 m depth.		

Plan (Not to Scale)



General Remarks

Trial pit walls stable and vertical.

No groundwater encountered.

Trial pit terminated at 1.65m, no further progress through mudstone.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	

TRIALPIT

STRUCTURAL SOILS

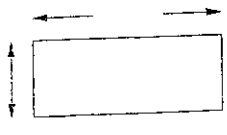
TRIAL PIT LOG

Contract	Client	Trial Pit No
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	TP6

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	09.09.02	12.82		1 of 1

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
0.00-0.30	1	B			Grass over TOPSOIL.	0.40	
0.50		V	110kPa		Stiff brown/grey slightly sandy slightly gravelly SILT/CLAY. Gravel is fine to coarse subrounded quartz. (Superficial Deposits)		
0.50-1.00	2	B				1.00	
1.00-1.20	3	B.			Stiff reddish brown mottled grey CLAY with some medium gravel size subangular to subrounded black and light grey very weak mudstone lithorelicts. (Mercia Mudstone Group Zone III)		
1.10		V	139kPa				
1.20-1.60	4	B			... becoming Zone III to Zone II below 1.4m.	(0.80)	
						1.80	
1.80-2.20	5	B			Weak reddish brown MUDSTONE. Recovered as angular gravel and cobble size fragments with a little matrix ofgrey silt. (Mercia Mudstone Groups II-III) .	(0.80)	
2.30-2.60	6	B				2.60	
					Trial pit terminated at 2.60 m depth.		

Plan (Not to Scale)



General Remarks

Trial pit walls stable and vertical.

No groundwater encountered.

Trial pit terminated at 2.60m, no further progress through mudstone.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	

TRIALPIT

STRUCTURAL SOILS

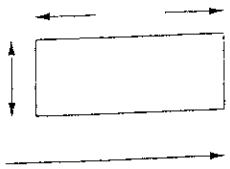
TRIAL PIT LOG

Contract	Client	Trial Pit No
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	TP7

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	10.09.02	10.55		1 of 1

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
0.00-0.20	1	B			Grass over TOPSOIL.	0.20	
					Firm to stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium subangular quartz. (Superficial Deposits)	0.40	
0.30		V	95kPa				
0.40-1.00	2	B			Firm plastic reddish brown mottled grey CLAY with some fine lithorelicts of mudstone. (Mercia Mudstone Group Zone IVa)	1.00	
0.80		V	68kPa				
1.00		V	136kPa		Stiff reddish brown mottled grey CLAY. (Mercia Mudstone Group Zone IVb)	1.30	
00-1.30	3	B					
					Weak reddish brown MUDSTONE. Recovered as angular gravel and cobble size fragments with a little matrix of silt. (Mercia Mudstone Zones II and III)	(0.75)	
1.50-2.00	4	B				2.05	
2.00-2.05	5	B			Trial pit terminated at 2.05 m depth.		

Plan (Not to Scale)



General Remarks

Trial pit walls stable and vertical.

No groundwater encountered.

Trial pit terminated at 2.05m, no further progress through mudstone.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	JJ

TRIALPIT

STRUCTURAL SOILS

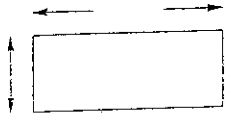
TRIAL PIT LOG

Contract	Client	Trial Pit No
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	TP8

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	10.09.02	11.44		1 of 1

Samples and In-situ Tests				Water	Description of Strata	Depth (Thickness)	Legend
Depth	No	Type	Result				
0.00-0.35	1	B			Grass over TOPSOIL.	0.35	
0.40		V	77kPa		Firm to stiff reddish brown slightly sandy, slightly gravelly CLAY. Gravel is fine to medium subangular very weak to weak mudstone. (Superficial Deposits)		
0.40-0.70	2	B				(0.80)	
0.80		V	75kPa			1.15	
1.15		V	81kPa		Firm to stiff reddish brown mottled grey CLAY with occasional fine lithorelicts of mudstone. (Mercia Mudstone Group Zone IVa)	1.40	
1.15-1.40	3	B					
1.40-1.55	4	B			Weak reddish brown MUDSTONE. Recovered as angular gravel size fragments with a little matrix of grey/green silt. (Mercia Mudstone Zones II and III) ... becoming brown angular cobble size at 1.55m. ... becomes Zone II below 1.8m depth.	1.80	
1.60-1.80	5	B					
					Trial pit terminated at 1.80 m depth.		

Plan (Not to Scale)



Bearing

General Remarks

Trial pit walls stable and vertical.
No groundwater encountered.
Trial pit terminated at 1.80m, no further progress through mudstone.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	JJ

TRIALPIT

STRUCTURAL SOILS

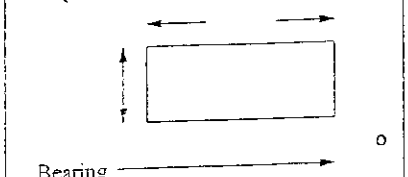
TRIAL PIT LOG

Contract	Client	Trial Pit
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	No TP9

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	10.09.02	9.62		1 of 1

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
0.00-0.30	1	B			Grass over TOPSOIL.	0.30	
0.30-0.95	2	B			Stiff reddish brown sandy CLAY with fine to medium subangular flint gravel and occasional rootlets. (Superficial Deposits)	0.95	
0.50		V	120kPa				
0.95		V	80kPa		Firm to stiff reddish brown mottled grey CLAY with occasional fine lithorelicts of mudstone. (Mercia Mudstone Group Zone IVa) ... becoming stiff at 1.15m.	1.40	
0.95-1.00	3	B					
1.15		V	150kPa				
1.20-1.40	4	B					
1.40-1.55	5	B			Stiff reddish brown mottled grey CLAY. (Mercia Mudstone Group Zone IVb)	1.55	
1.55-1.70	6	B			Weak brown/grey MUDSTONE. Recovered as angular gravel and cobble size fragments with a little matrix of silt. (Mercia Mudstone Zones II and III) ... contains gravelly sandy CLAY at 1.7-1.75m. Gravel is weak fine mudstone.	2.10	
1.70-1.75	7	B					
1.80-2.00	8	B					
					Trial pit terminated at 2.10 m depth.		

Plan (Not to Scale)



General Remarks

Trial pit walls stable and vertical.

No groundwater encountered.

Trial pit terminated at 2.10m, no further progress through mudstone.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	

TRIALPIT

STRUCTURAL SOILS

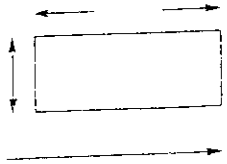
TRIAL PIT LOG

Contract	Client	Trial Pit No
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	TP10

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	10.09.02	9.97		1 of 1

Samples and In-situ Tests				Water	Description of Strata	Depth (Thickness)	Legend
Depth	No	Type	Result				
0.00-0.30	1	B			Grass over TOPSOIL.	0.30	
0.30-0.60 0.35	2	B V	95kPa		Firm to stiff slightly sandy slightly gravelly SILT. Gravel is fine to medium, subangular to subrounded mudstone. (Superficial Deposits)	0.60	
0.60-0.90	3	B			Weak grey/brown MUDSTONE. Recovered as angular gravel and cobble size fragments with a little matrix of silt. (Mercia Mudstone Zones II and III)	(0.95)	
1.00-1.50	4	B.			... becoming Zone II at 1.55m, Trial pit terminated at 1.55 m depth.	1.55	

Plan (Not to Scale)



Bearing

General Remarks

Trial pit walls stable and vertical.

No groundwater encountered.

Trial pit terminated at 1.55m, no further progress through mudstone.

All dimensions in metres Scale 1:25	Method Machine Dug	Logged By MC	Checked By

TRIALPIT

STRUCTURAL SOILS

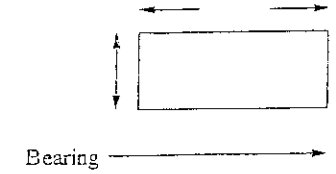
TRIAL PIT LOG

Contract	Client	Trial Pit
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	No TP11

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	10.09.02	17.97		1 of 1

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
0.00-0.45	1	B			Grass over TOPSOIL.	0.45	
0.50		V	80kPa		Firm to stiff reddish brown mottled grey CLAY with occasional fine lithorelicts of mudstone. (Mercia Mudstone Group Zone IVa)	0.85	
0.50-0.80	2	B					
0.90		V	167kPa		Stiff reddish brown mottled grey CLAY and occasional cobble size weak mudstone. (Mercia Mudstone Group Zone III)	1.30	
1.30-1.60	3	B			Stiff reddish brown mottled grey CLAY with occasional fine lithorelicts of mudstone. (Mercia Mudstone Group Zone IVa)	1.70	
1.70-1.80	4	B			Weak reddish brown MUDSTONE. Recovered as angular gravel and cobble size fragments with a little matrix of silt. (Mercia Mudstone Zones II and III) ... becoming Zone II below 1.8m. Trial pit terminated at 1.80 m depth.	1.80	

Plan (Not to Scale)



General Remarks

Trial pit walls stable and vertical.
No groundwater encountered.
Trial pit terminated at 1.8m, no further progress through mudstone.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	JJ

TRIA...

STRUCTURAL SOILS

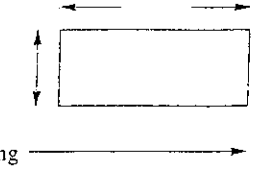
TRIAL PIT LOG

Contract	Client	Trial Pit
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	No TP12

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	10.09.02	17.28		1 of 1

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
0.00-0.35	1	B			Grass over TOPSOIL.	0.35	
0.35-0.70	2	B			Very stiff reddish brown mottled grey CLAY. (Mercia Mudstone Group Zone IVb)		
0.40		V	>150kPa				
0.60		V	100kPa			0.70	
					Stiff reddish brown mottled grey CLAY with occasional fine lithorelicts of mudstone. (Mercia Mudstone Group Zone IVa)	0.90	
					Weak grey brown MUDSTONE. Recovered as angular gravel and cobble size fragments with a little matrix of silt. (Mercia Mudstone Zones II and III)	(0.95)	
					... becomes Zone II at 1.85m.	1.85	
					Trial pit terminated at 1.85 m depth.		

Plan (Not to Scale)



General Remarks

Trial pit walls stable and vertical.

No groundwater encountered.

Trial pit terminated at 1.85m, no further progress through mudstone.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	JS

STRUCTURAL SOILS

TRIAL PIT LOG

Contract	Client	Trial Pit
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	No TP13

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	10.09.02	15.35		1 of 1

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
0.00-0.35	1	B			Grass over TOPSOIL.	0.35	
0.40		V	>150kPa		Very stiff brown/red sandy gravelly CLAY. Gravel is fine to medium subangular siltstone. (Superficial Deposits)		
0.50-0.60	2	B				0.70	
0.70		V	>150kPa		Very stiff reddish brown CLAY. (Superficial Deposits)	1.00	
					Stiff mottled brown/grey CLAY. (Superficial Deposits)	(0.80)	
						1.80	
1.80-2.00	3	B			Very sandy mottled grey/brown friable CLAY with occasional fine to medium subangular siltstone. (Superficial Deposits)	2.20	
2.30-2.40	4	B			Stiff reddish brown mottled grey CLAY with some fine to coarse angular lithorelicts of weak mudstone. (Mercia Mudstone Group Zone III)	(0.70)	
						2.90	
2.90-3.30	5	B			Weak reddish brown MUDSTONE. Recovered as angular gravel and cobble size fragments with a little matrix of silt. (Mercia Mudstone Zones II and III)		
					... becomes Zone II below 3.3m.	3.30	
					Trial pit terminated at 3.30 m depth.		

Plan (Not to Scale)

Bearing

General Remarks

Trial pit walls stable and vertical.
No groundwater encountered.
Trial pit terminated at 3.3m, no further progress through mudstone.v

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	JJ

STRUCTURAL SOILS

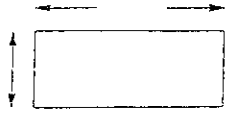
TRIAL PIT LOG

Contract	Client	Trial Pit
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	No TP14

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	10.09.02	12.66		1 of 2

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
0.00-0.35	1	B			Grass over TOPSOIL.	0.35	
0.40		V	27kPa		Soft friable reddish brown CLAY with occasional subangular to subrounded medium quartz gravel. (Superficial Deposits)	(0.85)	
0.40-1.20	2	B					
0.60		V	133kPa			1.20	
1.20		V	140kPa		Stiff reddish/brown CLAY with occasional decaying plant matter. Some fine to medium subangular quartz and flint and charcoal. (Superficial Deposits)	1.50	
1.20-1.30	3	B					
1.35-1.50	4	B					
1.50-2.00	5	B			Firm friable mottled reddish brown CLAY with occasional grey silt interbedded and occasional subangular to subrounded cobble size sandstone, flint, medium subrounded quartz and very weak eroded mudstone. (Superficial Deposits)	(2.10)	
3.30-3.50	6	B				3.60	
					Stiff reddish brown mottled grey CLAY with some fine to coarse angular lithorelicts of very weak mudstone with occasional mudstone cobbles. (Mercia Mudstone Group Zone III)		

Plan (Not to Scale)



General Remarks

Trial pit walls stable and vertical.

Seepage at 5.50m

Trial pit terminated at 5.6m.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	

STRUCTURAL SOILS

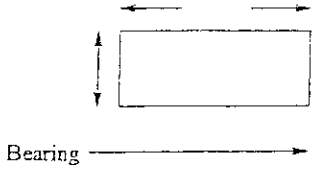
TRIAL PIT LOG

Contract	Client	Trial Pit
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	No TP14

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	10.09.02	12.66		2 of 2

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
					Stiff reddish brown mottled grey CLAY with some fine to coarse angular lithorelicts of very weak mudstone with occasional mudstone cobbles. (Mercia Mudstone Group Zone III)	(2.00)	
				≈		5.60	
					Trial pit terminated at 5.60 m depth.		

Plan (Not to Scale)



General Remarks

Trial pit walls stable and vertical.
Seepage at 5.50m
Trial pit terminated at 5.6m.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	JB

STRUCTURAL SOILS

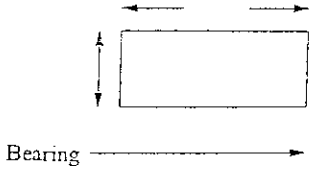
TRIAL PIT LOG

Contract	Client	Trial Pit
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	No TP15

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	10.09.02	16.12		1 of 1

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
0.00-0.30	1	B			Grass over TOPSOIL.	0.30	
0.30-0.60	2	B			Stiff slightly sandy gravelly SILT. Gravel is fine to medium subangular quartz. (Superficial Deposits)		
0.50		V	145kPa			0.65	
0.65		V	105kPa		Stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium subangular very weak to weak mudstone. (Superficial Deposits)		
0.65-0.85	3	B					
0.95		V	122kPa		... becoming eroded at 0.95m.	1.00	
1.10-1.50	4	B			Stiff reddish brown mottled grey CLAY (Mercia Mudstone Group Zone III)	1.10	
					Weak reddish brown MUDSTONE. Recovered as angular fine to coarse gravel with occasional firm silt interbedded in matrix. (Mercia Mudstone Zones II and III)	(1.20)	
1.80-2.20	5	B					
					... becoming possible Zone II with strong mudstone at 2.20m.	2.30	
					Trial pit terminated at 2.30 m depth.		

Plan (Not to Scale)



General Remarks

Trial pit walls stable and vertical.
No groundwater encountered.
Trial pit terminated at 2.3m, no further progress through mudstone.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	JS

TRL

STRUCTURAL SOILS

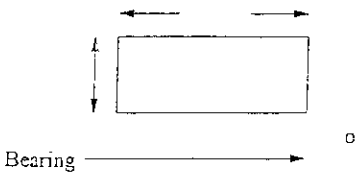
TRIAL PIT LOG

Contract	Client	Trial Pit
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	No TP16

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	11.09.02	15.05		1 of 1

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
0.00-0.20	1	B			Grass over TOPSOIL.	0.20	
0.20		V	>150kPa		MADE GROUND: Very stiff gravelly and sandy SILT. Gravel is fine siltstone and rare clinker.	0.30	
0.30-1.00	2	B			Very stiff reddish brown mottled grey CLAY with some fine to medium angular lithorelicts of weak mudstone and siltstone. (Mercia Mudstone Group Zone III)	(1.70)	
0.50		V	>150kPa				
1.55-2.00	3	B			... becomes Zone III-II with mottled grey/brown fine to medium angular lithorelicts of weak siltstone at 1.55m.	2.00	
					Trial pit terminated at 2.00 m depth.		

Plan (Not to Scale)



General Remarks

Trial pit walls stable and vertical.

No groundwater encountered.

Trial pit terminated at 2.00m, no further progress through mudstone.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	

STRUCTURAL SOILS

TRIAL PIT LOG

Contract	Client	Trial Pit
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	No TP17

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	11.09.02	14.18		1 of 2

Samples and In-situ Tests				Water	Description of Strata	Depth (Thickness)	Legend
Depth	No	Type	Result				
					Grass over TOPSOIL.	0.30	
0.30		V	85kPa		Firm to stiff brown SILT with fine to medium subangular siltstone. (Superficial Deposits)	0.45	
0.45-0.70	1	B			Very stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium subangular siltstone. (Superficial Deposits)	0.85	
0.50		V	>150kPa				
0.85		V	>150kPa		Stiff reddish brown mottled grey CLAY. (Mercia Mudstone Group Zone IVb)	1.45	
0.85-1.00	2	B					
1.50-2.00	3	B			Stiff reddish brown mottled grey slightly sandy slightly gravelly CLAY with occasional fine lithorelicts of mudstone and grey siltstone and rare strong medium sized mudstone. (Mercia Mudstone Group Zone IVa)	(1.00)	
						2.45	
2.50-3.00	4	B			Weak reddish brown MUDSTONE. Recovered as angular gravel and cobble size fragments with a little matrix of silt. (Mercia Mudstone Zones II and III) ... mudstone becomes stronger at 4m.		
3.00-3.60	5	B					
4.00-4.50	6	B				(3.25)	

Plan (Not to Scale)

Bearing

o

General Remarks

Trial pit walls stable and vertical.
No groundwater encountered.
Trial pit terminated at 5.7m.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	JS

STRUCTURAL SOILS

TRIAL PIT LOG

Contract	Client	Trial Pit
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	No TP17

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	11.09.02	14.18		2 of 2

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
5.00-5.50	7	B			Weak reddish brown MUDSTONE. Recovered as angular gravel and cobble size fragments with a little matrix of silt. (Mercia Mudstone Zones II and III)	5.70	
					Trial pit terminated at 5.70 m depth.		

Plan (Not to Scale)

Bearing o

General Remarks

Trial pit walls stable and vertical.
No groundwater encountered.
Trial pit terminated at 5.7m.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	JJ

STRUCTURAL SOILS

TRIAL PIT LOG

Contract	Client	Trial Pit
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	No TP18

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	11.09.02	12.07		1 of 2

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
0.00-0.30	1	B			Grass over TOPSOIL.	0.30	
0.30		V	>150kPa		Very stiff SILT with fine to medium subangular siltstone.	0.40	
0.30-0.40	2	B			Very stiff reddish brown mottled grey CLAY. (Superficial Deposits)	0.60	
0.50		V	>150kPa				
0.60-0.75	3	B			Stiff to very stiff reddish brown mottled grey CLAY with occasional fine lithorelicts of mudstone. (Mercia Mudstone Group Zone IVa)	(1.00)	
0.80		V	>150kPa				
0.80-1.20	4	B				1.60	
1.60-2.20	5	B			Stiff, friable reddish brown mottled grey CLAY with some fine to coarse angular lithorelicts of weak mudstone and weak fine grey siltstone interbedded. (Mercia Mudstone Group Zone III)	(1.40)	
2.50-3.00	6	B				3.00	
3.20-3.50	7	B			Stiff friable red/brown CLAY with fine to medium subangular weak mudstone. (Mercia Mudstone Group Zone III) ... clay is interbedded with grey silt matrix.	(1.20)	
4.20-4.50	8	B		1		4.20	
					Weak reddish brown mottled grey MUDSTONE with some fine to medium angular lithorelicts of weak mudstone and siltstone. (Mercia Mudstone Zones II and III) ... contains red/brown sandy gravelly clay at 5.2m. Gravel is fine to medium siltstone and mudstone.		

Plan (Not to Scale)

Bearing

o

General Remarks

Trial pit walls stable and vertical.

Seepage at 4.20m

Trial pit terminated at 5.9m.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	

STRUCTURAL SOILS

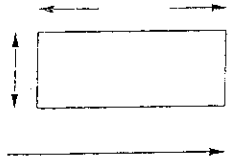
TRIAL PIT LOG

Contract	Client	Trial Pit
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	No TP18

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	11.09.02	12.07		2 of 2

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
5.20-5.50	9	B			Weak reddish brown mottled grey MUDSTONE with some fine to medium angular lithorelicts of weak mudstone and siltstone. (Mercia Mudstone Zones II and III)	(1.70)	
					Trial pit terminated at 5.90 m depth.	5.90	

Plan (Not to Scale)



General Remarks

Trial pit walls stable and vertical.
Seepage at 4.20m
Trial pit terminated at 5.9m.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract	Client	Trial Pit
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	No TP19

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	11.09.02	10.32		1 of 2

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
0.00-0.30	1	B			Grass over TOPSOIL	0.30	
0.30-0.60	2	B			Soft reddish brown sandy SILT with fine subangular black charcoal (Superficial Deposits)	0.60	
0.60-0.80	3	B			Stiff reddish brown mottled grey CLAY with fine to medium subangular charcoal (Superficial Deposits)	(1.05)	
0.85	4	V	100kPa			1.65	
1.65-2.00	5	B			Firm mottled reddish brown friable CLAY with fine to subangular black charcoal (Superficial Deposits) ... at 2.3m there are occasional fine lithorelicts of weak siltstone and rare fine-medium subangular limestone and rare fine to medium subangular to subrounded quartz	(1.85)	
3.00-3.50	6	B				3.50	
3.50-3.90	7	B			Soft friable mottled reddish brown sandy CLAY with occasional fine to medium weak siltstone and mudstone (Superficial Deposits)	3.90	
4.00-4.20	8	B			Soft reddish brown CLAY with occasional fine subrounded quartz (Superficial Deposits)	4.20	
4.20-4.50	9	B			Soft friable reddish brown sandy CLAY with some fine to medium lithorelicts of weak subangular siltstone and fine to medium strong subangular mudstone. (Mercia Mudstone Group Zone III)		

Plan (Not to Scale)

Bearing o

General Remarks

Trial pit walls stable and vertical.
Seepage at 5.4m.
Trial pit terminated at 5.6m.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	

STRUCTURAL SOILS

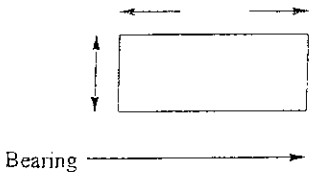
TRIAL PIT LOG

Contract	Client	Trial Pit
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	No TP19

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	11.09.02	10.32		2 of 2

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
4.60-5.00	10	B			Soft friable reddish brown sandy CLAY with some fine to medium lithorelicts of weak subangular siltstone and fine to medium strong subangular mudstone. (Mercia Mudstone Group Zone III)	(1.40)	
5.00-5.40	11	B			... occasional closely fissured and weathered cobble size mudstone at 5.4m	5.60	
					Trial pit terminated at 5.40 m depth.		

Plan (Not to Scale)



General Remarks

Trial pit walls stable and vertical.
Seepage at 5.4m.
Trial pit terminated at 5.6m.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	JS

STRUCTURAL SOILS

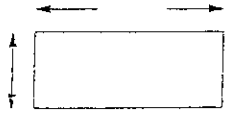
TRIAL PIT LOG

Contract	Client	Trial Pit
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	No TP20

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	11.09.02	12.15		1 of 1

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
0.00-0.30	1	B			Grass over TOPSOIL	0.30	
0.30-0.50	2	B			Very stiff brown SILT (Superficial Deposits)	0.50	
0.40	3	V	>150kPa				
0.50-0.90	4	B			Very stiff reddish brown CLAY with occasional fine rootlets (Superficial Deposits)	0.90	
0.60	5	V	>150kPa				
0.90-1.40	5	B			Weak reddish brown MUDSTONE. Recovered as angular fine to coarse gravel and occasioanl cobble size fragments with a little matrix of silt. (Mercia Mudstone Zones II and III) ... becoming Zone II at 1.4m	1.40	
					Trial pit terminated at 1.40 m depth.		

Plan (Not to Scale)



Bearing ——— o

General Remarks

Trial pit walls stable and vertical.

No groundwater encountered.

Trial pit terminated at 1.4m, no further progress through mudstone.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	JS

STRUCTURAL SOILS

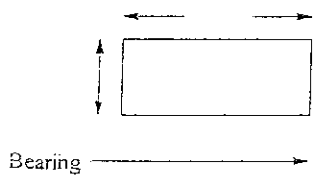
TRIAL PIT LOG

Contract	Client	Trial Pit
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	No TP21

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	12.09.02	14.66		1 of 2

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
0.00-0.20	1	B			Grass over TOPSOIL	0.20	
0.20	2	V	>150kPa		Very stiff brown friable SILT with fine to medium subangular limestone. (Superficial Deposits)	0.30	
0.20-0.30	3	B			Very stiff friable mottled grey brown sandy gravelly CLAY. Gravel is fine to medium subangular siltstone. Fine silt is interbedded throughout the CLAY. (Superficial Deposits)	(0.95)	
0.30-0.50	5	B					
0.40	4	V	>150kPa				
1.00-1.20	6	B				1.25	
1.25-1.75	7	B			Soft grey sandy CLAY with some reddish brown stiff clay. (Superficial Deposits)	1.75	
1.75-1.90	8	B			Stiff friable reddish brown mottled grey CLAY with occasional fine lithorelicts of weak siltstone. (Mercia Mudstone Group Zone IVa)		
2.00-2.50	9	B			... with an occasional matrix of silt at 1.9m ... with some fine to weak angular weathered mudstone and occasional cobble size weak subangular mudstone at 2.6m ... occasional calcite deposits on fine to medium subangular siltstone, and rare fine to medium very strong angular mudstone at 4.9m		
2.60-3.00	10	B				(3.15)	
4.20-4.30	11	B					

Plan (Not to Scale)



General Remarks

Trial pit walls stable and vertical.

No groundwater encountered.

Trial pit terminated at 5.10m, no further progress through mudstone.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	TJ

STRUCTURAL SOILS

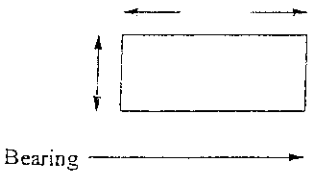
TRIAL PIT LOG

Contract	Client	Trial Pit
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	No TP21

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	12.09.02	14.66		2 of 2

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
4.60-4.80	12	B			Stiff friable reddish brown mottled grey CLAY with occasional fine lithorelicts of weak siltstone. (Mercia Mudstone Group Zone IVa)	4.90	
					Stiff reddish brown mottled grey CLAY with some fine to coarse angular lithorelicts of weak mudstone. (Mercia Mudstone Group Zone III) ... possibly becoming Zone II at 5.1m. Trial pit terminated at 5.10 m depth.	5.10	

Plan (Not to Scale)



General Remarks

Trial pit walls stable and vertical.
No groundwater encountered.
Trial pit terminated at 5.10m, no further progress through mudstone.

All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	JJ

STRUCTURAL SOILS

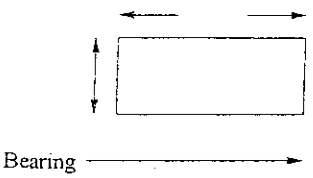
TRIAL PIT LOG

Contract	Client	Trial Pit
Newhouse Park Plot 2, Chepstow	East Mon Industrial Holdings Ltd	No TP22

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
20749	12.09.02	12.72		1 of 1

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
0.00-0.25	1	B			Grass over TOPSOIL	0.25	
0.25-0.40	2	B			Very stiff brown SILT with fine to medium subangular to subrounded quartz. (Superficial Deposits)	0.40	
0.30	3	V	>150kPa				
0.50	4	V	>150kPa		Very stiff reddish brown mottled grey CLAY (Mercia Mudstone Group Zone IVb)	0.60	
0.60-0.80	4	B			Weak reddish brown MUDSTONE. Recovered as angular gravel and cobble size fragments with a little matrix of silt. (Mercia Mudstone Zones II and III)		
0.90-1.50	7	B			... becomes coarse size lithorelicts of weak mudstone and occasional weak medium angular siltstone at 0.9m	(1.40)	
1.50-2.00	5	B				2.00	
					Trial pit terminated at 2.00 m depth.		

Plan (Not to Scale)



General Remarks

Trial pit walls stable and vertical.

No groundwater encountered.

Trial pit terminated at 2.00m, no further progress through mudstone.

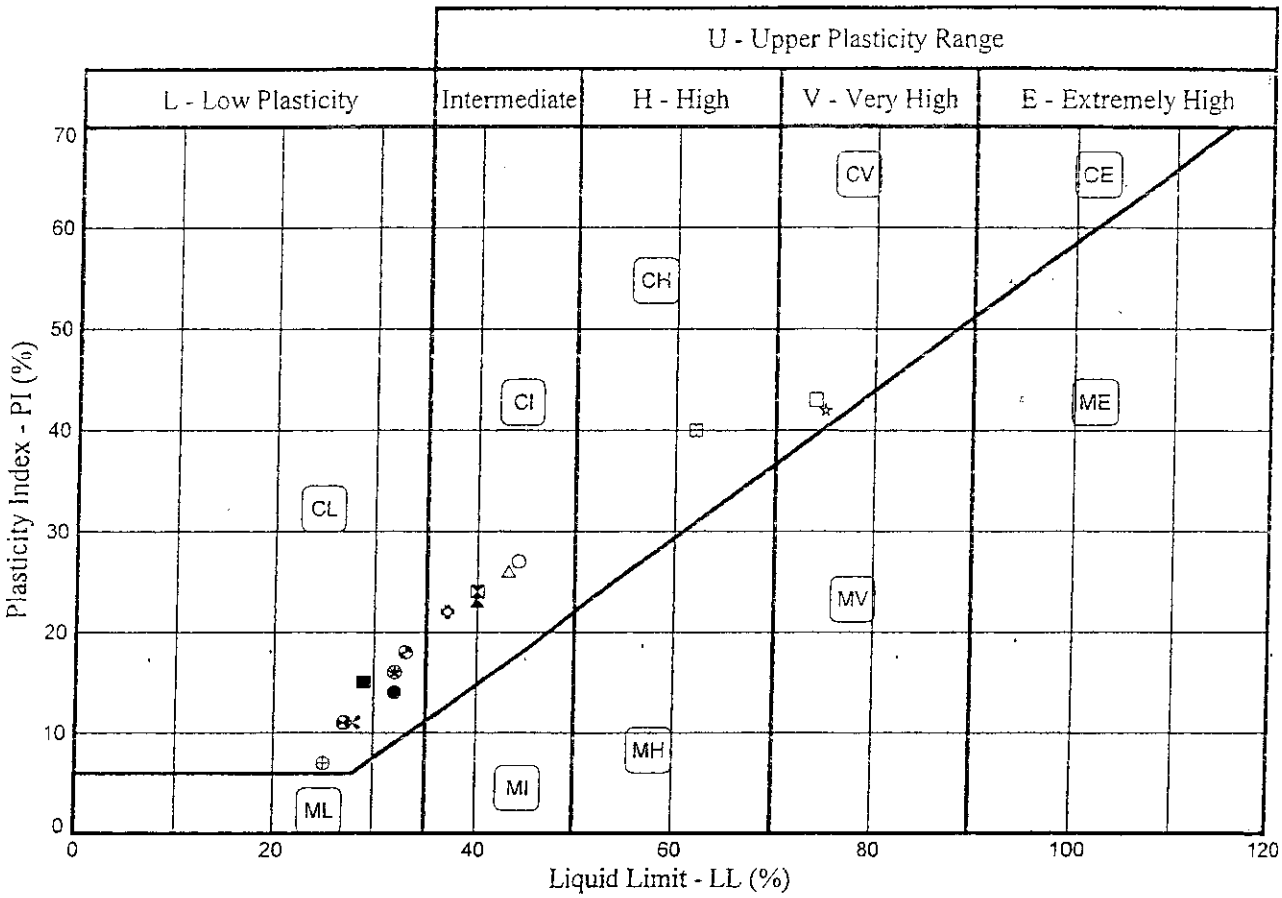
All dimensions in metres	Method	Logged By	Checked By
Scale 1:25	Machine Dug	MC	JS

APPENDIX C

(i) Laboratory Test Results

PLASTICITY CHART - PI Vs LL

In accordance with clause 42.3 of BS5930:1981
Testing in accordance with clauses 3.2,4.3,4.4,5.3,5.4 of BS1377:Part 2:1990



Sample Identification				MC	LL	PL	PI	<425um	Specimen Description
HoleID	Sample		Depth	%	%	%	%	%	
TP01	- B		1.80	12	32	18	14	47	Reddish brown CLAY with mudstone gravel
TP02	- B		0.50	21	40	16	24	100	Red brown mottled grey CLAY
TP02	- B		1.00	24	40	17	23	100	Red brown mottled grey CLAY
TP02	- B		2.00	28	32	16	16	97	Red brown mottled grey CLAY with a little mudstone gravel
TP03	- B		0.40	14	28	17	11	91	Orangish brown CLAY with a little gravel
TP03	- B		1.70	18	37	15	22	63	Reddish brown CLAY with some mudstone
TP04	- B		1.00	22	44	17	27	100	Red brown mottled grey CLAY
TP04	- B		1.50	23	43	17	26	96	Reddish brown mottled green slightly gravelly CLAY
TP06	- B		1.20	25	32	16	16	100	Red brown CLAY
TP08	- B		0.40	14	25	18	7	91	Orangish brown CLAY with a little gravel
TP13	- B		0.50	26	74	31	43	99	Red brown mottled grey slightly sandy CLAY
TP14	- B		0.40	14	27	16	11	96	Red brown slightly sandy CLAY with a little gravel
TP15	- B		1.10	31	33	15	18	76	Reddish brown mottled green CLAY with some mudstone
TP17	- B		0.85	27	75	33	42	97	Red brown mottled grey slightly sandy CLAY
TP21	- B		1.70	27	62	22	40	100	Red brown mottled grey CLAY
TP22	- B		0.90	12	29	14	15	80	Reddish brown mottled green CLAY with some mudstone

* Non-standard test

Approved Signatories: D. TROWBRIDGE A. FROST F. HAMILTON

STRUCTURAL SOILS
The Old School House
Stillhouse Lane
Bedminster
Bristol BS3 4EB

Compiled By	Date	Checked By	Date
A-D-Le	04/11/02	[illegible]	27/11/02

Contract: Newhouse Park, Chepstow

Job No: 20749

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Graph ALINE

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with clauses 3.2,4.3,4.4,5.3,5.4,7.2,8.2,8.3 of BS1377:Part 2:1990

Hole Reference	Sample No	Sample Type	Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Particle Density Mg/m^3	Liquid Limit %	Plastic Limit %	Plasticity Index %	% < 425 um	MCV	% > 20 mm	Description of Sample
-	A	B	-	18								12.4	2	Reddish brown slightly gravelly slightly sandy SILT
-	B	B	-	22								7.9	0	Reddish brown slightly sandy CLAY
-	C	B	-	18								8.4	0	Reddish brown slightly gravelly slightly sandy CLAY
-	D	B	-	32								13.2	0	Reddish brown slightly gravelly slightly sandy CLAY
-	E	B	-	28								11.8	2	Reddish brown slightly sandy CLAY
-	F	B	-	24								6.1	0	Reddish brown slightly sandy CLAY
-	G	B	-	18								12.3	53	Reddish brown sandy silty GRAVEL with some cobbles
-	H	B	-	11								12.7	92	Reddish brown clayey MUDSTONE

SYMBOLS: NP: Non Plastic

Approved Signatories: D. TROWBRIDGE A. FROST F. HAMILTON

STRUCTURAL SOILS
The Old School House
Stillhouse Lane
Bedminster
Bristol BS3 4EB

Compiled By	Date	Checked By	Date	Job No
A. D. Le	27.11.02	D Trowbridge	27/11/02	20749

Contract: Newhouse Park, Chepstow

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SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with clauses 3.2,4.3,4.4,5.3,5.4,7.2,8.2,8.3 of BS1377:Part 2:1990

Hole Reference	Sample No	Sample Type	Depth m	Moisture Content %	Bulk Density Mg/m³	Dry Density Mg/m³	Particle Density Mg/m³	Liquid Limit %	Plastic Limit %	Plasticity Index %	% < 425 um	MCV	% > 20 mm	Description of Sample
-	1	B	-	15								10.8	76	Reddish brown sandy silty gravelly COBBLES
TP01	-	B	0.55	18										Reddish brown mottled green CLAY
TP01	-	B	1.80	12				32	18	14	47			Reddish brown CLAY with mudstone gravel
TP01	-	B	3.00	9.3										Green mottled reddish brown clayey MUDSTONE
TP02	-	B	0.50	21				40	16	24	100	9.7	1	Red brown mottled grey CLAY
TP02	-	B	1.00	24				40	17	23	100			Red brown mottled grey CLAY
TP02	-	B	2.00	28				32	16	16	97			Red brown mottled grey CLAY with a little mudstone gravel
TP02	-	B	2.30	19										Reddish brown clayey MUDSTONE

SYMBOLS: NP: Non Plastic

Approved Signatories: D. TROWBRIDGE A. FROST F. HAMILTON

STRUCTURAL SOILS
The Old School House
Stillhouse Lane
Bedminster
Bristol BS3 4EB

Compiled By	Date	Checked By	Date	Job No
A.D.Te	27.11.02	Dwalrone	27/11/02	20749

Contract: **Newhouse Park, Chepstow**

Sheet of

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with clauses 3.2,4.3,4.4.5.3,5.4,7.2,8.2,8.3 of BS1377:Part 2:1990

Hole Reference	Sample No	Sample Type	Depth m	Moisture Content %	Bulk Density Mg/m³	Dry Density Mg/m³	Particle Density Mg/m³	Liquid Limit %	Plastic Limit %	Plasticity Index %	% < 425 um	MCV	% > 20 mm	Description of Sample
TP03	-	B	0.40	14				28	17	11	91	13.2	2	Orangish brown CLAY with a little gravel
TP03	-	B	0.80	23										Reddish brown mottled green CLAY
TP03	-	B	1.50	24										Reddish brown mottled green slightly gravelly CLAY
TP03	-	B	1.70	18				37	15	22	63			Reddish brown CLAY with some mudstone
TP04	-	B	1.00	22				44	17	27	100			Red brown mottled grey CLAY
TP04	-	B	1.50	23				43	17	26	96			Reddish brown mottled green slightly gravelly CLAY
TP06	-	B	0.50	14										Reddish brown CLAY
TP06	-	B	1.00	22										Reddish brown slightly gravelly CLAY

SYMBOLS: NP: Non Plastic

Approved Signatories: D. TROWBRIDGE A. FROST F. HAMILTON

STRUCTURAL SOILS The Old School House Stillhouse Lane Bedminster Bristol BS3 4EB	Compiled By: A. D. Foe	Date: 27.11.02	Checked By: [signature]	Date: 27/11/02	Job No: 20749
	Contract: Newhouse Park, Chepstow				Sheet of

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with clauses 3.2,4.3,4.4,5.3,5.4,7.2,8.2,8.3 of BS1377:Part 2:1990

Hole Reference	Sample No	Sample Type	Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Particle Density Mg/m^3	Liquid Limit %	Plastic Limit %	Plasticity Index %	% < 425 um	MCV	% > 20 mm	Description of Sample
TP06	-	B	1.20	25				32	16	16	100			Red brown CLAY
TP08	-	B	0.40	14				25	18	7	91			Orangish brown CLAY with a little gravel
TP11	-	B	0.50	10										Reddish brown CLAY
TP11	-	B	1.30	23										Reddish brown mottled green CLAY
TP12	-	B	0.35	13										Reddish brown slightly gravelly CLAY
TP13	-	B	0.50	26				74	31	43	99			Red brown mottled grey slightly sandy CLAY
TP13	-	B	2.30	25										Reddish brown
TP13	-	B	2.90	17										Reddish brown mottled green MUDSTONE

SYMBOLS: NP: Non Plastic

Approved Signatories: D. TROWBRIDGE A. FROST F. HAMILTON

STRUCTURAL SOILS
The Old School House
Stillhouse Lane
Bedminster
Bristol BS3 4EB

Compiled By	Date	Checked By	Date	Job No
A.D.Tee	27.11.02	D Trowbridge	27/11/02	20749

Contract: **Newhouse Park, Chepstow**

Sheet of

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with clauses 3.2,4.3,4.4,5.3,5.4,7.2,8.2,8.3 of BS1377:Part 2:1990

Hole Reference	Sample No	Sample Type	Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Particle Density Mg/m^3	Liquid Limit %	Plastic Limit %	Plasticity Index %	% ≤ 425 um	MCV	% > 20 mm	Description of Sample
TP14	-	B	0.40	14				27	16	11	96			Red brown slightly sandy CLAY with a little gravel
TP14	-	B	1.50	20								4.9	0	Orange mottled brown and grey slightly gravelly CLAY
TP14	-	B	3.30	32								12.8	1	Reddish brown mottled green slightly gravelly slightly sandy CLAY
TP15	-	B	1.10	18				33	15	18	76			Reddish brown mottled green CLAY with some mudstone
TP16	-	B	1.55	6.3										Green mottled reddish brown slightly gravelly CLAY
TP17	-	B	0.85	27				75	33	42	97			Red brown mottled grey slightly sandy CLAY
TP17	-	B	1.50	28										Reddish brown mottled green CLAY with occasional mudstone
TP18	-	B	0.50	35										Reddish brown mottled green slightly gravelly CLAY

SYMBOLS: NP: Non Plastic

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STRUCTURAL SOILS
The Old School House
Stillhouse Lane
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Bristol BS3 4EB

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Contract: **Newhouse Park, Chepstow**

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SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with clauses 3.2,4.3,4.4,5.3,5.4,7.2,8.2,8.3 of BS1377:Part 2:1990

Hole Reference	Sample No	Sample Type	Depth m	Moisture Content %	Bulk Density Mg/m³	Dry Density Mg/m³	Particle Density Mg/m³	Liquid Limit %	Plastic Limit %	Plasticity Index %	% < 425 um	MCV	% > 20 mm	Description of Sample
TP20	-	B	0.50	13										Reddish brown sandy CLAY
TP21	-	B	1.70	27				62	22	40	100			Red brown mottled grey CLAY
TP21	-	B	2.00	26										Dark reddish brown CLAY with occasional mudstone
TP21	-	B	2.60	29										Reddish brown CLAY with occasional mudstone
TP22	-	B	0.90	12				29	14	15	80			Reddish brown mottled green CLAY with some mudstone
TP22	-	B	1.50	8.4										Reddish brown MUDSTONE

SYMBOLS: NP: Non Plastic

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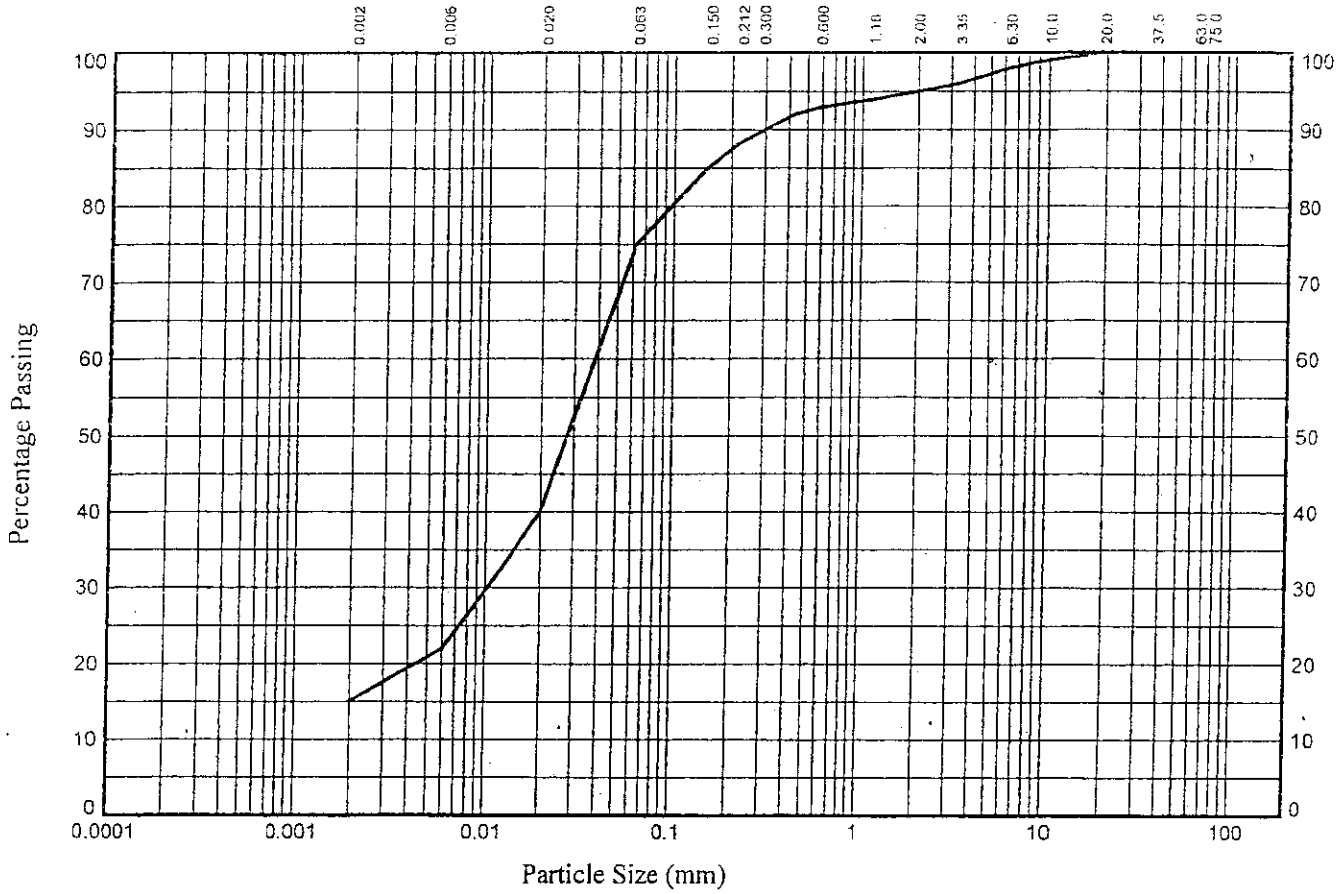
	Contract: Newhouse Park, Chepstow				Sheet of

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.3 of BS1377:Part 2:1990

Hole ID : Sample Reference : A Sample Type : B Depth (m) :



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	98
5.00	
3.35	96
2.00	95
1.18	94
0.600	93
0.425	92
0.300	
0.212	88
0.150	85
0.063	75

Particle Diameter	Percentage Passing
0.02	40
0.006	22
0.002	15

Soil Fraction	Sieve Percentage
GRAVEL	5
SAND	20
SILT	60
CLAY	15

Soil Description:
Reddish brown slightly gravelly slightly sandy SILT

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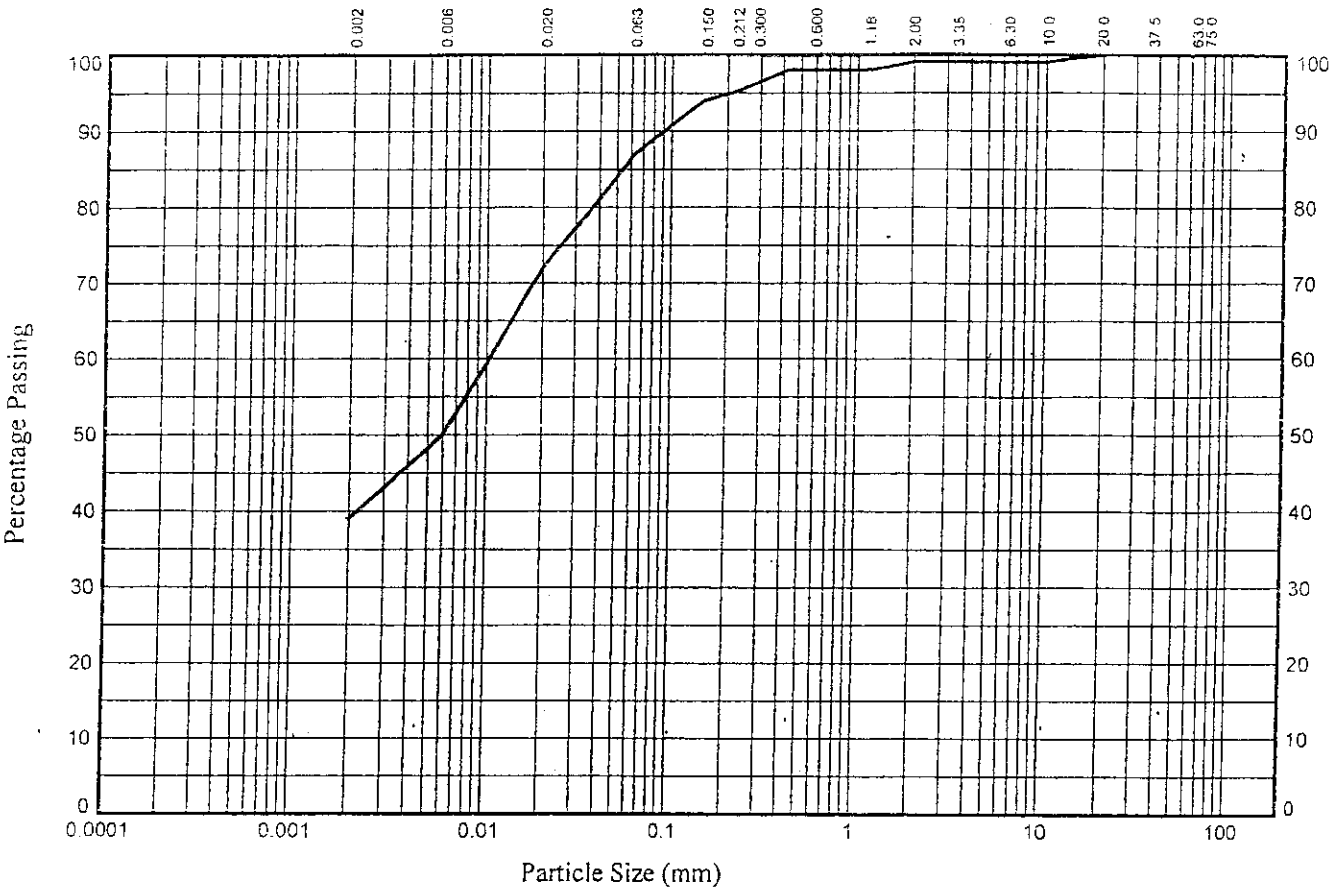
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.3 of BS1377:Part 2:1990

