



Ordnance Survey Plan

Published 1978

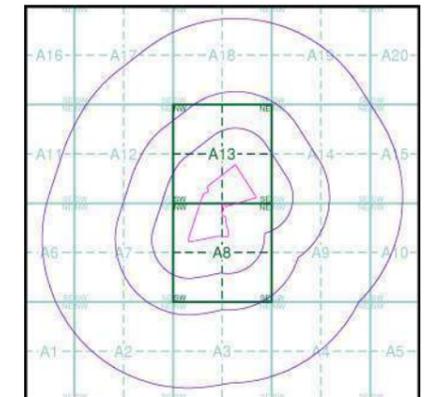
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

SE30SW
1978
1:10,000

Historical Map - Slice A



Order Details

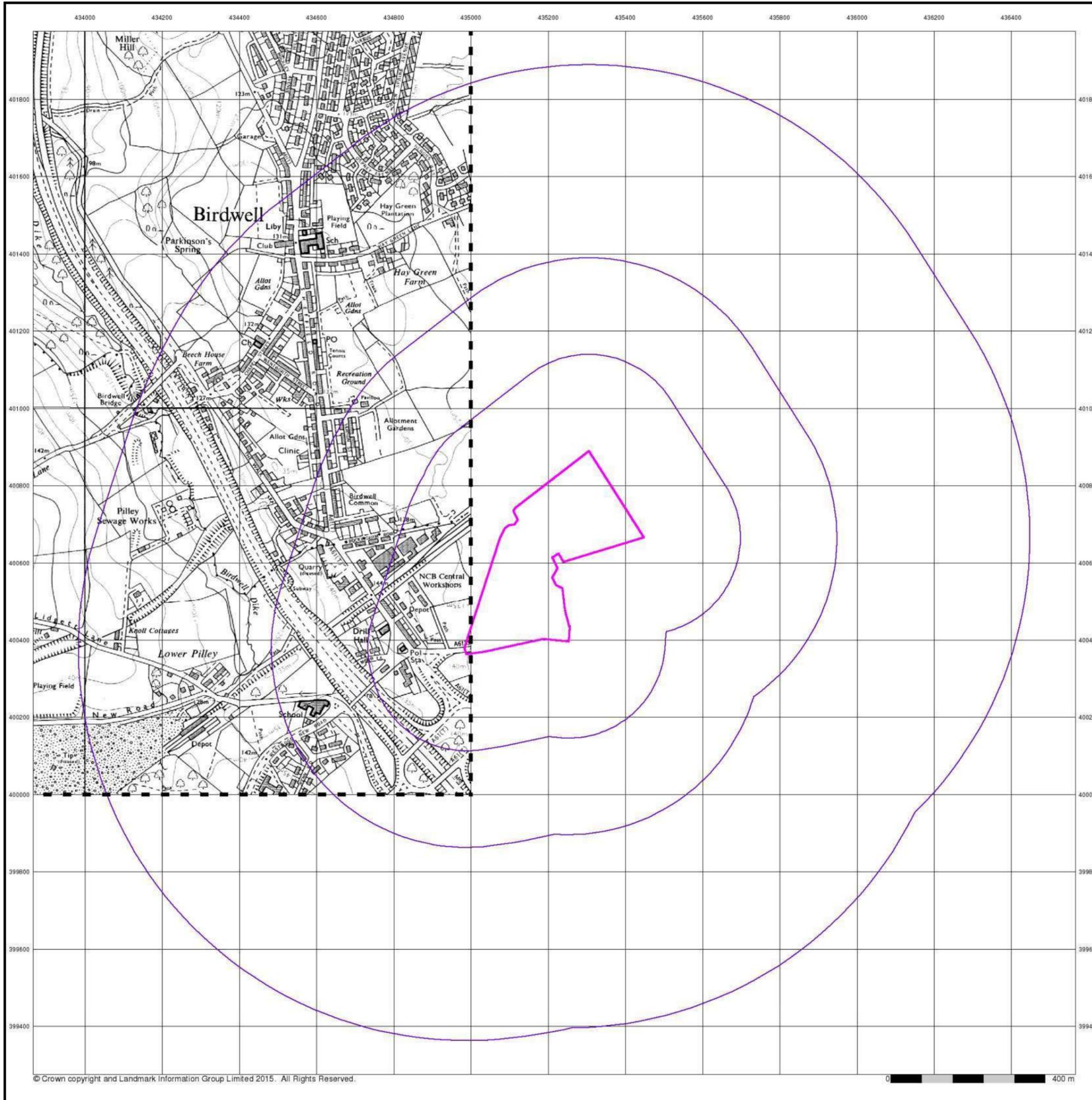
Order Number: 82656653_1_1
 Customer Ref: Rockingham
 National Grid Reference: 435210, 400600
 Slice: A
 Site Area (Ha): 11.01
 Search Buffer (m): 1000

Site Details

Site at 435150, 400650



Tel: 0844 844 9952
 Fax: 0844 844 9951
 Web: www.envirocheck.co.uk





Yorkshire

Published 1932

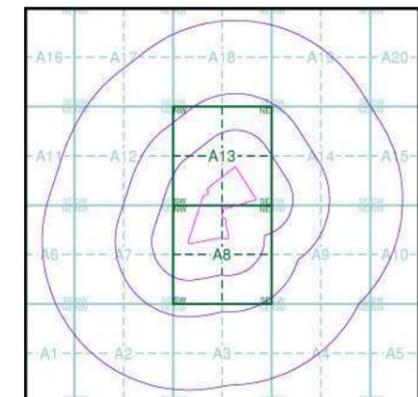
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