Hole ID : Sample Reference : C Sample Type : B Depth (m) :



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	99
5.00	
3.35	99
2.00	99
1.18	98
0.600	98
0.425	98
0.300	
0.212	95
0.150	94
0.063	87

Particle Diameter	Percentage Passing
0.02	72
0.006	50
0.002	39

Soil Fraction	Sieve Percentage
GRAVEL	1
SAND	12
SILT	48
CLAY	39

Soil Description:
Reddish brown slightly gravelly slightly sandy CLAY

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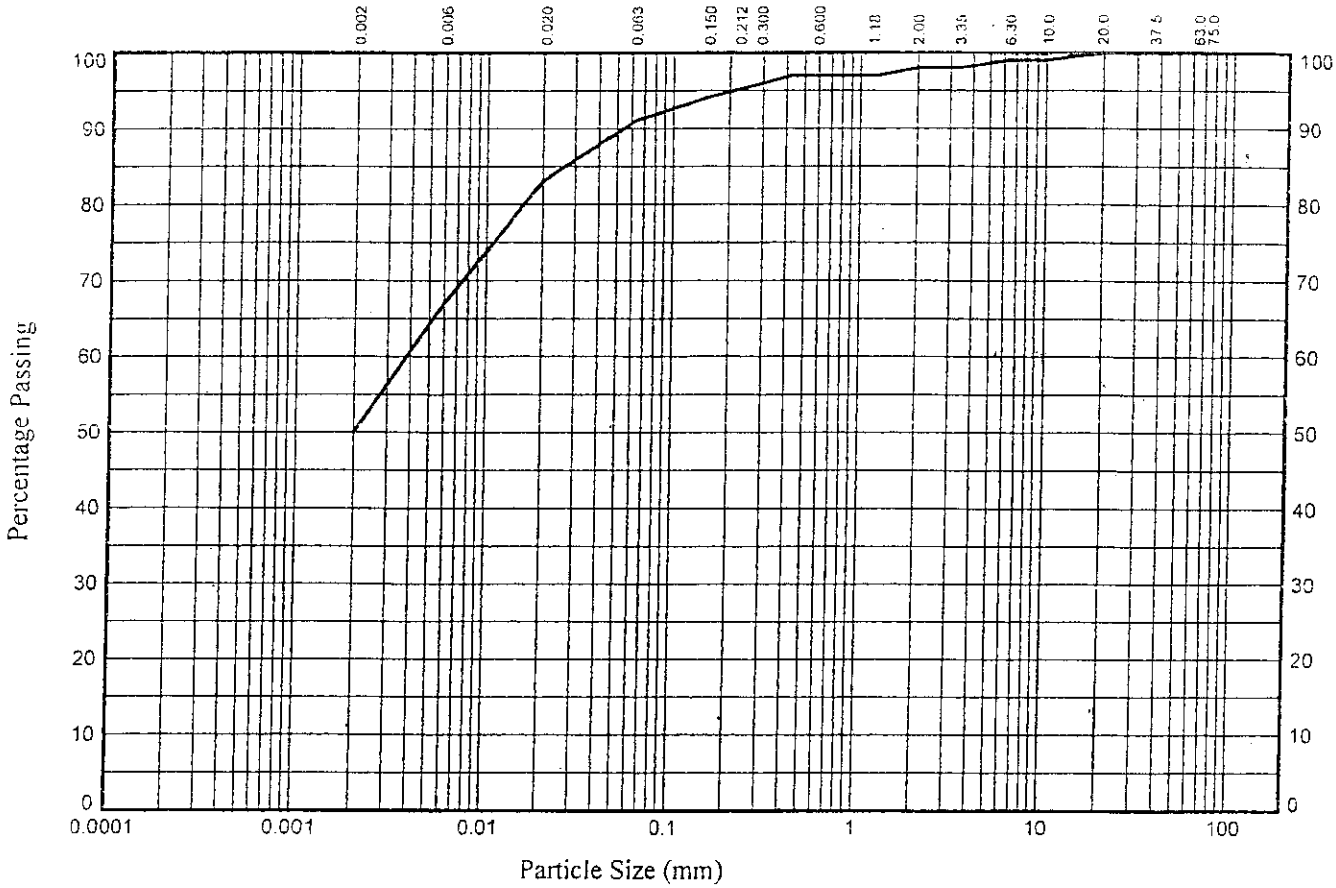
PARTICLE SIZE DISTRIBUTION TEST

in accordance with clauses 9.2,9.3 of BS1377:Part 2:1990

Hole ID : Sample Reference : **D** Sample Type : **B** Depth (m) :



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	99
5.00	
3.35	98
2.00	98
1.18	97
0.600	97
0.425	97
0.300	
0.212	95
0.150	94
0.063	91

Particle Diameter	Percentage Passing
0.02	83
0.006	67
0.002	50

Soil Fraction	Sieve Percentage
GRAVEL	2
SAND	7
SILT	41
CLAY	50

Soil Description:
Reddish brown slightly gravelly slightly sandy CLAY

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Contract: **Newhouse Park, Chepstow**

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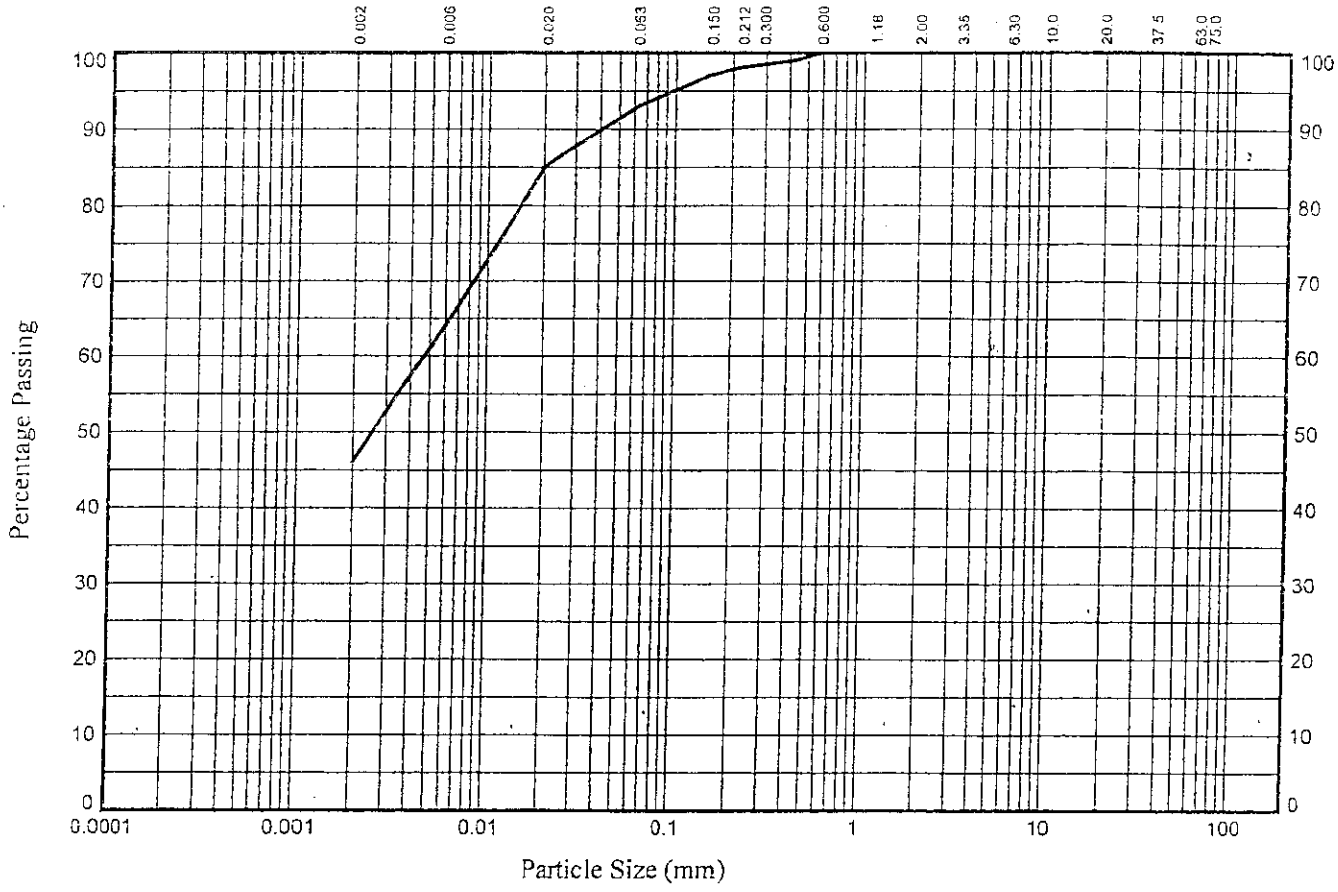
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.3 of BS1377:Part 2:1990

Hole ID : Sample Reference : E Sample Type : B Depth (m) :



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
5.00	
3.35	100
2.00	100
1.18	100
0.600	100
0.425	99
0.300	
0.212	98
0.150	97
0.063	93

Particle Diameter	Percentage Passing
0.02	85
0.006	64
0.002	46

Soil Fraction	Sieve Percentage
GRAVEL	0
SAND	7
SILT	47
CLAY	46

Soil Description:
Reddish brown slightly sandy CLAY

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STRUCTURAL SOILS
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Contract: Newhouse Park, Chepstow

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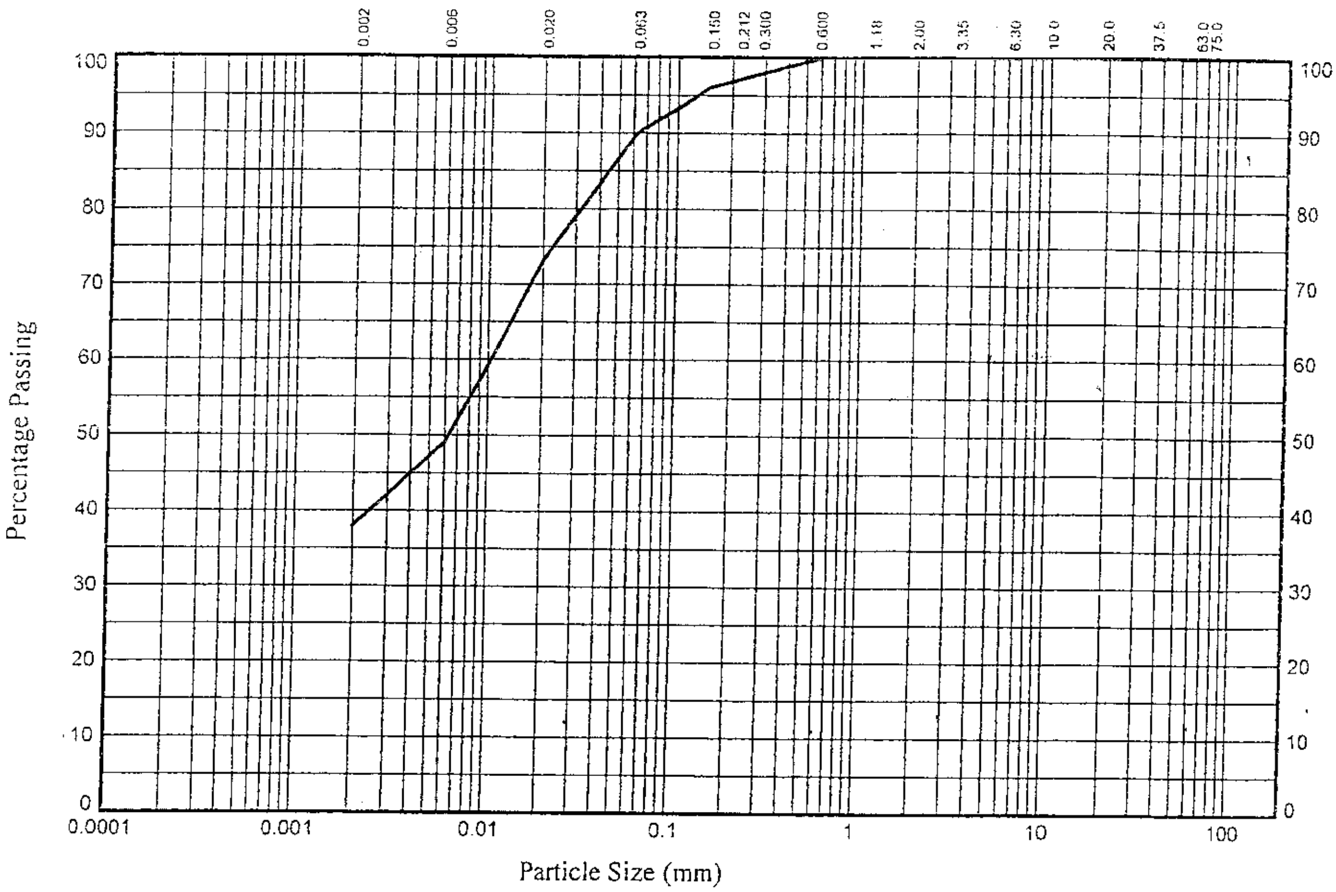
In accordance with clauses 9.2,9.3 of BS1377:Part 2:1990

Hole ID :   Sample Reference : F   Sample Type : B   Depth (m) :



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
5.00	
3.35	100
2.00	100
1.18	100
0.600	100
0.425	99
0.300	
0.212	97
0.150	96
0.063	90

Particle Diameter	Percentage Passing
0.02	73
0.006	49
0.002	38

Soil Fraction	Sieve Percentage
GRAVEL	0
SAND	10
SILT	52
CLAY	38

Soil Description:
Reddish brown slightly sandy CLAY

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STRUCTURAL SOILS
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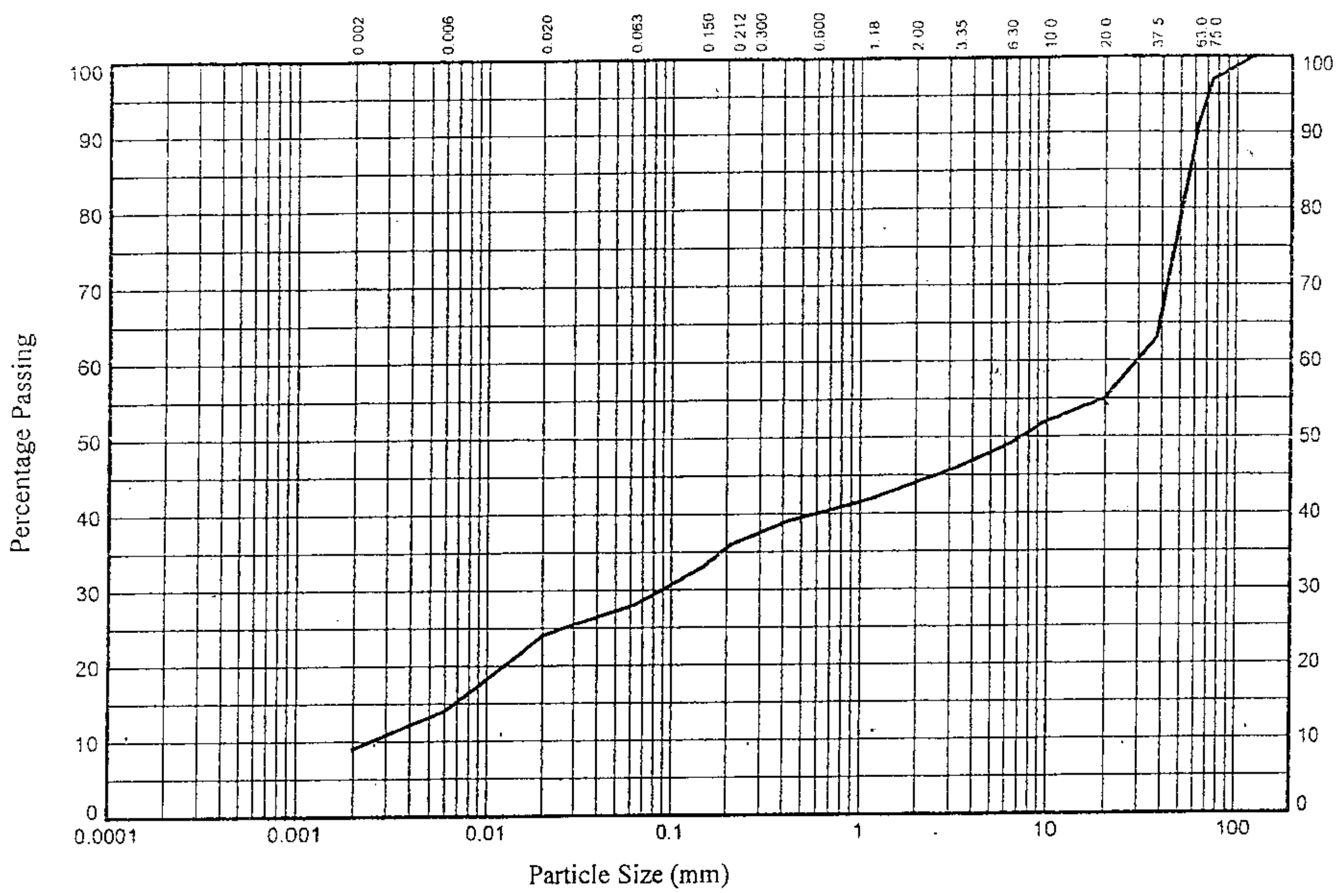
In accordance with clauses 9.2,9.3 of BS1377:Part 2:1990

NON STANDARD TEST

Hole ID :   Sample Reference : G   Sample Type : B   Depth (m) :



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	97
63.0	91
37.5	63
20.0	55
10.0	52
6.30	49
5.00	
3.35	46
2.00	44
1.18	42
0.600	40
0.425	39
0.300	
0.212	36
0.150	33
0.063	28

Particle Diameter	Percentage Passing
0.02	24
0.006	14
0.002	9

Soil Fraction	Sieve Percentage
COBBLES	9
GRAVEL	47
SAND	16
SILT	19
CLAY	9

Soil Description:

Reddish brown sandy silty GRAVEL with some cobbles

Approved Signatories: D. TROWBRIDGE A. FROST F. HAMILTON

STRUCTURAL SOILS The Old School House Stillhouse Lane Bedminster Bristol BS3 4EB	Compiled By	Date	Checked By	Date
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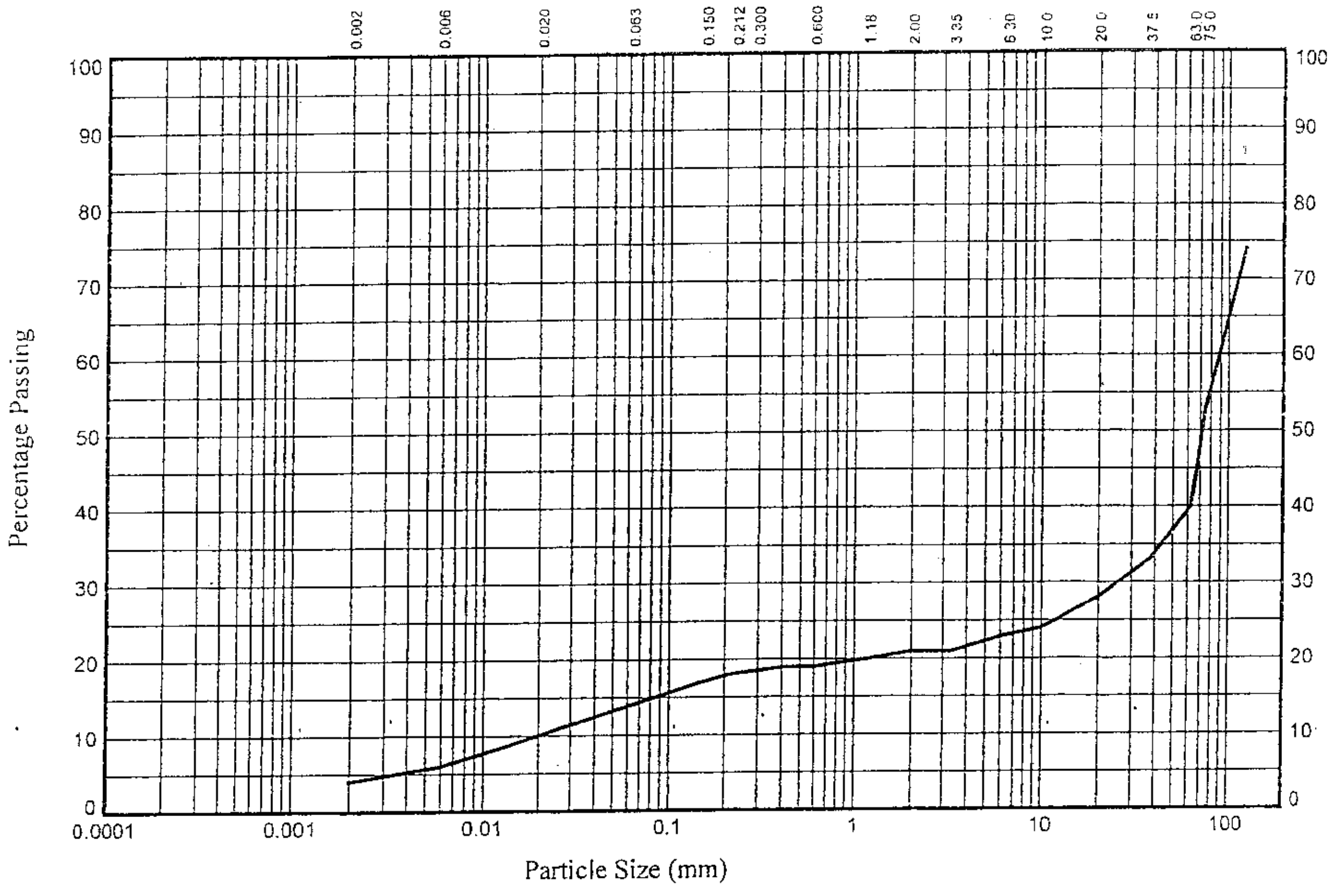
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.3 of BS1377:Part 2:1990
NON STANDARD TEST

Hole ID : | Sample Reference : **I** | Sample Type : **B** | Depth (m) :



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

BS Test Sieve (mm)	Percentage Passing
125.0	74
75.0	53
63.0	40
37.5	33
20.0	28
10.0	24
6.30	23
5.00	
3.35	21
2.00	21
1.18	20
0.600	19
0.425	19
0.300	
0.212	18
0.150	17
0.063	14

Particle Diameter	Percentage Passing
0.02	10
0.006	6
0.002	4

Soil Fraction	Sieve Percentage
COBBLES	60
GRAVEL	19
SAND	7
SILT	10
CLAY	4

Soil Description:
Reddish brown sandy silty gravelly COBBLES

Approved Signatories: D. TROWBRIDGE A. FROST F. HAMILTON

STRUCTURAL SOILS The Old School House Stillhouse Lane Bedminster Bristol BS3 4EB	Compiled By: A.D. [signature]	Date: 27/11/08	Checked By: [signature]	Date: 27/11/08
	Contract: **Newhouse Park, Chepstow**		Job No: **20749** Page of	

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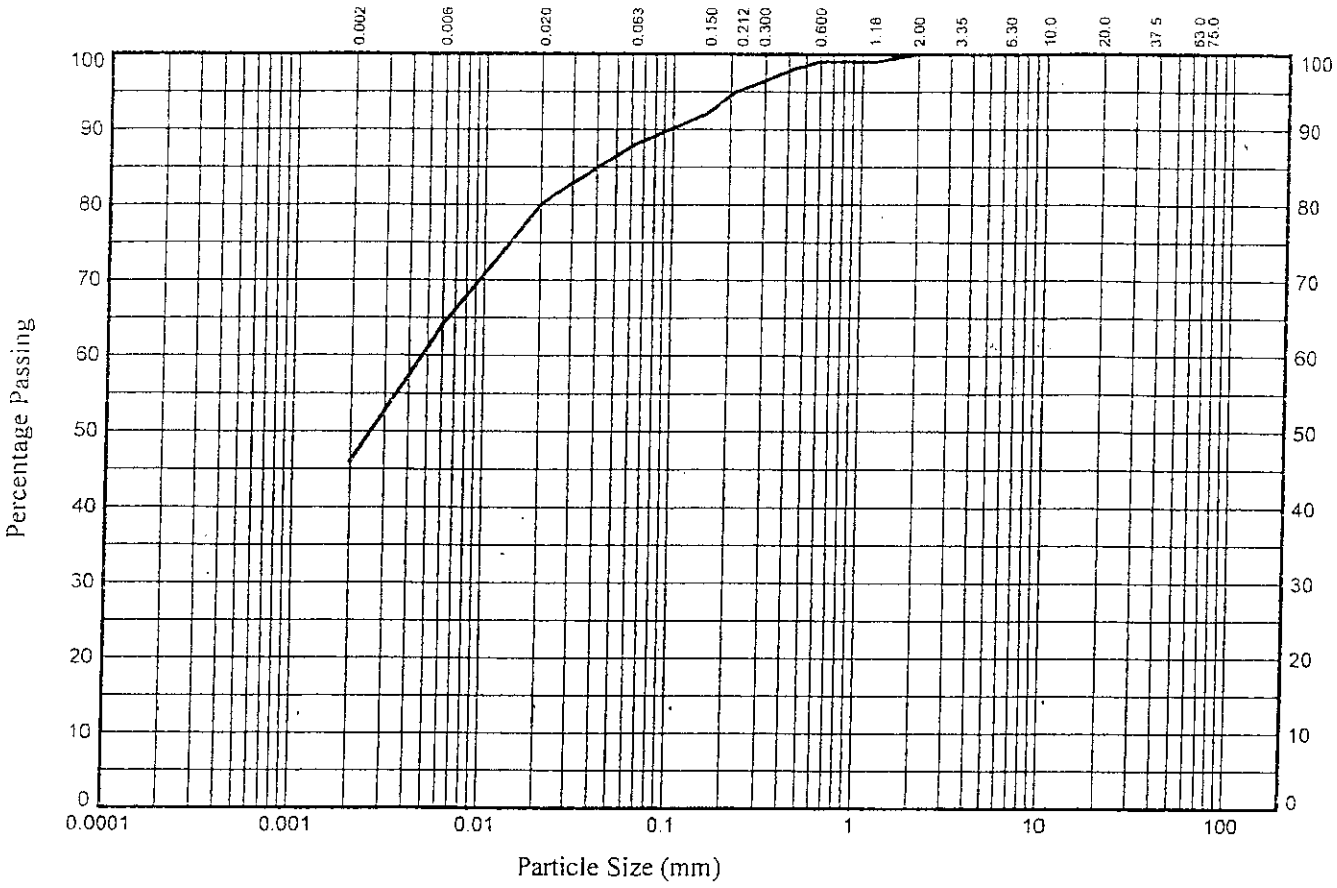
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.3 of BS1377:Part 2:1990

Trial Pit : TP13 Sample Reference : - Sample Type : B Depth (m) : 0.50



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
5.00	
3.35	100
2.00	100
1.18	99
0.600	99
0.425	98
0.300	
0.212	95
0.150	92
0.063	88

Particle Diameter	Percentage Passing
0.02	80
0.006	64
0.002	46

Soil Fraction	Sieve Percentage
GRAVEL	0
SAND	12
SILT	42
CLAY	46

Soil Description:
Red brown mottled grey slightly sandy CLAY

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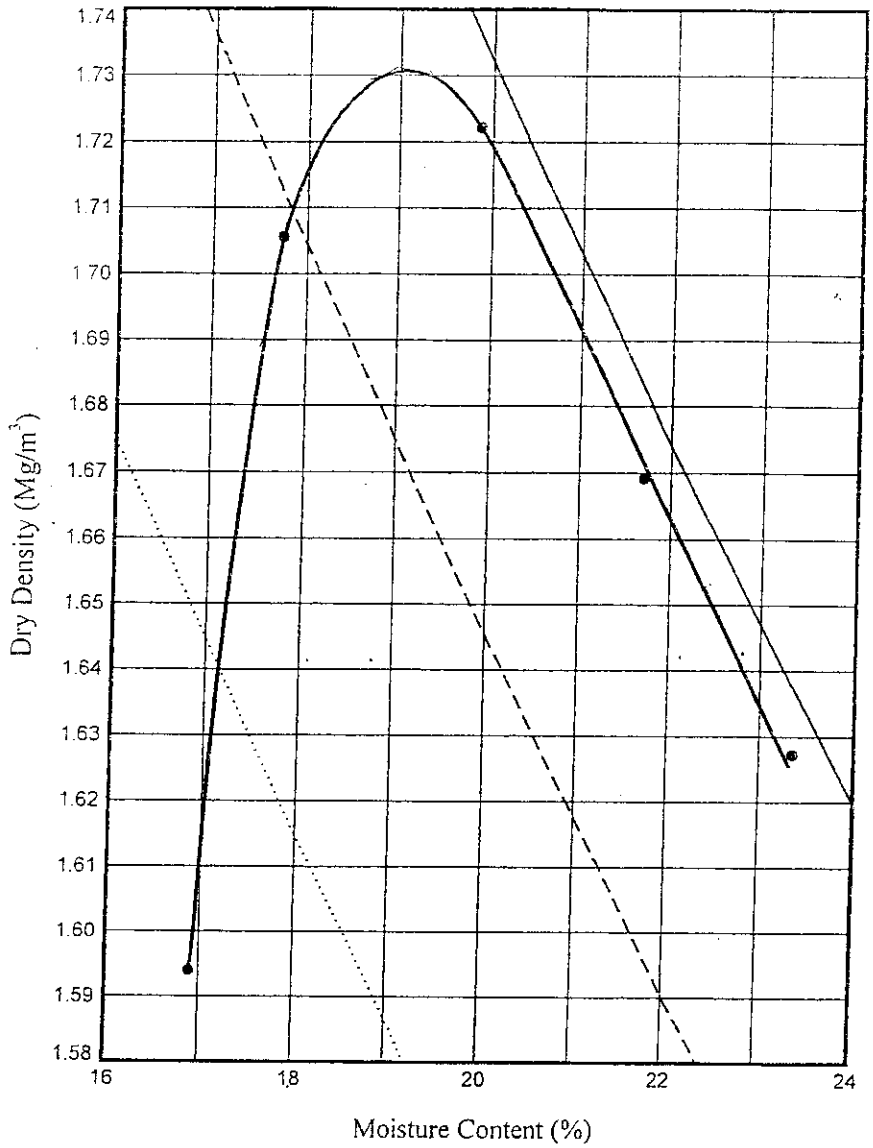
Graph PSD

RY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Hole ID : Sample Reference : **B** Sample Type : **B** Depth (m) :



Initial Sample Conditions			Test Details			Test Results		
Initial Moisture Content (%)	:	**22**	Compaction Type	:	**Light**	Maximum Dry Density (Mg/m³)	:	**1.73**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):		**2.5**	Optimum Moisture Content (%)	:	**19**
% Retained on 20.0mm BS Sieve	:	**0**	Type of Mould	:	**Proctor**	Method Used:		**Clause 3.3**
Particle Density - assumed (Mg/m³)	:	**2.65**				Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.					

Sample Description	Key to Voids Ratio Lines		
Reddish brown slightly sandy CLAY	—— 0%	- - - - 5%	····· 10%

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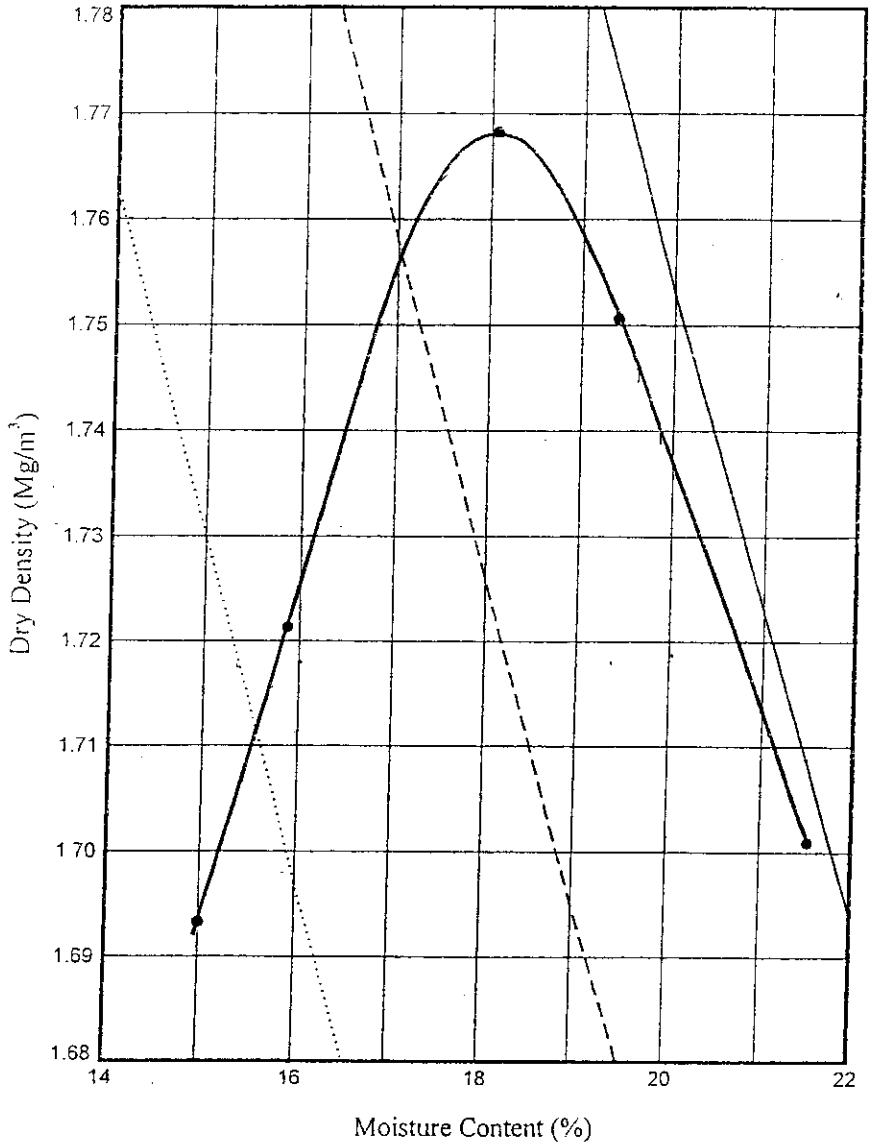
Graph COMPACTION

RY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

in accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Hole ID : Sample Reference : G Sample Type : B Depth (m) :



Initial Sample Conditions		Test Details		Test Results	
Initial Moisture Content (%)	: 18	Compaction Type	: Light	Maximum Dry Density (Mg/m³)	: 1.77
% Retained on 37.5mm BS Sieve	: 35	Mass of Rammer (kg):	2.5	Optimum Moisture Content (%)	: 18
% Retained on 20.0mm BS Sieve	: 18	Type of Mould	: CBR	Method Used:	Clause 3.4
Particle Density - assumed (Mg/m³)	: 2.70			Remarks:	
Size of Soil Pieces	: <20mm	Separate samples were used.			

Sample Description	Key to Voids Ratio Lines		
Reddish brown sandy silty GRAVEL with some cobbles	—— 0%	- - - - 5%	····· 10%

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Graph COMPACTION

MOISTURE CONDITION VALUE CALIBRATION

In accordance with clause 5.5 of BS1377:Part 4:1990

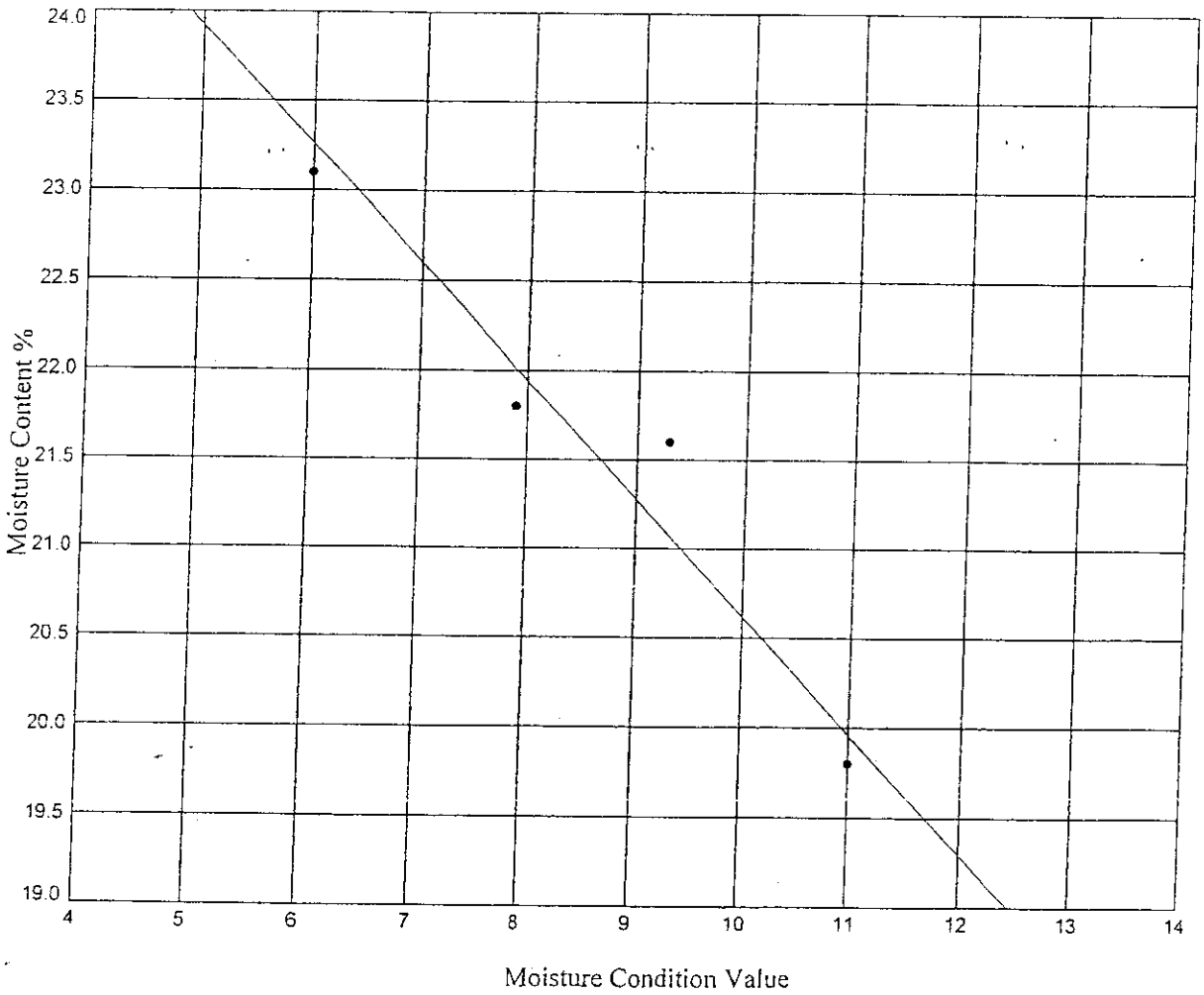
Hole ID : Sample Reference : B Sample Type : B Depth (m) :

Percentage retained on 20mm sieve : 0

Description : Reddish brown slightly sandy CLAY

Single/Separate Sample Used : Separate samples were used

Test Number	1	2	3	4	5
Moisture Content	21.8	23.1	21.6	19.8	
MCV	7.9	6.0	9.3	11.0	



Approved Signatories: D. TROWBRIDGE A. FROST F.HAMILTON

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Graph MCV CALIBRATION RESULTS

MOISTURE CONDITION VALUE CALIBRATION

In accordance with clause 5.5 of BS1377:Part 4:1990

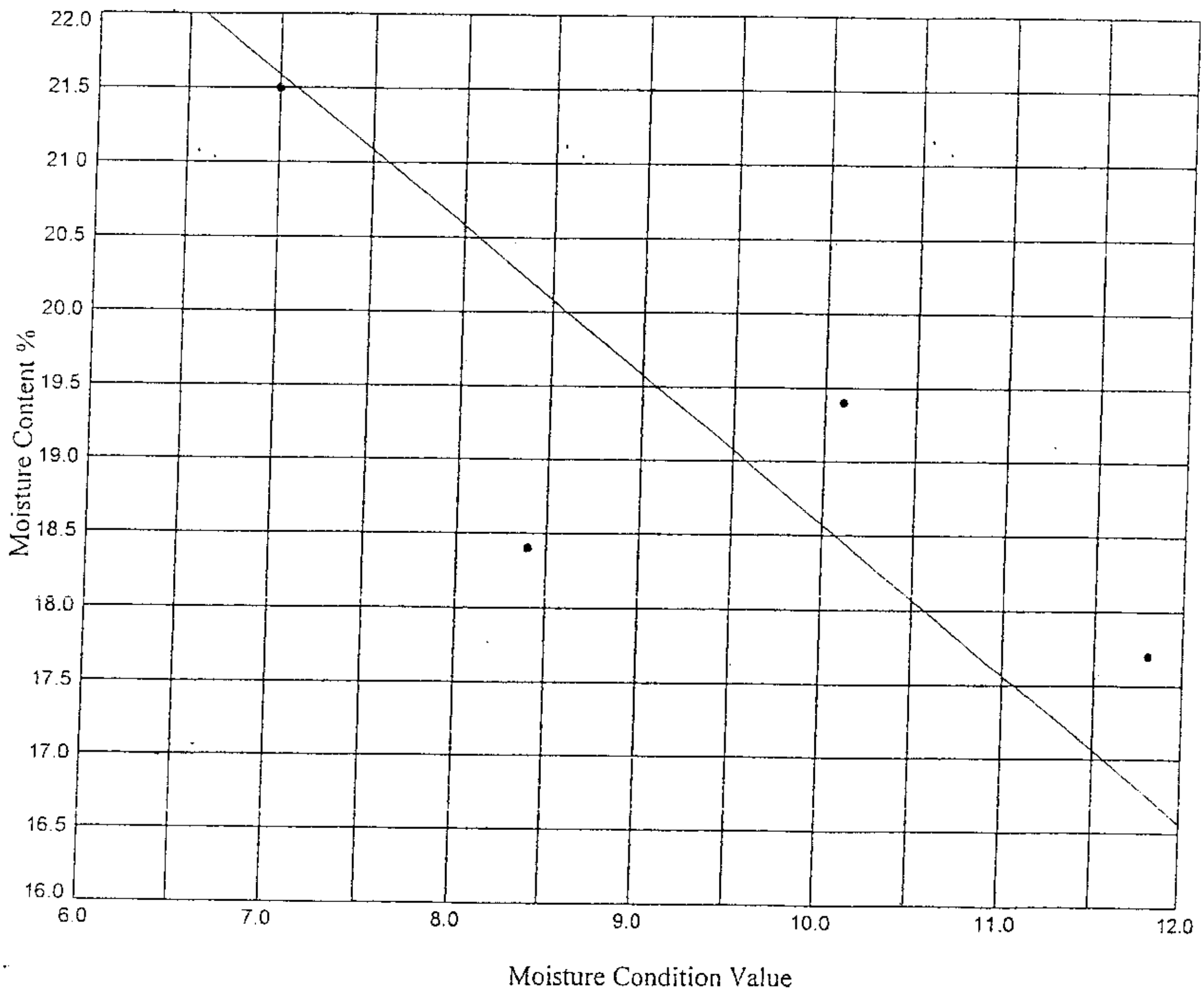
Hole ID : Sample Reference : C Sample Type : B Depth (m) :

Percentage retained on 20mm sieve : 0

Description : Reddish brown slightly gravelly slightly sandy CLAY

Single/Separate Sample Used : Separate samples were used

Test Number	1	2	3	4	5
Moisture Content	18.4	17.7	19.4	21.5	
MCV	8.4	11.8	10.1	7.0	



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	Contract: Newhouse Park, Chepstow		Job No: 20749	
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Graph MCV CALIBRATION RESULTS

MOISTURE CONDITION VALUE CALIBRATION

In accordance with clause 5.5 of BS1377:Part 4:1990

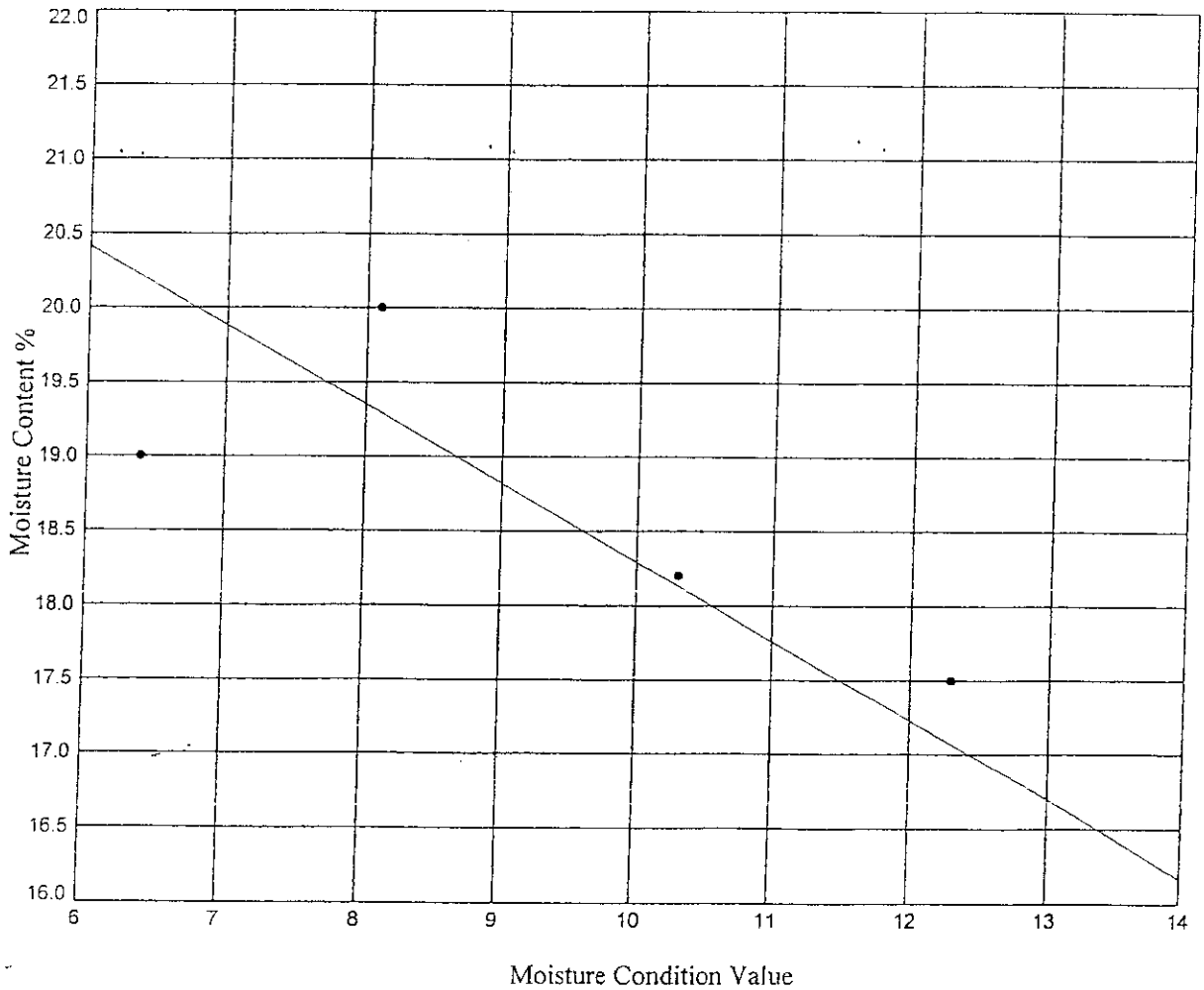
Hole ID : Sample Reference : G Sample Type : B Depth (m) :

Percentage retained on 20mm sieve : 53

Description : Reddish brown sandy silty GRAVEL with some cobbles

Single/Separate Sample Used : Separate samples were used

Test Number	1	2	3	4	5
Moisture Content	17.5	19.0	20.0	18.2	
MCV	12.3	6.4	8.1	10.3	



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	A. D. [illegible]	27/11/02	[illegible]	2-12-02
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Graph MCV CALIBRATION RESULTS

SUMMARY OF POINT LOAD INDEX TEST RESULTS

(International Society for Rock Mechanics : 1985)

Borehole Reference	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)
BH1	1.10	Axial	90	35	0.80	63	0.20	1.11	0.22
BH1	2.70	Axial	90	47	0.90	73	0.17	1.19	0.20
BH1	3.90	Diametral	43	85	0.60	85	0.08	1.27	0.11
BH1	3.90	Axial	84	51	0.95	74	0.17	1.19	0.21
BH1	4.30	Diametral	85	90	3.40	90	0.42	1.30	0.55
BH1	4.30	Axial	84	80	3.75	92	0.44	1.32	0.58
BH1	4.65	Diametral	53	86	1.65	86	0.22	1.28	0.28
BH2	2.15	Axial	84	65	3.80	83	0.55	1.26	0.69

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Contract: Newhouse Park, Chepstow

Figure

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SUMMARY OF POINT LOAD INDEX TEST RESULTS

(International Society for Rock Mechanics : 1985)

Borehole Reference	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)
BH2	3.75	Axial	88	61	0.60	83	0.09	1.25	0.11
BH2	3.75	Diametral	55	85	0.70	85	0.10	1.27	0.12
BH2	5.50	Axial	84	69	0.80	86	0.11	1.28	0.14
BH2	5.60	Diametral	85	84	1.60	84	0.23	1.26	0.29
BH2	6.40	Diametral	60	86	2.20	86	0.30	1.28	0.38
BH2	6.40	Axial	80	64	2.50	81	0.38	1.24	0.48
BH3	2.55	Axial	82	73	3.70	87	0.49	1.29	0.62
BH3	2.90	Diametral	43	86	2.20	86	0.30	1.28	0.38

STRUCTURAL SOILS
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Stillhouse Lane
Bedminster
Bristol BS3 4EB

Compiled By	Date	Checked By	Date	Job No
A.D.Fe	27/11/02	D Walton	2-7/11/02	20749

Contract: **Newhouse Park, Chepstow**

Figure

Sheet of

SUMMARY OF POINT LOAD INDEX TEST RESULTS

(International Society for Rock Mechanics : 1985)

Borehole Reference	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)
BH3	2.90	Axial	88	46	3.70	72	0.72	1.18	0.84
BH3	3.90	Diametral	66	86	3.90	86	0.53	1.28	0.67
BH3	3.90	Axial	76	78	3.25	87	0.43	1.28	0.55
BH3	4.10	Diametral	53	86	3.80	86	0.51	1.28	0.66
BH3	4.10	Axial	88	48	4.50	73	0.84	1.19	0.99
BH3	4.35	Diametral	45	85	4.60	90	0.57	1.30	0.74

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Figure

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SUMMARY OF CHEMICAL ANALYSES

In accordance with clauses 5, 9 of BS1377:Part 3:1990.

Hole Reference	Sample No	Sample Type	Depth m	Sulphate (SO_4) Content# Acid Soluble Sulphate as % SO_4	Sulphate (SO_4) Content# Aqueous Extract as g/l SO_4+	Sulphate (SO_4) Content# Ground-water as g/l SO_4	Chloride Content Soluble* Chloride as % Cl+	Chloride Content Ground-water* as % Cl	pH Value	Percent Passing 2 mm %	Description
-	A	B	-	0.02	0.14				6.7		Reddish brown slightly gravelly slightly sandy SILT
-	C	B	-	0.01	0.14				7.2		Reddish brown slightly gravelly slightly sandy CLAY
-	F	B	-	0.04	0.10				6.8		Reddish brown slightly sandy CLAY
-	I	B	-	0.13	0.17				8.2		Reddish brown sandy silty gravelly COBBLES
TP14	-	B	3.30	0.05	0.12				8.1		Reddish brown mottled green slightly gravelly slightly sandy CLAY
TP17	-	B	0.85	0.06	0.20				8.4		Red brown mottled grey slightly sandy CLAY

NOTES : + In 2:1 water:soil extract

Calculated as SO_3 to BS1377:Part 3:1990. reported as SO_4 ($SO_4 = SO_3 \times 1.2$)

* Chemical tests were undertaken by an external laboratory.

SO_4 results for soil are for material <2mm

Approved Signatories: D. TROWBRIDGE A. FROST F. HAMILTON

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Figure -

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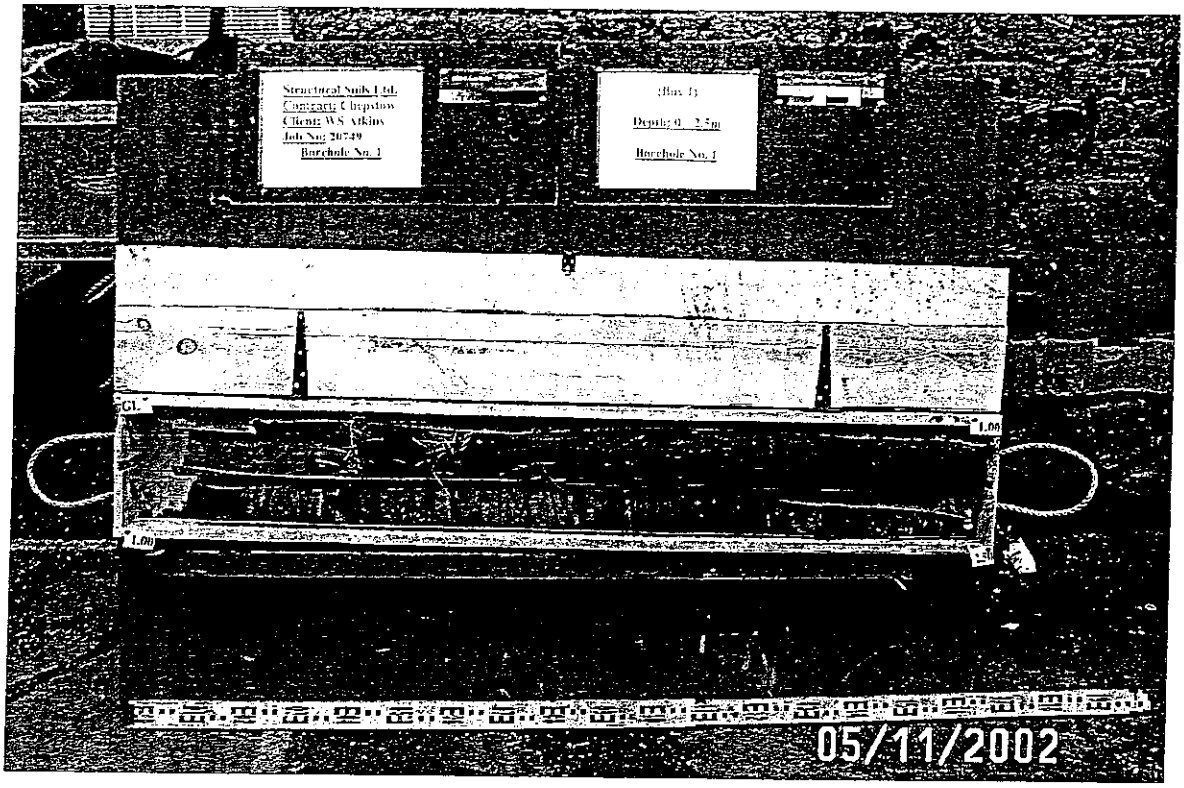
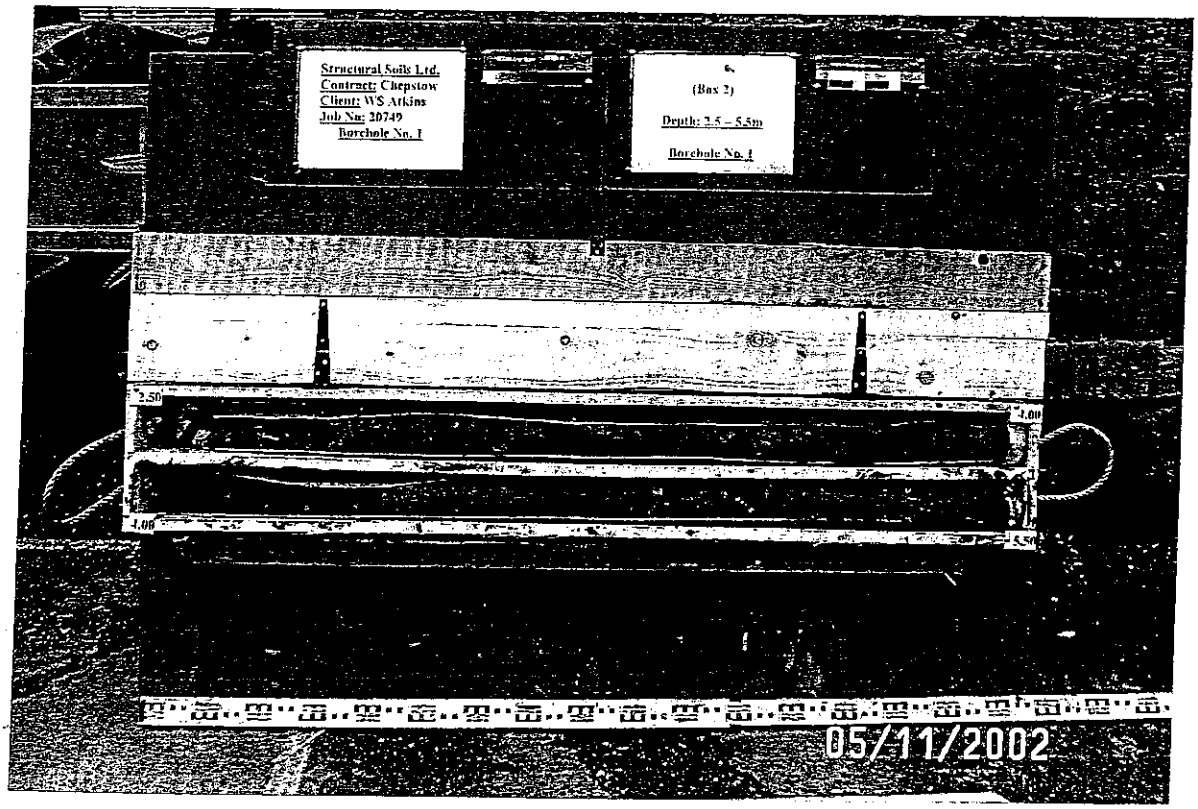
APPENDIX D

(i) Rotary Core Sample Photographs

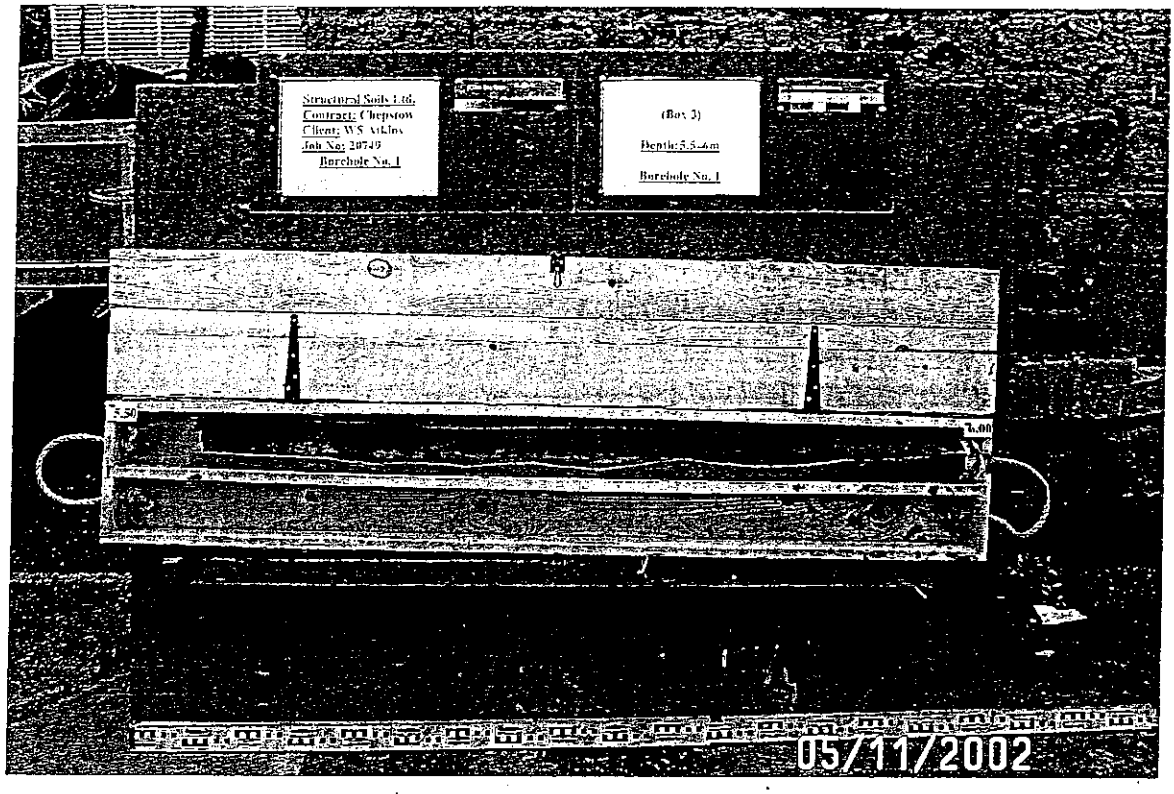
(ii) Trial Pit Photographs



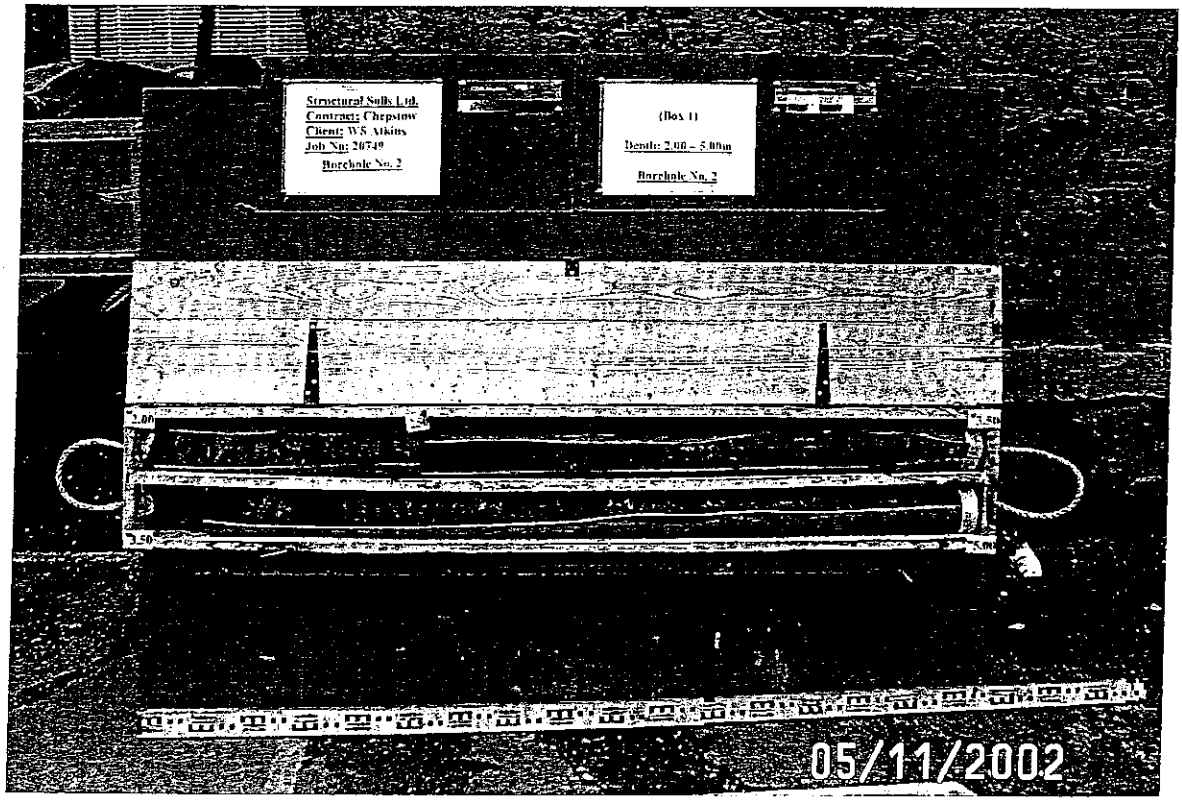
Borehole 1: Box 1: Gl-2.5 m



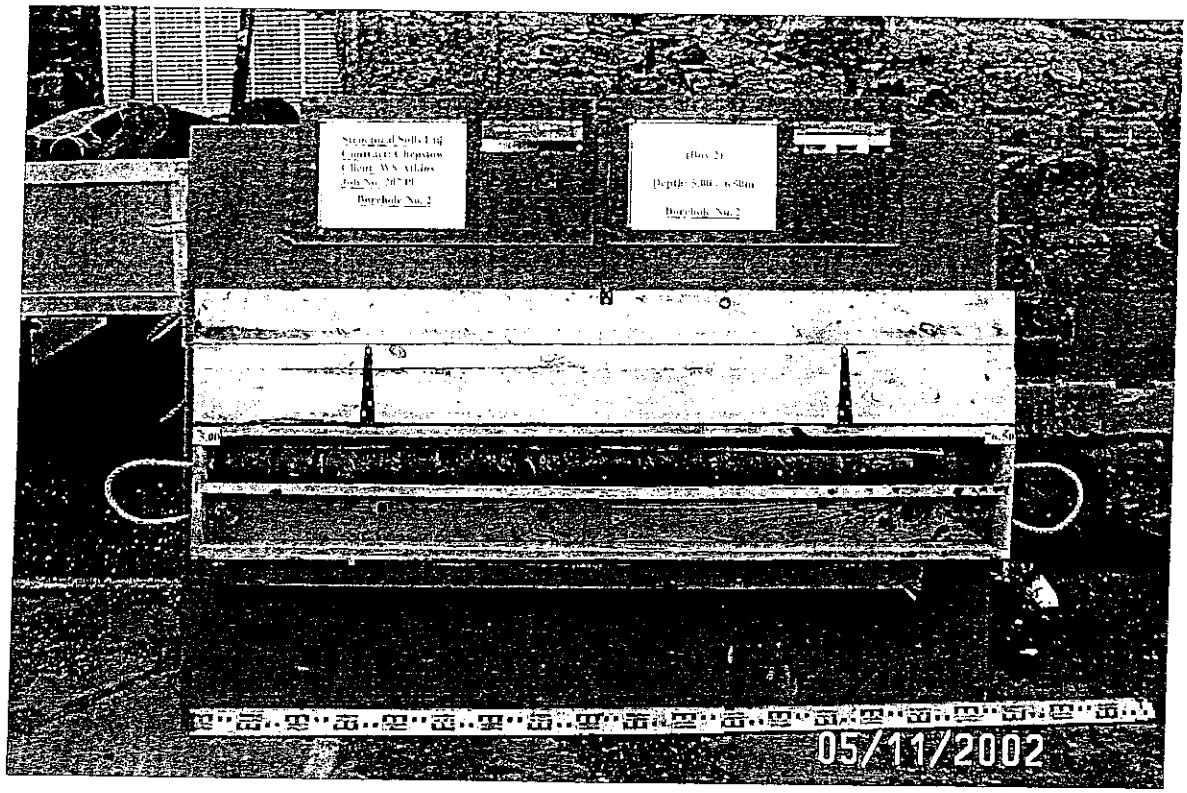
Borehole 1: Box 2: 2.5-5.5 m



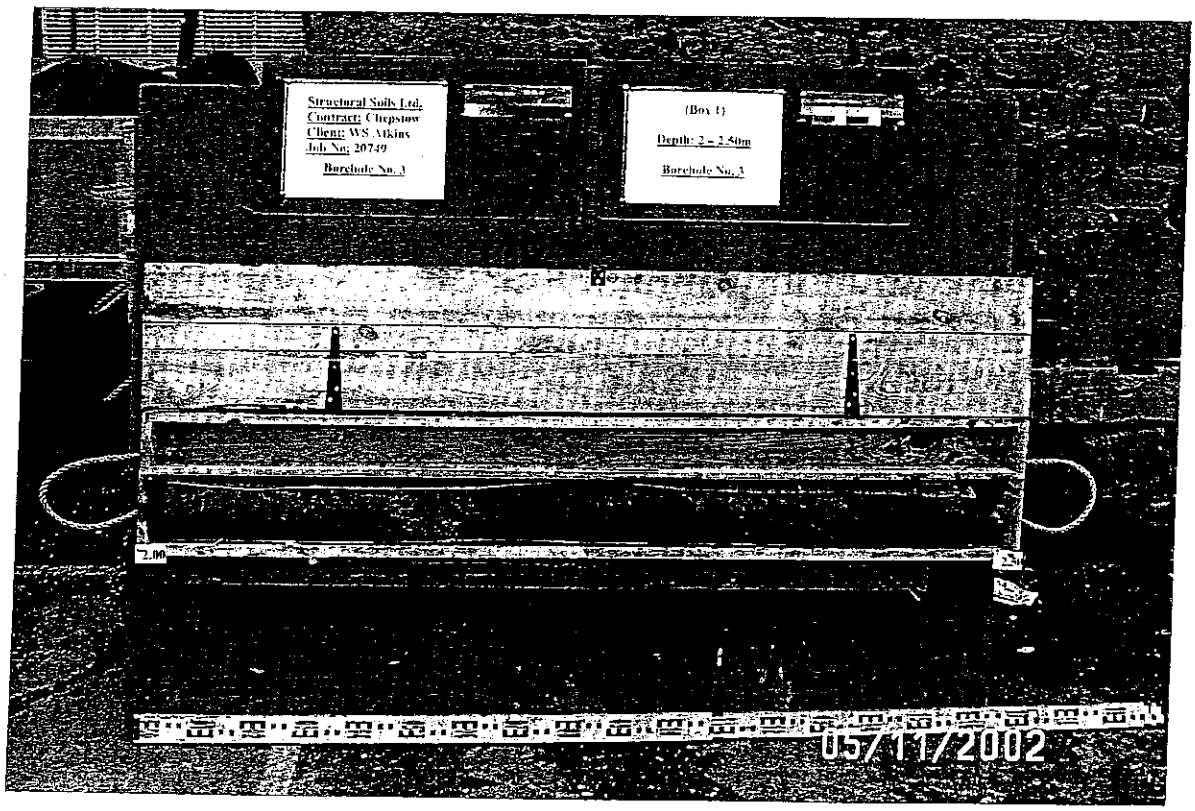
Borehole 1: Box 3: 5.5-6.0 m



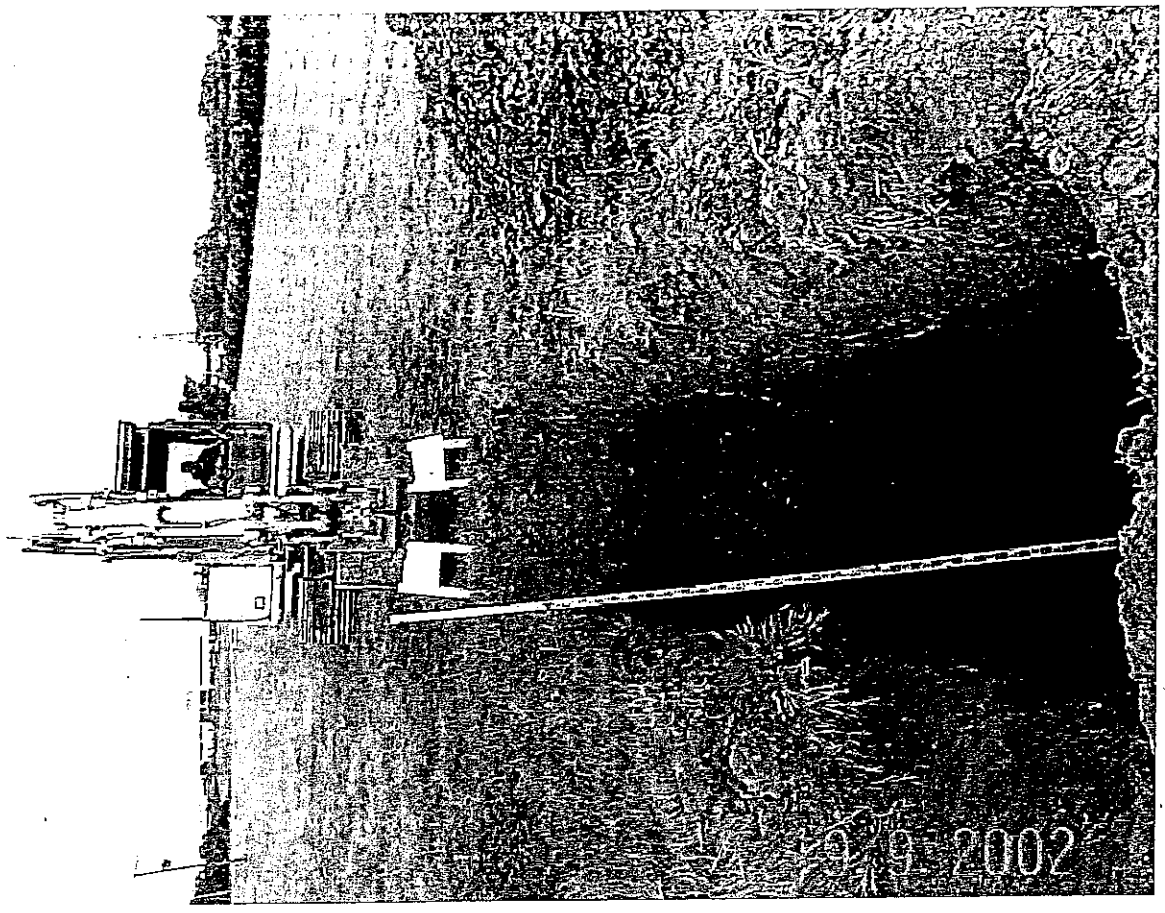
Borehole 2: Box 1: 2.0-5.0 m



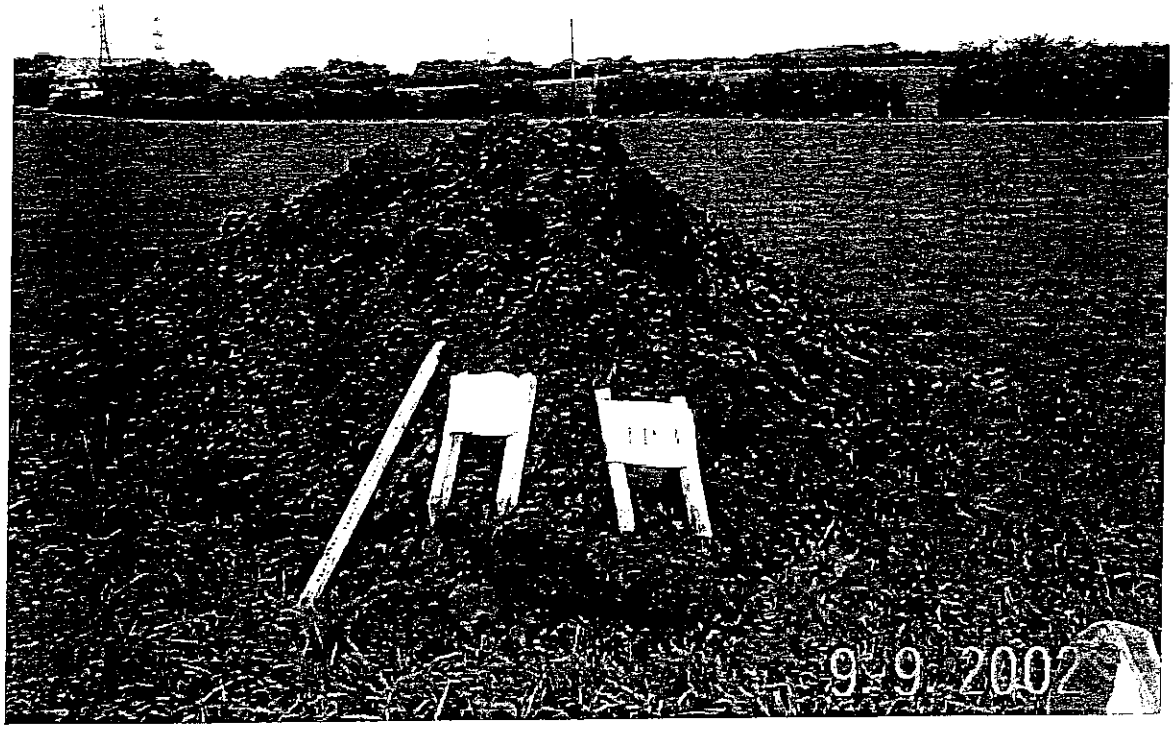
Borehole 2: Box 2: 5.0-6.5m



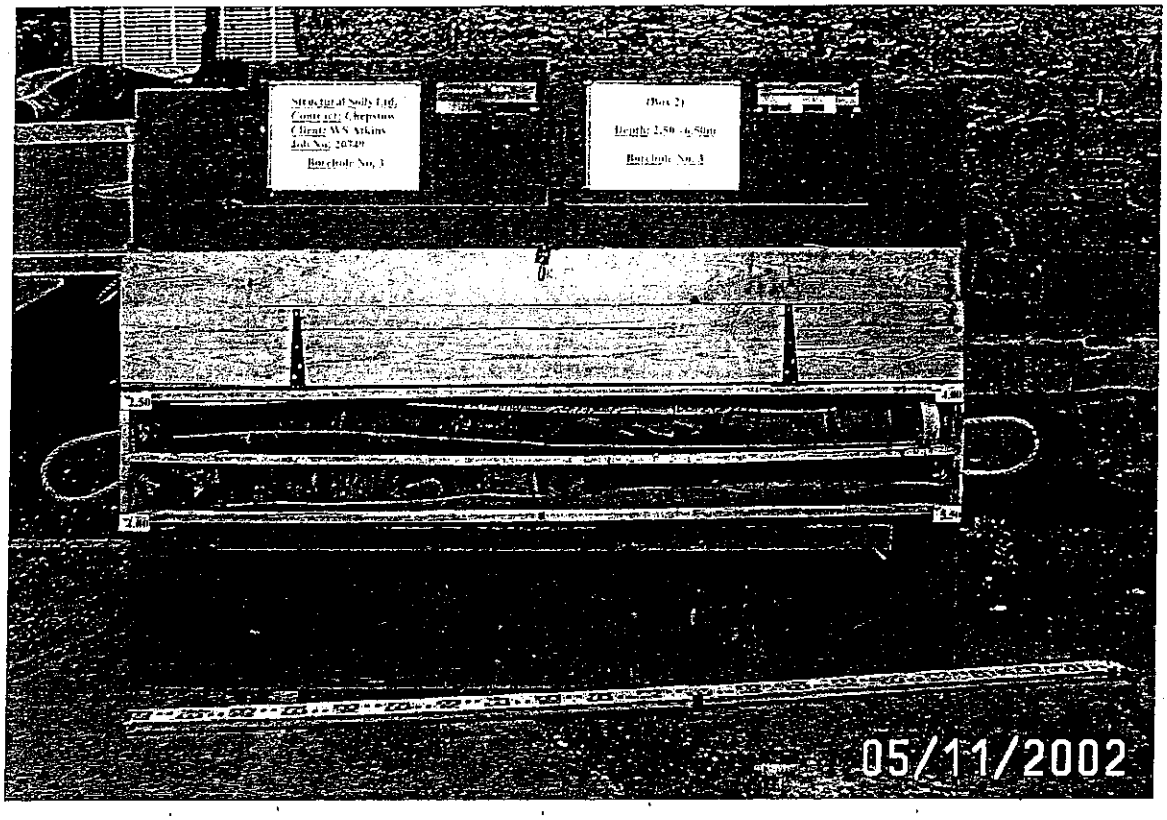
Borehole 3: Box 1: 2.0-2.5 m



Trial Pit 3



Trial Pit 3 – spoil



Borehole 3: Box 2: 2.5-6.5 m

MOISTURE CONDITION VALUE CALIBRATION

In accordance with clause 5.5 of BS1377:Part 4:1990

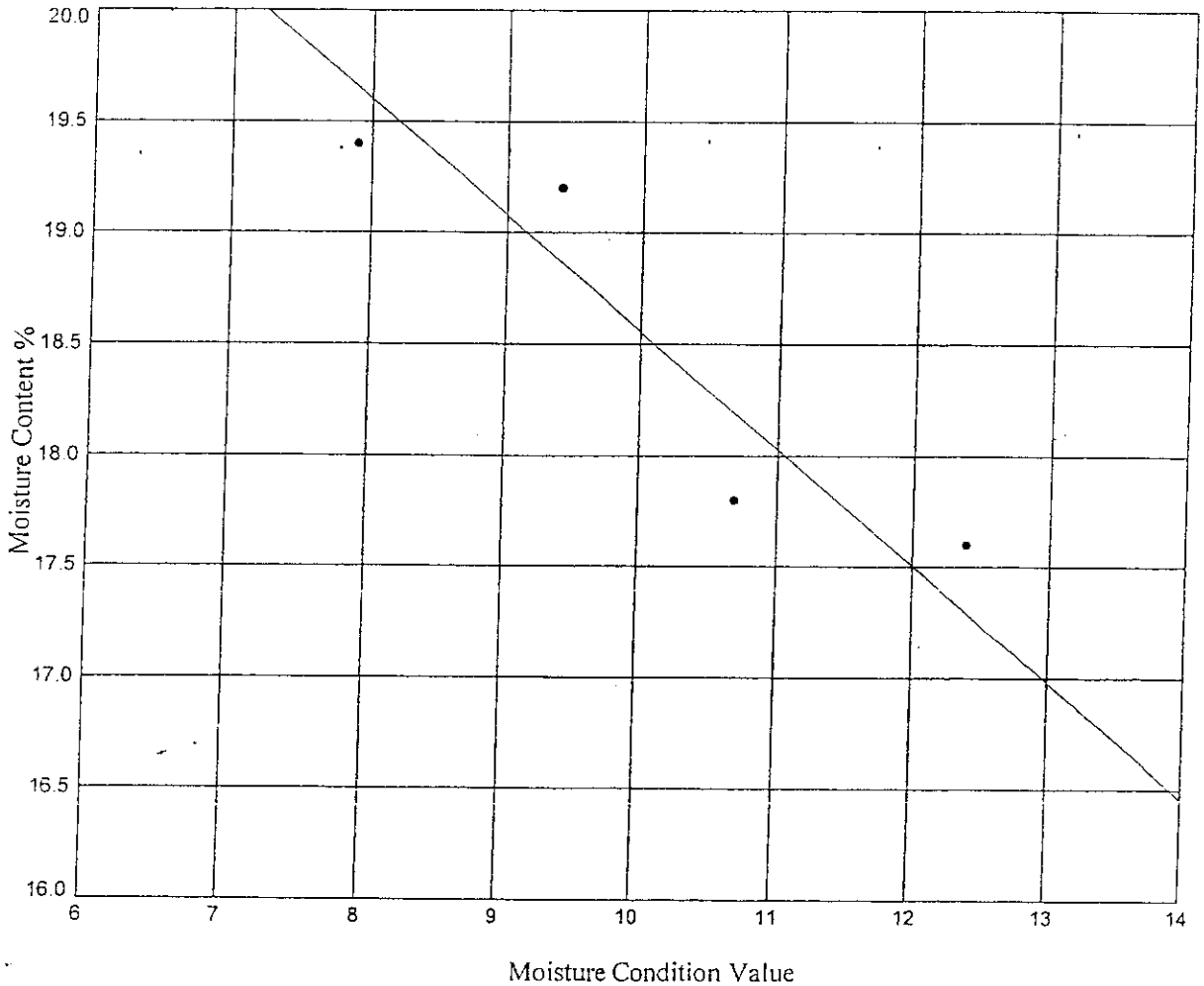
Hole ID : Sample Reference : A Sample Type : B Depth (m) :

Percentage retained on 20mm sieve : 2

Description : Reddish brown slightly gravelly slightly sandy SILT

Single/Separate Sample Used : Separate samples were used

Test Number	1	2	3	4	5
Moisture Content	17.6	17.8	19.2	19.4	
MCV	12.4	10.7	9.4	7.9	



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Job No: 20749

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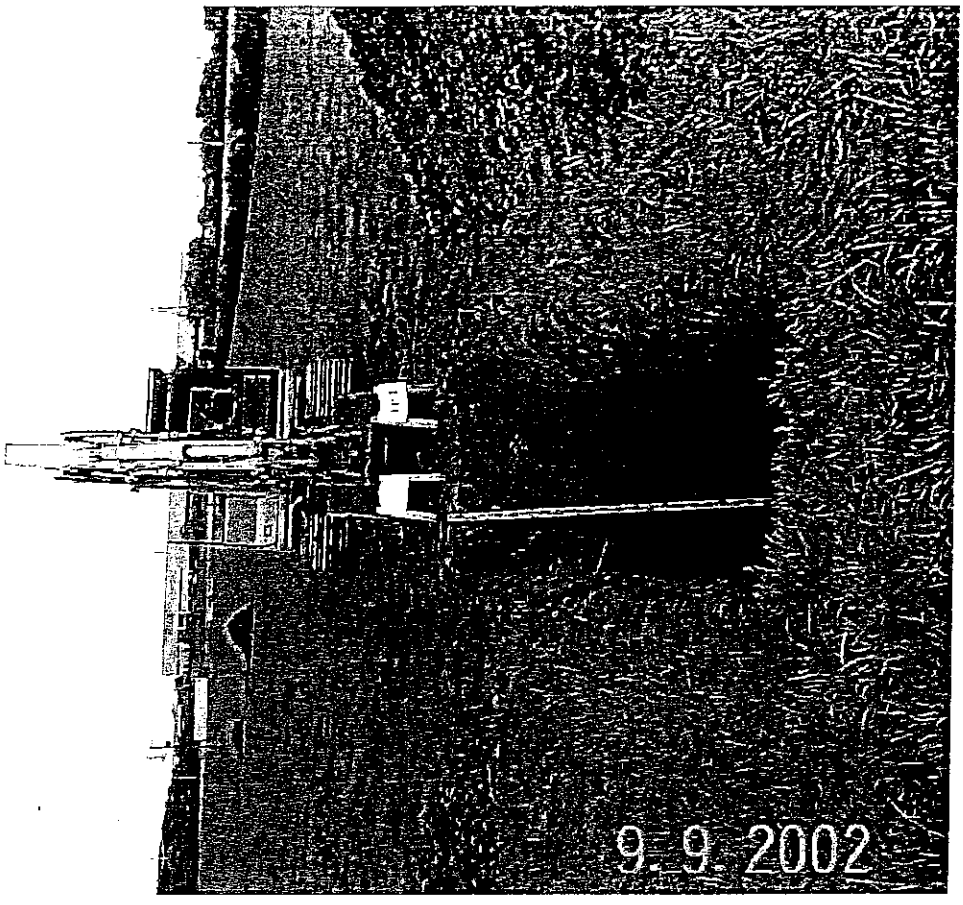
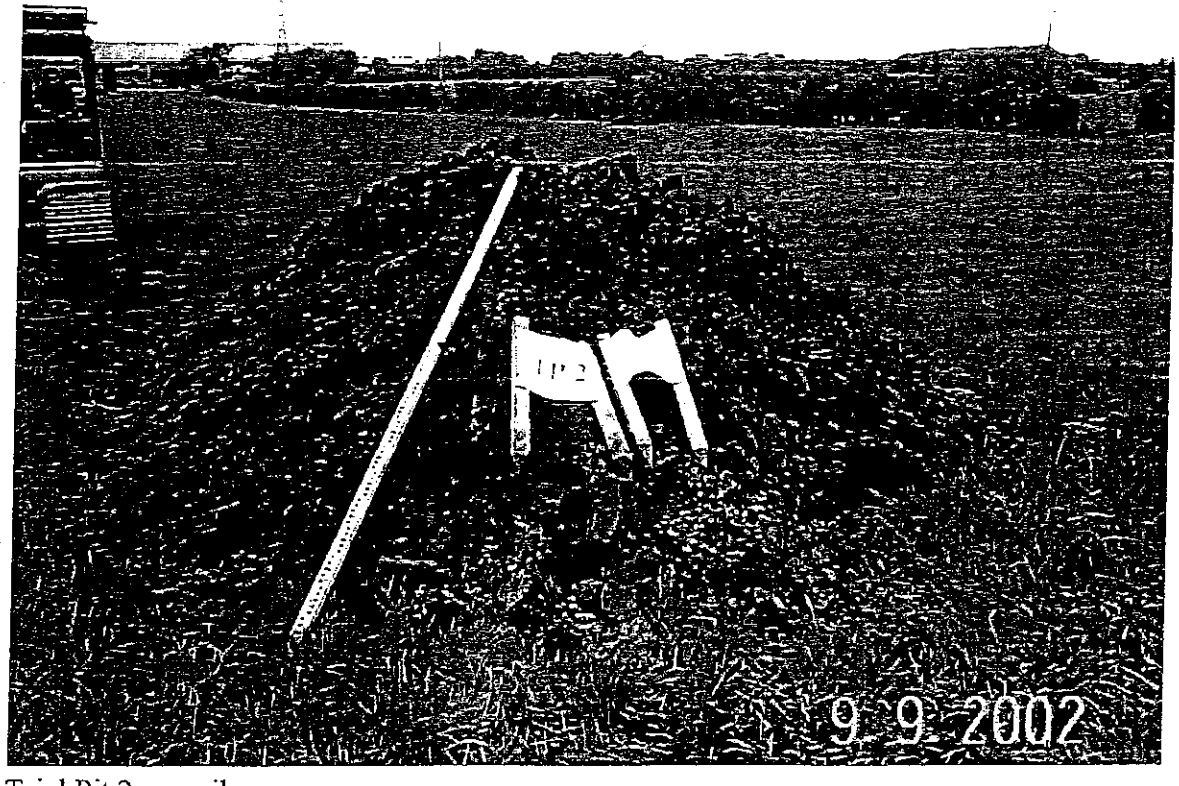
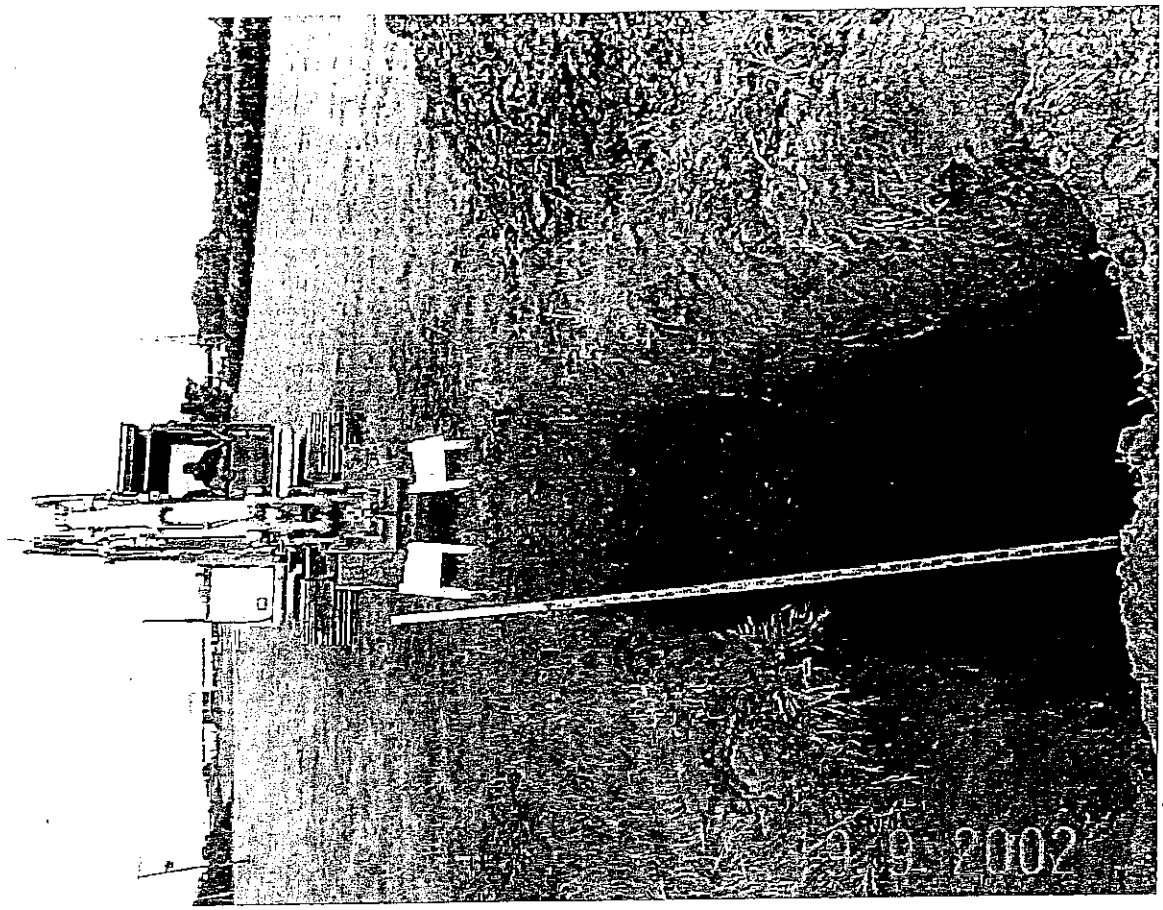
Graph MCV CALIBRATION RESULTS