282NE	1932	1:10,560
282SE	1932	1:10,560

Historical Map - Slice A



Order Details

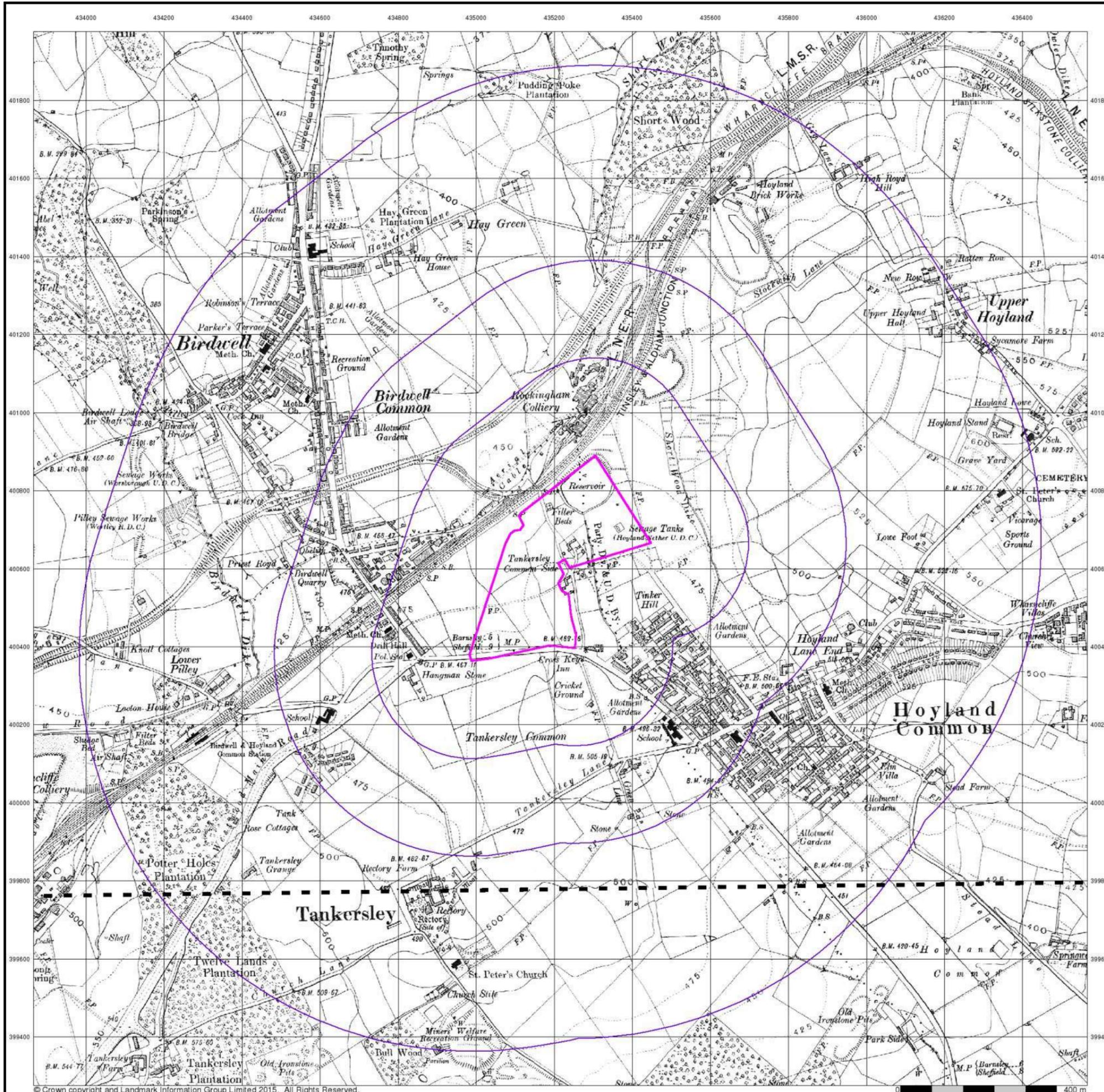
Order Number: 82656653_1_1
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Yorkshire

Published 1938

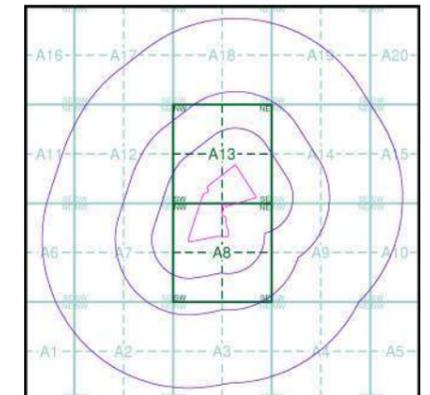
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