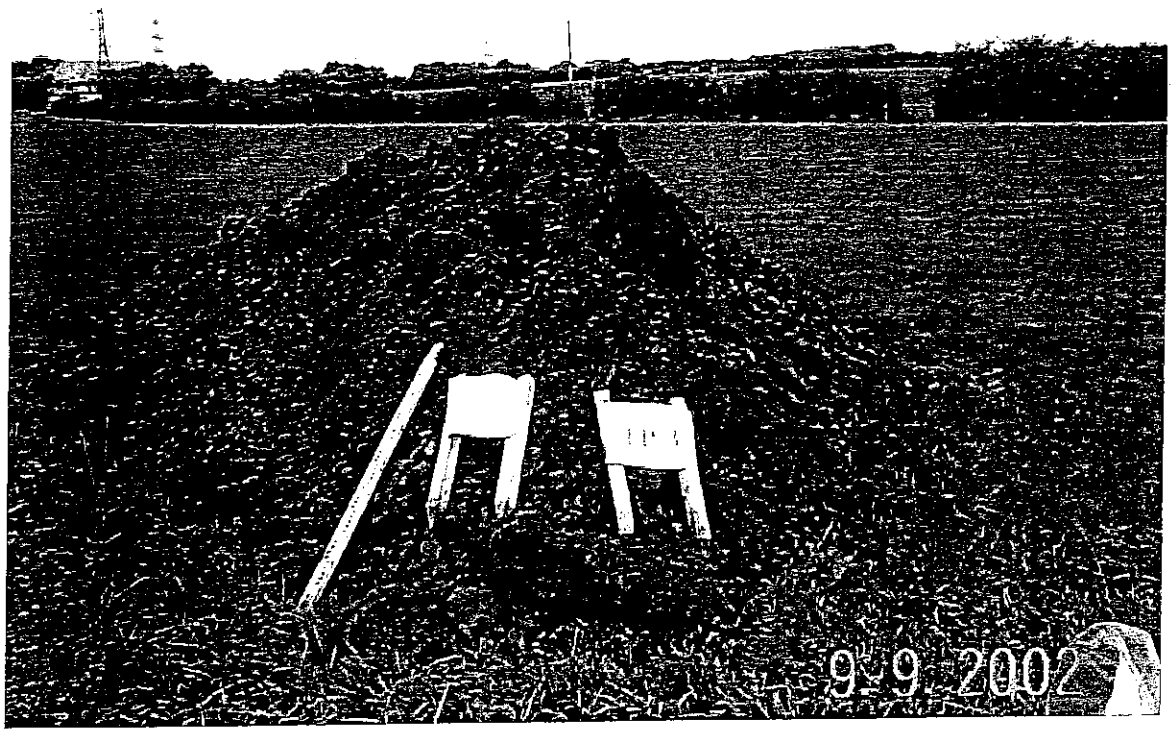
Trial Pit 2



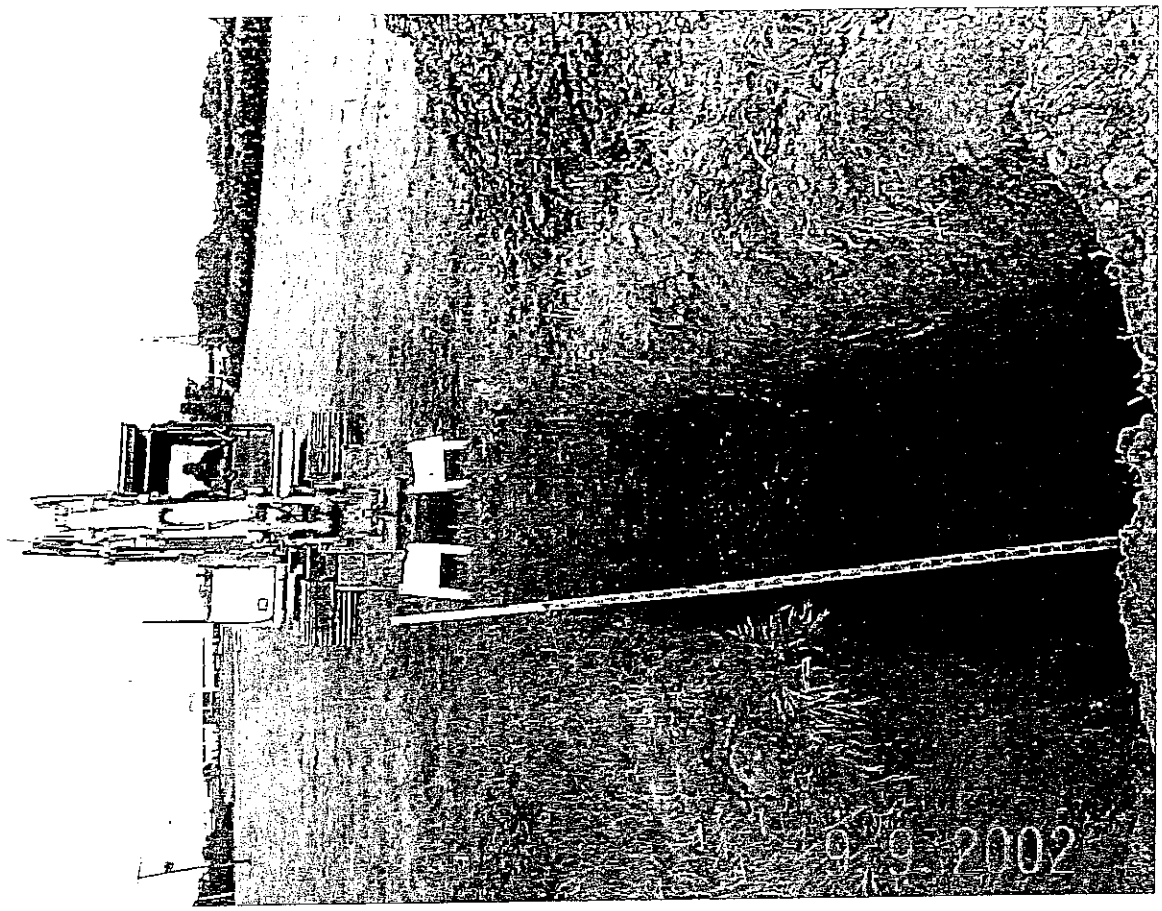
Trial Pit 2 – spoil



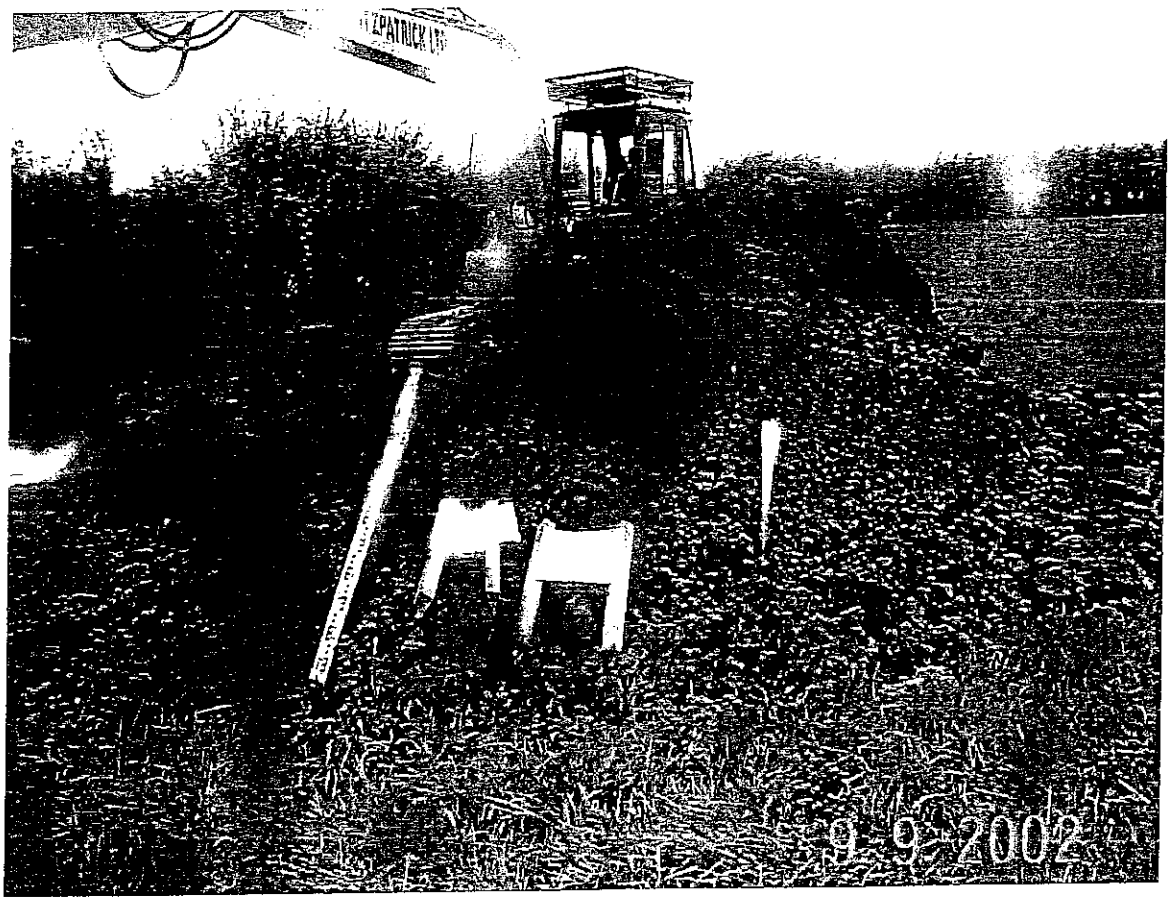
Trial Pit 3



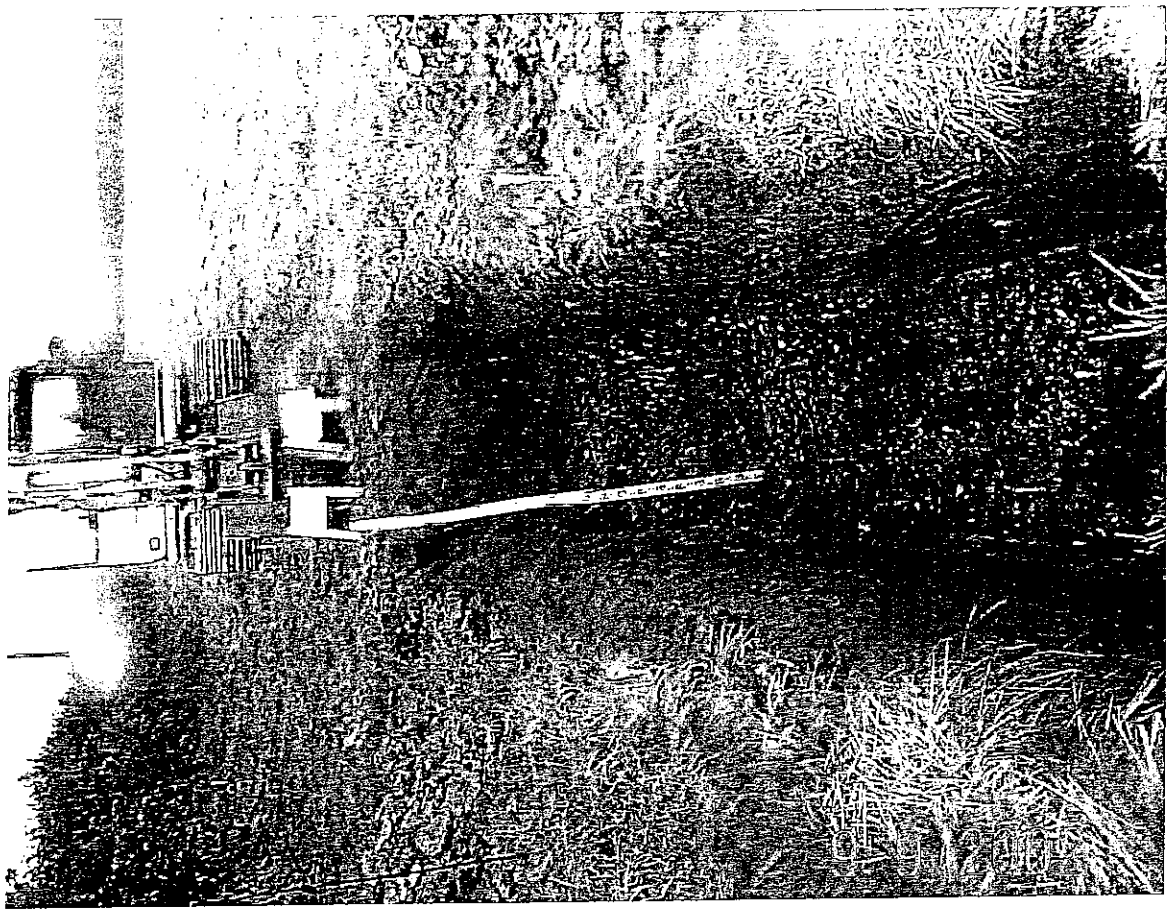
Trial Pit 3 – spoil



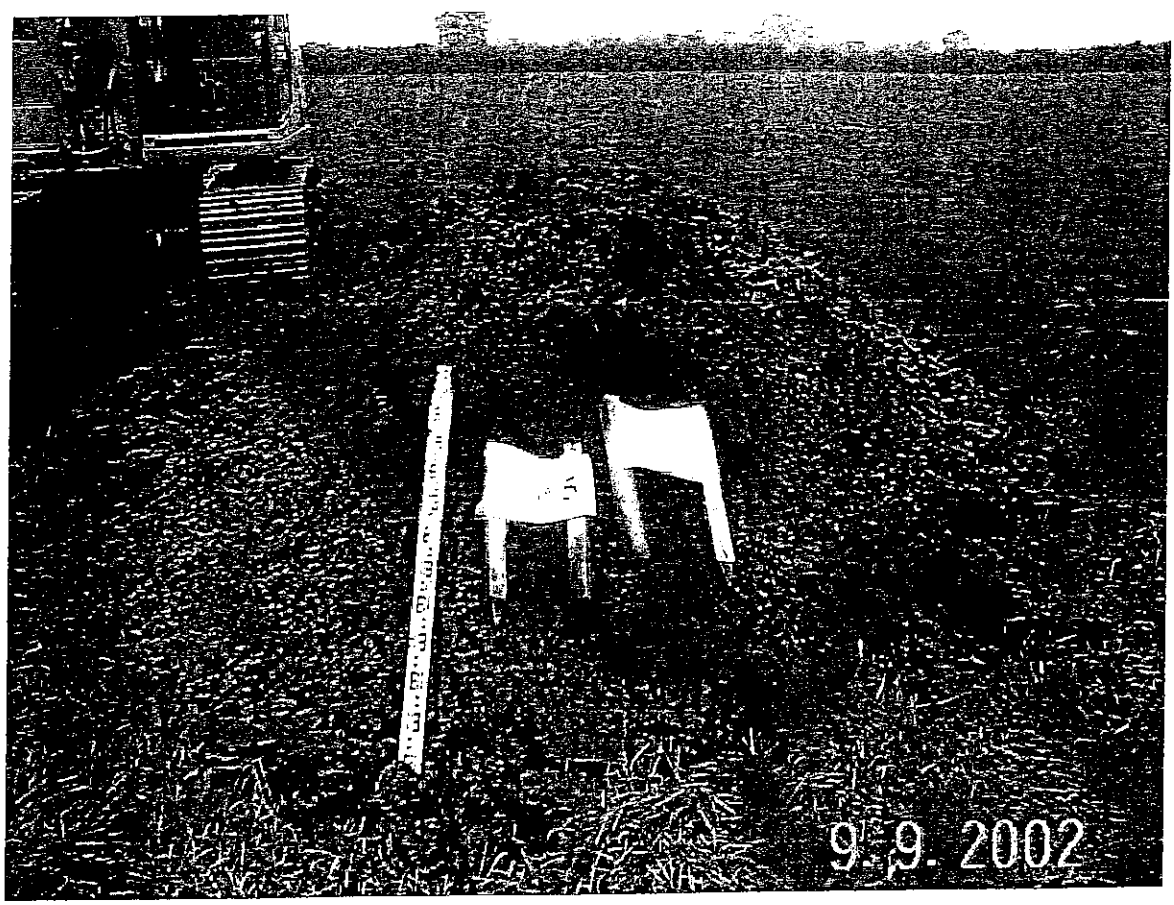
Trial Pit 4



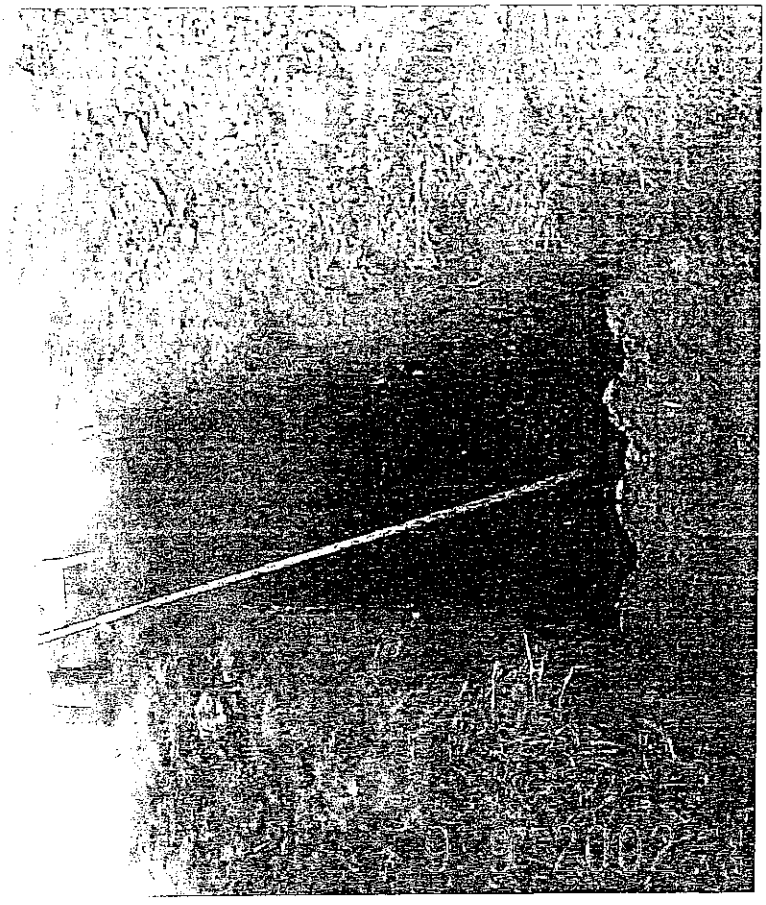
Trial Pit 4 – spoil



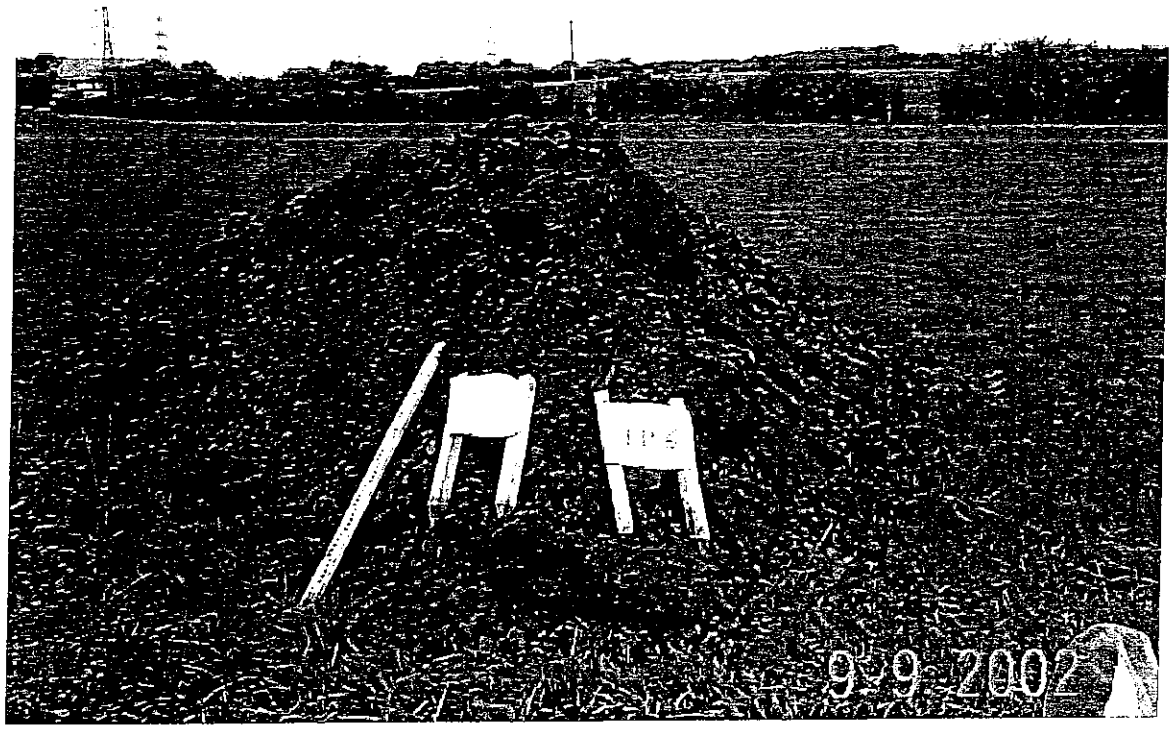
Trial Pit 5



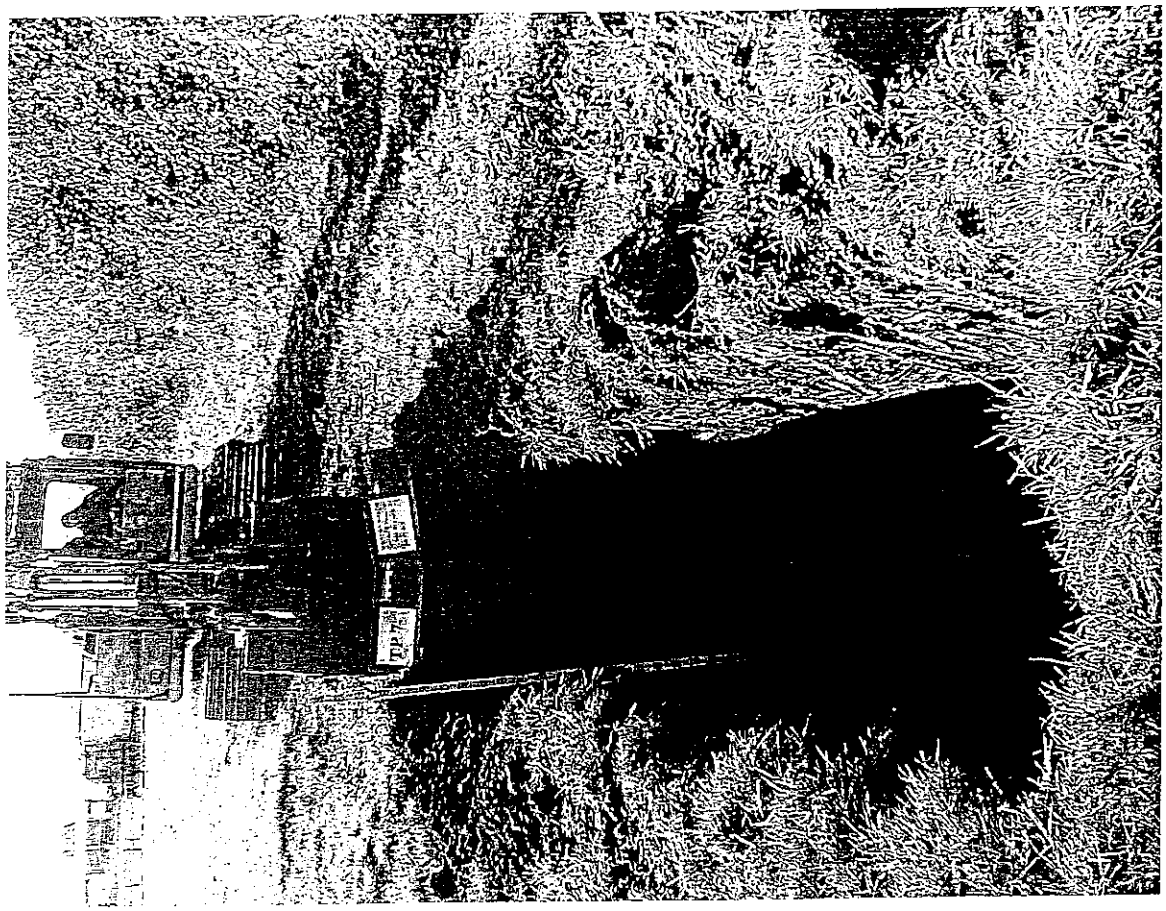
Trial Pit 5 – spoil



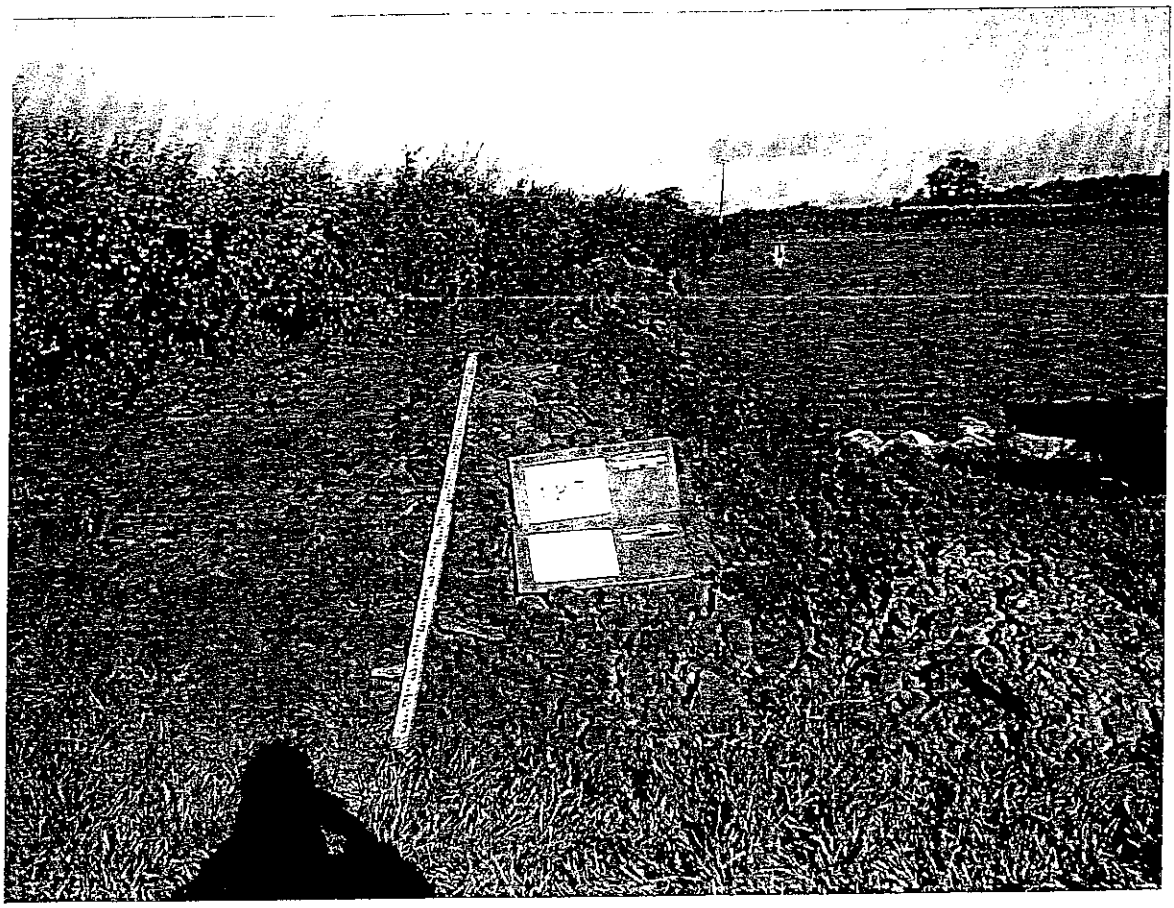
Trial Pit 6



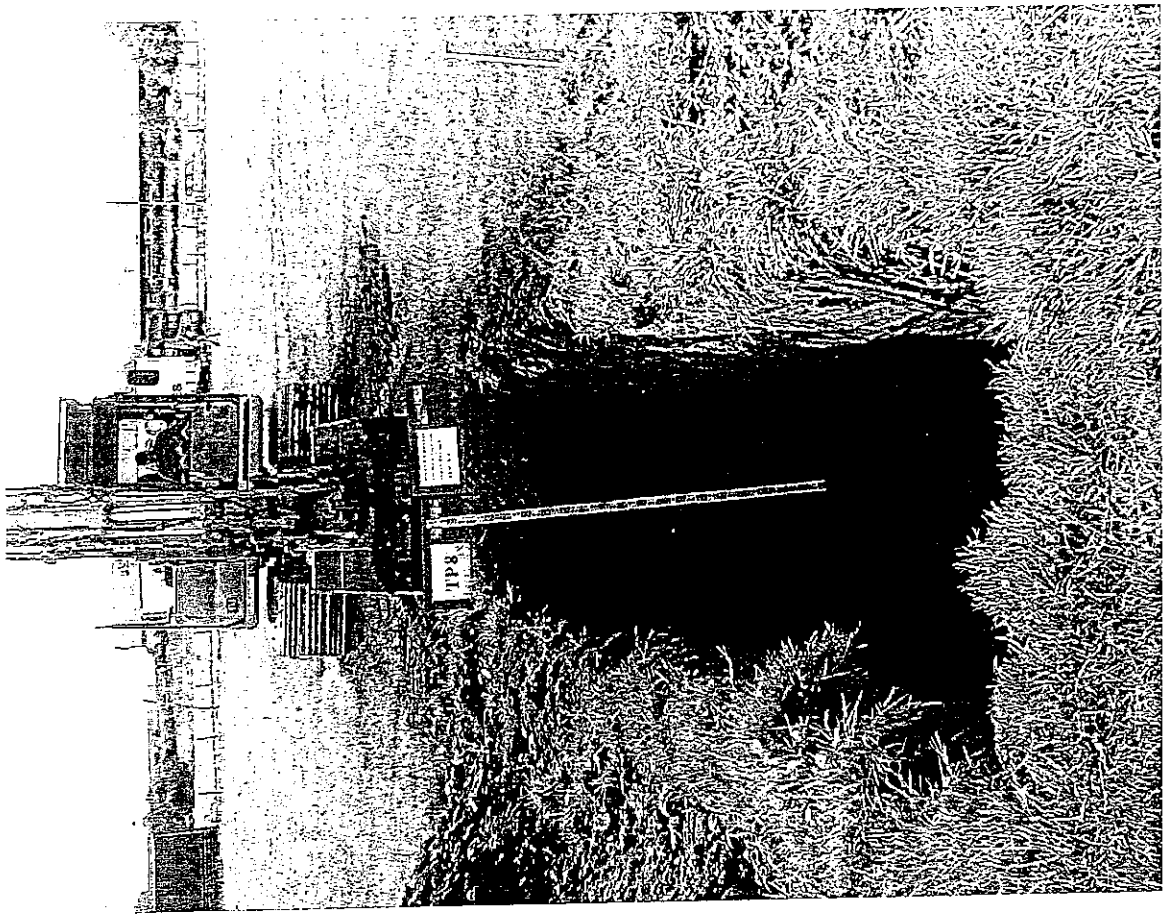
Trial Pit 6 – spoil



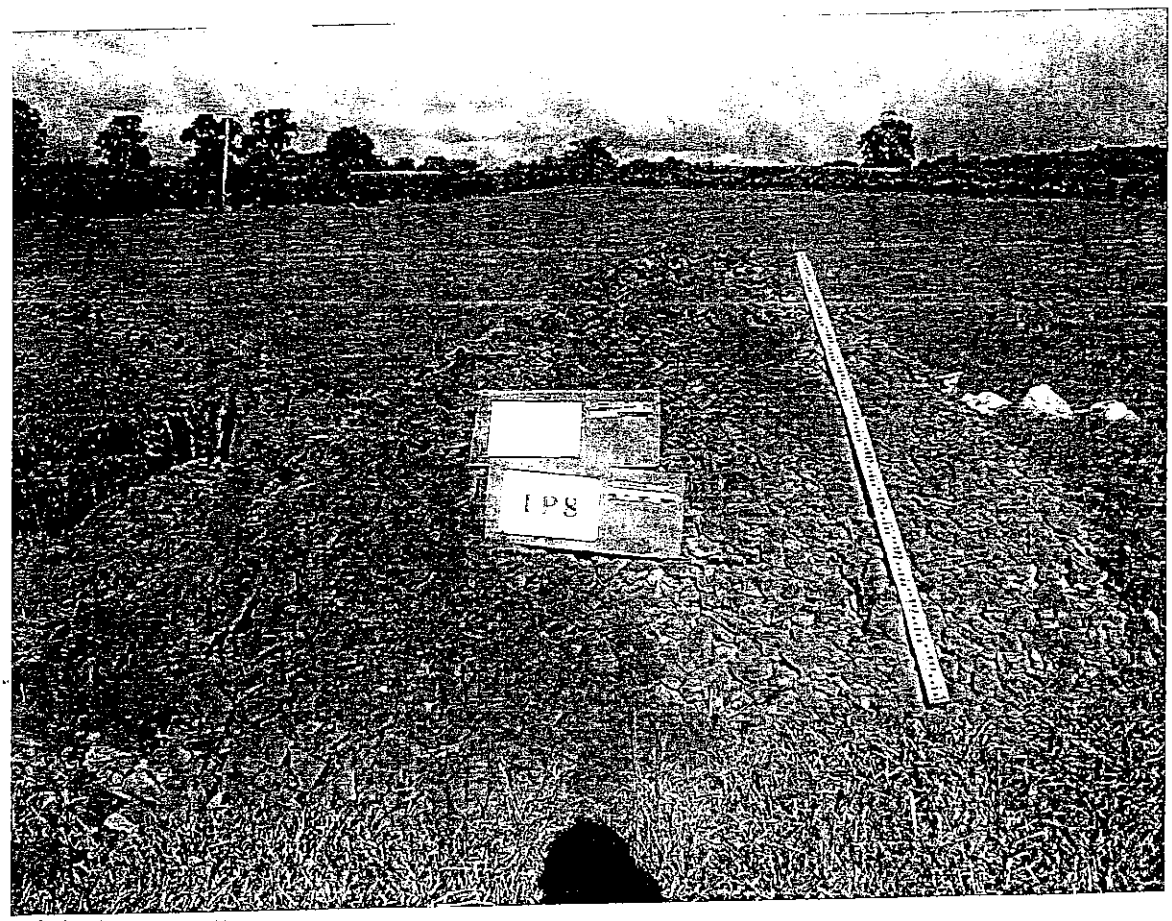
Trial Pit 7



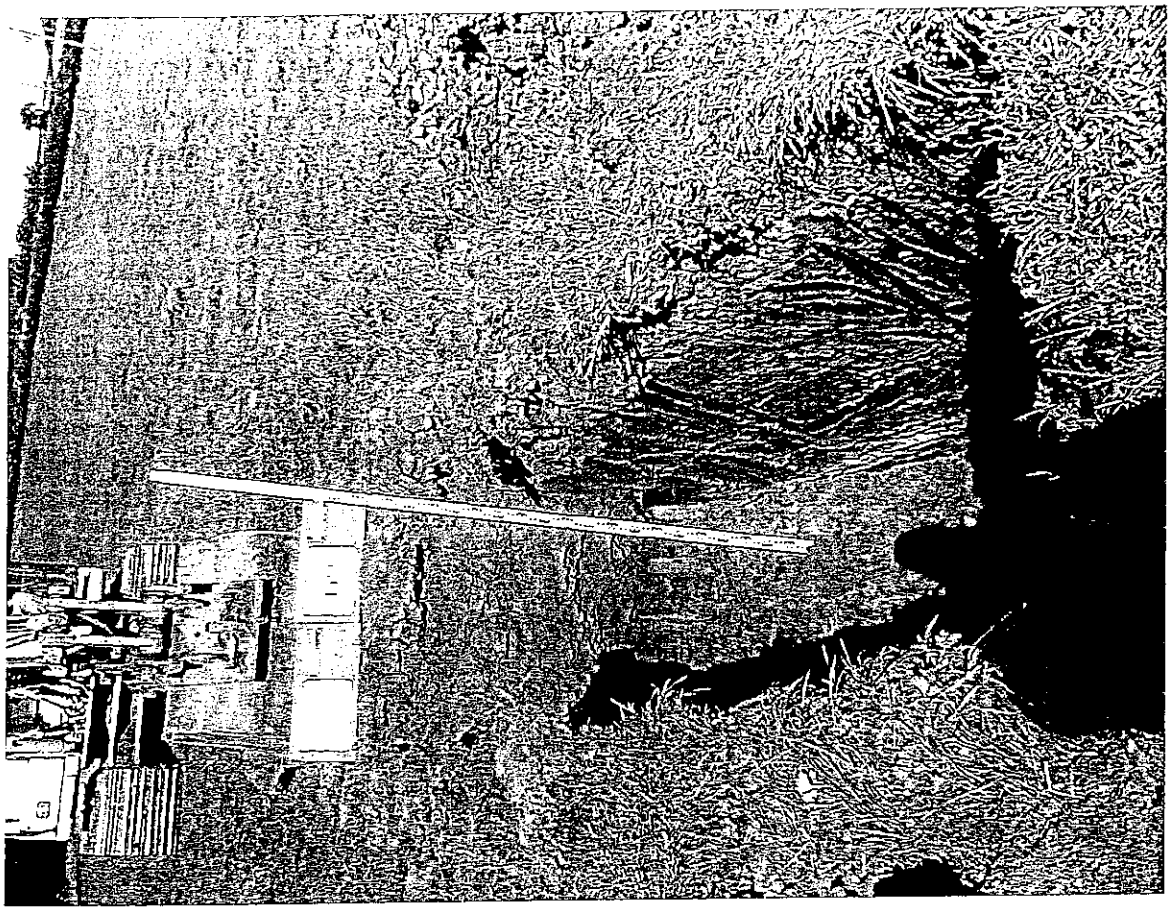
Trial Pit 7 – spoil



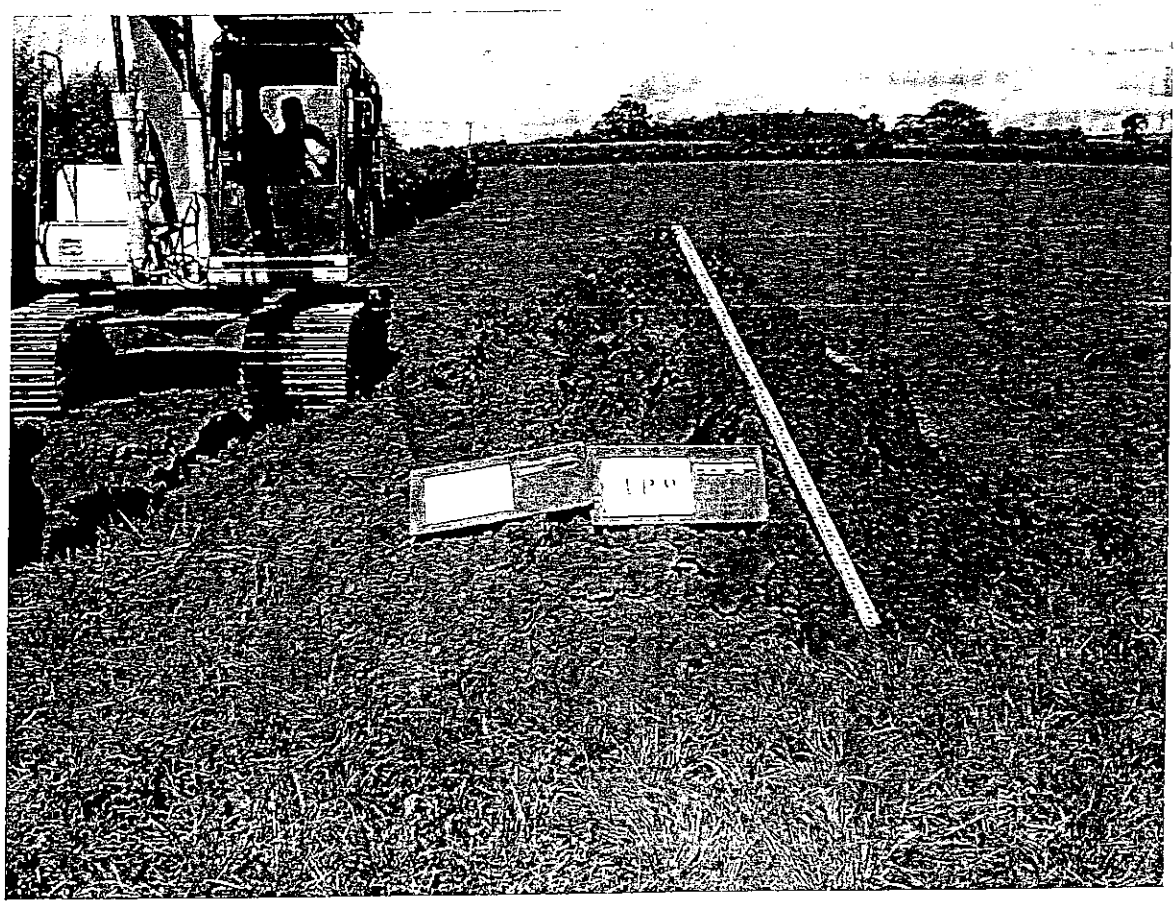
Trial Pit 8



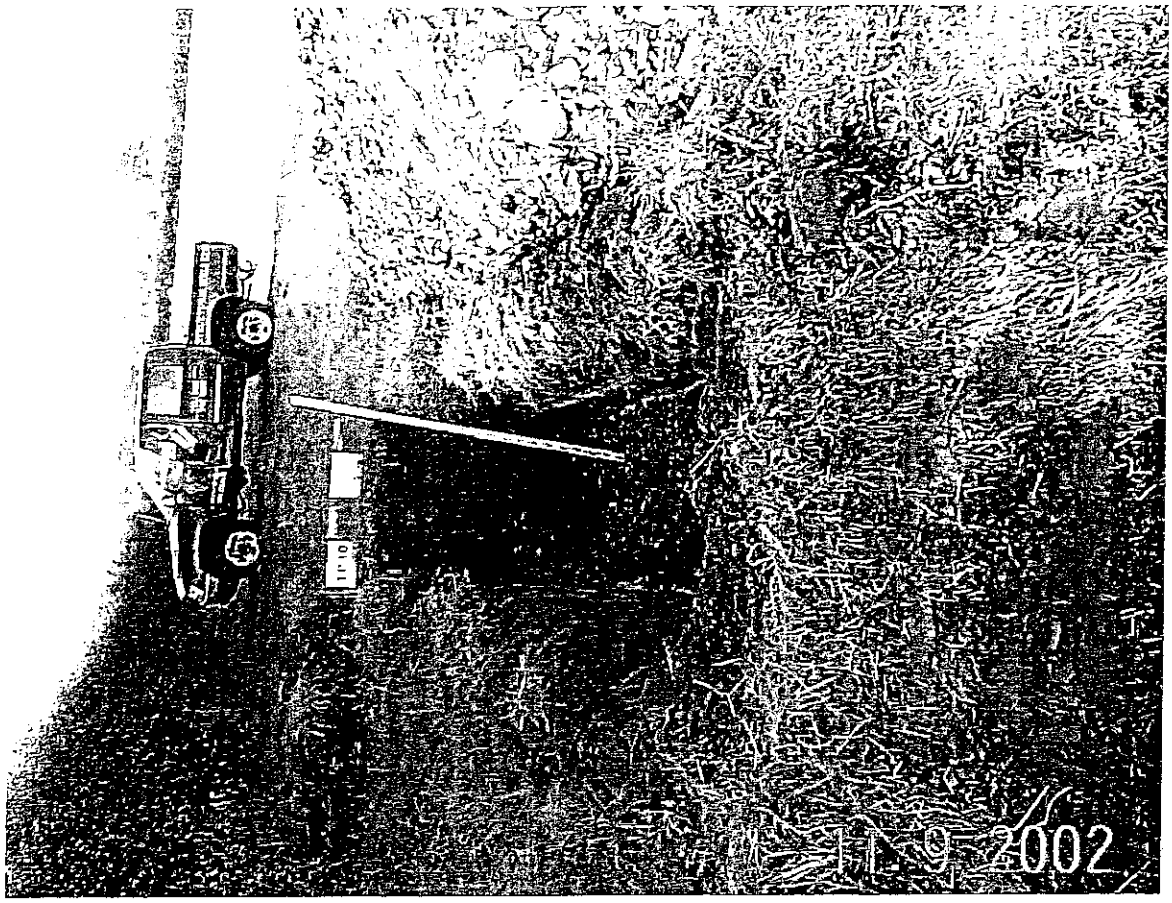
Trial Pit 8 – spoil



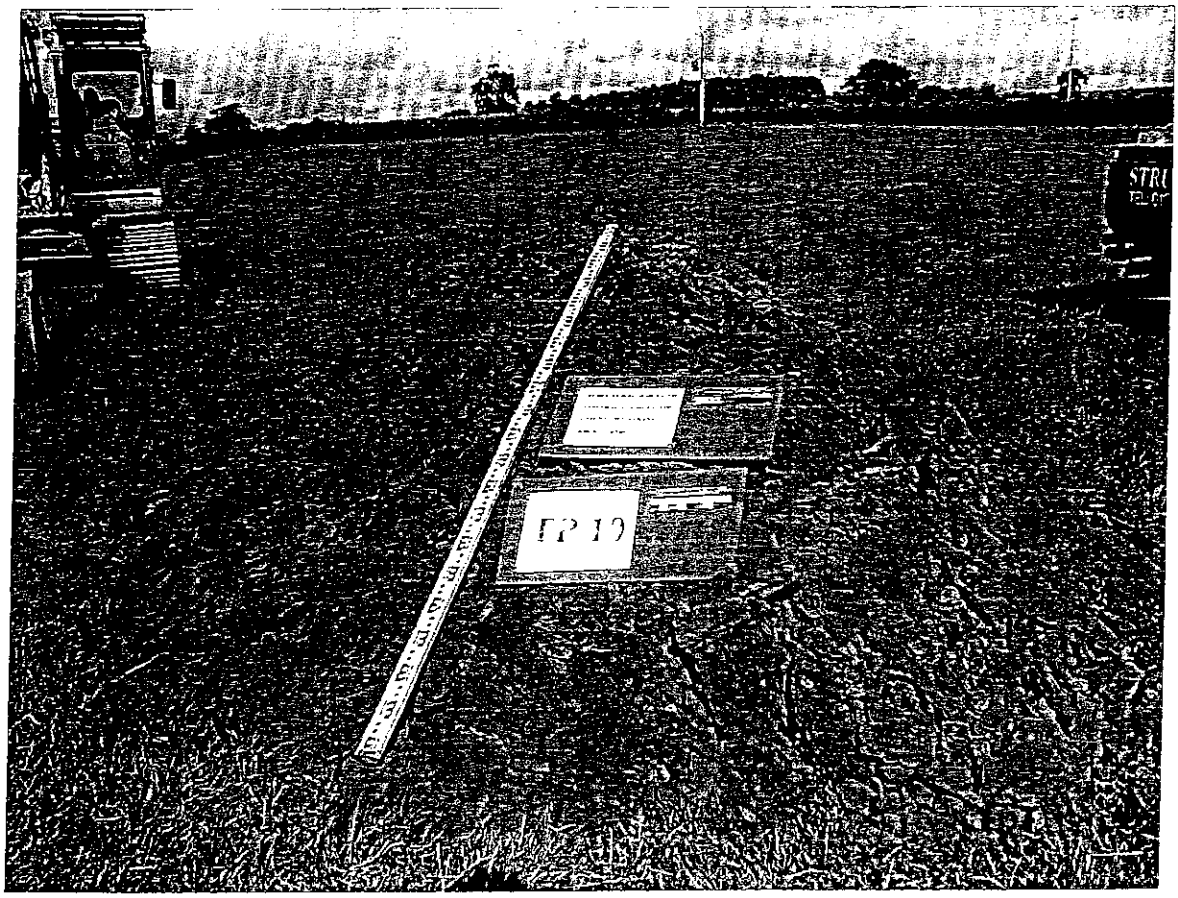
Trial Pit 9



Trial Pit 9 – spoil

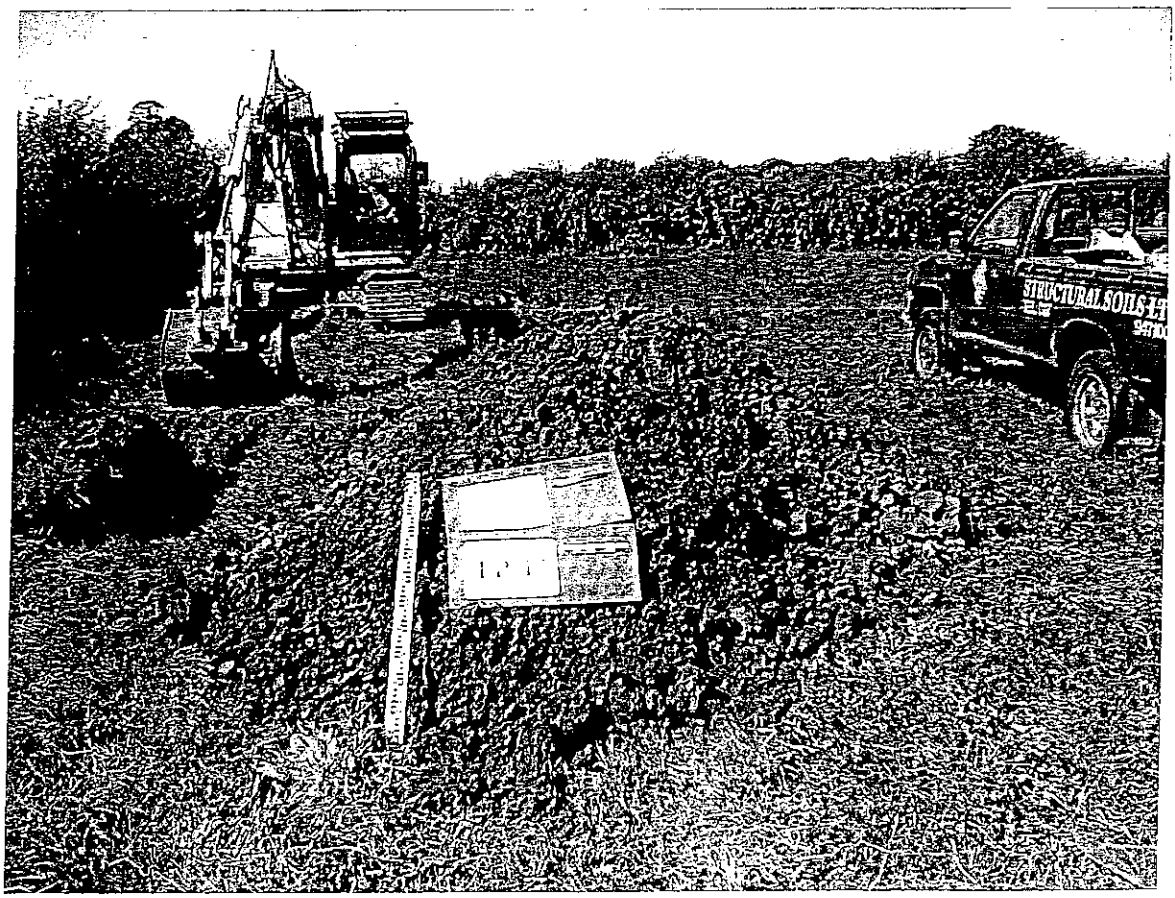


Trial Pit 10

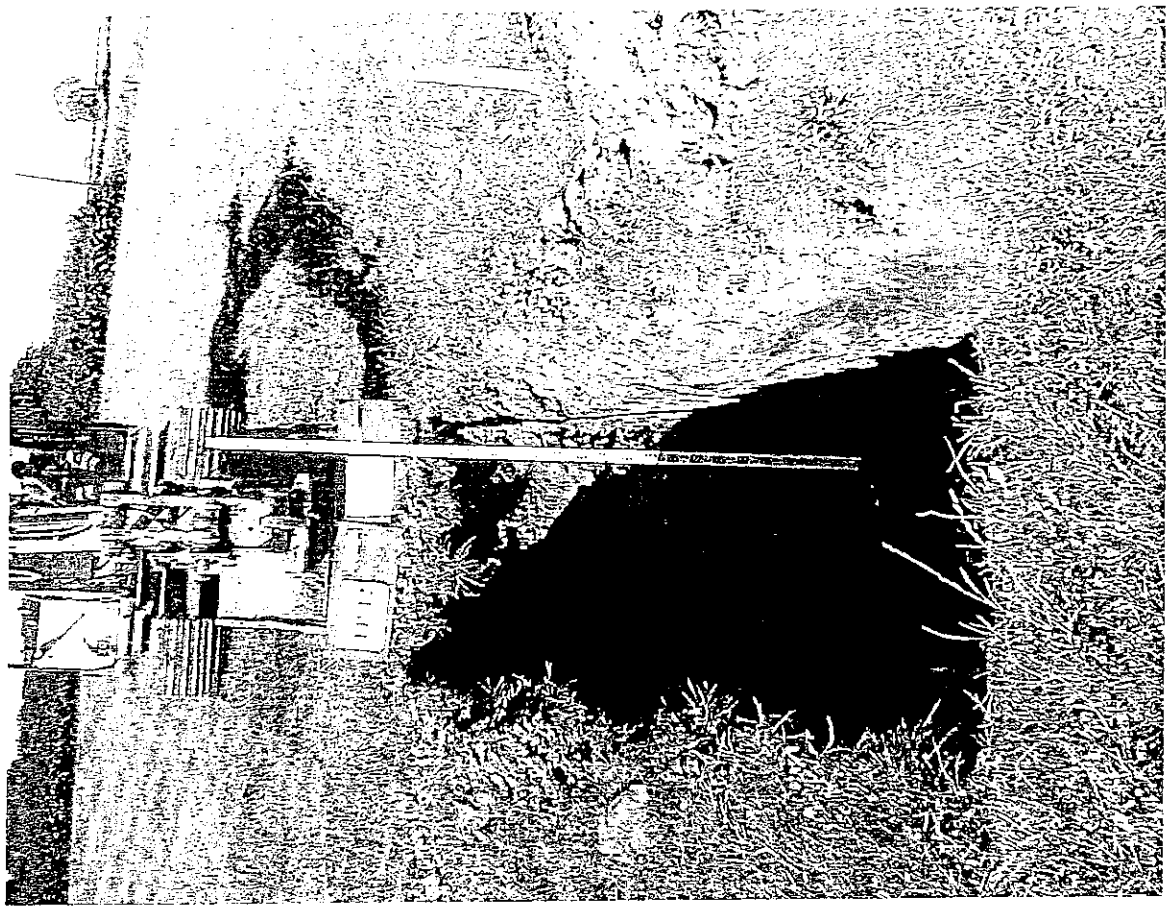


Trial Pit 10 – spoil

Trial Pit 11

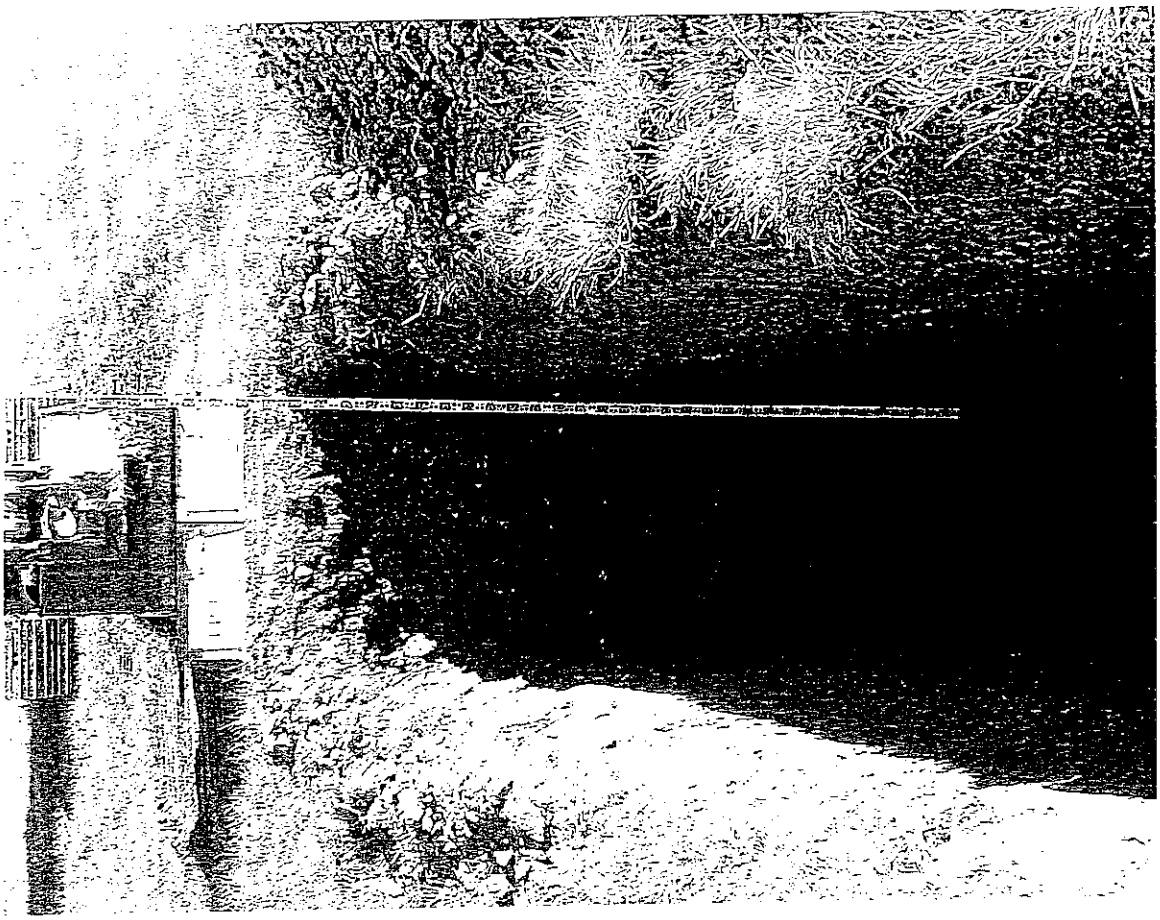


Trial Pit 11 – spoil

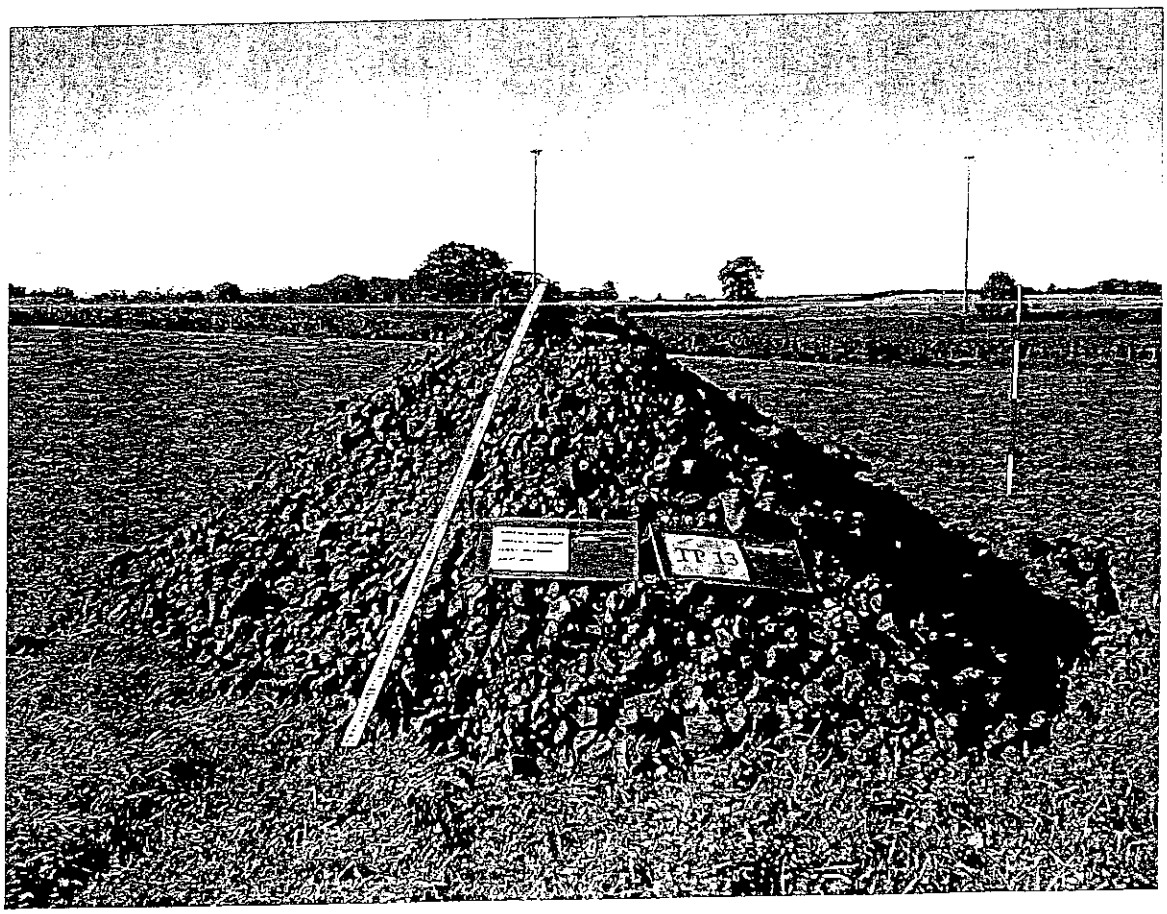


Trial Pit 12

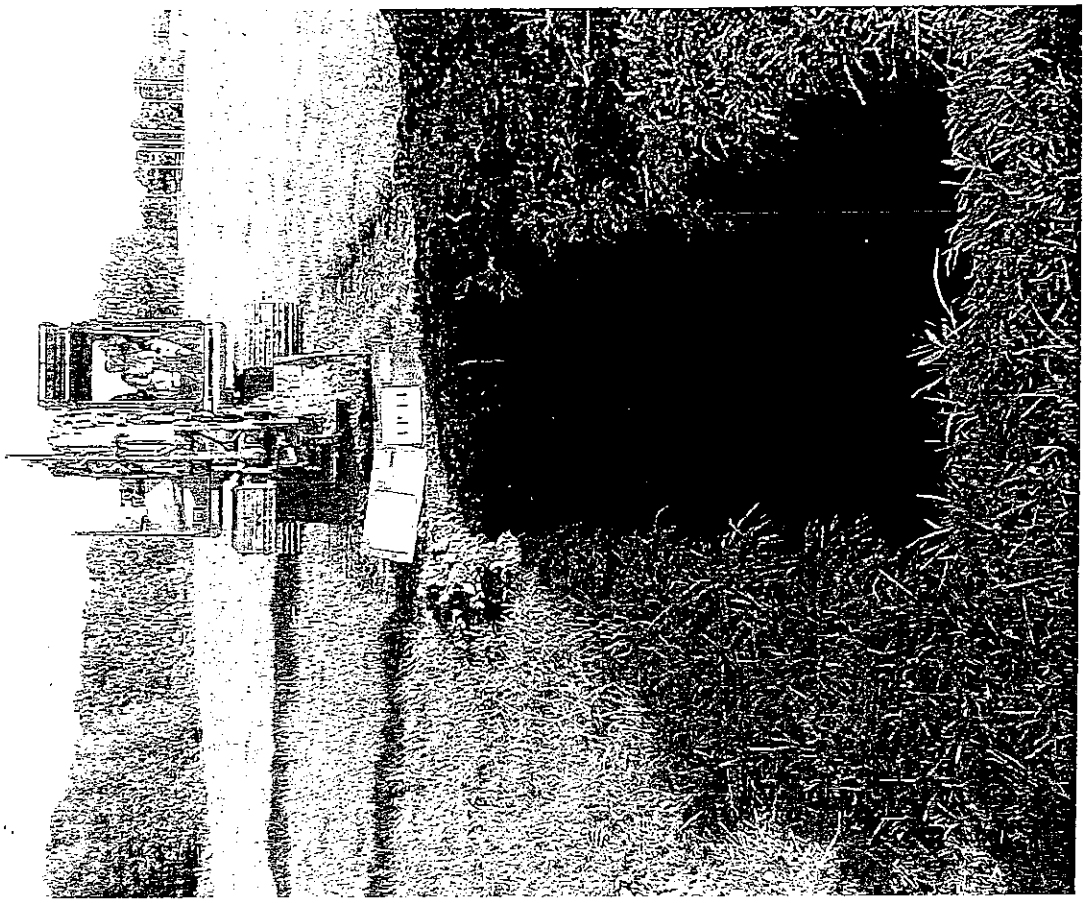
Trial Pit 12 – spoil



Trial Pit 13

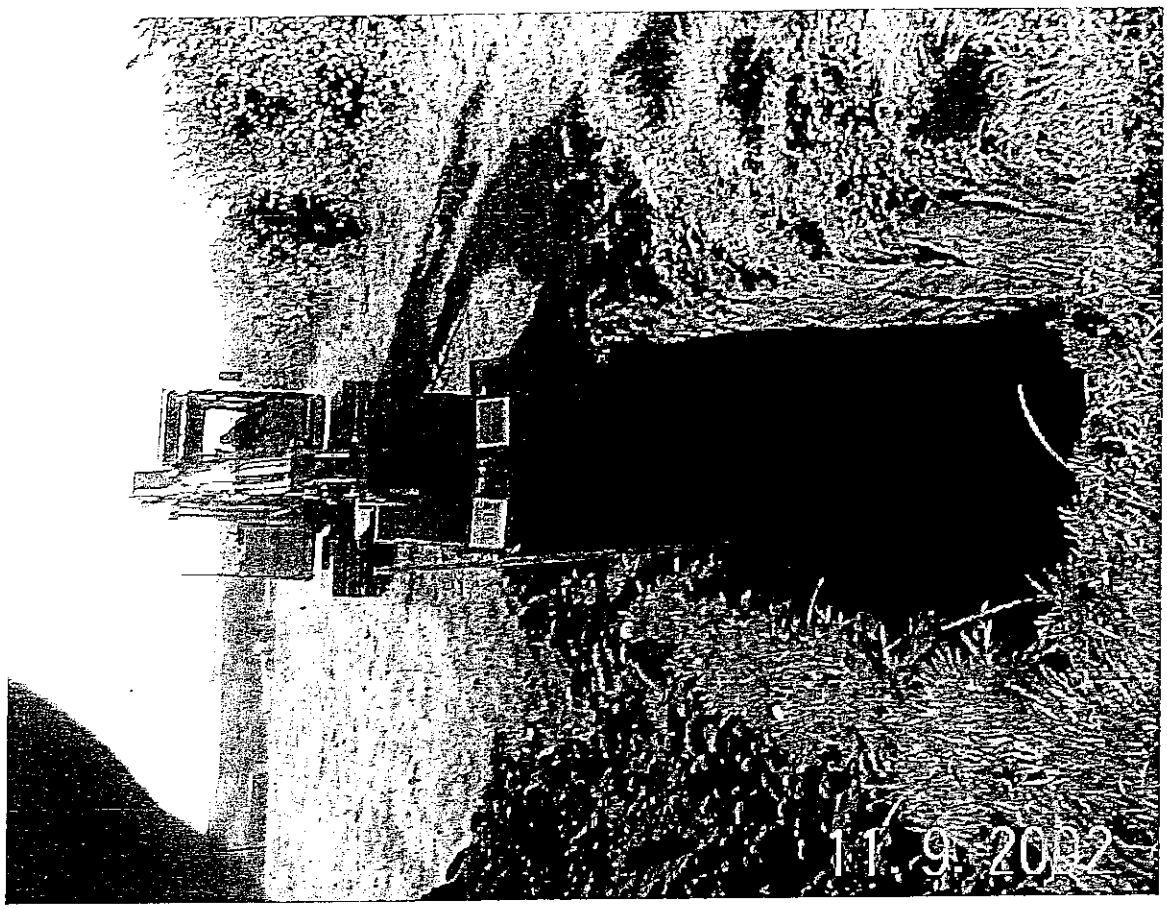


Trial Pit 13 – spoil

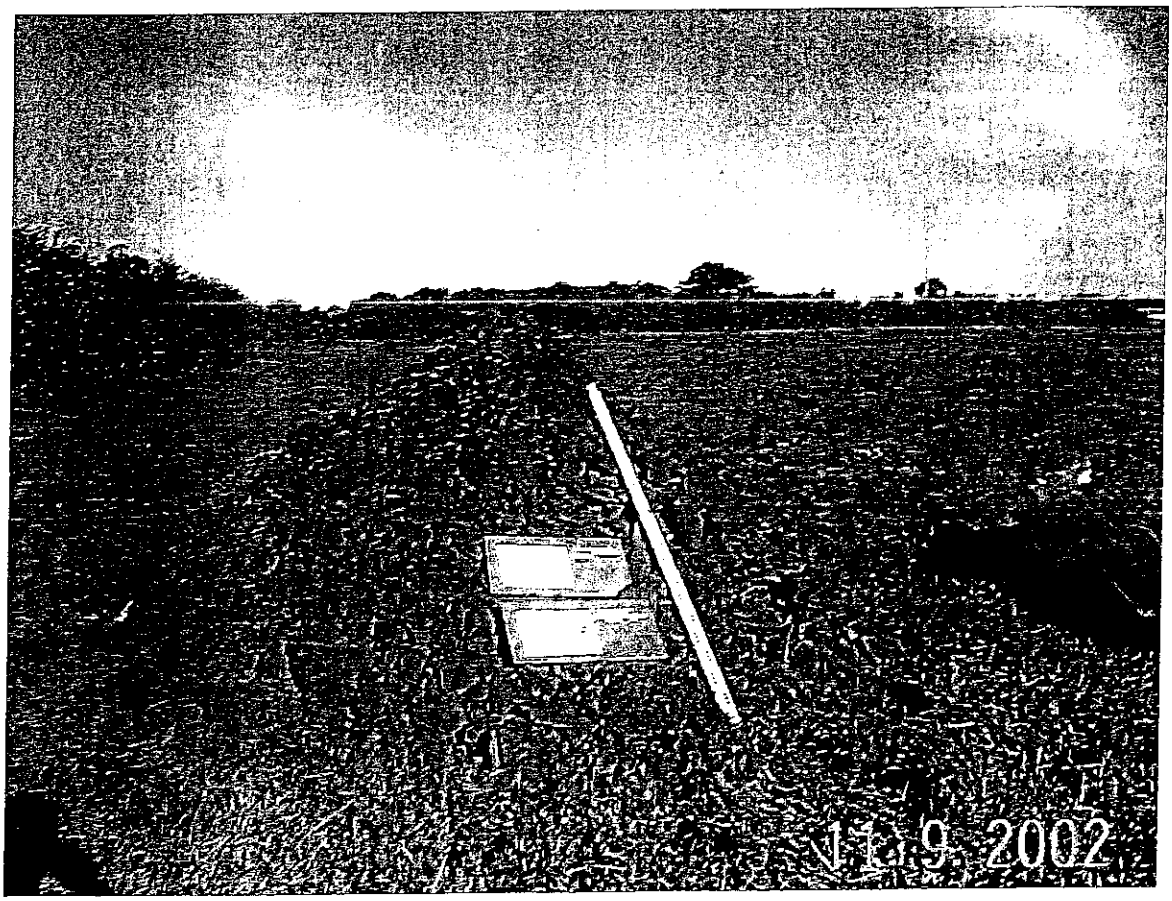


Trial Pit 14

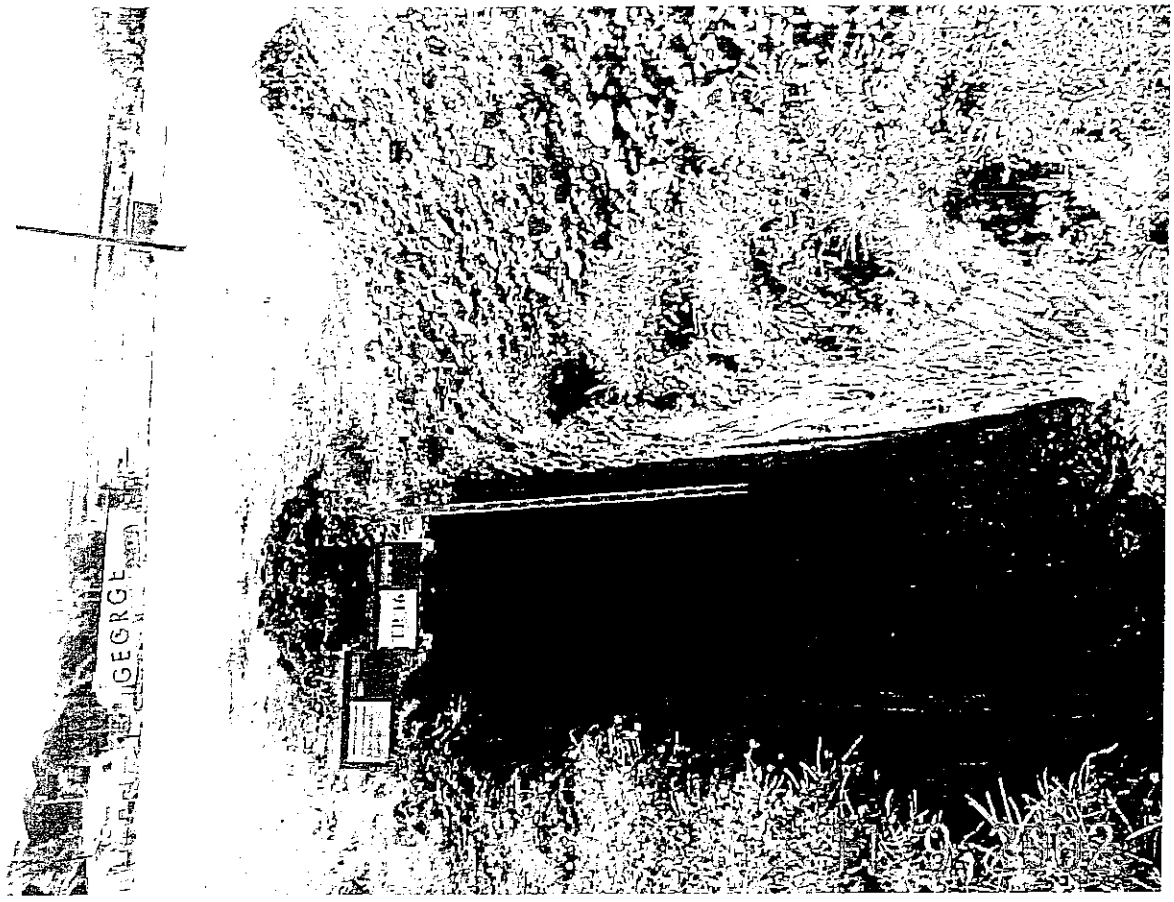
Trial Pit 14 – spoil



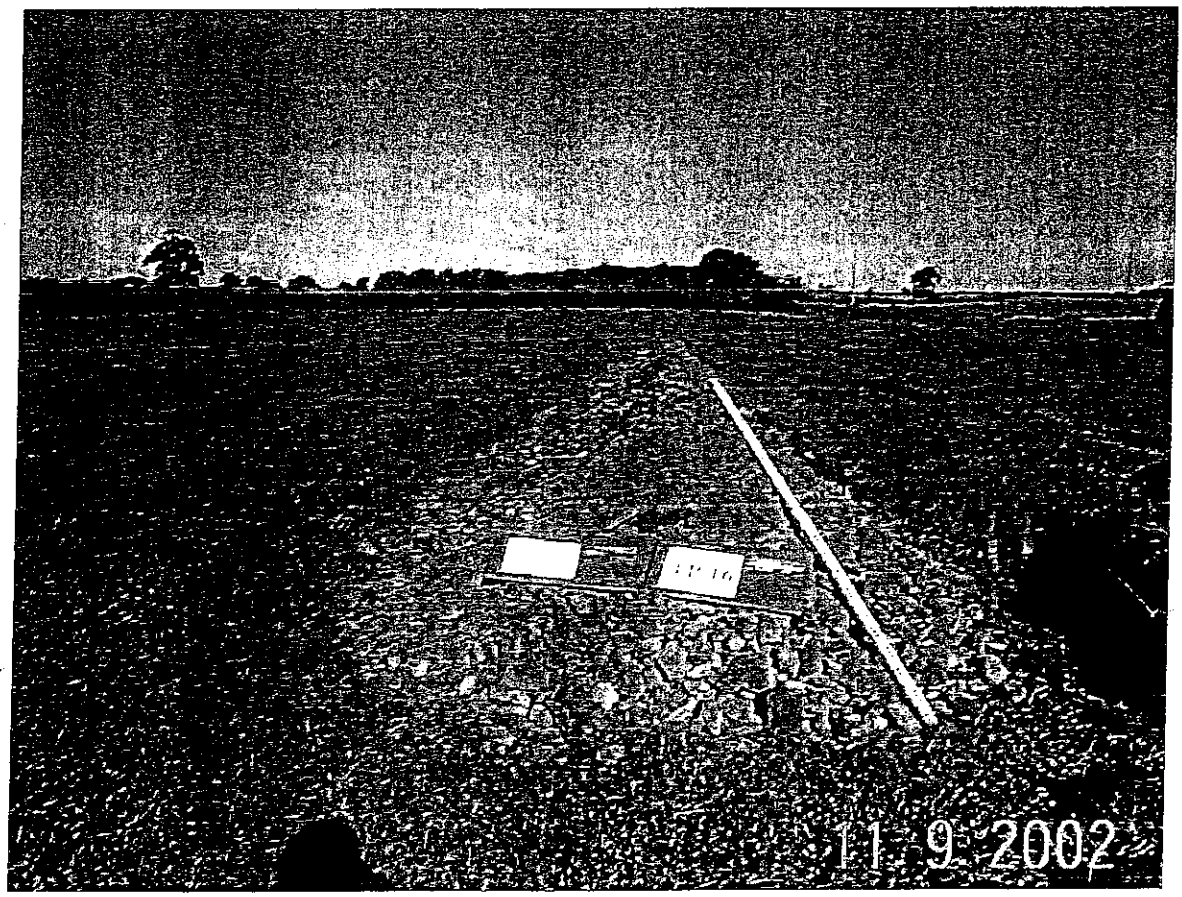
Trial Pit 15



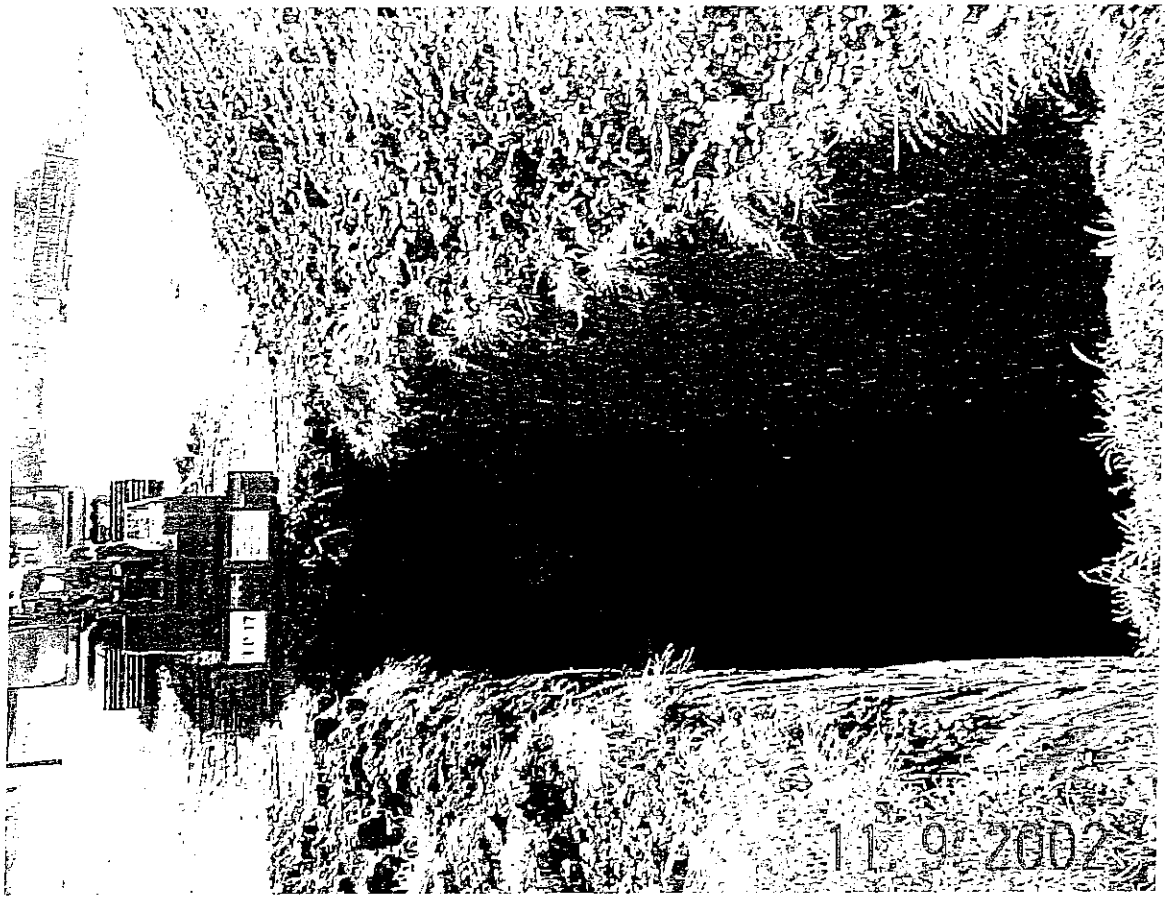
Trial Pit 15 – spoil



Trial Pit 16

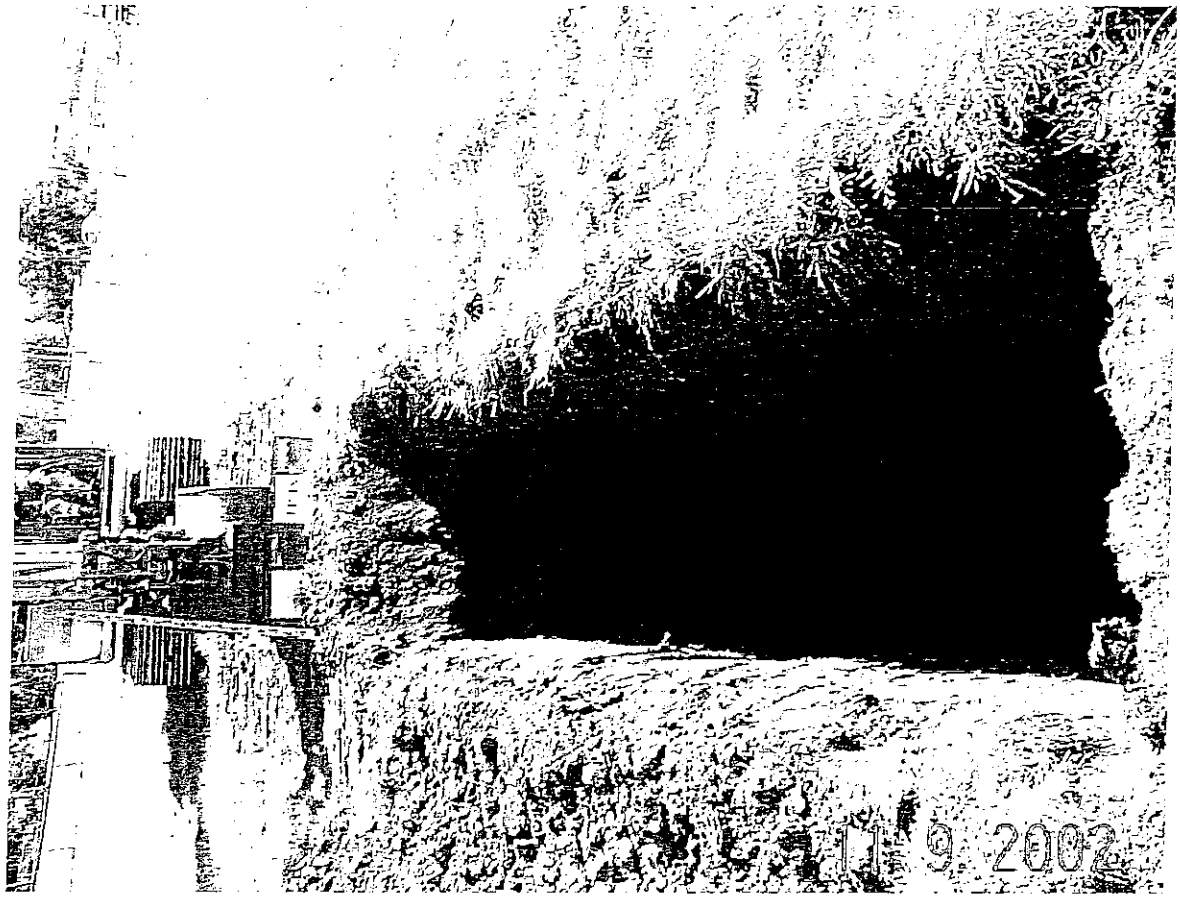


Trial Pit 16 – spoil

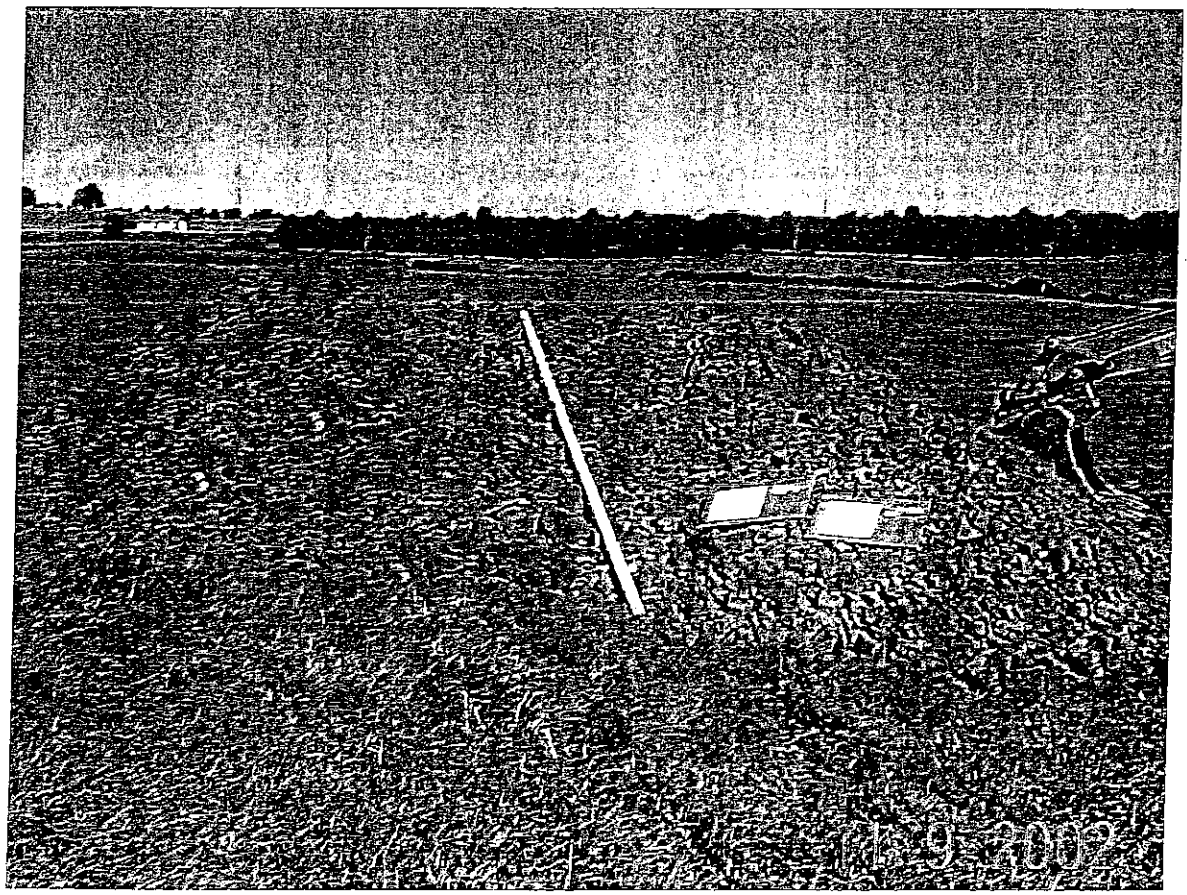


Trial Pit 17

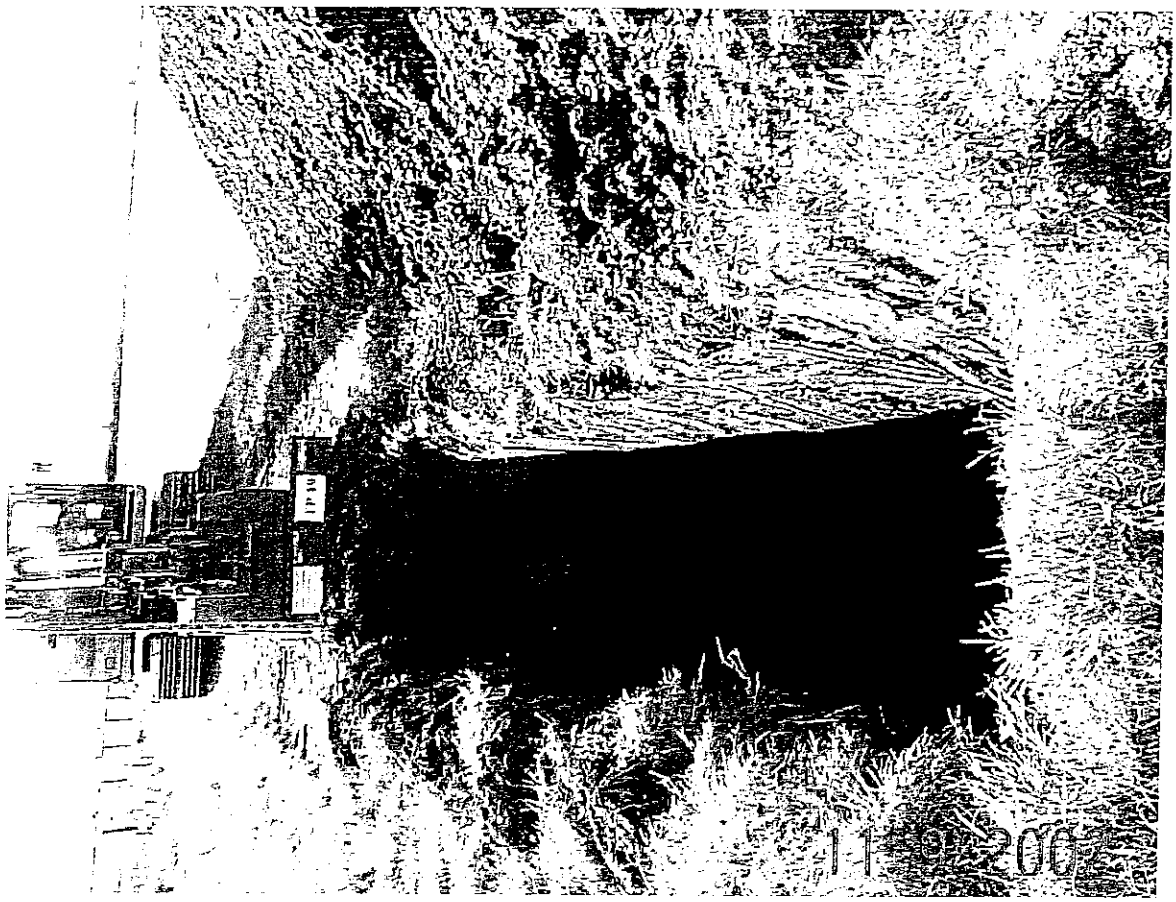
Trial Pit 17 – spoil



Trial Pit 18



Trial Pit 18 – spoil



Trial Pit 19

Trial Pit 19 – spoil

Trial Pit 20

Trial Pit 20 – spoil

jsa
CONSULTING ENGINEERS

DISTRIBUTION CENTRES DEVELOPMENT
NEW HOUSE PARK
CHEPSTOW

GEOTECHNICAL REPORT

3870/1/CM/PG9988
17 June 2005

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1.0 Investigation Works

1.1 The investigation works comprised of 22No. trial pits taken to a maximum depth of 5.9m and 3 No. boreholes taken to a maximum depth of 6.5m. The trial pits and boreholes identified a firm to very stiff clay (Weathered Mudstone) to a maximum depth of approximately 1.5m (one layer of very soft clay was identified in Boreholes 1 at a depth of 5.5 -5.7m.) overlying weak mudstone. The insitu testing of the clay substrata revealed shear strengths of between 27 and 210 kN/m^2, with an average figure of approximately 110 kN/m^2. The mudstone underwent axial and diametral point load tests which revealed Point Load Index results of between 0.11 and 0.99MN/m^2. This equates to an unconfined compressive strength of between 2.2 and 19.8 MN/m^2. Documented values of allowable bearing pressures for a weak mudstone, grade II or III, as is the case here, are between 200 and 600 kN/m^2 when using square foundations up to 3m X 3m.

1.2 The results of the Plasticity Index testing carried out on the clay at depths of between 0.5m and 2.0m classed the clay as ranging from low to high potential for shrinkage and volume. This will result in adjusting the foundation depths to any ancillary buildings as necessary should landscaping be proposed within close proximity. This is not likely to be an issue with the warehouse itself, as it is to be founded on or in the mudstone.

1.3 Groundwater was encountered in some of the deeper trial pits and in all boreholes at a depth of between 4.2m and 5.85m, with the exception of Borehole 1, where groundwater was encountered at a depth of 1.2m, rising to 0.09m. Groundwater was not encountered in the surrounding trial pits to Boreholes 1, although these were only taken to depths of between 1.85m and 5.70m AOD.

2.0 Foundations

2.1 From the above information we would recommend that pad footings be utilised for Unit B which are founded on the mudstone. As can be seen from the existing and proposed levels, the founding levels for the new Warehouse Unit B will only need to be approximately 1m below the new ground level. On inspection of proposed section A-A on drawing No.808/112 it would appear the floor to the warehouse will be at a level of 9.20m AOD, which is 1200mm or so above the adjoining lorry docking bays. It will therefore be possible to limit the excavation works within the perimeter of the building to suit the floor level.

2.2 With regard to the adjoining phases of the development, plots 1 and 3 (Warehouse A and C) and in particular the foundation design for these buildings, we have contacted the Local Authority Building Control Office, as there is no site investigation report available for these areas.

We have been advised that the properties of the soil vary greatly across the entire 22 hectare site, and to this end, various forms of foundation have been adopted to date; i.e. vibro-compaction, piling and traditional pad or strip footings. It is not possible therefore to predict at this stage the type of foundation required for these units.

2.3 We enquired as to the type of foundation used on the adjoining Asda 2 Building which we understand was completed in the last few years. The Local Authority were not appointed on this scheme to provide Building Control Approval and are therefore unable to advise of the foundation type.

2.4 In view of the comments from the Local Authority and in order to minimize financial risk, further site investigation should be carried out in the areas of plots 1 and 3 to ascertain the properties of the ground.

2.5 We would also recommend that a suite of chemical testing for contamination is undertaken simultaneously to satisfy the statutory requirements for ground management. This may need to be extended if any contaminants are encountered.

3.0 Warehouse Floors

3.1 The floor to Unit B will most likely comprise of a reinforced concrete slab approximately 350mm thick laid on hardcore approximately 200mm thick. We would suggest that the slab contain fibre reinforcement and be power floated to achieve a super flat finish. We would envisage at this stage that a free movement classification FM2 finish would be required. This will allow stacking heights in excess of 8m to be adopted. It is quite likely that a specialist sub-contractor would be employed to construct the floor and achieve the required finish.

3.2 It is possible that engineered fill will be required to form the sub-base to the floor of Unit A, which is in the lowest area of the site. The thickness required will depend on the proposed levels and the level of the mudstone in relation to it. The slab thickness and construction would be the same for this unit as units B and C.

4.0 Overall Site Level/Cut-and-Fill

4.1 We note from the preliminary levels and sections that some attention will have been paid to the overall cut-and-fill exercise for the site. We have not assessed the volumes in either case from the sections, but would obviously suggest that these should be balanced to limit any cart-away and disposal costs, and/or costs of importing material to the site. Should it be necessary to undertake this task we can generate a 3D computer model of the site with existing and proposed levels to achieve maximum efficiency in balancing the cut and fill.

5.0 Highway Construction

5.1 Highway and Pavement construction will form a significant part of the financial input on the project. CBR testing would normally be undertaken across the site to ensure the appropriate pavement construction is adopted, and to ensure it is not over-designed. In the absence of such test results we would assume with a clay or weak-mudstone substrata that a highway pavement construction in excess of 750mm will be required. In areas where only light vehicles are to have access, this may possibly be refined.

5.2 If further site investigation works are to be undertaken in plots 2 and 3, we would suggest that some CBR tests be undertaken at the proposed formation level. This will involve excavating to the formation level in many areas, but will give some certainty as to the likely construction thickness and make-up that will be required. Further testing can be undertaken during the works when the formations are exposed throughout in order to prove the preliminary results.

6.0 Mounding Area

6.1 We understand that Mounding 1 has been designed and detailed and awaiting commencement of construction. In developing the design of the construction works for Mounding Areas 2 and 3, in conjunction with the building works, it will be necessary to adopt safe gradients to the embankments, and incorporate the landscaping to ensure stability is achieved. This will be done in conjunction with the overall cut-and-fill exercise for the site.

6.2 In order to maximise the site area, and restrict the overall width of the mounds, particularly immediately to the north of Unit B, gabion boxes filled with stone could be utilised to retain the new embankments. These are a cost-effective means of retaining the soil, and should not require foundations due to the proposed levels. It is also possible to allow vegetation to grow in the boxes, which will compliment any landscaping proposals.

FACSIMILE

To:	**JSA**	*Date:*	24 June 05
Facsimile No:	020 8538 966		
For the Attention of:	**Chris Legg**		
Cc:	Charles Ward East Mon (01291 626969)		
Sender	Keith Hiley		
No. of Pages:	1 *(including this one)*		
Project:	**Newhouse Park: Chepstow**	*Ref*	808.SE
Message:			

Dear Chris

Distribution Centre Development: Fees

Following our phone call today, Thanks for preparing the Geotechnical Report. I confirm that Chris Ward of Land Securities would now like to proceed with the following engineering exercises to form part of their funding package:

- Prepare site computer model to calculate the most economic cut and fill design to include: redistributing excess spoil on Plot 1 (to raise the building and ground level above flood datum), on the mounding (to be raised to allow extra screening of buildings due to increased eaves heights of 12 –14m, and if any excess spoil occurs, possibly dumping on land to the east of Plot 3/mounding area 3.
- Include preliminary design/location for retaining walls to mounding areas 2 and 3 as necessary to create the most cost effective scheme along with mounding profiles.
- Liaise with the Drainage Authority to establish latest flood datum for the buildings FFLs.
- Prepare preliminary design for surface water drainage, to include dry lagoons, possible underground storage, re-routing the culvert / rhyne that crosses Plot 3 north to south, based on KHA feasibility study site plan drawing nos. 808/112A and 113. Copies of these drawing will be in the post to you on Monday. 112A is the same as 112 (which you have) and 113 splits Unit 2 to create two semi detached depots.
- Liaise/attend meetings with KHA and QS (and possibly landscape designer) to establish most economic solution combining the problems of building heights/screening, site levels/amended layout to suit surface water drainage and flood datum. Once we have your design and QS budget approved by the Client, we will need to liaise the Planners to see what height and mounding profiles they are likely to accept. This may result in some amendments to the site plan.
- Subject to your advice, you may wish to include a site visit with possible on site liaison with the Drainage Authority.

Could you please provide a fee for these services either in lump sum form including all expenses or as a maximum budget along with your standard hourly rates. It goes without saying that our Client, East Mon Industrial Holdings Ltd, will be looking for competitive fees to keep their costs down at this early stage of the development.

Kind regards,
Keith

jsa
CONSULTING ENGINEERS

3870/F/CL/GG10063
1 July 2005

Mr K Hiley
Keith Hiley Associates Ltd
60 High Street
Hampton Wick
Surrey
KT1 4DB

BY FAX & POST

Dear Keith

RE: DISTRIBUTION CENTRE DEVELOPMENT, CHEPSTOW

Further to your faxed letter dated 24th June 2005 regarding additional work at the above site I confirm the following.

- Based on the scope of work identified in your letter I propose a lump sum fee of £8500 +VAT.
- Within this I have included for attendance at 3 meetings with you, a site inspection and a meeting with the local drainage authority plus the design items you have specified.

I trust you find this in order.

KEITH HILEY
- 4 JUL 2005
ASSOCIATES

Yours sincerely

CHRIS LEGG
For JSA CONSULTING ENGINEERS

34 Candler Mews, Amyand Park Rd, Twickenham, TW1 3JF
T: 020 8538 9555 F: 020 8538 9666
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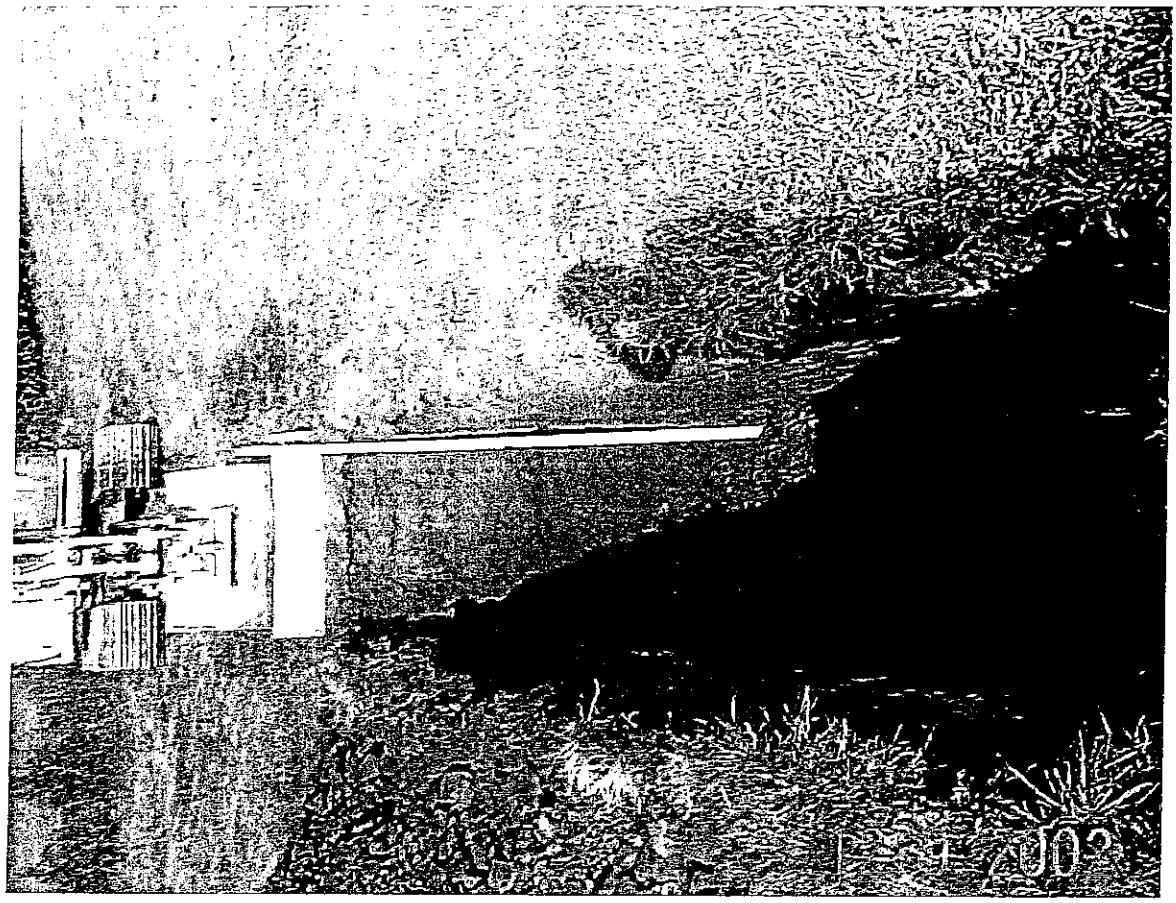
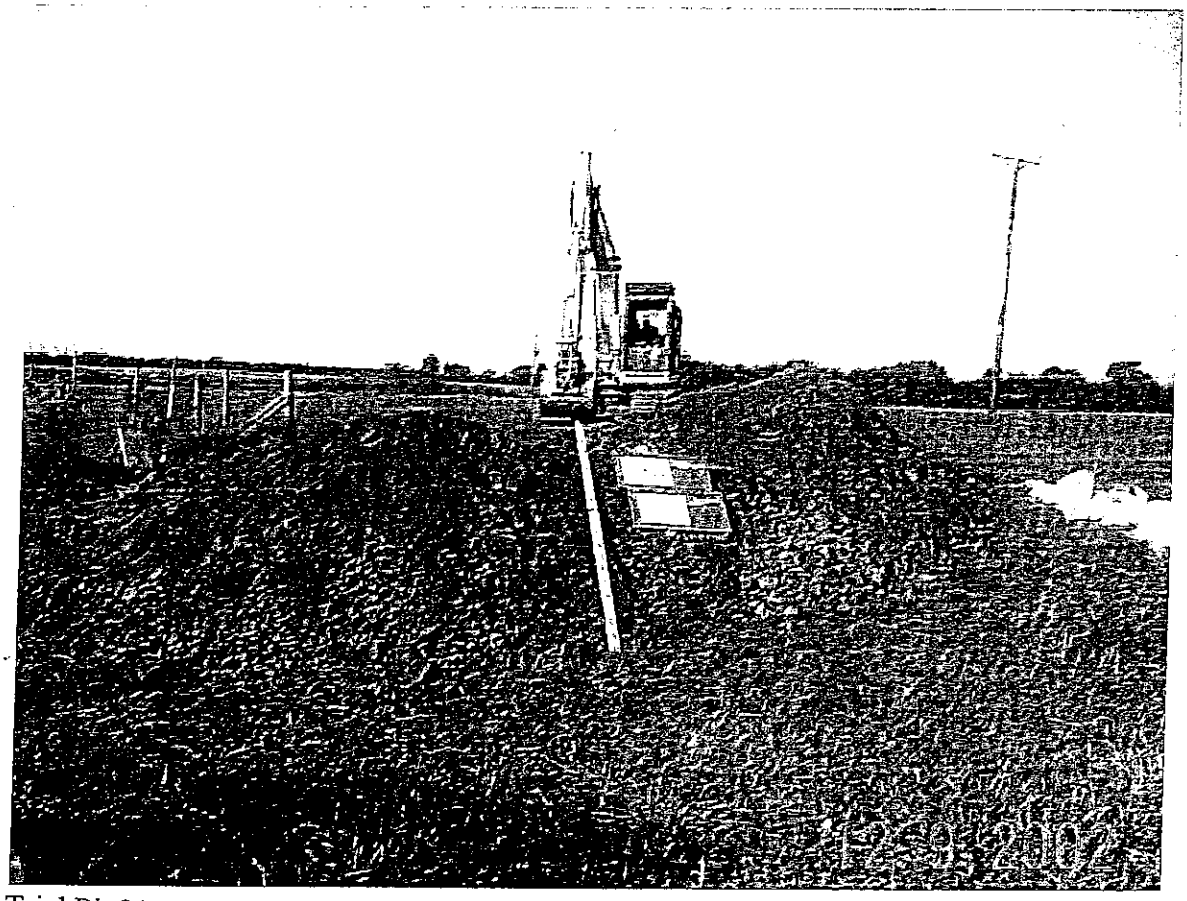
Directors: CT Legg BSc CEng MICE MIStructE, MC Hughes BSc CEng MICE, GJ Murphy BEng CEng MIStructE
Associate Director: K Johnston
Associate: AJ Dinsdale BEng CEng MICE AMIHE



Trial Pit 22

Trial Pit 22 - spoil

Trial Pit 21



Trial Pit 21 – spoil

Final

Environmental Assessment

Plots 1-3 Newhouse Farm Business Park

Chepstow

Frontier Estates (Chepstow Developments) Limited

Royal Bank of Scotland

Contract No:	*66-C10138*
Issue:	*3*
Author (signature):	*Jo McKay/Sarah Bannon*
Project Director (signature):	*Sue Bullock*
Date:	*30 March 2006*

This report has been prepared by ENVIRON with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. This report is confidential to the client, and ENVIRON accepts no responsibility whatsoever to third parties to whom this report, or any part thereof, is made known, unless formally agreed by ENVIRON beforehand. Any such party relies upon the report at their own risk.