282NE	1938	1:10,560
282SE	1938	1:10,560

Historical Map - Slice A



Order Details

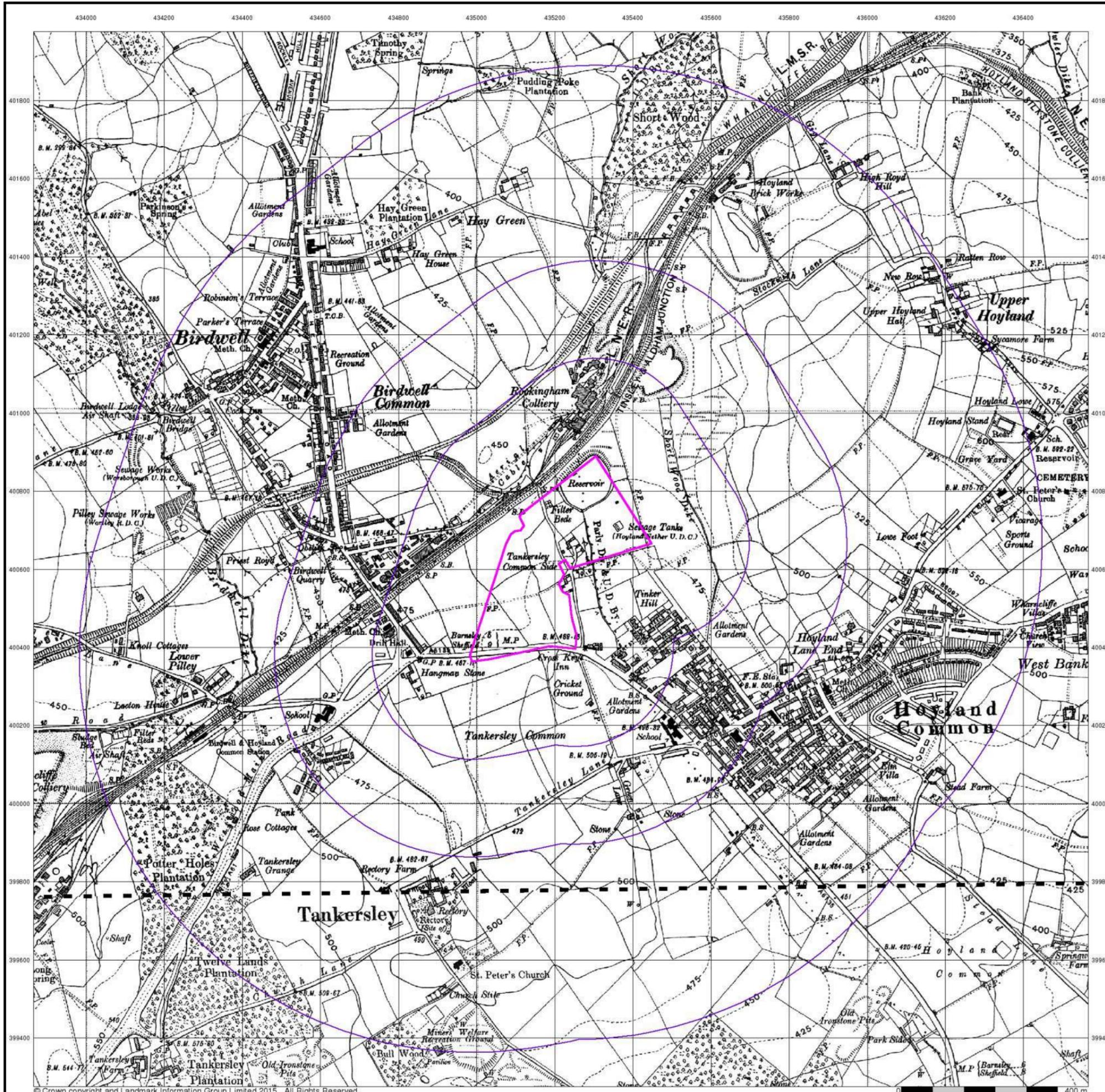
Order Number: 82656653_1_1
 Customer Ref: Rockingham
 National Grid Reference: 435210, 400600
 Slice: A
 Site Area (Ha): 11.01
 Search Buffer (m): 1000

Site Details

Site at 435150, 400650



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Yorkshire

Published 1948

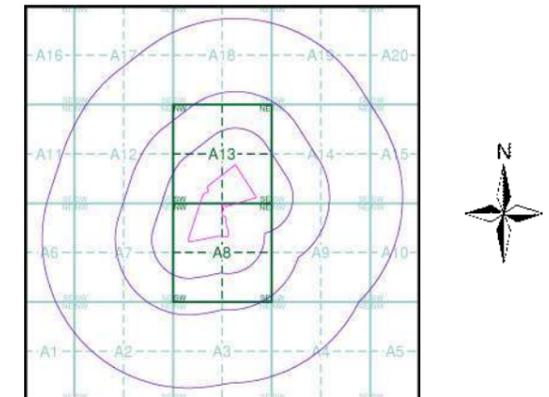
Source map scale - 1:10,560

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Map Name(s) and Date(s)

282NE
1948
1:10,560
282SE
1948
1:10,560

Historical Map - Slice A



Order Details

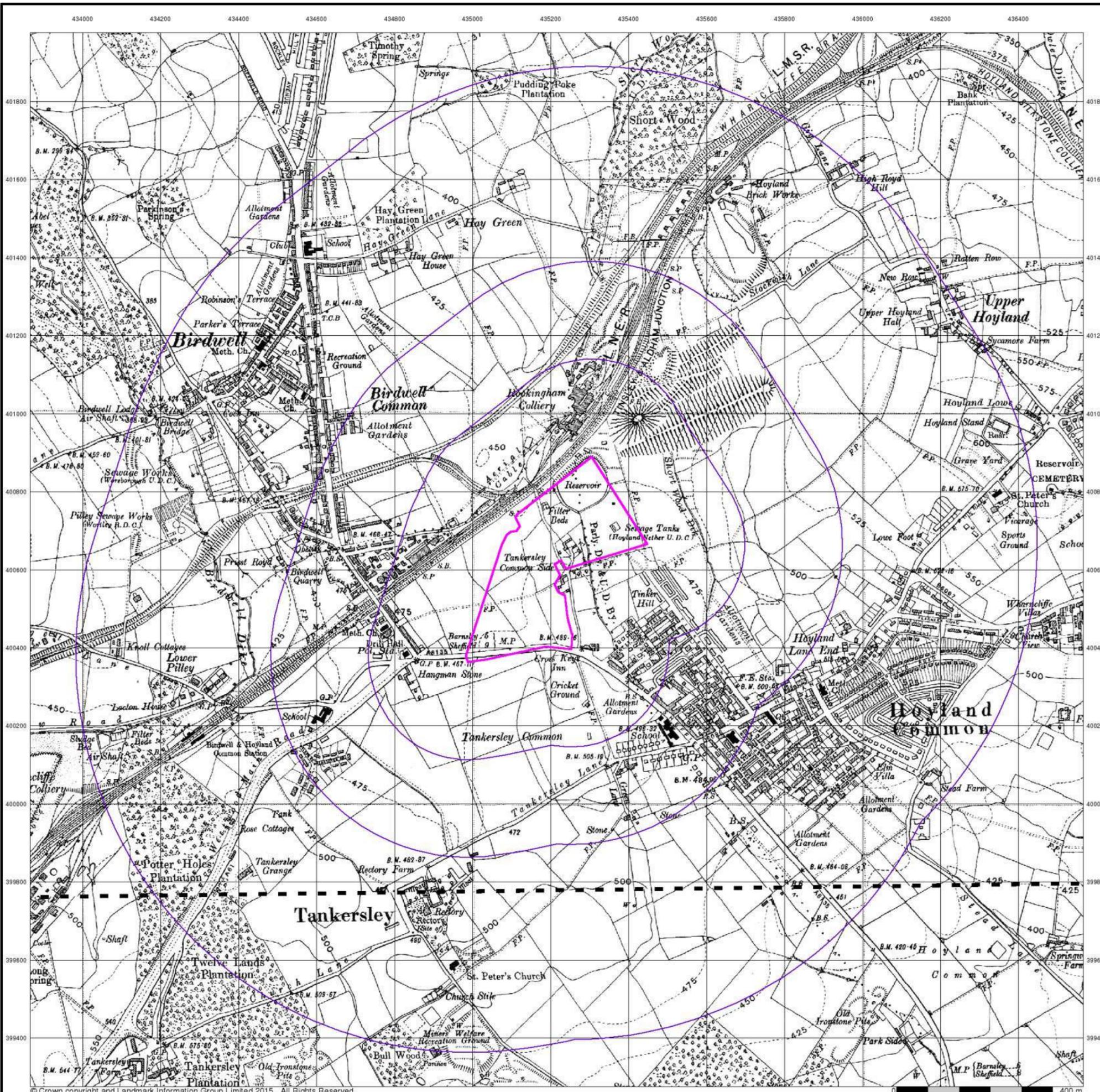
Order Number: 82656653_1_1
 Customer Ref: Rockingham
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 Site Area (Ha): 11.01
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APPENDIX B – SITE PHOTOGRAPHS

PHOTOGRAPHIC RECORD - LAND AT ROCKINGHAM



1) Site access at the north end of Cross Keys Lane (facing north)



2) Drainage channel running south to northwest across Plot 2 (facing south)



3) Embankment located along southern boundary of Plot 2 in the eastern corner (facing southeast)



4) Steep tree lined embankment located in the south along the eastern boundary of Plot 2 (facing east)

PHOTOGRAPHIC RECORD - LAND AT ROCKINGHAM



5) Pond located immediately to the east of Plot 2.



6) Drainage channel locate on Plot 2, running northwest to east (facing northwest)



7) Trees following the line of a small mount (suspected area associated with former highwall) in Plot 3 (facing north)



8) Tree lined eastern boundary of Plot 3 with residential houses beyond (facing east).

PHOTOGRAPHIC RECORD - LAND AT ROCKINGHAM

	
9) Plot 1 (facing south)	10) Plot 3 facing residential property located on the eastern boundary of the site (facing north)

APPENDIX C – COAL AUTHORITY REPORT



The Coal
Authority

Resolving the **impacts** of mining

CON29M Non-Residential Mining Report

SITE AT 435150, 400650
SOUTH YORKSHIRE

Date of enquiry: 15 March 2016
Date enquiry received: 15 March 2016
Issue date: 15 March 2016

Our reference: 51001122279001
Your reference: 82660921_1 |



CON29M Non-Residential Mining Report

This report is based on, and limited to, the records held by the Coal Authority and the Cheshire Brine Subsidence Compensation Board's records, at the time we answer the search.

Client name

LANDMARK INFORMATION GROUP LIMITED

Enquiry address

SITE AT 435150, 400650, SOUTH YORKSHIRE

How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

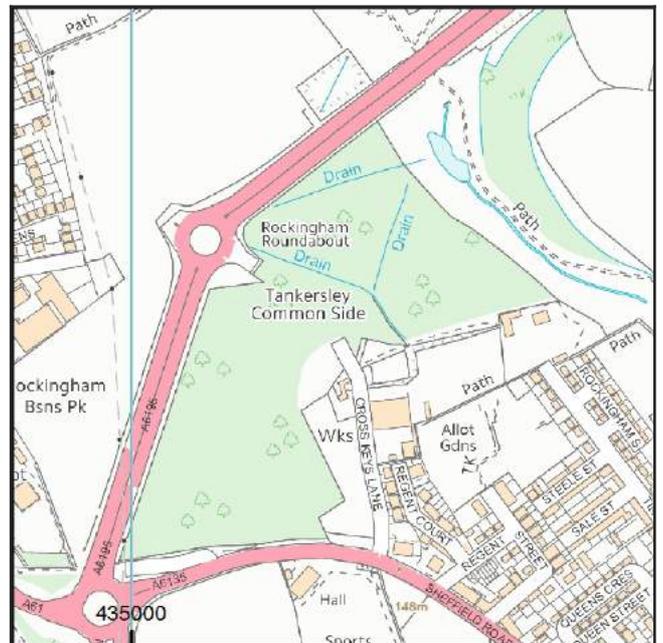
200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.gov.uk/coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /coalauthority



Approximate position of property



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Summary

Has the enquiry boundary identified evidence of		
1	Past underground coal mining	Yes
2	Present underground coal mining	No
3	Future underground coal mining	Yes
4	Mine entries	Yes
5	Coal mining geology	No
6	Past opencast coal mining	Yes
7	Present opencast coal mining	No
8	Future opencast coal mining	No
9	Coal mining subsidence	No
10	Mine gas	No
11	Hazards related to coal mining	No
12	Withdrawal of support	No
13	Working facilities order	No
14	Payments to owners of former copyhold land	No
15	Information from the Cheshire Brine Subsidence Compensation Board	No

For detailed findings, please go to page 4.