ENVIRON disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

VERSION CONTROL RECORD

ISSUE	DESCRIPTION OF STATUS	DATE	REVIEWER INITIALS	AUTHORS INITIALS
A	Internal Draft for Review	27/03/06	SLB	SB/JM
1	First Release to Client	28/03/06	SLB	SB/JM
2	Second Release to Client	28/03/06	SLB	SB/JM
3	Final Report	30/03/06	SLB	SB/JM

CONTENTS

CONTENTS (Cont'd)

EXECUTIVE SUMMARY

ENVIRON UK Limited (ENVIRON) was commissioned by Frontier Estates (Chepstow Developments) Limited (Frontier Estates), to undertake a focused Environmental Assessment, incorporating a desk-top review and intrusive investigation, of Units 1-3 Newhouse Park, Chepstow ('the site'). The work was requested in order to obtain information on the environmental ground condition of the site in advance of the proposed purchase of the freehold interest in the property by Frontier Estates. Frontier Estates proposes to develop the site for commercial/warehousing/light industrial purposes. The site is located in a mixed rural and industrial setting, and the local area is considered moderately sensitive area with regard to ecological receptors, due to the status of the Severn Estuary as a Ramsar site, Special Protection area and SSSI and the Wye Estuary as a SSSI.

The site is currently undeveloped land in agricultural use, and available information indicates that the use has not changed since the 1880s. There is no information, based on a site inspection, to indicate that potentially activities with the potential to result in contamination have been carried out, or that contamination has otherwise occurred on-site. On this basis, the potential for contamination as a result of current and historic uses of the site is considered low.

The site is located in an area of low hydrogeological sensitivity (the majority of the site is underlain by a Non-Aquifer) and moderate hydrological sensitivity. The River Wye lies 850m east of the site, flowing in a general north to south direction and the River Severn flows 800m south of the site, both of which are tidally influenced in the vicinity of the site. The site lies in an area with a moderate chance of flooding, taking into account the effect of any flood defences that may be in this area. Accordingly, a flood risk assessment may be required when seeking planning permission for this site.

A previous ground investigation of Plot 2 of the site, involving drilling of three boreholes to depths up to 6.5m bgl and excavation of twenty two trial pits to a maximum depth of 5.9m bgl, was carried out by WS Atkins Consultants Ltd in December 2002. Very limited chemical analysis was carried out, however, the findings of the investigation were not indicative of the presence of contamination.

An intrusive site investigation was undertaken by ENVIRON on 3rd, 16th and 17th March 2006. The investigation comprised the excavation of twenty four trial pits across Plots 1 and 3 to depths of up to 3.6m bgl and analysis of soil samples for a range of possible contaminants. No evidence of

contamination was noted during the site investigation, and groundwater was not encountered in any of the trial pits.

The analytical results indicate that, generally, concentrations of contaminants in soil at the site are such that they would not present a risk to human health or the environment on the basis that the site is developed for industrial/commercial/warehouse use. Morever, no evidence of widespread or localised areas of soil contamination is inferred from the results. An investigation of groundwater quality has not been carried out as part of this investigation; however, available information suggests that there are no on-site sources of contamination that may have adversely impacted shallow groundwater beneath the site.

In summary, there is no evidence of ground contamination at the site. Accordingly, the risk of future action by regulators or third parties with regard to existing ground contamination is considered low.

1.0 INTRODUCTION

1.1 BACKGROUND

ENVIRON UK Limited (ENVIRON) was commissioned by Frontier Estates (Chepstow Developments) Limited (Frontier Estates), to undertake a focused Environmental Assessment, incorporating a desk-top review and intrusive investigation, of Units 1-3 Newhouse Park, Chepstow ('the site'). The work was requested in order to obtain information on the environmental ground condition of the site in advance of the proposed purchase of the freehold interest in the property by Frontier Estates. Frontier Estates proposes to develop the site for commercial/warehousing/light industrial purposes. The site location is shown in Figure 1, Annex A.

1.2 OBJECTIVES

The objectives of the review were to provide a reasonable characterisation of baseline conditions at the site, in order to broadly assess the potential liabilities, if any, associated with ground contamination at the site and in the vicinity, such as these may have implications for a future owner of the property. For example, this includes the possibility of investigation and clean-up actions being enforced by the Regulatory Authorities or other parties. The findings of the assessment were required within a rapid timeframe to meet the overall schedule of the transaction.

1.3 SCOPE OF WORK

In order to achieve this objective, several separate work elements were required:

- Completion of a focused desk-top review;
- Identification and completion of a programme of soil sampling and analysis that would allow a broad characterisation of ground conditions at the site with a reasonable level of certainty; and

- Evaluation of the results of the desk-top review and intrusive investigation with regard to the current and likely future regulatory context, and identification of the potential for liability relating to ground contamination for a future owner of the site, assuming the site continues to operate in its current use. In particular, this includes identification of potential requirements for remedial action, and associated cost implications.

1.4 STRUCTURE OF REPORT

A discussion of the findings of the desk-based environmental review is provided in Section 2.0. The scope and results of the site investigation are set out in Section 3.0. These results are collectively interpreted within a risk assessment, the findings of which are described in Section 4.0. The implications of ground conditions for a future owner in terms of potential liability and associated cost are discussed in Section 5.0.

2.0 ENVIRONMENTAL DESK-TOP REVIEW

2.1 INTRODUCTION

The aim of the desk-top review was to assess the potential for ground contamination, both at and in the vicinity of the site. This information is necessary to the identification of an appropriate scope for a subsequent intrusive environmental site investigation and to the evaluation of the findings. Key aspects of the review were carried out in advance of the site investigation; however, in order to meet the timing of the transaction, the majority was completed in parallel with the site investigation. The review comprised the following:

The review comprised the following:

- a review of historical land uses and operations, at the site and on neighbouring land, to assess the potential for soil, groundwater or surface water contamination due to past activities;
- a review of available geological, hydrogeological and hydrological data associated with the site, to allow the significance of any contamination to be put into context in terms of the potential for third party or regulatory actions;
- an inspection of the site, comprising a visual survey of the site; and
- a review of third-party and Regulatory Authority databases to determine whether there are any records of relevant contamination issues pertaining to the site.

2.2 SITE LOCATION AND ENVIRONMENTAL SETTING

2.2.1 Site Location

The National Grid Reference of the site centre is 353120 191240 as indicated on Figure 1, Annex A and the address of the site is:

Newhouse Farm Business Park
Chepstow
Gwent

The site layout is indicated in Figure 2 and 2A, Annex A.

2.2.2 Site Setting

The site is located in a mixed rural and industrial setting, immediately south of the M48 motorway, approximately 2.2km south of Chepstow town centre. The River Wye and the River Severn lie 850m east and 800m south of the site respectively (the confluence of the River Severn and the River Wye lies approximately 1400m south-east of the site). The site is accessed from an unidentified road to the east of the site. The approximate elevation of the site is 15m above Ordnance Datum (AOD), and the surrounding land generally slopes to the south-east.

The site is bound:

- to the north by the M48 motorway, beyond which is undeveloped land, presumably in agricultural use;
- to the east by industrial properties associated with Newhouse Farm Industrial Estate;
- to the south by undeveloped land, presumably in agricultural use, and a railway line approximately 260m distant; and
- to the west by undeveloped land, beyond which are residential properties associated with Mathern Village.

The nearest residential properties lie to the west of the site, approximately 200m distant. on-site. The majority of the site is classed as a nitrate vulnerable zone. The Severn Estuary is classified as a Ramsar site, Special Protection area and SSSI. The Wye Estuary to the east is classified as an SSSI and Special Area of Conservation.

2.2.3 Site Description

The site covers 18.2 hectares, is currently undeveloped (greenfield land) in agricultural use and has an irregular shape. The site shape is that of an inverted 'L'.

2.4 HISTORICAL MAPS & REGULATORY ENQUIRIES

2.4.1 Introduction

A review of the previous land uses at the site was carried out by inspecting historical maps. This has enabled an assessment to be made of the potential for contamination to have been caused by former activities both on-site and in the surrounding areas.

2.4.2 Historical Map Review

The reviewed available historical maps are detailed in the table below. Historical maps are presented in Annex B.

Site History		
Date	**Features On-Site**	**Features Off-Site**
1881 1:2,500	The site is occupied by undeveloped open land, presumably in agricultural use. A surface water drain flow in a general north to south direction in the northern part of the site and adjacent to the eastern boundary in the southern part of the site. A Surface Water Drain flows across the southern part of the site in a general north-east to south-west direction and a Pond is located in the south-west area of the site. A Footpath crosses the centre of the site in a general east/west orientation.	The area surrounding the site is generally occupied by undeveloped open land, presumably in agricultural use. The Great Western Railway is located approximately 230m south-east of the site in a general north-east/south-west orientation.
1886/87 1:10,560	The site remains undeveloped.	There are no significant changes to the surrounding area.
1901 1:2,500	The site remains undeveloped.	There are no significant changes to the surrounding area.
1902/03 1:10,560	The site remains undeveloped.	There are no significant changes to the surrounding area. An Old Quarry is located approximately 220m north of the site.
1921 1:2,500	The site remains undeveloped.	There are no significant changes to the surrounding area.
1922 1:10,560	The site remains undeveloped.	There are no significant changes to the surrounding area.
1924 1:10,560	The site remains undeveloped.	There are no significant changes to the surrounding area.
1938 1:10,560	The site remains undeveloped.	There are no significant changes to the surrounding area.
1955 1:10,560	The site remains undeveloped.	There are no significant changes to the surrounding area.

Site History		
Date	**Features On-Site**	**Features Off-Site**
1968/69 1:2,500	The site remains undeveloped.	The M4 Motorway has been constructed adjacent to the northern boundary of the site in a general east/west orientation. An Electricity Transmission Line is located adjacent to the southern boundary of the site and an Electricity Pylon is located to the south of the site, approximately 30m distant.
1971 1:10,560	The site remains undeveloped.	The former Old Quarry to the north of the site is no longer depicted on the map, presumably infilled. Residential properties have been constructed approximately 500m north-east of the site. A Gas Holder is located approximately 580m east of the site.
1973 1:2,500	Only the southern part of the site features on the historical map. The site remains undeveloped.	Only the area to the south of the site features on the historical map. There are no significant changes to the surrounding area.
1982 1:2,500	Only the north-eastern part of the site features on the historical map. The site remains undeveloped.	Only the area to the north-east of the site features on the historical map. A road has been constructed adjacent to the eastern boundary of the site and a Warehouse is located to the east of the site, approximately 30m distant.
1987 1:10,000	The site remains undeveloped.	A Tank (thought to be a firewater tank) associated with the Warehouse immediately east of the site, is located approximately 30m distant. Warehouses are located 40m, 110m and 230m east of the site. A Works is located approximately 730m east of the site.
1990 1,2,500	The former Footpath is no longer shown on the map.	Only the area to the north of the site is shown on the historical map. A Tank is located approximately 20m east of the site, associated with the Warehouse 40m distant.
1991/92 1:2,500 1:10,000	The site remains undeveloped.	The area to the east of the site is depicted on the map as Newhouse Farm Industrial Estate. Industrial Buildings have been constructed 280m, 350m, 370m, 450m and 460m east of the site. land immediately to the west has been developed with an industrial unit, and the land immediately to the west appears to have been developed into a parking/storage area. The former Gas Holder to the east of the site has been dismantled.
1995 1:2,500	The site appears unchanged.	There are no significant changes to the surrounding area.
2000 1:10,000	The site appears unchanged.	An Industrial Building is located 150m east of the site. The Works, 730m east of the site, is depicted on the map as a Sewage works.

2.4.3 Regulatory Authority Information

The Local Authority has not been contacted as part of this assessment, although a search of database records has been undertaken from the Landmark (Envirocheck) Environmental Database. The following information has been obtained from the Database:

Regulatory Authorities	0-250m	250-500m	Details
Environment Agency Records			
Registered Landfill or other waste disposal sites.	0	0	Not Applicable (N/A)
Registered waste transfer or treatment sites.	0	0	Not Applicable (N/A)
Authorised industrial processes (IPC or IPPC).	0	0	Not Applicable (N/A)
Radioactive substances licenses.	0	0	Not Applicable (N/A)
Enforcements, prohibitions or prosecutions.	0	0	Not Applicable (N/A)
Pollution Incidents.	0	1	One pollution incident 360m south-east of the site, involving spillage of farm effluent/slurry – Category 3 (Minor Incident).
Other Information Sources			
National Radon Protection Board (NRPB) and Department of the Environment, Transport and the Regions (DETR)			
Is the site in a radon-affected area?	No		3-5% of homes exceed the Action Level for radon (200Bq m^{-3} averaged over a year). Radon protection measures should be provided in new dwellings.
Miscellaneous			
Are there any overhead transmission lines, masts or pylons for electricity within 250m of the site?	Yes		Adjacent to the southern boundary of the site.
Is the site in an area where there is a known risk of flooding?	Yes		Southern area of site in flood zone with a 1 in 75 (1.3%) chance of floods occurring each year.

Part IIA of the Environmental Protection Act came into force in the UK on 1 April 2000. This established a new statutory regime for the identification and remediation of contaminated land. Part IIA defines contaminated land as 'any land which appears to be in such a condition, by reason of substances in, or under the land that (a) significant harm is being caused or there is significant possibility of such harm being caused; or (b) pollution of controlled waters is being, or is likely to be, caused'. Controlled waters include streams, lakes and groundwater. As such, the Authority is required to determine which sites meet the definition of 'contaminated land' and to make sure appropriate remediation of such land takes place.

The Contaminated Land Inspection Strategy for Monmouthshire County Council was published in 2002 and has not been revised since. Information provided within the Inspection Strategy indicates that the Local Authority is likely to classify the historic use and current use of the site (undeveloped land in agricultural use) as being of a low risk with regard to its potential to

have caused contamination. In ENVIRON's opinion, the Local Authority is unlikely to identify the site for further investigation.

2.4.4 Previous Reports

A previous ground investigation of Plot 2 of the Newhouse Park estate was carried out by WS Atkins Consultants Ltd in December 2002. The investigation involved rotary drilling of three (3) boreholes to depths between 6.0 and 6.5m bgl, and excavation of twenty two (22) trial pits to a maximum depth of 5.9m bgl across Plot 2. Hand vane tests were carried out in cohesive strata within the trial pits and disturbed samples were submitted to the laboratory for testing. Undisturbed cores from the boreholes were submitted for logging and testing at the laboratory. The investigation report identifies that Mercia Mudstone immediately underlies this area of the site (i.e. alluvium is absent across this area. Plot 2 is further away from the River Severn and on higher ground than Plot 1). Groundwater was generally encountered at depths of between 4.2 and 5.85m across Plot 2 (groundwater was measured slightly below surface level in one borehole towards the centre of this area). Very limited chemical analysis (pH and sulphate) was carried out during the previous investigation, and these results were not indicative of the presence of contamination.

2.4.5 Information from site visit

Observations made during the course of Phase II site investigations are annotated on Figures 2 and 2A. They include the presence of a fenced compound (apparently unused, with no indication of a former use) to the south of Plot 1, a surface water balancing pond to the north of Plot 1, an electrical sub-station on neighbouring land (off-site) north of Plot 3, two overhead power lines above Plot 3 and various surface water drainage ditches across the site. The land on the southern part of Plot 1 is slightly raised compared to the northern side of this Plot, and appears to be landscaped. No evidence of historic or current contamination was observed on the site.

2.5 GEOLOGY, HYDROGEOLOGY AND HYDROLOGY

2.5.1 Introduction

Desk-based research of the local geology, hydrogeology and hydrology was carried out, where possible, in order to establish the potential for migration of contamination onto or away from the site, and to assess the surface and groundwater sensitivity of the site area.

Information on the geological stratigraphy underlying the site was obtained from a number of sources, namely:

- Published geological map produced by the British Geological Survey (BGS) Sheet 250, Chepstow, Solid & Drift Edition;
- Policy and Practice for the Protection of Groundwater, Groundwater Vulnerability1:100,000 Map Series, Sheet 37, Southern Cotswolds; produced by the Environment Agency;
- Policy and Practice for the Protection of Groundwater, Welsh Regional Appendix, published by the NRA;
- Radon Atlas of England and Wales, 2002, published by the National Radiological Protection Board; and
- Dealing with radon emissions in respect of new development, 2000, published by the Department of the Environment Transport and Regions and the British Geological Survey.

2.5.2 Geology

According to the BGS map (Sheet 250, Chepstow, 1:50,000 scale), the north-western part of the site is underlain by drift deposits of Second Terrace Deposits (Gravel) and the southern part of the site is underlain by drift deposits of estuarine Alluvium, which are relatively thin beneath the site. The north-eastern part of the site and the drift deposits are underlain by Mercia Mudstone which is estimated to be up to 40m thick beneath the site. The Mercia Mudstone is in turn underlain by Upper Coal Measures.

According to data issued by the National Radiological Protection Board (2002), the site lies in an area where 3-5% of homes exceed the Action Level for radon (200Bq m-3 averaged over a year). According to information published by the Department of the Environment, Transport and the Regions and the British Geological Survey (2000), the site is in an area which requires full radon protection to be provided in new dwellings. These guidelines refer to residential dwellings, not commercial properties. The Action Level for commercial properties is 400Bq/m3 and assessment of potential worker exposure is the responsibility of the occupant.

2.5.3 Hydrogeology

The Environment Agency classifies the Second Terrace Deposits as a Minor Aquifer. Although these aquifers will seldom produce large quantities of water for abstraction. They are important in both providing local supplies and in supplying base flow to river. The Estuarine Alluvium and Mercia Mudstone are classified by the EA as Non-Aquifers. These formations are generally regarded as containing insignificant quantities of groundwater.

The Groundwater Vulnerability Map (Sheet 37) confirms that the north-west are of the site is located on a Minor Aquifer and the remainder of the site is located on a Non-Aquifer, of negligible permeability.

According to the Environmental Database, there are two licensed groundwater abstractions within a 2km radius of the site. Both are held by Wyelands Estates Limited and located approximately 820m north-west of the site. The licences allow abstraction of water from Carboniferous Limestone for general farming, industrial and domestic use.

Information from the Environment Agency database indicates that the site does not lie within a groundwater Source Protection Zone (SPZ), although the total catchment of a SPZ lies to the west of the site.

2.5.4 Hydrology

Several surface water drains flow across the site. These include a surface water drain which flows in a general north to south direction in the northern area of the site and adjacent to the

eastern boundary in the southern area of the site, and a drain which flows in a general east to west direction in the southern area of the site. The River Wye is located approximately 850m east of the site, flowing in a general north to south direction and the River Severn is located approximately 800m south of the site. There are no watercourses classified under the Environment Agency's General Quality Assessment (GQA) Scheme within 1km of the site. The drains across the site are not classified, and the River Wye and River Severn are tidal at this point, and therefore also unclassified.

According to the Environment Agency, there are no surface water abstractions within a 2km radius of the site.

According to the Landmark Database, there are no Discharge Consents within a 250m radius of the site.

According to an EA data source, the site is situated in an area with a moderate chance of flooding. The chance of flooding each year is greater than 1.3% (1 in 75), taking into account the effect of any flood defences that may be in this area. Accordingly, a flood risk assessment may be required when seeking planning permission for this site.

2.6 CONCEPTUAL SITE MODEL (PRE-INVESTIGATION)

2.6.1 Introduction

This section sets out the conceptual site model (CSM) (pre-investigation) for the site. The CSM is central to the risk assessment process, and consists of:

- Evaluation of potential source areas (historic and on-going);
- Evaluation of potential pathways; and
- Identification of potential environmental and human receptors and exposure scenarios.

A source, pathway and receptor must be present for a pollution linkage to exist.

2.6.2 Potential Sources of Contamination

Based on available information that suggests the site has historically been used for agricultural use, there is considered to be limited potential for on-site sources of contamination to exist. Potential sources could include contaminated Made Ground that has been imported onto the site, although there is no evidence to suggest the presence of such fill, and residual pesticides or fertilisers arising from agricultural use, although this would apply to any land in agricultural use.

2.6.3 Potential Pathways for Contamination

The following potential pathways have been identified at the site:

- Contaminants in superficial or shallow unsaturated soils may be dissolved in infiltrating surface water and gradually leach into shallow groundwater within the underlying alluvial deposits;
- Contaminants in shallow groundwater may migrate horizontally with the general direction of groundwater flow onto adjoining properties. It is expected that shallow groundwater in the Alluvium will flow towards and discharge to the River Severn 800m south of the site. However, the Estuarine Alluvium is classed as a Non Aquifer and lateral groundwater flow beneath the site is likely to be limited. Similarly, the underlying Mercia Mudstone is a Non Aquifer, such that vertical migration of groundwater is unlikely to be significant.
- Surface water run-off may discharge to the River Wye or River Severn (or other unidentified local surface waters) via land drains.
- Contaminants in shallow soils and groundwater may vaporise or gases such as methane or hydrogen sulphide may be generated and migrate through the sub-surface into buildings or outdoor air. However, there is no information to suggest that volatile or gaseous contaminants are likely to be present or generated on-site;
- Contaminants in superficial soils may be mobilised as dust by wind action or by direct contact from site users;
- Preferential pathways for the migration of contaminants may exist in the form of drainage and underground utility routes on the site. Structures such as foundations may also locally influence groundwater flow by forming barriers; and
- Contaminants may undergo physical, chemical and biological processes which cause them to transform or degrade in-situ.

2.6.4 Receptors

The following receptors have been identified.

- The Estuarine Alluvium is classed as a Non Aquifer, and shallow groundwater beneath the site is therefore likely to be limited. Similarly, the Mercia Mudstone is a Non Aquifer. Groundwater receptors beneath the site are not likely to be of high sensitivity.
- The nearest identified surface water is the River Severn approximately 800m south of the site;
- Future site residents, workers, staff and customers, with regard to the intention to develop the site for warehousing. Exposure to soils is likely to be limited due to the presence of buildings and hardcover across the site which will limit generation of dust or exposure by direct contact;
- Construction workers. Works involving excavation of roadways or floor slabs and/or underlying soils will involve additional potential exposure routes (dermal contact, inhalation and ingestion of dust, as well as inhalation of vapours) for workers;
- Buildings and structures. The acidic and/or aggressive nature of some contaminants may result in damage to buildings or concrete materials; and
- Off-site residents and workers. Contaminants may leach or migrate in groundwater from the subject site onto neighbouring properties. Neighbouring land is generally developed for warehousing/retail use.

3.0 SITE INVESTIGATION

3.1 INTRODUCTION

An intrusive site investigation was undertaken by ENVIRON on 3rd, 16th and 17th March 2006. With reference to the preliminary Conceptual Site Model (CSM), the investigation focused on providing a broad characterisation of site conditions, to identify whether made ground is present, confirming the shallow geology and investigating the nature and extent of contamination, if any, within the shallow soils at the site. A summary of the scope of the investigation undertaken at the site is presented in the table below. Exploratory locations are provided in Figure 2 and 2A, Annex A. The Trial Pits were positioned on-site in order to gain a representative coverage of ground conditions beneath the site.

TABLE 1 - SUMMARY OF INTRUSIVE WORKS UNDERTAKEN

Site Activity	No.	Comments
Service Location Survey	Item	Prior to intrusive works, a specialist service location contractor was used to locate below ground services.
Trial Pits	24No.	Trial Pits (TP) were excavated using a 3CX JCB to a maximum depth of 3.6m bgl. Soil arisings were logged by ENVIRON personnel. Detailed logs of the excavations are presented in Appendix B of this report. Soil samples were obtained at regular intervals throughout the soil profile for on-site screening of soil hydrocarbon vapours using a photoionisation detector (PID).
Soil Samples	41 No.	Soil samples were recovered at regular intervals during the excavation of the trial pits. All samples were stored within appropriate sample containers and forwarded to an independent analytical laboratory.
Soil Analysis	15 No.	A total of 15 No. soil samples were submitted for organic content, pH, sulphate, phenols, cyanide, ammoniacal nitrogen, PAH, nitrate, TPH, metals and pesticides.

The soil logs and observations in the field are presented in Annex C and discussed in Section 3.2. Soil samples were retained to provide a representative overview of conditions across the site. Retained samples were placed in containers appropriate for the analysis being undertaken, and stored in cool boxes maintained at a low temperature, to avoid the loss of volatile compounds. The results of the soil analysis are discussed in Section 4.0.

3.2 RESULTS OF THE INVESTIGATION

3.2.1 Ground Conditions

Logs describing ground conditions encountered within the boreholes are presented in Annex C of this report. General ground conditions encountered are summarised in Table 2 overleaf:

A silty clay containing occasional gravels, concrete, limestone, slag (TP1), red mudstone (TP2) was encountered beneath the southern part of Plot 1 to a maximum depth of 1.7m bgl (TP2) (no made ground was encountered in TP5 in this area). Metal fragments and a plastic drainage pipe were also encountered in TP3. The southern section of Plot 1 site is slightly raised and appears to be landscaped. Due to the differences in the arisings of the trial pits over a relatively small area, and the presence of limestone and occasional slag and red mudstone sized gravels it is considered likely that the top of the ground in this area is Made Ground. Anecdotal information indicates that this area of Plot 1 (incorporating TP1-TP5) was used relatively recently for placement of soil arisings during the development of adjacent land for industrial use. In addition a drain was found running from east to west which further indicates that the land has been previously worked.

The only Made Ground encountered in the northern section of Plot 1 was in TP10 to a depth of 0.8m bgl and consisted of medium sized clinker gravels. Made Ground was only encountered on Plot 3 in TP17 to a depth of 1.2m bgl. The Made ground comprised gravels and cobbles of limestone, brick and concrete. Made Ground was not encountered elsewhere on site.

Alluvium was found below the Made Ground in most of the trial pits in the form of silty clay, which varied in its description, from a stiff dark grey blue fissured clay to a soft red brown superficial clay (possibly reworked with the top of the Mercia Mudstone in the southern area of Plot 1). The Alluvium is underlain by weathered mudstone (the top of the Mercia Mudstone) at depths of between 0.35m to over 3.2m (unproven). This is generally in accordance with the published geology.

No visual or olfactory signs of contamination were noted on Plot 1 or 3 during the site investigation. No elevated PID readings were obtained during the investigation.

Groundwater was not encountered in any of the trial pits during the investigation.

TABLE 2 - SUMMARY OF GROUND CONDITIONS ENCOUNTERED		
Southern Section of Plot 1		
Strata	**Description**	**Strata Depths**
Made Ground	Grass and moss cover over brown friable clayey gravelly silt topsoil.	Ground Level.
Made Ground	Brown red gravely silty clay with frequent laminae and yellow or black (non hydrocarbon) discolorations. Gravels comprise concrete, limestone, slag (TP1), red mudstone (TP2). Occasional metal fragments and a plastic drainage pipe were encountered in TP3.	Encountered at approximately 0.1m bgl. Made ground was present to a maximum depth of 1.7m bgl (TP2). No made ground was encountered in TP5.
Clay	Grey blue weathered clay with black (non hydrocarbon) discolorations and occasional wood fragments, rootlets and flint gravels. Clay becomes a brown red colour in TP4 after 2.0m bgl.	Encountered at approximately 1.2m bgl to a maximum depth of 3.2m bgl. Red brown clay in TP5 was present from ground level to depth of 3.6m bgl.
Northern Section of Plot 1		
Strata	**Description**	**Strata Depths**
Top Soil	Grass over red brown friable clayey silt topsoil.	Ground Level
Clay	Mainly red brown friable silty clay with gravel sized fragments of stiff grey green clay and occasional flint gravels. Clay has frequent laminae and black discolorations	0.2m bgl to a maximum depth of 3.2m bgl (TP14). However, the final depth is unproven.
Weathered Mudstone	Gravels and cobble size fragments of stiff brown red mudstone in a brown red silty sandy matrix.	Weathered Mudstone was present only in TP8, TP9 and TP10 from 1.4m bgl to 2.6m bgl (TP8). However, the final depth is unproven.
Plot 3		
Strata	**Description**	**Strata Depths**
Top Soil	Occasional grass and straw over brown red clayey silt with frequent rootlets.	Ground Level
Clay	Mainly red brown silty friable clay with grey green discolorations, gravel size fragments of stiff grey clay and occasional flint gravels.	0.3m bgl to a maximum depth of 3.2m bgl (TP20). However, the final depth is unproven.
Weathered Mudstone	Red brown stiff dry silty clay with gravel size fragments of stiff grey green clay and dark red Mudstone.	Weathered Mudstone was present only in TP24, TP25 and TP26 from 0.35m bgl (TP24) to a maximum depth of 2.9m bgl (TP26). However, the final depth is unproven.

3.4 CHEMICAL ANALYSIS

3.4.1 Analytical Strategy

The analytical strategy was developed with reference to information about the historic use of the site, field observations and screening results to assess the presence of a range of potential contaminants. The analytical schedule is summarised in Annex D. 41 soil samples samples were submitted to the laboratory.

The analytical schedule comprised: 15 soil samples analysed for pH, a range of heavy metals, sulphate, extractable petroleum hydrocarbons (EPH)(C_{10} to C_{40} range), speciated PAH, nitrate and ammoniacal nitrogen; 10 soil samples analysed for phenols and cyanide, 4 soil samples for pesticides/chlorinated pesticides and 3 soil samples for fraction organic carbon.

3.4.2 Analytical Results

The results of the laboratory analysis are presented in Annex E.

4.0 RISK ASSESSMENT

4.1 INTRODUCTION

The CSM has been revised with reference to the findings of the site investigation, and a preliminary risk assessment to evaluate the significance of the investigation findings at the site has been completed based on this revised model. This uses conservative methods to evaluate whether site conditions present an acceptable risk to identified receptors and that the land may accordingly be considered suitable for use. Since the methods are conservative, failure to meet the assessment criteria does not necessarily imply that an unacceptable risk exists, but that further assessment or remedial action *may* be necessary. Accordingly, professional judgement and experience have also been used to interpret the results and discuss the potential implications of environmental ground conditions for a future site owner in terms of (a) the likelihood that remedial action will be required and enforced at the site in its current use and (b) the likelihood that future requirement for remedial action (e.g. on redevelopment) could affect the value or liquidity of the property.

4.2 CRITERIA FOR INTERPRETATION

Preliminary screening by comparison of soil and groundwater data with relevant assessment criteria was carried out in order to focus the risk assessment.

Published guidelines from various sources have been identified, and appropriate and conservative assessment criteria were selected given the proposals to develop the site for warehousing use. The guidelines have been used as an initial assessment tool only, for the comparison of site data with published data. Professional judgement and consideration of other relevant environmental factors are important in application of the various guideline values. The screening values selected represent conservative, chemical-specific concentrations for a defined application below which an unacceptable risk can be considered not to exist.

Soil Guideline Values (SGVs) published by the Department for Environment, Food and Rural Affairs (DEFRA) provide generic assessment criteria for assessing the risks to human health associated with a particular land use from chronic exposure to contaminated soils. For the

purpose of this assessment, SGVs for commercial/industrial use were generally considered appropriate. SGVs for residential use are also referenced to provide a further relative measure by which to assess the results.

R&D Publication CLR 7 published by Defra and the Environment Agency advocates the use of averaging areas, where appropriate to distinguish between different source areas and exposure patterns at a site. The guidance also recommends the use of the upper 95th percent confidence interval on the mean measured concentration as an estimate of reasonable maximum contaminant concentrations across the site (with the exception of lead), which takes into account uncertainties inherent in the site investigation process. However, for the purpose of this assessment, the GAC or SSAC have been compared directly with available soil data, particularly maximum contaminant concentrations observed; a more complex approach was not deemed necessary.

In summary, SGVs are generic assessment criteria that include a number of precautionary assumptions. The overall effect is that these criteria mark the concentration of a substance in soil at or below which human exposure can be considered to represent either a 'tolerable' or 'minimal' risk. Exceedance of these criteria can indicate that further assessment or remedial action may be needed.

When considering the risks from soils to water resources, there are no soil screening levels that directly apply. Site specific assessment criteria are developed in accordance with UK guidance, as necessary, to enable an assessment of the risk contaminated soils pose to water resources.

The risk to construction workers has not been considered within this assessment, since the nature of exposure will vary according to each project. Appropriate measures to control exposure of construction workers to sub-surface contaminants should be identified and implemented on a project by project basis in accordance with health and safety legislation.

4.3 ASSESSMENT OF SOIL RESULTS

The results of the screening exercise indicate that, generally, concentrations of contaminants in soil at the site do not exceed conservative assessment criteria, such that a risk to human health or the environment is unlikely to exist.

Generally, maximum concentrations of metals were less than the relevant SGV for both residential and industrial use, and are considered to be representative of background concentrations. SGVs for copper and zinc have not been developed. The presence of these metals in soils is not considered a priority with regard to the potential to harm human health. The analytical results indicate that these chemicals are present at relatively low levels that are typical of background concentrations, and are therefore very unlikely to present a risk to either human health or the environment. Cyanide was not measured above the method detection limit in any soil samples. No evidence of localised areas of contamination by inorganic compounds is inferred from the results.

An elevated concentration of ammonium (460mg/kg) was detected in one sample (TP4). The result is not considered significant in the context of risk to human health, and is unlikely to significantly affect water resources.

No significantly elevated concentrations of EPH were detected and, as above, are likely to be representative of background levels. Phenols, PAHs and pesticides were not detected in any soil samples from the site.

pH was variable in the range of 6.9 to 8.3, with a mean concentration of 7.7.

4.6 CONCEPTUAL MODEL SUMMARY – POST INVESTIGATION

Based on the results of the investigation, the CSM has been reviewed. No identifiable source of contamination has been identified on-site. Accordingly, based on measured concentrations in soil of a range of chemicals identified with regard to the historic and current use of the site, the risk to identified human health (including future workers) and the environment (particularly the River Severn) is considered low.

5.0 CONCLUSIONS

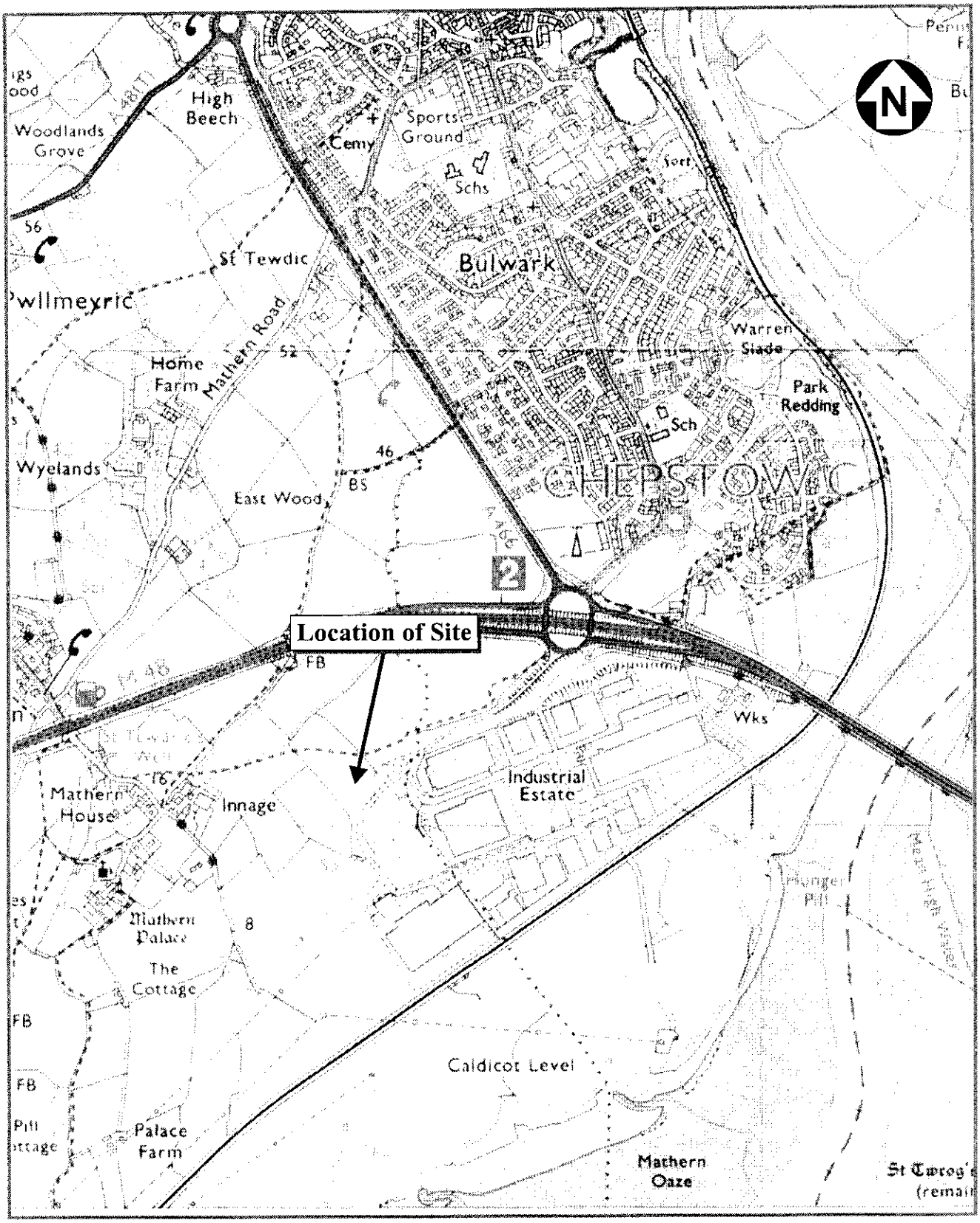
ENVIRON has completed a broad assessment of ground conditions at Plots 1-3 Newhouse Farm Business Park. Based on desk-top information indicating that the site was historically (since the late 1800s), and is currently undeveloped farm land, the investigation focused on evaluating whether made ground is present, confirming the shallow geology and investigating the nature and extent of contamination, if any, within the shallow soils at the site.

The findings of the investigation indicate that, generally, existing shallow soil conditions at the site are unlikely to present an unacceptable risk to human health or the environment, assuming the site is to be developed for industrial/commercial/warehouse use, or even a more sensitive use. An investigation of groundwater quality has not been carried out as part of this investigation; however, available information suggests that there are no on-site sources of contamination that may have adversely impacted shallow groundwater beneath the site.

In summary, there is no evidence of ground contamination at the site. Accordingly, the risk of future action by regulators or third parties with regard to existing ground contamination is considered low.

ANNEX A: FIGURES

Figure 1 - Site Location Plan
Plots 1-3, Newhouse Farm Business Park,
Chepstow, Gwent



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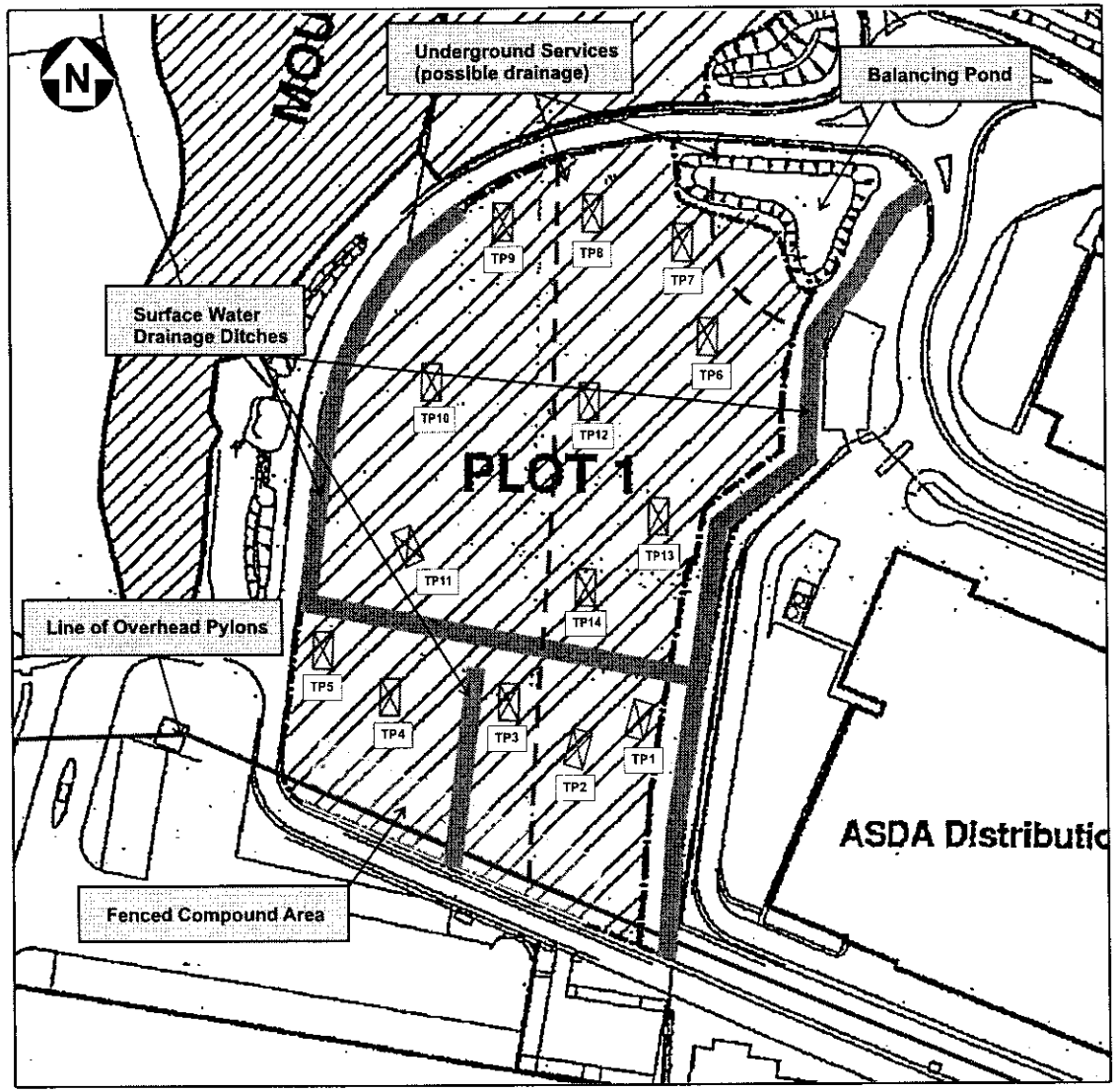
Client	**Frontier Estates**		
Scale	**Taken from 1:25,000**	Date	**March 2006**
Project No	**66-C10138**	Drawn by	**SB**



LEGEND

Approximate Trial Pit Location

ENVIRON

Environmental Investigation New Farm Industrial Estate, Chepstow

Figure 2

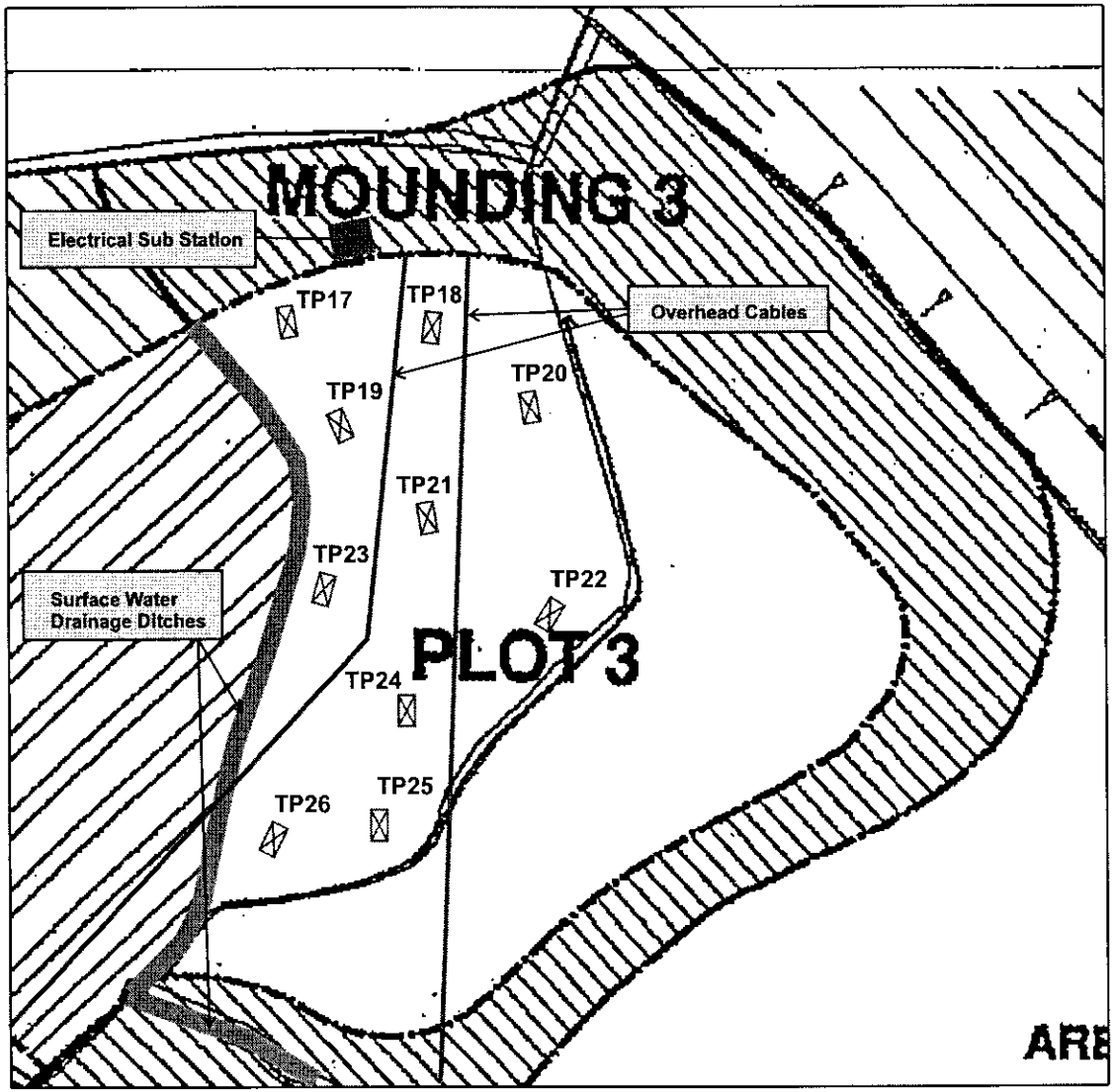
Site Layout Plan

Client: Frontier Estates

Scale: NTS

Project No.: 66-C10138

Date: March 2006



LEGEND

Approximate Trial Pit Location

ENVIRON

Environmental Investigation New Farm Industrial Estate, Chepstow

Figure 2A

Site Layout Plan

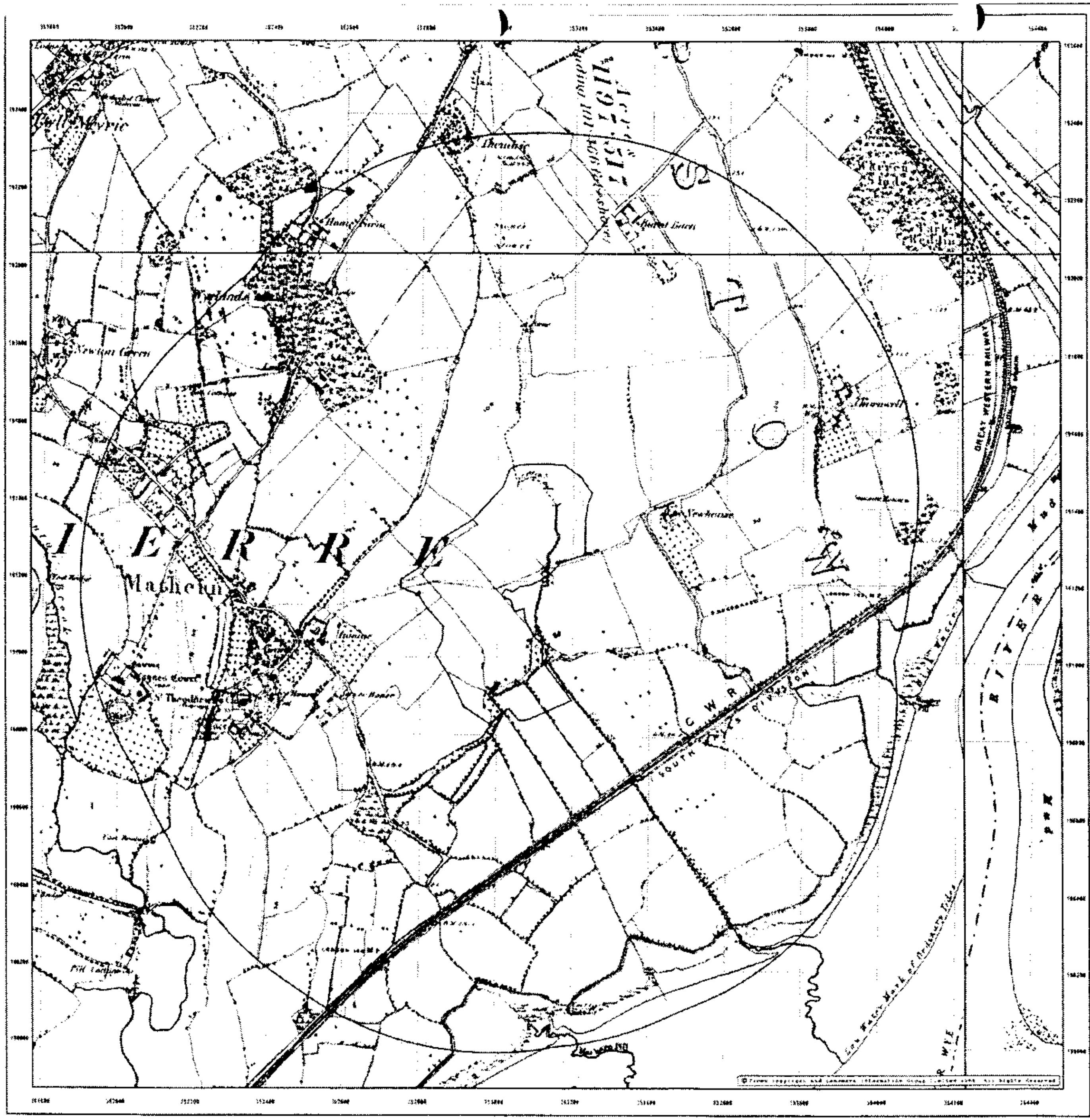
Client: Frontier Estates

Scale: NTS

Project No.: 66-C10138

Date: March 2006

ANNEX B: HISTORIC MAPS



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CLIENT DETAILS Envirocheck Order No. QC17892171_2_2

Customer Ref.: L Walker-C14138
Environ UK Limited
36 Park Row Fourth Floor
LEEDS
LS1 5JL

SITE DETAILS Grid Reference 353120 191240

Phase II
Newhouse Farm Business Park
Chepstow

Historical Map Legend

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

Ordnance Survey County Series 1

GLOUCESTERSHIRE
Published 1887 to 1891
Source map scale - 1:10,560

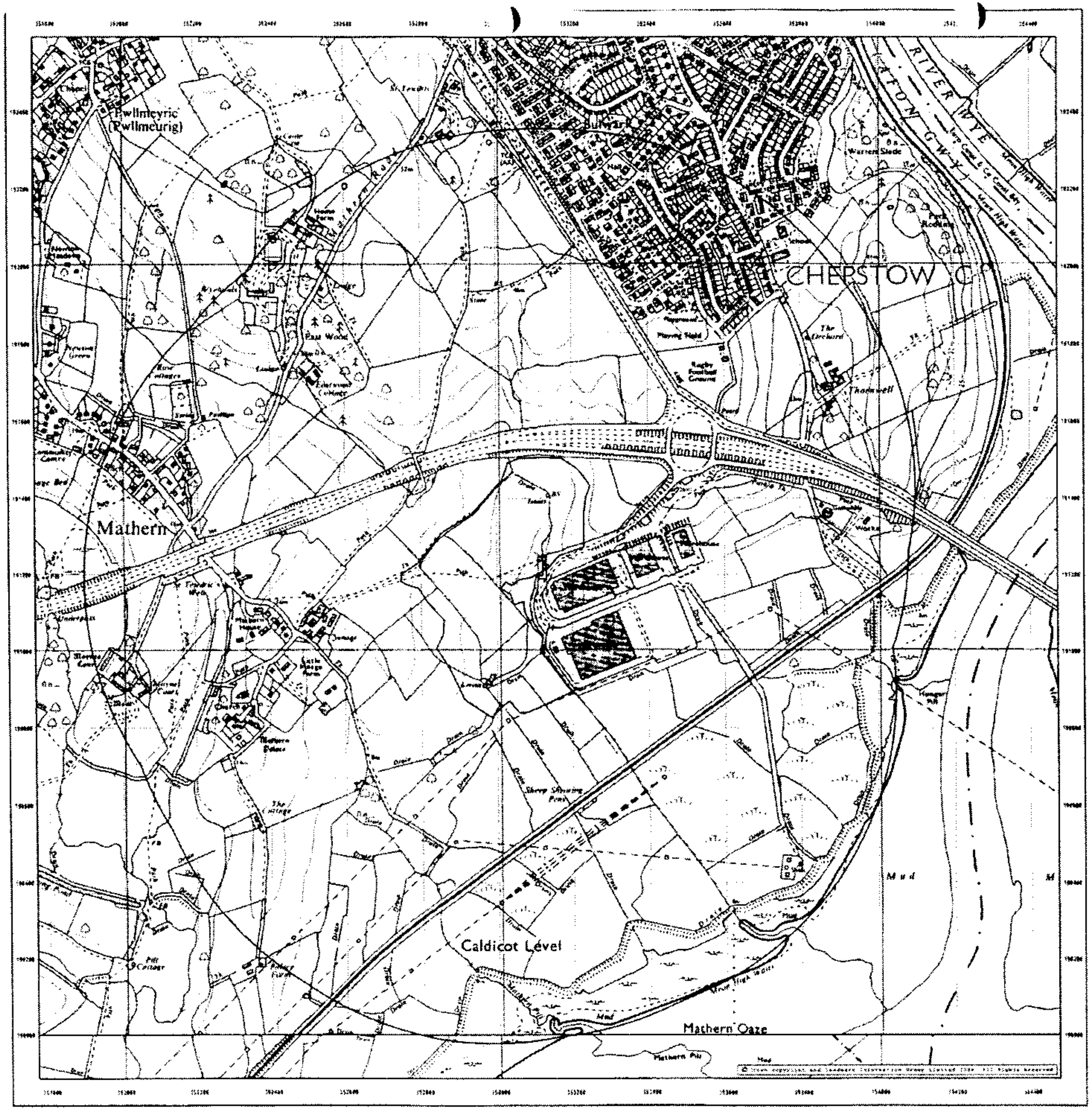
1891	1891
1887	1890

Date(s) of Publication

Ordnance Survey

LANDMARK information Group

Produced by Landmark Information Group Limited Tel: 0870 850 6670 Fax: 0870 850 6671



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CLIENT DETAILS Envirocheck Order No. QC17692171_2_2

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Enviros UK Limited
36 Park Row Fourth Floor
LEEDS
LS1 5JL

SITE DETAILS Grid Reference 353120 191240

Phase II
Newhouse Farm Business Park
Chepstow

Historical Map Legend

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

Ordnance Survey Plan 1

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1951 the 1:2,500 scale was adopted for mapping urban areas. These maps were used to update the 1:10,560 maps. The published date given on the right therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

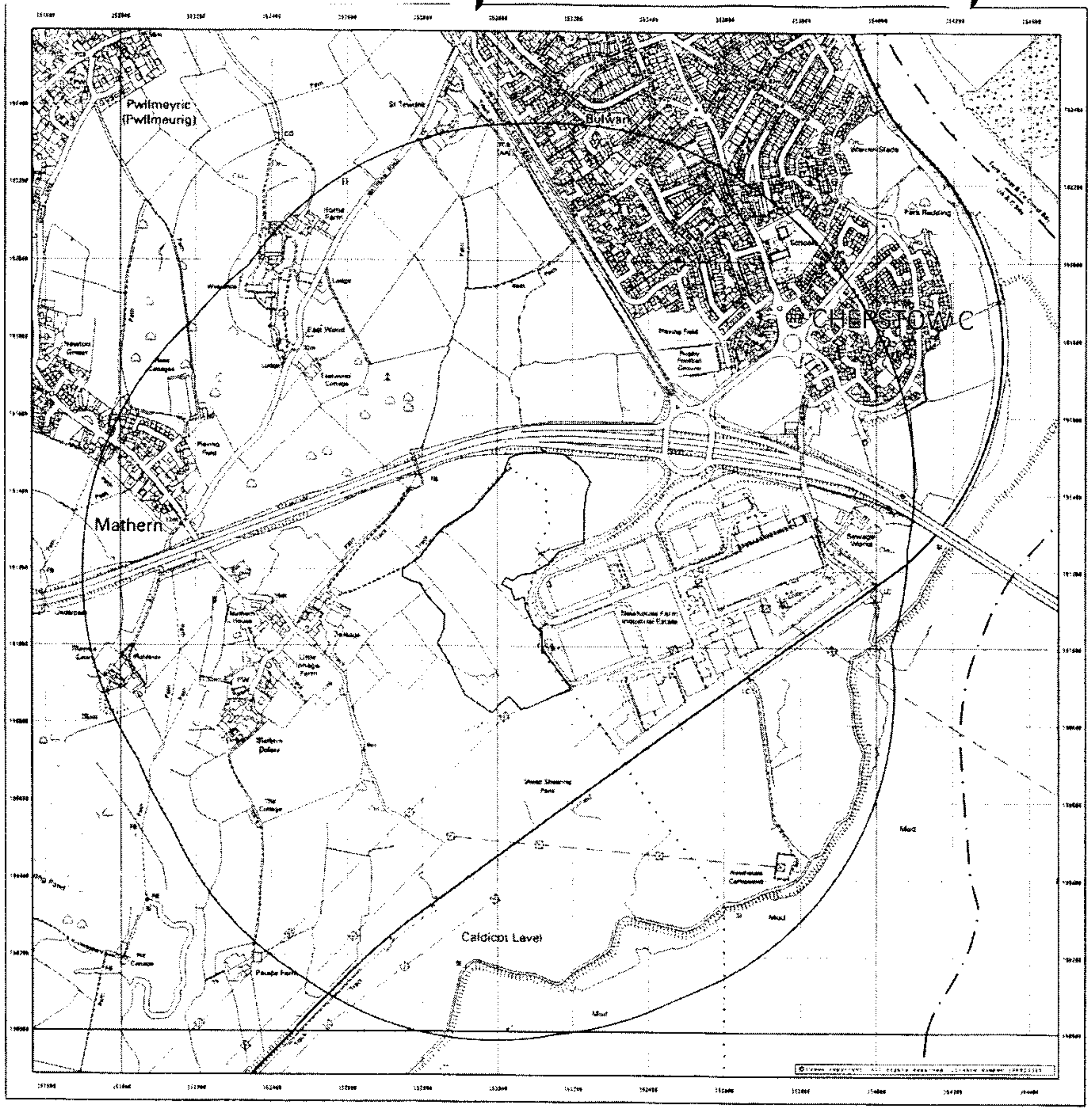
In the late 1940's a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially prepared with the National Grid. In 1970, the first 1:10,000 maps were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

ORDNANCE SURVEY PLAN
Published 1974 to 1987
Source map scale - 1:10,000

1987
1974

Date(s) of Publication

Ordnance Survey · LANDMARK Information Group



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CLIENT DETAILS — Envirocheck Order No. QC17892171_2_2

Customer Ref:
Enviros UK Limited
36 Park Row Fourth Floor
LEEDS

SITE DETAILS — Grid Reference 353120 191240

Phase II
Newhouse Farm Business Park
Chepstow

Historical Map Legend

Non-coniferous Trees		Pylon	
Coniferous Trees		Telephone Line (where shown)	
Orchard		Electricity Transmission Line (with poles)	
Rough Grassland		Gravel Pit	
Heath		Shingle	
Scrub		Refuse Tip or Slag Heap	
Marsh, Salt Marsh or Reeds		Sand	
County Boundary (England only)		Sand Pit	
Civil Parish or Community Boundary		Slopes	
Constituency Boundary		District, Unitary, Metropolitan London Borough Boundary	

10K Raster Mapping 1

ORDNANCE SURVEY PLAN
Published 1999 to 2000
Source map scale - 1:10,000

2000
1999

Date(s) of Publication

Ordnance Survey

LANDMARK Information Group

ANNEX C: BOREHOLE LOGS

Project No: 66-C10138 | **Trial Pit: TP1** | **ENVIRON TRIAL PIT LOG**

Client: Frontier Estates | **Date:** 03/03/06

Site Location: Chepstow | **Plant Used:** 3CX

Logged by: JM

Depth (m)	Symbol	Description	Unit Depth
0.0		Ground Surface	0.0
		MADE GROUND Grass and moss over brown friable clayey SILT.	-0.2
		MADE GROUND Brown red grey slightly gravelly silty CLAY. Gravel comprises sub rounded to angular concrete and slag with occasional cobbles of concrete.	
1.0			-1.2
		CLAY Dark grey blue stiff silty CLAY. Clay is weathered with horizontal laminae which increase with depth. Red brown discolourations around the fissures, occasional rootlets and an organic odour.	
			-2.0
2.0		2 m bgl	
3.0			
4.0			
5.0			

Remarks: Trial Pit finished at 2.0m bgl.
No groundwater encountered.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Sheet: 1 of 1

Project No: 66-C10138 | ***Trial Pit: TP2*** | ***ENVIRON TRIAL PIT LOG***

Client: Frontier Estates | ***Date:*** 03/03/06

Site Location: Chepstow | ***Plant Used:*** 3CX

Logged by: JM

Depth (m)	Symbol	Description	Unit Depth
0.0		Ground Surface	0.0
		MADE GROUND Grass and moss over red brown moist slighty gravelly silty CLAY with grey brown stiff slightly gravelly clay layers. The grey brown clay is fissured with occasional rootlets and black discolouration in the fissures with an organic (non-hydrocarbon) odour. Gravel comprises fine to coarse sub rounded to angular limestone, gravel size fragments of red mudstone and occasional cobbles of limestone.	
1.0			-1.7
		CLAY Dark grey blue weathered stiff silty CLAY with frequent horizontal laminae and occasional rootlets. Clay becomes moist after 1.9m bgl with brown discolourations. A small water ingress occured at 2.5m bgl.	
2.0			-2.7
		2.7 m bgl	
3.0			
4.0			
5.0			

Remarks: Trial Pit finished at 2.7m bgl.
No groundwater encountered.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Sheet: 1 of 1

Project No: 66-C10138

Client: Frontier Estates

Site Location: Chepstow

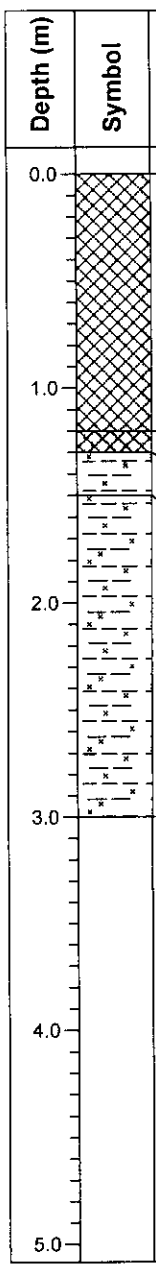
Trial Pit: TP3

Date: 03/03/06

Plant Used: 3CX

Logged by: JM

ENVIRON TRIAL PIT LOG



Description	Unit Depth
Ground Surface	0.0
MADE GROUND Grass and moss over moist brown red gravelly clayey SILT with rootlets and black discolourations with an organic (non-hydrocarbon) odour. Gravel comprises subrounded to angular limestone. A collection of limestone cobbles present at the northern end of the pit from 0.3m bgl and occasional metal fragments. Layer of stiff compact grey clay at 0.6m bgl. A plastic drainage pipe encountered at 0.9m bgl running from east to west of the pit below the limestone cobbles.	-1.2
MADE GROUND Cobbles of limestone and concrete.	-1.3 -1.5
CLAY Stiff silty grey weathered CLAY with horizontal laminae.	
CLAY Dark grey blue weathered stiff silty CLAY with frequent horizontal laminae and black discolourations with an organic (non hydrocarbon) odour. Clay contains occasional rootlets and wood fragments. Lenses of red brown soft silty clay encountered between 1.3m bgl to 2.5m bgl containing fine to medium flint gravels. Small water ingress at 1.5m bgl	-3.0
3 m bgl	

Remarks: Trial Pit finished at 3.0m bgl.
No groundwater encountered.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Sheet: 1 of 1

Project No: 66-C10138

Client: Frontier Estates

Site Location: Chepstow

Trial Pit: TP4

Date: 03/03/06

Plant Used: 3CX

Logged by: JM

ENVIRON TRIAL PIT LOG

Depth (m)	Symbol	Description	Unit Depth
		Ground Surface	0.0
0.0		**MADE GROUND** Grass over dark brown friable clayey SILT with frequent rootlets.	-0.1
		MADE GROUND Brown red silty CLAY with horizontal fissures, frequent rootlets and occasional wood fragments. Lenses of stiff grey blue silty clay with occasional yellow discolourations in fissures and an organic odour.	-0.8
1.0		**CLAY (Natural?)** Dark grey slightly blue soft silty CLAY with frequent rootlets and occasional wood fragments. Horizon of pale yellow brown silty CLAY with rounded to sub rounded fine to medium flint gravels.	-2.0
2.0		**CLAY** Brown red silty sandy fissured frable CLAY with black discolourations in fissures.	-3.2
3.0		3.2 m bgl	
4.0			
5.0			

Remarks: Trial Pit finished at 3.2m bgl.
No groundwater encountered.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Sheet: 1 of 1

Project No: 66-C10138 ***Trial Pit: TP5*** ***ENVIRON TRIAL PIT LOG***

Client: Frontier Estates ***Date:*** 03/03/06

Site Location: Chepstow ***Plant Used:*** 3CX

Logged by: JM

Depth (m)	Symbol	Description	Unit Depth
0.0		Ground Surface	0.0
		CLAY (Natural?) Grass over red brown silty CLAY with lenses of grey brown very silty gravelly clay containing wood fragments and occasional sub rounded to angular limestone gravels with an organic (non-hydrocarbon) odour.	
1.0			-1.1
		CLAY Yellow brown red silty gravelly friable CLAY with black discolourations in fissures. Gravel comprises rounded to sub rounded flint and occasional flint cobbles.	
2.0			-2.2
		CLAY Moist soft yellow red brown slightly silty sandy CLAY with black discolourations and organic odour. Clay becomes more fractured and red with depth.	
3.0			-3.6
		3.6 m bgl	
4.0			
5.0			

Remarks: Trial Pit finished at 3.6m bgl.
No groundwater encountered.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Sheet: 1 of 1

Project No: 66-C10138

Client: Frontier Estates

Site Location: Chepstow

Trial Pit: TP6

Date: 16/03/06

Plant Used: 3CX

Logged by: JM

ENVIRON TRIAL PIT LOG

Depth (m)	Symbol	Description	Unit Depth
0.0		Ground Surface	0.0
		TOP SOIL Grass over brown friable clayey SILT with frequent rootlets.	-0.3
1.0		**CLAY** Red brown moist friable silty CLAY with ocasional gravel sized fragents of hard grey clay.	-1.4
2.0		**CLAY** Dark blue grey CLAY with horizontal laminae and horizons of silty red clay. Clay contains occasional sub rounded flint gravels and becomes a pale grey with frequent gravels of hard clay with depth. Water ingresses from 2.0m bgl.	-2.5
3.0		2.5 m bgl	
4.0			
5.0			

Remarks: Trial Pit finished at 2.5m bgl.
No groundwater encountered.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Sheet: 1 of 1

Project No: 66-C10138

Client: Frontier Estates

Site Location: Chepstow

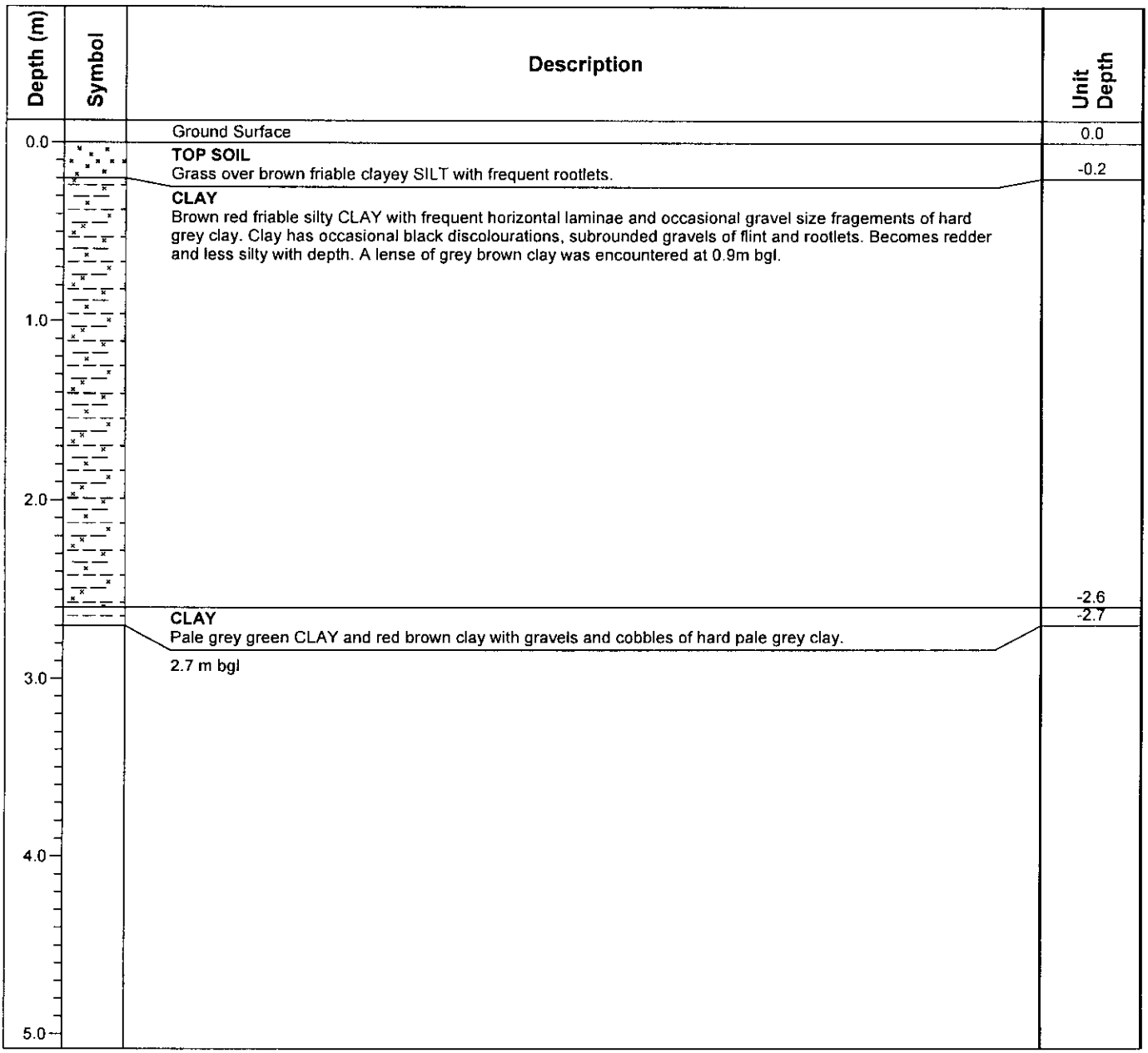
Trial Pit: TP7

Date: 16/03/06

Plant Used: 3CX

Logged by: JM

ENVIRON TRIAL PIT LOG



Remarks: Trial Pit finished at 2.7m bgl.
No groundwater encountered.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Sheet: 1 of 1

Project No: 66-C10138 | ***Trial Pit: TP8*** | ***ENVIRON TRIAL PIT LOG***

Client: Frontier Estates | ***Date:*** 16/03/06

Site Location: Chepstow | ***Plant Used:*** 3CX

Logged by: JM

Depth (m)	Symbol	Description	Unit Depth
0.0		Ground Surface	0.0
		TOP SOIL Grass over brown friable clayey SILT with frequent rootlets.	-0.2
1.0		**CLAY** Red brown moist friable silty CLAY with ocasional gravel sized fragents of very stiff grey clay.	-1.4
		CLAY Sandy gravel size fragements of grey green very stiff CLAY.	-1.8
2.0		**WEATHERED MUDSTONE** Gravels and cobbles size fragements of hard brown red mudstone in a brown red silty sandy matrix.	-2.6
		2.6 m bgl	
3.0			
4.0			
5.0			

Remarks: Trial Pit finished at 2.6m bgl.
No groundwater encountered.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Sheet: 1 of 1

Project No: 66-C10138 | **Trial Pit: TP9** | **ENVIRON TRIAL PIT LOG**

Client: Frontier Estates | **Date:** 16/03/06

Site Location: Chepstow | **Plant Used:** 3CX

Logged by: JM

Depth (m)	Symbol	Description	Unit Depth
0.0		Ground Surface	0.0
		TOP SOIL Grass over brown friable clayey SILT with frequent rootlets.	-0.3
1.0		**CLAY** Red brown silty CLAY with frequent rootlets and occasional fine to medium rounded flint gravels. Clay becomes redder with depth with frequent laminae and occasional black discolourations.	-1.4
2.0		**WEATHERED MUDSTONE** Gravel to cobbles size fragements of hard red mudstone in a red brown sandy clayey silty matrix. Mudstone is weathered and fractured.	-2.5
3.0		2.5 m bgl	
4.0			
5.0			

Remarks: Trial Pit finished at 2.5m bgl.
No groundwater encountered.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Sheet: 1 of 1

Project No: 66-C10138
Client: Frontier Estates
Site Location: Chepstow

Trial Pit: TP10
Date: 16/03/06
Plant Used: 3CX
Logged by: JM

ENVIRON TRIAL PIT LOG

Depth (m)	Symbol	Description	Unit Depth
0.0		Ground Surface	0.0
		TOP SOIL Grass over brown friable clayey SILT with frequent rootlets.	-0.3
		MADE GROUND Red brown silty CLAY with frequent horizontal laminae and occasional black discolourations. becomes redder with depth with rounded fine to medium flint gravels. A line of clinker gravel was encountered at 0.7m bgl running diagonally across the pit. The trial pit was moved back to avoid any cable that may be present.	-0.8
1.0		**WEATHERED MUDSTONE** Dark red gravel and cobble size fragments of mudstone in a clayey sandy silty matrix.	-1.8
		WEATHERED MUDSTONE Red silty CLAY with gravel size fragments of pale grey green hard clay.	-2.0
2.0		2 m bgl	
3.0			
4.0			
5.0			

Remarks: Trial Pit finished at 2.0m bgl.
No groundwater encountered.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Project No: 66-C10138

Client: Frontier Estates

Site Location: Chepstow

Trial Pit: TP11

Date: 16/03/06

Plant Used: 3CX

Logged by: JM

ENVIRON TRIAL PIT LOG

Depth (m)	Symbol	Description	Unit Depth
0.0		Ground Surface	0.0
		TOP SOIL Grass over brown friable clayey SILT with occasional sub rounded flint gravels.	-0.3
		CLAY (Natural?) Pale brown clayey SILT with yellow discolourations and occasional sub rounded flint gravels and rootlets.	-0.7
1.0		**CLAY** Red brown yellow moist silty sandy CLAY with frequent horizontal laminae and occasional black discolourations. A slight water ingress encountered at 1.4m bgl. Clay becomes softer with more frequent yellow discolourations with depth.	
2.0			-2.8
3.0		2.8 m bgl	
4.0			
5.0			

Remarks: Trial Pit finished at 2.8m bgl.
No groundwater encountered.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Sheet: 1 of 1

Project No: 66-C10138

Client: Frontier Estates

Site Location: Chepstow

Trial Pit: TP12

Date: 16/03/06

Plant Used: 3CX

Logged by: JM

ENVIRON TRIAL PIT LOG

Depth (m)	Symbol	Description	Unit Depth
0.0		Ground Surface	0.0
		TOP SOIL Grass over dark brown friable clayey SILT with frequent thick rootlets.	-0.2
		CLAY (Natural?) Red brown soft CLAY.	-0.6
1.0		**SILT (Natural?)** Black brown wet peaty clayey SILT with frequent rootlets and a strong (non-petroleum) organic odour.	-1.3
2.0		**CLAY** Blue grey slightly silty soft moist CLAY and water ingresses. Lense of pale grey green sandy gravelly hard clay encountered at 1.9m bgl.	-2.4
		WEATHERED MUDSTONE Weathered wet red brown gravelly CLAY with frequent laminae and gravels of hard red mudstone. Groundwater encountered at 2.8m bgl.	-2.8
3.0		2.8 m bgl	
4.0			
5.0			

Remarks: Trial Pit finished at 2.8m bgl.
Groundwater encountered at 2.8m bgl.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Sheet: 1 of 1

Project No: 66-C10138
Client: Frontier Estates
Site Location: Chepstow

Trial Pit: TP13
Date: 16/03/06
Plant Used: 3CX
Logged by: JM

ENVIRON TRIAL PIT LOG

Depth (m)	Symbol	Description	Unit Depth
0.0		Ground Surface	0.0
		TOP SOIL Grass over dark brown friable clayey SILT.	-0.3
1.0		**CLAY** Brown red very silty friable CLAY with black discolourations, rootlets and laminae.	-1.5
2.0		**CLAY** Grey blue silty CLAY with yellow brown discolourations and occasional sub rounded flint gravels. Clay is very firm with frequent laminae.	-2.2
3.0		**WEATHERED MUDSTONE** Brown red silty CLAY with gravel size fragments of hard pale grey clay and grey blue sandy clayey lenses.	-3.1
4.0		3.1 m bgl	
5.0			

Remarks: Trial Pit finished at 3.1m bgl.
No groundwater encountered.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Sheet: 1 of 1

Project No: 66-C10138

Client: Frontier Estates

Site Location: Chepstow

Trial Pit: TP14

Date: 16/03/06

Plant Used: 3CX

Logged by: JM

ENVIRON TRIAL PIT LOG

Depth (m)	Symbol	Description	Unit Depth
0.0		Ground Surface	0.0
		TOP SOIL Grass over brown friable clayey SILT with frequent rootlets.	-0.3
1.0		**CLAY** Brown red moist stiff silty CLAY with horizontal laminae and occasional rounded flint gravels and rootlets. Clay becomes very friable with yellow discolourations with depth.	-1.6
2.0		**CLAY** Grey blue very soft wet silty CLAY. Becomes browner and more friable with depth with frequent rounded to sub rounded flint gravels. Water ingress encountered at 2.6m bgl.	-3.0
3.0		**CLAY** Soft moist red brown sandy CLAY.	-3.2
		3.2 m bgl	
4.0			
5.0			

Remarks: Trial Pit finished at 3.2m bgl.
No groundwater encountered.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Sheet: 1 of 1

Project No: 66-C10138

Client: Frontier Estates

Site Location: Chepstow

Trial Pit: TP17

Date: 17/03/06

Plant Used: 3CX

Logged by: JM

ENVIRON TRIAL PIT LOG

Depth (m)	Symbol	Description	Unit Depth
0.0		Ground Surface	0.0
		MADE GROUND Some grass and straw over dark brown red clayey gravelly SILT with occasional black discolourations with a organic (non-petroleum) odour. Gravels and cobbles comprise medium to coarse limestone, brick and concrete. Becomes more clayey with depth.	
1.0			-1.2
		CLAY Red brown friable silty CLAY with freqent laminae becoming stiffer and more weathered with grey green discolourations with depth.	
2.0			-2.4
		2.4 m bgl	
3.0			
4.0			
5.0			

Remarks: Trial Pit finished at 2.4m bgl.
No groundwater encountered.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Sheet: 1 of 1

Project No: 66-C10138

Client: Frontier Estates

Site Location: Chepstow

Trial Pit: TP18

Date: 17/03/06

Plant Used: 3CX

Logged by: JM

ENVIRON TRIAL PIT LOG

Depth (m)	Symbol	Description	Unit Depth
0.0		Ground Surface	0.0
		TOP SOIL Some grass and straw over brown red clayey SILT with frequent rootlets.	-0.4
1.0		**CLAY** Red brown friable weathered silty CLAY with frequent laminae and occasional green grey discolourations. becomes dryer and siltier with depth.	-2.1
2.0		2.1 m bgl	
3.0			
4.0			
5.0			

Remarks: Trial Pit finished at 2.1m bgl.
No groundwater encountered.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Sheet: 1 of 1

Project No: 66-C10138

Client: Frontier Estates

Site Location: Chepstow

Trial Pit: TP19

Date: 17/03/06

Plant Used: 3CX

Logged by: JM

ENVIRON TRIAL PIT LOG

Depth (m)	Symbol	Description	Unit Depth
0.0		Ground Surface	0.0
		TOP SOIL Some grass and straw over brown clayey SILT with rootlets.	-0.3
		CLAY Yellow red brown silty sandy friable CLAY.	-0.9
1.0		**CLAY** Red brown stiff friable CLAY with occasional grey green discolourations. Clay becomes drier with depth. A lense of dry grey green silty CLAY was encountered at 2.2m bgl.	
2.0			
3.0		3 m bgl	-3.0
4.0			
5.0			

Remarks: Trial Pit finished at 3.0m bgl.
No groundwater encountered.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Sheet: 1 of 1

Project No: 66-C10138

Client: Frontier Estates

Site Location: Chepstow

Trial Pit: TP20

Date: 17/03/06

Plant Used: 3CX

Logged by: JM

ENVIRON TRIAL PIT LOG

Depth (m)	Symbol	Description	Unit Depth
0.0		Ground Surface	0.0
		TOP SOIL Some grass and straw over brown clayey SILT with rootlets.	-0.3
1.0		**CLAY** Brown very silty friable CLAY with laminae and some black discolourations.	-2.0
2.0		**CLAY** red brown hard CLAY with occasional black and grey green discolourations. A lense of grey green silty clay was encountered at 3.0m bgl.	-3.2
3.0			
		3.2 m bgl	
4.0			
5.0			

Remarks: Trial Pit finished at 3.2m bgl.
No groundwater encountered.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Sheet: 1 of 1

Project No: 66-C10138

Client: Frontier Estates

Site Location: Chepstow

Trial Pit: TP21

Date: 17/03/06

Plant Used: 3CX

Logged by: JM

ENVIRON TRIAL PIT LOG

Depth (m)	Symbol	Description	Unit Depth
0.0		Ground Surface	0.0
		TOP SOIL Brown clayey friable SILT.	-0.3
1.0		**CLAY** Brown very silty friable CLAY with horizontal laminae and occasional black discolourations.	-2.0
2.0		**CLAY** Red brown slightly silty hard CLAY with black and grey green discolourations. Becomes stiffer with depth and a grey green silty clay lense encountered at 3.2m bgl.	-2.8
3.0		2.8 m bgl	
4.0			
5.0			

Remarks: Trial Pit finished at 2.8m bgl.
No groundwater encountered.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Sheet: 1 of 1

Project No: 66-C10138

Client: Frontier Estates

Site Location: Chepstow

Trial Pit: TP22

Date: 17/03/06

Plant Used: 3CX

Logged by: JM

ENVIRON TRIAL PIT LOG

Depth (m)	Symbol	Description	Unit Depth
0.0		Ground Surface	0.0
		TOP SOIL Some grass and straw over dark brown clayey friable SILT with rootlets.	-0.3
		CLAY Red brown silty friable CLAY with frequent laminae, black and grey green discolourations and occasional rounded to sub rounded flint gravels between 0.3 to 0.5m bgl. Clay becomes stiffer with depth.	
1.0			
2.0			-2.2
		2.2 m bgl	
3.0			
4.0			
5.0			

Remarks: Trial Pit finished at 2.2m bgl.
No groundwater encountered.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Sheet: 1 of 1

Project No: 66-C10138

Client: Frontier Estates

Site Location: Chepstow

Trial Pit: TP23

Date: 17/03/06

Plant Used: 3CX

Logged by: JM

ENVIRON TRIAL PIT LOG

Depth (m)	Symbol	Description	Unit Depth
0.0		Ground Surface	0.0
		TOP SOIL Some grass and straw over dark brown clayey friable SILT with rootlets.	-0.3
		CLAY Red brown silty friable CLAY with frequent laminae.	-1.0
1.0		**CLAY** Brown grey slightly gravelly CLAY with yellow and black discolourations and frequent laminae. Gravel comprises occasional sub rounded flint and gravel size fragments of stiff grey clay.	-1.8
2.0		**CLAY** Brown red silty friable CLAY with occasional grey green lenses of clayey silt. Becomes dryer with depth.	-3.0
3.0		3 m bgl	
4.0			
5.0			

Remarks: Trial Pit finished at 3.0m bgl.
No groundwater encountered.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Sheet: 1 of 1

Project No: 66-C10138

Client: Frontier Estates

Site Location: Chepstow

Trial Pit: TP24

Date: 17/03/06

Plant Used: 3CX

Logged by: JM

ENVIRON TRIAL PIT LOG

Depth (m)	Symbol	Description	Unit Depth
0.0		Ground Surface	0.0
		TOP SOIL Some grass and straw over dark brown clayey friable SILT with rootlets.	-0.4
		WEATHERED MUDSTONE Brown red sandy silty CLAY with stiff gravel size fragments of red mudstone and grey green sandy clay lenses. Clay becomes dryer and more gravelly with depth.	
1.0			
2.0			
			-2.7
		2.7 m bgl	
3.0			
4.0			
5.0			

Remarks: Trial Pit finished at 2.7m bgl.
No groundwater encountered.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Sheet: 1 of 1

Project No: 66-C10138

Client: Frontier Estates

Site Location: Chepstow

Trial Pit: TP25

Date: 17/03/06

Plant Used: 3CX

Logged by: JM

ENVIRON TRIAL PIT LOG

Depth (m)	Symbol	Description	Unit Depth
0.0		Ground Surface	0.0
		TOP SOIL Some grass and straw over dark brown clayey friable SILT with rootlets and occasional medium sub rounded flint gravels.	-0.4
		WEATHERED MUDSTONE Brown red dry silty CLAY with frequent laminae. Clay has grey green discolourations and gravel size fragments of stiff red mudstone from 1.5m bgl. Becomes a paler red colour with depth and a lense of grey green silty sandy clay encountered at 2.3m bgl.	-2.5
1.0			
2.0			
		2.5 m bgl	
3.0			
4.0			
5.0			

Remarks: Trial Pit finished at 2.5m bgl.
No groundwater encountered.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Sheet: 1 of 1

Project No: 66-C10138

Client: Frontier Estates

Site Location: Chepstow

Trial Pit: TP26

Date: 17/03/06

Plant Used: 3CX

Logged by: JM

ENVIRON TRIAL PIT LOG

Depth (m)	Symbol	Description	Unit Depth
0.0		Ground Surface	0.0
		TOP SOIL Some grass and straw over dark brown clayey friable SILT with rootlets and peaty organic (non-petroleum) black discolourations.	-0.5
1.0		**CLAY** Red brown slightly moist friable silty CLAY with laminae and occasional gravel size fragments of stiff grey clay and occasional black discolourations. Clay becomes stiffer with depth. A lense of hard grey green clay was encountered at 2.0m bgl.	-2.0
2.0		**WEATHERED MUDSTONE** Dark red brown stiff dry CLAY with gravel size fragements of stiff grey green clay and dark red mudstone.	-2.9
3.0		2.9 m bgl	
4.0			
5.0			

Remarks: Trial Pit finished at 2.9m bgl.
No groundwater encountered.
Trial Pit backfilled with arisings on completion.

Checked by: AG

Sheet: 1 of 1

ANNEX D: ANALYTICAL SCHEDULE

Chain of Custody No: TO BE PRE-PRINTED 16050

ANALYSIS REQUEST FORM AND SAMPL[illegible] [illegible]USTODY SHEET

ALcontrol Technichem
Heron Drive
Langley, Slough
Berkshire
SL3 8XP
Tel : 01753 212500
Fax : 01753 212533

Client: ENVIKON
Address: HARTHAM PK CORSHAM, WILTS SN13 0RR
e-mail:
Tel: 01249 700104
Fax: 01249 700105
Project/Site Name: CHEPSIDW - 66C10138
Contact Name: JO MCCAY

Date Samples Despatched: 03/03/06
Project Code: 66C10138
Sampler ID: JM
Quote Reference: 66C10138
Turnaround Time/Date Required: 10DAY
AGS Format (please tick if req):

Sheet 1 of 1

One project per sheet please

LAB USE ONLY	Date of Sampling	Borehole/Trial Pit No./Sample ID	Depth in metres	Sample Number	(S)oil or (W)ater (specify if other)	Suite Name (from Contract Rates or Quotation)	pH Value	Electrical Conductivity	Total Sulphate	2:1 Water Soluble Sulphate	Sulphide	Elemental Sulphur	Phenols (Monohydric)	Total Cyanide	Free, Complex & Thiocyanate	Ammoniacal Nitrogen	PAH Rapid	Speciated PAH by GCMS	Chloride (water soluble)	Nitrate (water soluble)	EPH (C10-C40)	TPH rapid (C8-C40) soils only 50mg/kg	TPH Banding(C5-10,C10-30,C30-40)	Boron (Water Soluble for Soils)	As,Cd,Cr,Pb,Hg,Se,Cu,Ni,Zn	CLEA Metals	BOD (5 Day)	COD	TOC (Water)	Organic Content/Carbon (Soil) - Please indicate which is required	BTEX by GCMS	VOC	SVOC	Na, K, Mg, Ca	VPH (previously PRO) by GCFID	TPH CWG (aliphatic/aromatic split) C5-C37 incl. BTEX	Asbestos Screen/ID	Pesticides/ Chlorinated pesticides
	03/03	TP1	0.2		S		X		X				X	X		X		X		X	X				X													X
			2.0																																			
		TP2	2.3																																			
			0.9				X		X							X		X		X	X				X													
		TP3	0.7																																			
			2.0				X		X				X	X		X		X		X	X				X													
		TP4	1.7				X		X							X		X		X	X				X													
			2.3																																			
		TP5	2.8				X		X							X		X		X	X				X													
			1.7		↓																																	

Special Instructions / Known Hazards:

Purchase Order No:

Intended Use of Results:

Required for Environment Agency? Y / N (Please Circle as Applicable)

Please indicate the analysis required for each sample by marking the appropriate box. Use blank columns for further analysis. Regular clients may indicate agreed / standard suites in the "Suite Name" column.

Date Received: Time: Signature: Report No.

Chain of Custody No: TO BE PRE-PRINTED 16895

ANALYSIS REQUEST FORM AND SAMPLE CUSTODY SHEET

ALcontrol Technichem
Heron Drive
Langley, Slough
Berkshire
SL3 8XP
Tel : 01753 212500 Fax : 01753 212533

Client: ENVIRON
Address: HARTHAM PK CORSHAM WILTS
e-mail:
Tel: Fax: 01249 700105
Project/Site Name: 66C10138 - NEWHOUSE PK, CHEPSTOW
Contact Name: Jo McKay

Date Samples Despatched: 22/03/06
Project Code: 66C10138
Sampler ID: JM
Quote Reference: 66C10138
Turnaround Time/Date Required: 2 DAYS
AGS Format (please tick if req):

Sheet 2 of 2

One project per sheet please

LAB USE ONLY	Date of Sampling	Borehole/Trial Pit No./Sample ID	Depth in metres	Sample Number	(S)oil or (W)ater (specify if other)	Suite Name (from Contract Rates or Quotation)	Organic Content	pH Value	Electrical Conductivity	Total Sulphate	2:1 Water Soluble Sulphate	Sulphide	Elemental Sulphur	Phenols (Monohydric)	Total Cyanide	Free, Complex & Thiocyanate	Ammonia/Total Nitrogen	PAH Rapid	Speciated PAH by GCMS	Chloride (water soluble)	Nitrate (water soluble)	EPH (C10-C40)	TPH rapid (C8-C40) soils only 50mg/kg	TPH Banding(C5-10,C10-30,C30-40)	Boron (Water Soluble for Soils)	As,Cd,Cr,Pb,Hg,Se,Cu,Ni,Zn	CLEA Metals	BOD (5 Day)	COD	TOC (Water)	Organic Content/Carbon (Soil) - Please indicate which is required	BTEX by GCMS	VOC	SVOC	Na, K, Mg, Ca	VPH (previously PRO) by GC/FID	TPH CWG (aliphatic/aromatic split) C5-C37 incl. BTEX	Asbestos Screen/ID	Pesticides/ Chlorinated pesticides
	16/03	TP6	1.4		S			X	X					X	X		X		X		X	X				X													
		TP7	1.0																																				
			2.6																																				
		TP8	0.1					X	X					X			X		X		X	X				X												X	
			2.4																																				
		TP9	1.3																																				
			2.3																																				
		TP10	0.7					X	X		X			X	X		X		X		X	X				X													
			1.9																																				
		TP11	1.4																																				
			0.2					X	X		X			X	X		X		X		X	X				X												X	
		TP12	0.7					X	X		X			X	X		X		X		X	X				X													
			1.8																																				
		TP13	0.45																																				
		TP14	1.2																																				
			3.1		↓																																		

Special Instructions / Known Hazards: Purchase Order No:

*2 DAYS * Approved by RR

Intended Use of Results:

Required for Environment Agency? Y / N (Please Circle as Applicable)

Please indicate the analysis required for each sample by marking the appropriate box. Use blank columns for further analysis. Regular clients may indicate agreed / standard suites in the "Suite Name" column.

Date Received: Time: Signature: Report No.

Chain of Custody No: TO BE PRE-PRINTED 16894

ANALYSIS REQUEST FORM AND SAMPLE CUSTODY SHEET

ALcontrol Technichem
Heron Drive
Langley, Slough
Berkshire
SL3 8XP
Tel : 01753 212500 Fax : 01753 212533

Client: ENVIRON
Address: HARTHAM PK CORSHAM WILTS
e-mail:
Tel:
Fax: 01249 700105
Project/Site Name: 66C10138 - Newhouse PK, Chepstow
Contact Name: JO MCKAY

Date Samples Despatched: 22/03/06
Project Code: 66C10138
Sampler ID: JM
Quote Reference: 66C10138
Turnaround Time/Date Required: 2 DAYS
AGS Format (please tick if req):

Sheet 1 of 2

One project per sheet please

LAB USE ONLY	Date of Sampling	Borehole/Trial Pit No./Sample ID	Depth in metres	Sample Number	(S)oil or (W)ater (specify if other)	Suite Name (from Contract Rates or Quotation)	Organic Content	pH Value	Electrical Conductivity	Total Sulphate	2:1 Water Soluble Sulphate	Sulphide	Elemental Sulphur	Phenols (Monohydric)	Total Cyanide	Free, Complex & Thiocyanate	Ammoniacal Nitrogen	PAH Rapid	Speciated PAH by GCMS	Chloride (water soluble)	Nitrate (water soluble)	EPH (C10-C40)	TPH rapid (C8-C40) soils only 50mg/kg	TPH Banding(C5-10,C10-30,C30-40)	Boron (Water Soluble for Soils)	As,Cd,Cr,Pb,Hg,Se,Cu,Ni,Zn	CLEA Metals	BOD (5 Day)	COD	TOC (Water)	Organic Content/Carbon (Soil) - Please indicate which is required	BTEX by GCMS	VOC	SVOC	Na, K, Mg, Ca	VPH (previously PRO) by GCFID	TPH CWG (aliphatic/aromatic split) C5-C37 incl. BTEX	Asbestos Screen/ID	Pesticides/Chlorinated Pesticides
	17/03	TP17	1.9		S			X		X				X	X		X		X		X	X				X													
		TP18	0.3																																				
			1.5																																				
		TP19	2.4																																				
		TP20	0.6					X		X				X	X		X		X		X	X				X													
			2.7																																				
		TP21	0.7																																				
		TP22	1.0				X	X		X				X	X		X		X		X	X				X													
		TP23	0.1																																				
			1.1																																				
		TP24	0.9					X		X							X		X		X	X				X													
		TP25	0.3																																				
			2.0																																				
		TP26	0.2					X		X				X	X		X		X		X	X				X													X
			1.6																																				

Special Instructions / Known Hazards: Purchase Order No:
* 2 Day Turnaround * Approved by RR
Intended Use of Results:
Required for Environment Agency? Y / N (Please Circle as Applicable)

Please indicate the analysis required for each sample by marking the appropriate box. Use blank columns for further analysis. Regular clients may indicate agreed / standard suites in the "Suite Name" column.

Date Received: Time: Signature: Report No.

ANNEX E: ANALYTICAL RESULTS

Plots 1-3 Newhouse Park, Chepstow
Summary of Analytical Results for Soils, Metals and EPH

		No. of Samples Analysed	> MDL	Maximum Concentration	UK SGV Residential	Industrial
Moisture Content (Dry Weight)	%	15	15	90.4		
Moisture Content (Wet Weight)	%	15	15	47.5		
Arsenic	mg/kg	15	15	21	20	500
Cadmium	mg/kg	15	5	0.7	8	1400
Chromium	mg/kg	15	15	42	130	5000
Copper	mg/kg	15	15	33		
Lead	mg/kg	15	15	73	450	750
Mercury	mg/kg	15	1	0.3	8	480
Nickel	mg/kg	15	15	29	50	5000
Selenium	mg/kg	15	4	2.4	35	8000
Sulphate (Total Acid Soluble) as SO4	mg/kg	15	13	1500		
Zinc	mg/kg	15	15	170		
Exchangeable Ammonium as N	mg/kg	15	1	460		
Total Cyanide	mg/kg	15	0	0		
W/S Nitrate as N	mg/kg	15	10	12		
pH	pH Units	15	15	8.3		
		10	10	8.3		
EPH (C10-C40)	mg/kg	15	15	120		

J. McKay
Environ UK Ltd
Hartham Park
Corsham
Wiltshire
SN13 0RR

29 March 2006

TEST REPORT

Our Report Number: 06-12986

Your Order Reference: Instructions of 15/03/2006

5 soil samples submitted for analysis on 15/03/2006

Project Name: Chepstow

Project Code: 66C10138

Laboratory analysis started on 15/03/2006
All laboratory analysis completed by 29 March 2006

Rexona Rahman
Analytical Reporting Manager
ALCONTROL TECHNICHEM

Sharon Googh
Project Co-ordinator
ALCONTROL TECHNICHEM

Test methods are documented in house procedures or where appropriate standard methods. Non accredited tests (if applicable) are identified on each page. Procedures for sampling are outside the scope of the laboratory UKAS accreditation. Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation. All samples connected with this report , including any 'on hold', will be stored and disposed of according to company policy. A copy of this policy is available on request.