Detailed findings

1. Past underground coal mining

The property is in a surface area that could be affected by underground mining in 8 seams of coal at 60m to 340m depth, and last worked in 1959.

Any movement in the ground due to coal mining activity should have stopped.

In addition the property is in an area where the Coal Authority believe there is coal at or close to the surface. This coal may have been worked at some time in the past. The potential presence of coal workings at or close to the surface should be considered prior to any site works or future development activity. Your attention is drawn to the Comments on the Coal Authority information section of the report.

2. Present underground coal mining

The property is not within a surface area that could be affected by present underground mining.

3. Future underground coal mining

The property is not in an area where the Coal Authority has plans to grant a licence to remove coal using underground methods.

The property is not in an area where a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area likely to be affected from any planned future underground coal mining.

However, reserves of coal exist in the local area which could be worked at some time in the future.

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

4. Mine entries

There are no known coal mine entries within, or within 20 metres of, the boundary of the property.

Records may be incomplete. Consequently, there may exist in the local area mine entries of which the Coal Authority has no knowledge.

5. Coal mining geology

The Coal Authority is not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining.

6. Past opencast coal mining

The property is within the boundary of an opencast site from which coal has been removed by opencast methods.

7. Present opencast coal mining

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

8. Future opencast coal mining

There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

9. Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres, since 31st October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

10. Mine gas

The Coal Authority has no record of a mine gas emission requiring action.

11. Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Authority, under its Emergency Surface Hazard Call Out procedures.

12. Withdrawal of support

The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

13. Working facilities order

The property is not in an area where an order has been made, under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

14. Payments to owners of former copyhold land

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

15. Information from the Cheshire Brine Subsidence Compensation Board

The property lies outside the Cheshire Brine Compensation District.

Comments on the Coal Authority information

The Coal Authority own the copyright in this report and the information used is protected by our database right.

In view of the mining circumstances a prudent developer would seek appropriate technical advice before any works are undertaken.

Therefore if development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply good engineering practice developed for mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or mines of coal without the permission of the Coal Authority. Developers should be aware that the investigation of coal seams/former mines of coal may have the potential to generate and/or displace underground gases and these risks both under and adjacent to the development should be fully considered in developing any proposals. The need for effective measures to prevent gases entering into public properties either during investigation or after development also needs to be assessed and properly addressed. This is necessary due to the public safety implications of any development in these circumstances.

Additional remarks

Information provided by the Coal Authority in this report is compiled in response to the Law Society's Con29M Coal Mining and Brine Subsidence Claim enquiries. The said enquiries are protected by copyright owned by the Law Society of 113 Chancery Lane, London WC2A 1PL. Please note that Brine Subsidence Claim enquiries are only relevant for England and Wales. This report is prepared in accordance with the Law Society's Guidance Notes 2006, the User Guide 2006 and the Coal Authority and Cheshire Brine Board's Terms and Conditions applicable at the time the report was produced.

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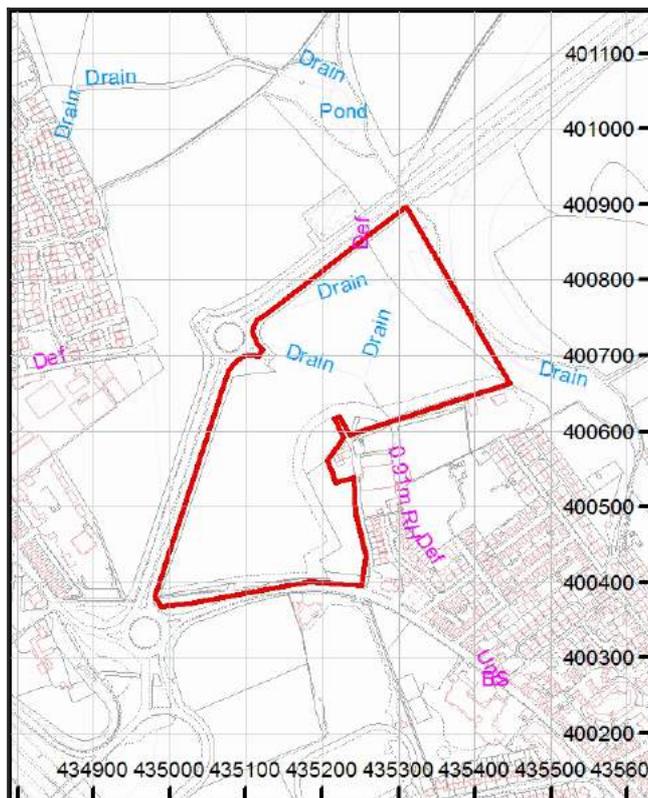
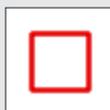
Alternative formats

If you would like this report in an alternative format, please contact our communications team.

Enquiry boundary

Key

Approximate position of enquiry boundary shown



How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.gov.uk/coalauthority

 /company/the-coal-authority

 /thecoalauthority

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APPENDIX D – LIMITATIONS

Limitations for WSP | Parsons Brinckerhoff Land Restoration and Ground Engineering Division General

WSP | Parsons Brinckerhoff Land has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report. Unless explicitly agreed otherwise, in writing, this report has been prepared under WSP | Parsons Brinckerhoff Land Standard Terms and Conditions, as included within our proposal to the Client.

Project specific appointment documents may be agreed on a project by project basis, at our discretion. A charge may be levied for both the time to review and finalise appointments documents and also for associated changes to the appointment terms. WSP | Parsons Brinckerhoff Land reserve the right to amend the fee should any changes to the appointment terms create an increase risk to WSP| Parsons Brinckerhoff Land.

The report needs to be considered in the light of the WSP | Parsons Brinckerhoff Land proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report. The report is only valid for its originally intended purpose as set out in either our report or the proposal.

Phase 1 Geo Environmental Preliminary Risk Assessments

The works undertaken to prepare this report comprise a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects responses may not have been received from all parties. It is not standard, due to the timescales, to visit archives and local libraries as part of these works. WSP | Parsons Brinckerhoff Land cannot be held responsible for any disclosures that are provided post production of our report and will not automatically update our report.

The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, WSP | Parsons Brinckerhoff Land reserves the right to review such information and, if warranted, to modify the opinions accordingly.

It should be noted that any risks identified in this report are perceived risks based on the information reviewed. Actual risks can only be assessed following intrusive investigations of the Site.

WSP | Parsons Brinckerhoff Land does not warrant work / data undertaken / provided by others.

This section covers reports with the following titles or combination of titles: Phase 1; Desk Top Study; Geo-Environmental Assessment; Development Appraisal; Preliminary Environmental Risk Assessment; Constraints Report; Due Diligence Report; Geotechnical Development Review; Environmental Statement; Environmental Chapter; Geotechnical Development Risk Register or Baseline Environmental Assessment. These limitations associated with preliminary works also apply when they are reported within an intrusive investigation report.

Intrusive Investigation Reports

The investigation has been undertaken to provide information concerning the type and degree of contamination present at the Site in order to allow a generic risk assessment to be undertaken or identification of the soil properties to allow for geotechnical development constraints to be identified.

The objectives of the investigation are limited to establishing the risks associated with potential contamination sources with the potential to cause harm to human health, building materials, the environment (including adjacent land), or controlled waters. For geotechnical investigations the purpose is to broadly identify the development constraints associated with the physical property of the soils underlying the site.

The amount of exploratory work, soil property and chemical testing undertaken has necessarily been restricted by various factors which may include accessibility, the presence of services; existing buildings; current site usage or short timescales. The exploratory holes completed assess only a small percentage of the area in relation to the overall size of the Site, and as such can only provide a general indication of conditions. The number of sampling points and the methods of sampling and testing do not preclude the possible existence of localised "hotspots" of contamination where concentrations may be significantly higher than those actually encountered or ground conditions that vary from those identified. In addition, there may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report. For example these include spatial variations in soil properties; the varying thickness and physical nature of the strata identified and changes in groundwater levels or flow rates.

The inspection; testing and monitoring records relate specifically to the investigation points and the timeframe that the works were undertaken. They will also be limited by the techniques employed. WSP | Parsons Brinckerhoff Land has interpreted between these points based upon assumptions to develop our interpretation and conclusions. The assumption made in forming our conclusions is that the ground and groundwater conditions (both chemically and physically) are the same as have been encountered during the works undertaken at the specific points of investigation.

On 1st April 2010, BS EN 1997-1:2004 (Eurocode 7: Geotechnical Design – Part 1) became the mandatory baseline standard for geotechnical ground investigations.

In terms of geotechnical design for foundations, slopes, retaining walls and earthworks, EC7 sets guidance on design procedures including specific guidance on the numbers and spacing of boreholes for geotechnical design, there are limits to methods of ground investigation and the quality of data obtained and there are also prescriptive methods of assessing soil strengths and methods of design.

Unless otherwise explicitly stated, the work has not been undertaken in accordance with EC7. A standard geotechnical interpretative report will not meet the requirements of the Geotechnical Design Report (GDR) under Eurocode 7.

A GDR can strictly only be prepared following confirmation of all structural loads and serviceability requirements. The design process requires close co-operation between the geotechnical engineer and the structural engineer and is iterative. Where a GDR is prepared using preliminary or assumed loadings and/or serviceability limits it should only be considered as an interim report and should not be relied upon for the procurement or construction of the works it describes. A GDR will be a standalone specifically entitled report.

During any build programme WSP | Parsons Brinckerhoff Land should be consulted if alternative ground conditions are encountered. It assumes during any site works that the contractor will use their best endeavours to manage and control groundwater and other unforeseen ground conditions. WSP | Parsons Brinckerhoff Land will not be liable for actions taken prior to consultation.

The scope of the investigation was selected on the basis of the specific development and land use scenario proposed by the Client and may be inappropriate to another form of development or scheme. If the development layout was not known at the time of the investigation the report findings may need revisiting once the development layout is confirmed.

The risk assessment and opinions provided are based on currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values. Specific assumptions associated with the WSP |

Parsons Brinckerhoff risk assessment process have been outlined within the body or associated appendix of the report.

Additional investigations may be required in order to satisfy relevant planning conditions or to resolve any engineering and environmental issues.

If costs have been included in relation to additional site works, and / or site remediation works these must be considered as indicative only and must, be confirmed by a qualified quantity surveyor.

The following report titles (or combination) may cover this category of work: geo environmental site investigation; geotechnical assessment; GIR (Ground Investigation reports); preliminary environmental and geotechnical risk assessment; geotechnical risk register.