ALcontrol Technichem
Sample Description

Job Number: 06-12986
Client: Environ UK Ltd
Project Code: 66C10138

Matrix: Soil
Project Name: Chepstow

Laboratory Reference No	Sample Reference	Sample Depth (m)	Date Sampled	Sample Description
130251	TP1	0.2	03/03/06	Brown sandy clay with vegetation
130252	TP2	0.9	03/03/06	Orange clay with vegetation
130253	TP3	2.0	03/03/06	Orange / brown clay
130254	TP4	1.7	03/03/06	Grey & brown clay with vegetation
130255	TP5	2.8	03/03/06	Orange clay

ALcontrol Technichem
Table Of Results

Job Number : 06-12986
Matrix : Soil
Project Code: 66C10138

Project Name: Chepstow
Client : Environ UK Ltd

Sample Reference	TP1	TP2	TP3	TP4	TP5		Method No	Units
Sample Depth (m)	0.2	0.9	2.0	1.7	2.8			
Date Sampled	03/03/06	03/03/06	03/03/06	03/03/06	03/03/06			
Date Scheduled	15/03/06	15/03/06	15/03/06	15/03/06	15/03/06			
Laboratory Reference No	130251	130252	130253	130254	130255			
Analysis								
Moisture Content (Dry Weight)	22.4	24.7	11.2	22.2	20.6			%
Moisture Content (Wet Weight)	18.3	19.8	10.1	18.2	17.1			%
Arsenic	13	12	17	12	9.7		069[IM]	mg/kg
Cadmium	0.6	< 0.5	< 0.5	0.6	< 0.5		069[IM]	mg/kg
Chromium	36	30	32	37	28		069[IM]	mg/kg
Copper	15	16	23	15	9.9		069[IM]	mg/kg
Lead	48	40	42	54	34		069[IM]	mg/kg
Mercury	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3		069[IM]	mg/kg
Nickel	18	20	29	19	18		069[IM]	mg/kg
Selenium	< 1	2.1	< 1	2.4	< 1		069[IM]	mg/kg
Sulphate (Total Acid Soluble) as SO4	980	630	360	770	< 200		025a[IM]	mg/kg
Zinc	110	120	88	120	77		069[IM]	mg/kg
Exchangeable Ammonium as N	< 40	< 40	< 40	460	< 40		018[IM]	mg/kg
Total Cyanide	< 5	-	< 5	-	-		061[IM]	mg/kg
W/S Nitrate as N	5.9	2.5	3.9	11	< 2.2		073[I]	mg/kg
pH	8.0	7.9	8.0	6.9	7.6		009[IM]	pH Units
* * EPH SUITE * *								
EPH (C10-C40)	25	33	10	120	10		070[IM]	mg/kg
* * PHENOLS SUITE * *								
Phenol	< 0.1	-	< 0.1	-	-		020S[IM]	mg/kg
Total Monohydric Phenols	< 1	-	< 1	-	-		020S[I]	mg/kg
Pentachloroethane	< 0.1	-	-	-	-		076[I]	mg/kg
Hexachloroethane	< 0.1	-	-	-	-		076[I]	mg/kg
1,3,5-trichlorobenzene	< 0.1	-	-	-	-		076[I]	mg/kg
1,2,4-trichlorobenzene	< 0.1	-	-	-	-		076[I]	mg/kg
1,2,3-trichlorobenzene	< 0.1	-	-	-	-		076[I]	mg/kg
Hexachlorobutadiene	< 0.1	-	-	-	-		076[I]	mg/kg
1,2,4,5-tetrachlorobenzene	< 0.1	-	-	-	-		076[I]	mg/kg
Dichlobenil	< 0.1	-	-	-	-		076[I]	mg/kg

[I] Determination is Accredited to ISO 17025.
[M] Determination is Accredited to MCERTS.

ALcontrol Technichem
Table Of Results

Job Number : 06-12986
Matrix : Soil
Project Code: 66C10138

Project Name: Chepstow
Client : Environ UK Ltd

Sample Reference	TP1	TP2	TP3	TP4	TP5		Method No	Units
Sample Depth (m)	0.2	0.9	2.0	1.7	2.8			
Date Sampled	03/03/06	03/03/06	03/03/06	03/03/06	03/03/06			
Date Scheduled	15/03/06	15/03/06	15/03/06	15/03/06	15/03/06			
Laboratory Reference No	130251	130252	130253	130254	130255			
Analysis								
Pentachlorobenzene	< 0.1	-	-	-	-		076[I]	mg/kg
Tecnazene	< 0.1	-	-	-	-		076[I]	mg/kg
Trifluralin	< 0.1	-	-	-	-		076[I]	mg/kg
alpha-HCH	< 0.1	-	-	-	-		076[I]	mg/kg
Hexachlorobenzene	< 0.1	-	-	-	-		076[I]	mg/kg
beta-HCH	< 0.1	-	-	-	-		076[I]	mg/kg
gamma-HCH (lindane)	< 0.1	-	-	-	-		076[I]	mg/kg
Quintozene	< 0.1	-	-	-	-		076	mg/kg
Propyzamide	< 0.1	-	-	-	-		076[I]	mg/kg
delta-HCH	< 0.1	-	-	-	-		076[I]	mg/kg
Chlorothalonil	< 0.1	-	-	-	-		076[I]	mg/kg
Triallate	< 0.1	-	-	-	-		076[I]	mg/kg
Heptachlor	< 0.1	-	-	-	-		076[I]	mg/kg
Aldrin	< 0.1	-	-	-	-		076[I]	mg/kg
Triadimefon	< 0.1	-	-	-	-		076	mg/kg
Isodrin	< 0.1	-	-	-	-		076[I]	mg/kg
Pendimethalin	< 0.1	-	-	-	-		076[I]	mg/kg
Cis-Heptachlor Epoxide	< 0.1	-	-	-	-		076[I]	mg/kg
gamma-Chlordane (trans)	< 0.1	-	-	-	-		076[I]	mg/kg
o,p-DDE	< 0.1	-	-	-	-		076[I]	mg/kg
alpha-Endosulphan	< 0.1	-	-	-	-		076[I]	mg/kg
alpha-Chlordane (cis)	< 0.1	-	-	-	-		076[I]	mg/kg
p,p-DDE	< 0.1	-	-	-	-		076[I]	mg/kg
Dieldrin	< 0.1	-	-	-	-		076[I]	mg/kg
o,p-TDE	< 0.1	-	-	-	-		076[I]	mg/kg
Endrin	< 0.1	-	-	-	-		076[I]	mg/kg
beta-Endosulphan	< 0.1	-	-	-	-		076	mg/kg
Iprodione	< 0.1	-	-	-	-		076	mg/kg
p,p-TDE	< 0.1	-	-	-	-		076[I]	mg/kg
o,p-DDT	< 0.1	-	-	-	-		076[I]	mg/kg

[I] Determination is Accredited to ISO 17025.
[M] Determination is Accredited to MCERTS.

ALcontrol Technichem
Table Of Results

Job Number : 06-12986
Matrix : Soil
Project Code: 66C10138

Project Name: Chepstow
Client : Environ UK Ltd

Sample Reference	TP1	TP2	TP3	TP4	TP5		Method No	Units
Sample Depth (m)	0.2	0.9	2.0	1.7	2.8			
Date Sampled	03/03/06	03/03/06	03/03/06	03/03/06	03/03/06			
Date Scheduled	15/03/06	15/03/06	15/03/06	15/03/06	15/03/06			
Laboratory Reference No	130251	130252	130253	130254	130255			
Analysis								
Propiconazole I	< 0.1	-	-	-	-		076	mg/kg
Endosulphan sulphate	< 0.1	-	-	-	-		076[I]	mg/kg
p,p-DDT	< 0.1	-	-	-	-		076[I]	mg/kg
Propiconazole II	< 0.1	-	-	-	-		076	mg/kg
o,p-Methoxychlor	< 0.1	-	-	-	-		076[I]	mg/kg
Fluroxypyr	< 0.1	-	-	-	-		076[I]	mg/kg
p,p-Methoxychlor	< 0.1	-	-	-	-		076[I]	mg/kg
Permethrin I	< 0.1	-	-	-	-		076	mg/kg
Permethrin II	< 0.1	-	-	-	-		076[I]	mg/kg
Dichlorvos	< 0.1	-	-	-	-		077[I]	mg/kg
Mevinphos	< 0.1	-	-	-	-		077	mg/kg
Methacriphos	< 0.1	-	-	-	-		077[I]	mg/kg
Heptenophos	< 0.1	-	-	-	-		077[I]	mg/kg
Tributylphosphate	< 0.1	-	-	-	-		077[I]	mg/kg
Sulfotep	< 0.1	-	-	-	-		077[I]	mg/kg
Phorate	< 0.1	-	-	-	-		077[I]	mg/kg
Dimethoate	< 0.1	-	-	-	-		077	mg/kg
Propetamphos	< 0.1	-	-	-	-		077[I]	mg/kg
Fonofos	< 0.1	-	-	-	-		077[I]	mg/kg
Diazinon	< 0.1	-	-	-	-		077[I]	mg/kg
Phosphamidon I	< 0.1	-	-	-	-		077	mg/kg
Disulfoton	< 0.1	-	-	-	-		077[I]	mg/kg
Phosphamidon II	< 0.1	-	-	-	-		077	mg/kg
Chlorpyriphos-methyl	< 0.1	-	-	-	-		077[I]	mg/kg
Methyl-Parathion	< 0.1	-	-	-	-		077[I]	mg/kg
Fenitrothion	< 0.1	-	-	-	-		077	mg/kg
Pirimiphos-methyl	< 0.1	-	-	-	-		077[I]	mg/kg
Malathion	< 0.1	-	-	-	-		077[I]	mg/kg
Fenthion	< 0.1	-	-	-	-		077[I]	mg/kg
Chlorpyriphos	< 0.1	-	-	-	-		077[I]	mg/kg

[I] Determination is Accredited to ISO 17025.
[M] Determination is Accredited to MCERTS.

ALcontrol Technichem
Table Of Results

Job Number : 06-12986
Matrix : Soil
Project Code: 66C10138

Project Name: Chepstow
Client : Environ UK Ltd

Sample Reference	TP1	TP2	TP3	TP4	TP5		Method No	Units
Sample Depth (m)	0.2	0.9	2.0	1.7	2.8			
Date Sampled	03/03/06	03/03/06	03/03/06	03/03/06	03/03/06			
Date Scheduled	15/03/06	15/03/06	15/03/06	15/03/06	15/03/06			
Laboratory Reference No	130251	130252	130253	130254	130255			
Analysis								
Parathion	< 0.1	-	-	-	-		077[I]	mg/kg
Chlorfenvinphos	< 0.1	-	-	-	-		077[I]	mg/kg
Ethion	< 0.1	-	-	-	-		077[I]	mg/kg
Triazophos	< 0.1	-	-	-	-		077	mg/kg
Carbophenothion	< 0.1	-	-	-	-		077[I]	mg/kg
Triphenylphosphate	< 0.1	-	-	-	-		077[I]	mg/kg
Phosmet	< 0.1	-	-	-	-		077[I]	mg/kg
EPN	< 0.1	-	-	-	-		077[I]	mg/kg
Phosalone	< 0.1	-	-	-	-		077[I]	mg/kg
Azinphos-methyl	< 0.1	-	-	-	-		077	mg/kg
Azinphos-ethyl	< 0.1	-	-	-	-		077	mg/kg
Coumaphos	< 0.1	-	-	-	-		077[I]	mg/kg

[I] Determination is Accredited to ISO 17025.
[M] Determination is Accredited to MCERTS.

ALcontrol Technichem
Table Of Results

Job Number : 06-12986
Matrix : Soil
Project Code: 66C10138

Project Name: Chepstow
Client : Environ UK Ltd

Sample Reference	TP1	TP2	TP3	TP4	TP5		Method No	Units
Sample Depth (m)	0.2	0.9	2.0	1.7	2.8			
Date Sampled	03/03/06	03/03/06	03/03/06	03/03/06	03/03/06			
Date Scheduled	15/03/06	15/03/06	15/03/06	15/03/06	15/03/06			
Laboratory Reference No	130251	130252	130253	130254	130255			
Analysis								
* * PAH SUITE * *								
Naphthalene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		022S[IM]	mg/kg
Acenaphthylene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		022S[I]	mg/kg
Acenaphthene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		022S[IM]	mg/kg
Fluorene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		022S[I]	mg/kg
Phenanthrene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		022S[IM]	mg/kg
Anthracene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		022S[IM]	mg/kg
Fluoranthene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		022S[IM]	mg/kg
Pyrene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		022S[IM]	mg/kg
Benzo(a)anthracene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		022S[IM]	mg/kg
Chrysene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		022S[IM]	mg/kg
Benzo(b)fluoranthene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		022S[IM]	mg/kg
Benzo(k)fluoranthene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		022S[IM]	mg/kg
Benzo(a)pyrene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		022S[IM]	mg/kg
Indeno(1,2,3-cd)pyrene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		022S[IM]	mg/kg
Dibenzo(a,h)anthracene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		022S[I]	mg/kg
Benzo(g,h,i)perylene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		022S[IM]	mg/kg
PAH (Sum of EPA 16)	ND	ND	ND	ND	ND		022S[I]	mg/kg

[I] Determination is Accredited to ISO 17025.
[M] Determination is Accredited to MCERTS.

ALcontrol Technichem
EPH Description

Job Number: 06-12986
Client: Environ UK Ltd
Project Code: 66C10138

Matrix: Soils
Project Name: Chepstow

Laboratory Reference No	Sample Reference	Sample Depth (m)	Date Sampled	EPH Description
130251	TP1	0.2	03/03/06	The sample chromatogram exhibits a hump of unresolved complex material eluting from C12 to C40.
130252	TP2	0.9	03/03/06	The sample chromatogram exhibits a hump of unresolved complex material eluting from C12 to C40, overlain by several peaks unidentifiable by this analysis.
130253	TP3	2.0	03/03/06	The sample chromatogram exhibits too little GC-FID amenable material to provide qualitative analysis.
130254	TP4	1.7	03/03/06	The sample chromatogram exhibits a hump of unresolved complex material eluting from C12 to beyond C40, overlain by several peaks unidentifiable by this analysis.
130255	TP5	2.8	03/03/06	The sample chromatogram exhibits too little GC-FID amenable material to provide qualitative analysis.

ALcontrol Technichem
Table Of Results - Appendix

Summary of methods contained within report :

Method No.	Reference	Description	ISO 17025 Accredited	MCERTS Accredited	Wet/Dry Analysis
070	In-house method	Determination of hexane/acetone extractable hydrocarbons in soil by gas chromatography with flame ionisation detection. Note: UKAS accreditation only applies to C10-C40 and excludes other carbon banding.	Y	Y	W
061	In-house method based on Method 4500-CN, "Standard Methods for the Examination of Water and Waste Water", APHA AWWA WEF, Edition 18, 1992	Determination of cyanides and thiocyanate in soil samples by continuous flow colorimetry (Skalar)	Y	Y	W
022S	In-house method	Determination of PAH compounds in soil samples by hexane / acetone extraction followed by GC-MS detection	Y	Y	W
020S	In-house method based on Second Site Property: Environmental Assessment Guidance Version 3: March 2003	Determination of methanol/water extractable phenols in soil samples by HPLC with electrochemical detection	Y	Y	W
018	In-house method based on Method 17.13 "Environmental Assessment Guidance" Version 3, Second Site Property, March 2003	Determination of exchangeable ammonium in soil samples (potassium chloride extraction)	Y	Y	W
009	In-house method referencing BS1377: Part 3: 1990 and Second Site Property: Environmental Assessment Guidance Version 3: March 2003	Determination of pH by addition of water followed by electrometric measurement	Y	Y	W
077	In-house method	Determination of organophosphorus pesticides in soil samples by hexane/acetone extraction followed by GC-MS detection	Y	N	W
076	In-house method	Determination of organochlorine pesticides in soil samples by hexane/acetone extraction followed by GC-MS detection	Y	N	W

ALcontrol Technichem
Table Of Results - Appendix

Summary of methods contained within report :

Method No.	Reference	Description	ISO 17025 Accredited	MCERTS Accredited	Wet/Dry Analysis
069	In-house method based on MEWAM "Methods for the Determination of Metals in Soil", HMSO, 1986	Determination of metals in soil samples by aqua-regia digestion followed by ICP-OES detection	Y	Y	D
025a	In-house method based on BS1377 Part 3, "Chemical and Electrochemical Tests", 1990	Determination of hydrochloric acid soluble sulphate in soil samples by Inductively Coupled Plasma - Optical Emission Spectrometry (ICP-OES)	Y	Y	D
073	In-house method based on BS1377 Part 3, "Chemical and Electrochemical Tests", 1990	Determination of water soluble anion content in soils using a 2:1 water:soil extration ratio followed by ion chromatographic determination with electrical conductivity detector	Y	Y	D

Soil results are expressed on a dry weight basis. Where the test uses as-received sample, a moisture correction factor is applied to the wet weight result to convert it. This factor is determined gravimetrically using loss of moisture on drying at 30 (+/-5) degrees C.

J. McKay
Environ UK Ltd
Hartham Park
Corsham
Wiltshire
SN13 0RR

29 March 2006

TEST REPORT

Our Report Number: 06-13310

Your Order Reference: Instructions of 23/03/2006

10 soil samples submitted for analysis on 23/03/2006

Project Name: Newhouse Park Chepstow

Project Code: 66C10138

Laboratory analysis started on 23/03/2006
All laboratory analysis completed by 29 March 2006

Rexona Rahman
Analytical Reporting Manager
ALCONTROL TECHNICHEM

Sharon Googh
Project Co-ordinator
ALCONTROL TECHNICHEM

ALcontrol Technichem
Sample Description

Job Number: 06-13310
Client: Environ UK Ltd
Project Code: 66C10138

Matrix: Soil
Project Name: Newhouse Park Chepstow

Laboratory Reference No	Sample Reference	Sample Depth (m)	Date Sampled	Sample Description
131899	TP17	1.9	17/03/06	Brown sandy clay
131900	TP20	0.6	17/03/06	Brown sandy clay
131901	TP22	1.0	17/03/06	Red / brown clay with gravel
131902	TP24	0.9	17/03/06	Brown sandy clay with gravel
131903	TP26	0.2	17/03/06	Red / brown clay with gravel
131904	TP6	1.4	17/03/06	Grey & brown clay with gravel
131905	TP8	0.1	17/03/06	Red / brown sandy clay with vegetation
131906	TP10	0.7	17/03/06	Red / brown clay with gravel
131907	TP11	0.2	17/03/06	Light brown sandy clay with gravel
131908	TP12	0.7	17/03/06	Dark brown sandy clay with gravel

ALcontrol Technichem
Table Of Results

Job Number : 06-13310
Matrix : Soil
Project Code: 66C10138

Project Name: Newhouse Park Chepstow
Client : Environ UK Ltd

Sample Reference	TP17	TP20	TP22	TP24	TP26	TP6	Method No	Units
Sample Depth (m)	1.9	0.6	1.0	0.9	0.2	1.4		
Date Sampled	17/03/06	17/03/06	17/03/06	17/03/06	17/03/06	17/03/06		
Date Scheduled	23/03/06	23/03/06	23/03/06	23/03/06	23/03/06	23/03/06		
Laboratory Reference No	131899	131900	131901	131902	131903	131904		
Analysis								
Moisture Content (Dry Weight)	20.2	20.1	16.2	30.1	39.9	21.3		%
Moisture Content (Wet Weight)	16.8	16.7	13.9	23.1	28.5	17.6		%
Arsenic	14	13	6.5	7.5	9.8	21	069[IM]	mg/kg
Cadmium	0.5	< 0.5	< 0.5	< 0.5	0.6	< 0.5	069[IM]	mg/kg
Chromium	34	28	27	32	29	27	069[IM]	mg/kg
Copper	28	31	11	19	19	11	069[IM]	mg/kg
Lead	67	73	32	36	48	33	069[IM]	mg/kg
Mercury	< 0.3	< 0.3	< 0.3	< 0.3	0.3	< 0.3	069[IM]	mg/kg
Nickel	19	20	16	26	17	17	069[IM]	mg/kg
Selenium	< 1	< 1	2.2	1.4	< 1	< 1	069[IM]	mg/kg
Sulphate (Total Acid Soluble) as SO4	390	360	230	420	650	< 200	025a[IM]	mg/kg
Zinc	170	170	86	130	120	96	069[IM]	mg/kg
Exchangeable Ammonium as N	< 40	< 40	< 40	< 40	< 40	< 40	018[IM]	mg/kg
Total Cyanide	< 5	< 5	< 5	< 5	< 5	< 5	061[IM]	mg/kg
Organic Matter	-	-	0.64	-	-	-	026[I]	%
W/S Nitrate as N	9.7	10	6.1	< 2.2	12	< 2.2	073[I]	mg/kg
pH	7.8	8.0	7.5	8.3	7.4	7.4	009[IM]	pH Units
* * EPH SUITE * *								
EPH (C10-C40)	28	37	12	13	20	10	070[IM]	mg/kg
* * PHENOLS SUITE * *								
Phenol	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	020S[IM]	mg/kg
Total Monohydric Phenols	< 1	< 1	< 1	< 1	< 1	< 1	020S[I]	mg/kg
Pentachloroethane	-	-	-	-	< 0.1	-	076[I]	mg/kg
Hexachloroethane	-	-	-	-	< 0.1	-	076[I]	mg/kg
1,3,5-trichlorobenzene	-	-	-	-	< 0.1	-	076[I]	mg/kg
1,2,4-trichlorobenzene	-	-	-	-	< 0.1	-	076[I]	mg/kg
1,2,3-trichlorobenzene	-	-	-	-	< 0.1	-	076[I]	mg/kg
Hexachlorobutadiene	-	-	-	-	< 0.1	-	076[I]	mg/kg
1,2,4,5-tetrachlorobenzene	-	-	-	-	< 0.1	-	076[I]	mg/kg
Dichlobenil	-	-	-	-	< 0.1	-	076[I]	mg/kg

[I] Determination is Accredited to ISO 17025.
[M] Determination is Accredited to MCERTS.

ALcontrol Technichem
Table Of Results

Job Number : 06-13310
Matrix : Soil
Project Code: 66C10138

Project Name: Newhouse Park Chepstow
Client : Environ UK Ltd

Sample Reference	TP17	TP20	TP22	TP24	TP26	TP6	Method No	Units
Sample Depth (m)	1.9	0.6	1.0	0.9	0.2	1.4		
Date Sampled	17/03/06	17/03/06	17/03/06	17/03/06	17/03/06	17/03/06		
Date Scheduled	23/03/06	23/03/06	23/03/06	23/03/06	23/03/06	23/03/06		
Laboratory Reference No	131899	131900	131901	131902	131903	131904		
Analysis								
Pentachlorobenzene	-	-	-	-	< 0.1	-	076[I]	mg/kg
Tecnazene	-	-	-	-	< 0.1	-	076[I]	mg/kg
Trifluralin	-	-	-	-	< 0.1	-	076[I]	mg/kg
alpha-HCH	-	-	-	-	< 0.1	-	076[I]	mg/kg
Hexachlorobenzene	-	-	-	-	< 0.1	-	076[I]	mg/kg
beta-HCH	-	-	-	-	< 0.1	-	076[I]	mg/kg
gamma-HCH (lindane)	-	-	-	-	< 0.1	-	076[I]	mg/kg
Quintozene	-	-	-	-	< 0.1	-	076	mg/kg
Propyzamide	-	-	-	-	< 0.1	-	076[I]	mg/kg
delta-HCH	-	-	-	-	< 0.1	-	076[I]	mg/kg
Chlorothalonil	-	-	-	-	< 0.1	-	076[I]	mg/kg
Triallate	-	-	-	-	< 0.1	-	076[I]	mg/kg
Heptachlor	-	-	-	-	< 0.1	-	076[I]	mg/kg
Aldrin	-	-	-	-	< 0.1	-	076[I]	mg/kg
Triadimefon	-	-	-	-	< 0.1	-	076	mg/kg
Isodrin	-	-	-	-	< 0.1	-	076[I]	mg/kg
Pendimethalin	-	-	-	-	< 0.1	-	076[I]	mg/kg
Cis-Heptachlor Epoxide	-	-	-	-	< 0.1	-	076[I]	mg/kg
gamma-Chlordane (trans)	-	-	-	-	< 0.1	-	076[I]	mg/kg
o,p-DDE	-	-	-	-	< 0.1	-	076[I]	mg/kg
alpha-Endosulphan	-	-	-	-	< 0.1	-	076[I]	mg/kg
alpha-Chlordane (cis)	-	-	-	-	< 0.1	-	076[I]	mg/kg
p,p-DDE	-	-	-	-	< 0.1	-	076[I]	mg/kg
Dieldrin	-	-	-	-	< 0.1	-	076[I]	mg/kg
o,p-TDE	-	-	-	-	< 0.1	-	076[I]	mg/kg
Endrin	-	-	-	-	< 0.1	-	076[I]	mg/kg
beta-Endosulphan	-	-	-	-	< 0.1	-	076	mg/kg
Iprodione	-	-	-	-	< 0.1	-	076	mg/kg
p,p-TDE	-	-	-	-	< 0.1	-	076[I]	mg/kg
o,p-DDT	-	-	-	-	< 0.1	-	076[I]	mg/kg
Propiconazole I	-	-	-	-	< 0.1	-	076	mg/kg

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ALcontrol Technichem
Table Of Results

Job Number : 06-13310
Matrix : Soil
Project Code: 66C10138

Project Name: Newhouse Park Chepstow
Client : Environ UK Ltd

Sample Reference	TP17	TP20	TP22	TP24	TP26	TP6	Method No	Units
Sample Depth (m)	1.9	0.6	1.0	0.9	0.2	1.4		
Date Sampled	17/03/06	17/03/06	17/03/06	17/03/06	17/03/06	17/03/06		
Date Scheduled	23/03/06	23/03/06	23/03/06	23/03/06	23/03/06	23/03/06		
Laboratory Reference No	131899	131900	131901	131902	131903	131904		
Analysis								
Endosulphan sulphate	-	-	-	-	< 0.1	-	076[I]	mg/kg
p,p-DDT	-	-	-	-	< 0.1	-	076[I]	mg/kg
Propiconazole II	-	-	-	-	< 0.1	-	076	mg/kg
o,p-Methoxychlor	-	-	-	-	< 0.1	-	076[I]	mg/kg
Fluroxypyr	-	-	-	-	< 0.1	-	076[I]	mg/kg
p,p-Methoxychlor	-	-	-	-	< 0.1	-	076[I]	mg/kg
Permethrin I	-	-	-	-	< 0.1	-	076	mg/kg
Permethrin II	-	-	-	-	< 0.1	-	076[I]	mg/kg
Dichlorvos	-	-	-	-	< 0.1	-	077[I]	mg/kg
Mevinphos	-	-	-	-	< 0.1	-	077	mg/kg
Methacriphos	-	-	-	-	< 0.1	-	077[I]	mg/kg
Heptenophos	-	-	-	-	< 0.1	-	077[I]	mg/kg
Tributylphosphate	-	-	-	-	< 0.1	-	077[I]	mg/kg
Sulfotep	-	-	-	-	< 0.1	-	077[I]	mg/kg
Phorate	-	-	-	-	< 0.1	-	077[I]	mg/kg
Dimethoate	-	-	-	-	< 0.1	-	077	mg/kg
Propetamphos	-	-	-	-	< 0.1	-	077[I]	mg/kg
Fonofos	-	-	-	-	< 0.1	-	077[I]	mg/kg
Diazinon	-	-	-	-	< 0.1	-	077[I]	mg/kg
Phosphamidon I	-	-	-	-	< 0.1	-	077	mg/kg
Disulfoton	-	-	-	-	< 0.1	-	077[I]	mg/kg
Phosphamidon II	-	-	-	-	< 0.1	-	077	mg/kg
Chlorpyriphos-methyl	-	-	-	-	< 0.1	-	077[I]	mg/kg
Methyl-Parathion	-	-	-	-	< 0.1	-	077[I]	mg/kg
Fenitrothion	-	-	-	-	< 0.1	-	077	mg/kg
Pirimiphos-methyl	-	-	-	-	< 0.1	-	077[I]	mg/kg
Malathion	-	-	-	-	< 0.1	-	077[I]	mg/kg
Fenthion	-	-	-	-	< 0.1	-	077[I]	mg/kg
Chlorpyriphos	-	-	-	-	< 0.1	-	077[I]	mg/kg
Parathion	-	-	-	-	< 0.1	-	077[I]	mg/kg
Chlorfenvinphos	-	-	-	-	< 0.1	-	077[I]	mg/kg

[I] Determination is Accredited to ISO 17025.
[M] Determination is Accredited to MCERTS.

ALcontrol Technichem
Table Of Results

Job Number : 06-13310
Matrix : Soil
Project Code: 66C10138

Project Name: Newhouse Park Chepstow
Client : Environ UK Ltd

Sample Reference	TP17	TP20	TP22	TP24	TP26	TP6	Method No	Units
Sample Depth (m)	1.9	0.6	1.0	0.9	0.2	1.4		
Date Sampled	17/03/06	17/03/06	17/03/06	17/03/06	17/03/06	17/03/06		
Date Scheduled	23/03/06	23/03/06	23/03/06	23/03/06	23/03/06	23/03/06		
Laboratory Reference No	131899	131900	131901	131902	131903	131904		
Analysis								
Ethion	-	-	-	-	< 0.1	-	077[I]	mg/kg
Triazophos	-	-	-	-	< 0.1	-	077	mg/kg
Carbophenothion	-	-	-	-	< 0.1	-	077[I]	mg/kg
Triphenylphosphate	-	-	-	-	< 0.1	-	077[I]	mg/kg
Phosmet	-	-	-	-	< 0.1	-	077[I]	mg/kg
EPN	-	-	-	-	< 0.1	-	077[I]	mg/kg
Phosalone	-	-	-	-	< 0.1	-	077[I]	mg/kg
Azinphos-methyl	-	-	-	-	< 0.1	-	077	mg/kg
Azinphos-ethyl	-	-	-	-	< 0.1	-	077	mg/kg
Coumaphos	-	-	-	-	< 0.1	-	077[I]	mg/kg

[I] Determination is Accredited to ISO 17025.
[M] Determination is Accredited to MCERTS.

ALcontrol Technichem
Table Of Results

Job Number : 06-13310
Matrix : Soil
Project Code: 66C10138

Project Name: Newhouse Park Chepstow
Client : Environ UK Ltd

Sample Reference	TP8	TP10	TP11	TP12			Method No	Units
Sample Depth (m)	0.1	0.7	0.2	0.7				
Date Sampled	17/03/06	17/03/06	17/03/06	17/03/06				
Date Scheduled	23/03/06	23/03/06	23/03/06	23/03/06				
Laboratory Reference No	131905	131906	131907	131908				
Analysis								
Moisture Content (Dry Weight)	34.7	17.2	28.4	90.4				%
Moisture Content (Wet Weight)	25.8	14.7	22.1	47.5				%
Arsenic	8.5	8.8	12	8.6			069[IM]	mg/kg
Cadmium	< 0.5	< 0.5	< 0.5	0.7			069[IM]	mg/kg
Chromium	26	39	34	42			069[IM]	mg/kg
Copper	14	12	10	33			069[IM]	mg/kg
Lead	39	34	45	43			069[IM]	mg/kg
Mercury	< 0.3	< 0.3	< 0.3	< 0.3			069[IM]	mg/kg
Nickel	14	23	14	22			069[IM]	mg/kg
Selenium	< 1	< 1	< 1	< 1			069[IM]	mg/kg
Sulphate (Total Acid Soluble) as SO4	550	230	400	1500			025a[IM]	mg/kg
Zinc	89	70	89	84			069[IM]	mg/kg
Exchangeable Ammonium as N	< 40	< 40	< 40	< 40			018[IM]	mg/kg
Total Cyanide	-	< 5	< 5	< 5			061[IM]	mg/kg
Organic Matter	-	0.63	-	12			026[I]	%
W/S Nitrate as N	4.6	< 2.2	< 2.2	5.1			073[I]	mg/kg
pH	7.2	7.6	7.7	7.6			009[IM]	pH Units
* * EPH SUITE * *								
EPH (C10-C40)	38	12	33	72			070[IM]	mg/kg
* * PHENOLS SUITE * *								
Phenol	-	< 0.1	< 0.1	< 0.1			020S[IM]	mg/kg
Total Monohydric Phenols	-	< 1	< 1	< 1			020S[I]	mg/kg
Pentachloroethane	< 0.1	-	< 0.1	-			076[I]	mg/kg
Hexachloroethane	< 0.1	-	< 0.1	-			076[I]	mg/kg
1,3,5-trichlorobenzene	< 0.1	-	< 0.1	-			076[I]	mg/kg
1,2,4-trichlorobenzene	< 0.1	-	< 0.1	-			076[I]	mg/kg
1,2,3-trichlorobenzene	< 0.1	-	< 0.1	-			076[I]	mg/kg
Hexachlorobutadiene	< 0.1	-	< 0.1	-			076[I]	mg/kg
1,2,4,5-tetrachlorobenzene	< 0.1	-	< 0.1	-			076[I]	mg/kg
Dichlobenil	< 0.1	-	< 0.1	-			076[I]	mg/kg

[I] Determination is Accredited to ISO 17025.
[M] Determination is Accredited to MCERTS.

ALcontrol Technichem
Table Of Results

Job Number : 06-13310
Matrix : Soil
Project Code: 66C10138

Project Name: Newhouse Park Chepstow
Client : Environ UK Ltd

Sample Reference	TP8	TP10	TP11	TP12			Method No	Units
Sample Depth (m)	0.1	0.7	0.2	0.7				
Date Sampled	17/03/06	17/03/06	17/03/06	17/03/06				
Date Scheduled	23/03/06	23/03/06	23/03/06	23/03/06				
Laboratory Reference No	131905	131906	131907	131908				
Analysis								
Pentachlorobenzene	< 0.1	-	< 0.1	-			076[I]	mg/kg
Tecnazene	< 0.1	-	< 0.1	-			076[I]	mg/kg
Trifluralin	< 0.1	-	< 0.1	-			076[I]	mg/kg
alpha-HCH	< 0.1	-	< 0.1	-			076[I]	mg/kg
Hexachlorobenzene	< 0.1	-	< 0.1	-			076[I]	mg/kg
beta-HCH	< 0.1	-	< 0.1	-			076[I]	mg/kg
gamma-HCH (lindane)	< 0.1	-	< 0.1	-			076[I]	mg/kg
Quintozene	< 0.1	-	< 0.1	-			076	mg/kg
Propyzamide	< 0.1	-	< 0.1	-			076[I]	mg/kg
delta-HCH	< 0.1	-	< 0.1	-			076[I]	mg/kg
Chlorothalonil	< 0.1	-	< 0.1	-			076[I]	mg/kg
Triallate	< 0.1	-	< 0.1	-			076[I]	mg/kg
Heptachlor	< 0.1	-	< 0.1	-			076[I]	mg/kg
Aldrin	< 0.1	-	< 0.1	-			076[I]	mg/kg
Triadimefon	< 0.1	-	< 0.1	-			076	mg/kg
Isodrin	< 0.1	-	< 0.1	-			076[I]	mg/kg
Pendimethalin	< 0.1	-	< 0.1	-			076[I]	mg/kg
Cis-Heptachlor Epoxide	< 0.1	-	< 0.1	-			076[I]	mg/kg
gamma-Chlordane (trans)	< 0.1	-	< 0.1	-			076[I]	mg/kg
o,p-DDE	< 0.1	-	< 0.1	-			076[I]	mg/kg
alpha-Endosulphan	< 0.1	-	< 0.1	-			076[I]	mg/kg
alpha-Chlordane (cis)	< 0.1	-	< 0.1	-			076[I]	mg/kg
p,p-DDE	< 0.1	-	< 0.1	-			076[I]	mg/kg
Dieldrin	< 0.1	-	< 0.1	-			076[I]	mg/kg
o,p-TDE	< 0.1	-	< 0.1	-			076[I]	mg/kg
Endrin	< 0.1	-	< 0.1	-			076[I]	mg/kg
beta-Endosulphan	< 0.1	-	< 0.1	-			076	mg/kg
Iprodione	< 0.1	-	< 0.1	-			076	mg/kg
p,p-TDE	< 0.1	-	< 0.1	-			076[I]	mg/kg
o,p-DDT	< 0.1	-	< 0.1	-			076[I]	mg/kg
Propiconazole I	< 0.1	-	< 0.1	-			076	mg/kg

[I] Determination is Accredited to ISO 17025.
[M] Determination is Accredited to MCERTS.

ALcontrol Technichem
Table Of Results

Job Number : 06-13310
Matrix : Soil
Project Code: 66C10138

Project Name: Newhouse Park Chepstow
Client : Environ UK Ltd

Sample Reference	TP8	TP10	TP11	TP12			Method No	Units
Sample Depth (m)	0.1	0.7	0.2	0.7				
Date Sampled	17/03/06	17/03/06	17/03/06	17/03/06				
Date Scheduled	23/03/06	23/03/06	23/03/06	23/03/06				
Laboratory Reference No	131905	131906	131907	131908				
Analysis								
Endosulphan sulphate	< 0.1	-	< 0.1	-			076[I]	mg/kg
p,p-DDT	< 0.1	-	< 0.1	-			076[I]	mg/kg
Propiconazole II	< 0.1	-	< 0.1	-			076	mg/kg
o,p-Methoxychlor	< 0.1	-	< 0.1	-			076[I]	mg/kg
Fluroxypyr	< 0.1	-	< 0.1	-			076[I]	mg/kg
p,p-Methoxychlor	< 0.1	-	< 0.1	-			076[I]	mg/kg
Permethrin I	< 0.1	-	< 0.1	-			076	mg/kg
Permethrin II	< 0.1	-	< 0.1	-			076[I]	mg/kg
Dichlorvos	< 0.1	-	< 0.1	-			077[I]	mg/kg
Mevinphos	< 0.1	-	< 0.1	-			077	mg/kg
Methacriphos	< 0.1	-	< 0.1	-			077[I]	mg/kg
Heptenophos	< 0.1	-	< 0.1	-			077[I]	mg/kg
Tributylphosphate	< 0.1	-	< 0.1	-			077[I]	mg/kg
Sulfotep	< 0.1	-	< 0.1	-			077[I]	mg/kg
Phorate	< 0.1	-	< 0.1	-			077[I]	mg/kg
Dimethoate	< 0.1	-	< 0.1	-			077	mg/kg
Propetamphos	< 0.1	-	< 0.1	-			077[I]	mg/kg
Fonofos	< 0.1	-	< 0.1	-			077[I]	mg/kg
Diazinon	< 0.1	-	< 0.1	-			077[I]	mg/kg
Phosphamidon I	< 0.1	-	< 0.1	-			077	mg/kg
Disulfoton	< 0.1	-	< 0.1	-			077[I]	mg/kg
Phosphamidon II	< 0.1	-	< 0.1	-			077	mg/kg
Chlorpyriphos-methyl	< 0.1	-	< 0.1	-			077[I]	mg/kg
Methyl-Parathion	< 0.1	-	< 0.1	-			077[I]	mg/kg
Fenitrothion	< 0.1	-	< 0.1	-			077	mg/kg
Pirimiphos-methyl	< 0.1	-	< 0.1	-			077[I]	mg/kg
Malathion	< 0.1	-	< 0.1	-			077[I]	mg/kg
Fenthion	< 0.1	-	< 0.1	-			077[I]	mg/kg
Chlorpyriphos	< 0.1	-	< 0.1	-			077[I]	mg/kg
Parathion	< 0.1	-	< 0.1	-			077[I]	mg/kg
Chlorfenvinphos	< 0.1	-	< 0.1	-			077[I]	mg/kg

[I] Determination is Accredited to ISO 17025.
[M] Determination is Accredited to MCERTS.

ALcontrol Technichem
Table Of Results

Job Number : 06-13310
Matrix : Soil
Project Code: 66C10138

Project Name: Newhouse Park Chepstow
Client : Environ UK Ltd

Sample Reference	TP8	TP10	TP11	TP12			Method No	Units
Sample Depth (m)	0.1	0.7	0.2	0.7				
Date Sampled	17/03/06	17/03/06	17/03/06	17/03/06				
Date Scheduled	23/03/06	23/03/06	23/03/06	23/03/06				
Laboratory Reference No	131905	131906	131907	131908				
Analysis								
Ethion	< 0.1	-	< 0.1	-			077[I]	mg/kg
Triazophos	< 0.1	-	< 0.1	-			077	mg/kg
Carbophenothion	< 0.1	-	< 0.1	-			077[I]	mg/kg
Triphenylphosphate	< 0.1	-	< 0.1	-			077[I]	mg/kg
Phosmet	< 0.1	-	< 0.1	-			077[I]	mg/kg
EPN	< 0.1	-	< 0.1	-			077[I]	mg/kg
Phosalone	< 0.1	-	< 0.1	-			077[I]	mg/kg
Azinphos-methyl	< 0.1	-	< 0.1	-			077	mg/kg
Azinphos-ethyl	< 0.1	-	< 0.1	-			077	mg/kg
Coumaphos	< 0.1	-	< 0.1	-			077[I]	mg/kg

[I] Determination is Accredited to ISO 17025.
[M] Determination is Accredited to MCERTS.

ALcontrol Technichem
Table Of Results

Job Number : 06-13310
Matrix : Soil
Project Code: 66C10138

Project Name: Newhouse Park Chepstow
Client : Environ UK Ltd

Sample Reference	TP17	TP20	TP22	TP24	TP26	TP6	Method No	Units
Sample Depth (m)	1.9	0.6	1.0	0.9	0.2	1.4		
Date Sampled	17/03/06	17/03/06	17/03/06	17/03/06	17/03/06	17/03/06		
Date Scheduled	23/03/06	23/03/06	23/03/06	23/03/06	23/03/06	23/03/06		
Laboratory Reference No	131899	131900	131901	131902	131903	131904		
Analysis								
* * PAH SUITE * *								
Naphthalene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	022S [IM]	mg/kg
Acenaphthylene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	022S [I]	mg/kg
Acenaphthene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	022S [IM]	mg/kg
Fluorene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	022S [I]	mg/kg
Phenanthrene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	022S [IM]	mg/kg
Anthracene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	022S [IM]	mg/kg
Fluoranthene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	022S [IM]	mg/kg
Pyrene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	022S [IM]	mg/kg
Benzo(a)anthracene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	022S [IM]	mg/kg
Chrysene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	022S [IM]	mg/kg
Benzo(b)fluoranthene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	022S [IM]	mg/kg
Benzo(k)fluoranthene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	022S [IM]	mg/kg
Benzo(a)pyrene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	022S [IM]	mg/kg
Indeno(1,2,3-cd)pyrene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	022S [IM]	mg/kg
Dibenzo(a,h)anthracene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	022S [I]	mg/kg
Benzo(g,h,i)perylene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	022S [IM]	mg/kg
PAH (Sum of EPA 16)	ND	ND	ND	ND	ND	ND	022S [I]	mg/kg

[I] Determination is Accredited to ISO 17025.
[M] Determination is Accredited to MCERTS.

ALcontrol Technichem
Table Of Results

Job Number : 06-13310
Matrix : Soil
Project Code: 66C10138

Project Name: Newhouse Park Chepstow
Client : Environ UK Ltd

Sample Reference	TP8	TP10	TP11	TP12			Method No	Units
Sample Depth (m)	0.1	0.7	0.2	0.7				
Date Sampled	17/03/06	17/03/06	17/03/06	17/03/06				
Date Scheduled	23/03/06	23/03/06	23/03/06	23/03/06				
Laboratory Reference No	131905	131906	131907	131908				
Analysis								
** PAH SUITE **								
Naphthalene	< 0.1	< 0.1	< 0.1	< 0.1			022S[IM]	mg/kg
Acenaphthylene	< 0.1	< 0.1	< 0.1	< 0.1			022S[I]	mg/kg
Acenaphthene	< 0.1	< 0.1	< 0.1	< 0.1			022S[IM]	mg/kg
Fluorene	< 0.1	< 0.1	< 0.1	< 0.1			022S[I]	mg/kg
Phenanthrene	< 0.1	< 0.1	< 0.1	< 0.1			022S[IM]	mg/kg
Anthracene	< 0.1	< 0.1	< 0.1	< 0.1			022S[IM]	mg/kg
Fluoranthene	< 0.1	< 0.1	< 0.1	< 0.1			022S[IM]	mg/kg
Pyrene	< 0.1	< 0.1	< 0.1	< 0.1			022S[IM]	mg/kg
Benzo(a)anthracene	< 0.1	< 0.1	< 0.1	< 0.1			022S[IM]	mg/kg
Chrysene	< 0.1	< 0.1	< 0.1	< 0.1			022S[IM]	mg/kg
Benzo(b)fluoranthene	< 0.1	< 0.1	< 0.1	< 0.1			022S[IM]	mg/kg
Benzo(k)fluoranthene	< 0.1	< 0.1	< 0.1	< 0.1			022S[IM]	mg/kg
Benzo(a)pyrene	< 0.1	< 0.1	< 0.1	< 0.1			022S[IM]	mg/kg
Indeno(1,2,3-cd)pyrene	< 0.1	< 0.1	< 0.1	< 0.1			022S[IM]	mg/kg
Dibenzo(a,h)anthracene	< 0.1	< 0.1	< 0.1	< 0.1			022S[I]	mg/kg
Benzo(g,h,i)perylene	< 0.1	< 0.1	< 0.1	< 0.1			022S[IM]	mg/kg
PAH (Sum of EPA 16)	ND	ND	ND	ND			022S[I]	mg/kg

[I] Determination is Accredited to ISO 17025.
[M] Determination is Accredited to MCERTS.

ALcontrol Technichem
EPH Description

Job Number: 06-13310
Client: Environ UK Ltd
Project Code: 66C10138

Matrix: Soils
Project Name: Newhouse Park Chepstow

Laboratory Reference No	Sample Reference	Sample Depth (m)	Date Sampled	EPH Description
131899	TP17	1.90	17/03/06	The sample chromatogram exhibits a hump of unresolved complex material eluting from C14 to beyond C40, overlain by several peaks unidentifiable by this analysis.
131900	TP20	0.60	17/03/06	The sample chromatogram exhibits a hump of unresolved complex material eluting from C14 to beyond C40, overlain by several peaks unidentifiable by this analysis.
131901	TP22	1.00	17/03/06	The sample chromatogram exhibits a hump of unresolved complex material eluting from C16 to C40.
131902	TP24	0.90	17/03/06	The sample chromatogram exhibits a hump of unresolved complex material eluting from C10 to C28.
131903	TP26	0.20	17/03/06	The sample chromatogram exhibits a hump of unresolved complex material eluting from C16 to C40.
131904	TP6	1.40	17/03/06	The sample chromatogram exhibits too little GC-FID amenable material to provide qualitative analysis.
131905	TP8	0.10	17/03/06	The sample chromatogram exhibits a hump of unresolved complex material eluting from C14 to beyond C40, overlain by several peaks unidentifiable by this analysis.
131906	TP10	0.70	17/03/06	The sample chromatogram exhibits too little GC-FID amenable material to provide qualitative analysis.

ALcontrol Technichem
EPH Description

Job Number: 06-13310
Client: Environ UK Ltd
Project Code: 66C10138

Matrix: Soils
Project Name: Newhouse Park Chepstow

Laboratory Reference No	Sample Reference	Sample Depth (m)	Date Sampled	EPH Description
131907	TP11	0.20	17/03/06	The sample chromatogram exhibits a hump of unresolved complex material eluting from C14 to beyond C40, overlain by several peaks unidentifiable by this analysis.
131908	TP12	0.70	17/03/06	The sample chromatogram exhibits a hump of unresolved complex material eluting from C14 to C40, overlain by several peaks unidentifiable by this analysis.

ALcontrol Technichem
Table Of Results - Appendix

Summary of methods contained within report :

Method No.	Reference	Description	ISO 17025 Accredited	MCERTS Accredited	Wet/Dry Analysis
070	In-house method	Determination of hexane/acetone extractable hydrocarbons in soil by gas chromatography with flame ionisation detection. Note: UKAS accreditation only applies to C10-C40 and excludes other carbon banding.	Y	Y	W
061	In-house method based on Method 4500-CN, "Standard Methods for the Examination of Water and Waste Water", APHA AWWA WEF, Edition 18, 1992	Determination of cyanides and thiocyanate in soil samples by continuous flow colorimetry (Skalar)	Y	Y	W
022S	In-house method	Determination of PAH compounds in soil samples by hexane / acetone extraction followed by GC-MS detection	Y	Y	W
018	In-house method based on Method 17.13 "Environmental Assessment Guidance" Version 3, Second Site Property, March 2003	Determination of exchangeable ammonium in soil samples (potassium chloride extraction)	Y	Y	W
009	In-house method referencing BS1377: Part 3: 1990 and Second Site Property: Environmental Assessment Guidance Version 3: March 2003	Determination of pH by addition of water followed by electrometric measurement	Y	Y	W
077	In-house method	Determination of organophosphorus pesticides in soil samples by hexane/acetone extraction followed by GC-MS detection	Y	N	W
076	In-house method	Determination of organochlorine pesticides in soil samples by hexane/acetone extraction followed by GC-MS detection	Y	N	W
020S	In-house method based on Second Site Property: Environmental Assessment Guidance Version 3: March 2003	Determination of methanol/water extractable phenols in soil samples by HPLC with electrochemical detection	Y	Y	W

ALcontrol Technichem
Table Of Results - Appendix

Summary of methods contained within report :

Method No.	Reference	Description	ISO 17025 Accredited	MCERTS Accredited	Wet/Dry Analysis
069	In-house method based on MEWAM "Methods for the Determination of Metals in Soil", HMSO, 1986	Determination of metals in soil samples by aqua-regia digestion followed by ICP-OES detection	Y	Y	D
025a	In-house method based on BS1377 Part 3, "Chemical and Electrochemical Tests", 1990	Determination of hydrochloric acid soluble sulphate in soil samples by Inductively Coupled Plasma - Optical Emission Spectrometry (ICP-OES)	Y	Y	D
073	In-house method based on BS1377 Part 3, "Chemical and Electrochemical Tests", 1990	Determination of water soluble anion content in soils using a 2:1 water:soil extration ratio followed by ion chromatographic determination with electrical conductivity detector	Y	Y	D
026	In-house method based on BS1377 Part 3, "Chemical and Electrochemical Tests", 1990	Determination of organic matter in soil samples by oxidation (Walkley & Black method) followed by titration	Y	N	D

Soil results are expressed on a dry weight basis. Where the test uses as-received sample, a moisture correction factor is applied to the wet weight result to convert it. This factor is determined gravimetrically using loss of moisture on drying at 30 (+/-5) degrees C.