Detailed Quantitative Risk Assessments and Remedial Strategy Reports

These reports either use primary data or build upon previous report versions and associated notes. The scope of the investigation; further testing and monitoring and associated risk assessments were selected on the basis of the specific development and land use scenario proposed by the Client and may not be appropriate to another form of development or scheme layout. The risk assessment and opinions provided are based on currently available approaches in the generation of Site Specific Assessment Criteria relating to contamination concentrations and are not considered to represent a risk in a specific land use scenario to a specific receptor. No liability can be accepted for the retrospective effects of any future changes or amendments to these values, associated models or associated guidance.

The outputs of the Detailed Quantitative Risk Assessments are based upon WSP | Parsons Brinckerhoff Land manipulation of standard risk assessment models. Models are simulations based on the available data set and should not be used as predictions.

Where a remediation strategy is proposed, this is based on our interpretation of the risk assessment criteria and is specific to a particular location and a particular intended land use and configuration / layout. Prior to adoption they will need discussing and agreeing with the Regulatory Authorities prior to adoption on site. The regulatory discussion and engagement process may result in an alternative interpretation being determined and agreed. The process and timescales associated with the Regulatory Authority engagement are not within the control of WSP | Parsons Brinckerhoff Land. All costs and programmes presented as a result of this process should be validated by a quantity surveyor and should be presumed to be indicative.

Monitoring (including Remediation Monitoring reports)

These reports are factual in nature and comprise monitoring, normally groundwater and ground gas and data provided by contractors as part of an earthworks or remedial works.

The data is presented and will be compared with assessment criteria.

Asbestos in soils

Unless explicitly included for in our proposal, our investigation does not include for a formal asbestos assessment and the inspection for asbestos, either as asbestos containing materials (ACMs) lying on the surface or as ACMs and/or as loose asbestos fibres within made ground/stockpiles is excluded. Our report will include only the factual reporting of any laboratory asbestos soil screening results, if completed. These results should be treated cautiously and should not be relied upon to provide detailed and representative information on the delineation, type and extent of bulk ACMs and/or trace loose asbestos fibres within the soil matrix at the site.

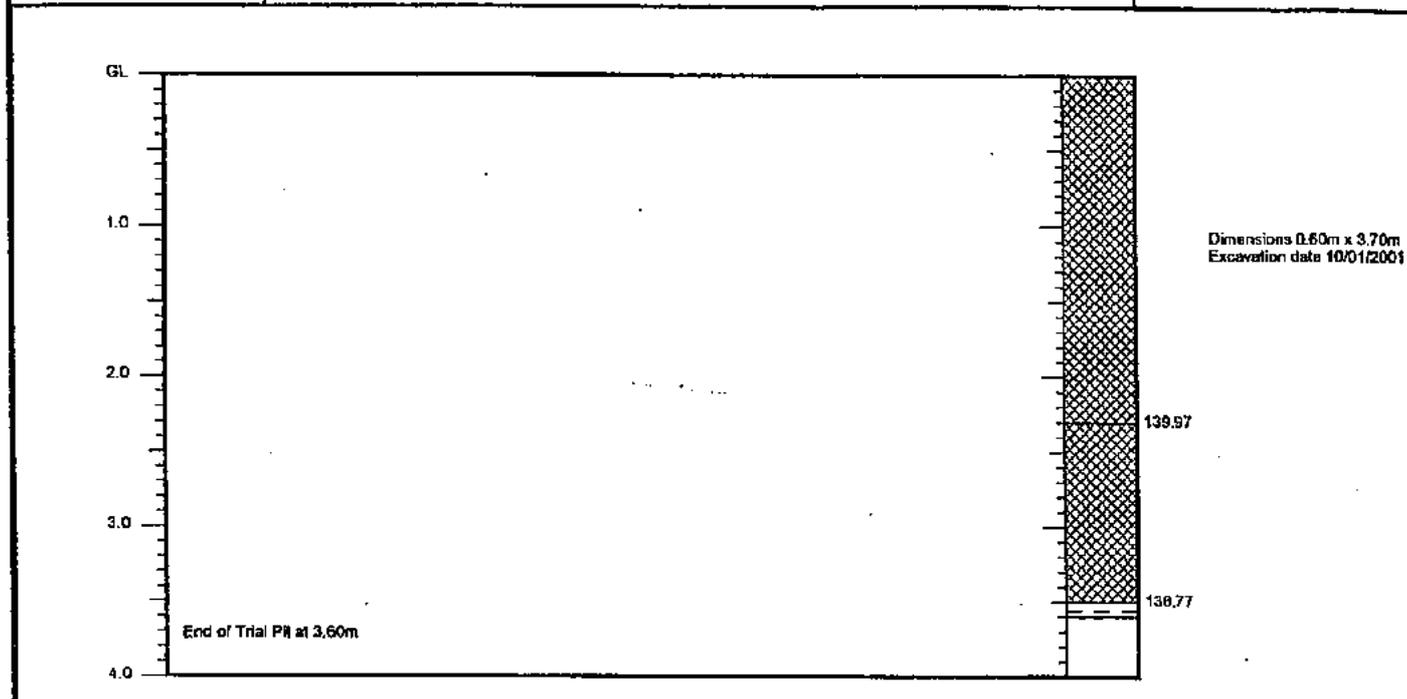
Where we indicate in our proposal that we will consider asbestos we will undertake screening of representative soil samples for the presences / absence of loose asbestos fibres. If these are found a further and more detailed specific investigation into asbestos in soils will need to be undertaken, which will include asbestos quantification testing. These investigations are associated with more rigorous monitoring of asbestos and health and safety provisions.

APPENDIX E – GROUND INVESTIGATION LOGS



Trial Pit Log

Logged by JH Checked by PG	Equipment and Methods Machine dug trial pit using JCB 3CX from 0.00m to 3.60m. Backfilled with compacted arisings	Ground Level +142.27 m OD National Grid Coordinates
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Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
0.50 1.50 2.00	E1 E2 E3		0.00-2.30	1	Stiff greenish grey gravelly to very gravelly CLAY. Gravel is angular to subangular of mudstone. Occasional angular to subangular cobbles of mudstone. (MADE GROUND) Below 1.00m, grades to clayey gravel, occasional to frequent cobbles.
2.40	E4		2.30-3.50	2	Stiff light yellow brown mottled light grey and orange brown CLAY. (Probably MADE GROUND) Below 3.00m, friable.
3.60	E5		3.50-3.60	3	Very stiff light brownish grey CLAY. Frequent angular gravel size lithorelicts of mudstone. (Probably highly weathered MUDSTONE)

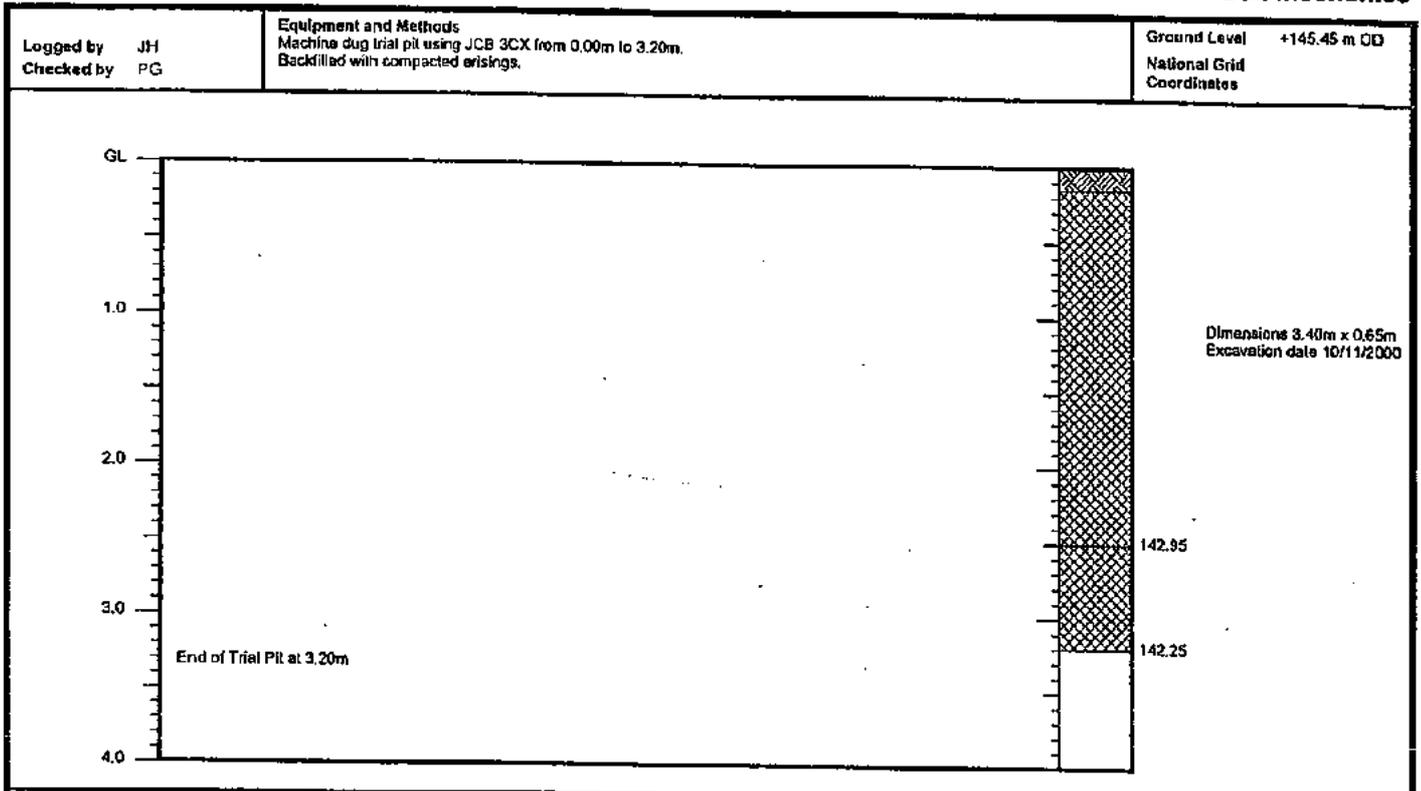
Groundwater None encountered	Remarks 1. All faces similar. 2. Excavation: Moderate. Stability: Minor collapse, 1.00-2.50m, Shoring: None Hole backfill: 0.00m to 3.80m.
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Notes: For explanation of symbols and abbreviations see key sheet. All depths in metres. Scale 1:50	Project ROCKINGHAM OPENCAST Project no. 101603 Carried out for RJB Mining UK Limited	Trial Pit TP1 Sheet 1 of 1
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07/02/2001 14:20:11 ESGLog v2.02



Trial Pit Log



Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
0.10	E1		0.00-0.15	1	Dark grey clayey TOPSOIL
0.50	E2		0.15-2.50	2	Red brown locally slightly clayey, sandy to very sandy GRAVEL. Gravel is angular to subangular of mudstone. Occasional angular cobbles of mudstone. (MADE GROUND) Below 0.60m, reddish brown.
1.50	E3				
2.00	E4				
2.50	E5				
3.00	E6		2.50-3.20	3	Stiff to very stiff grey gravelly CLAY. Gravel is angular to subangular of mudstone. (MADE GROUND) Below 3.00m, frequent angular cobbles of mudstone.

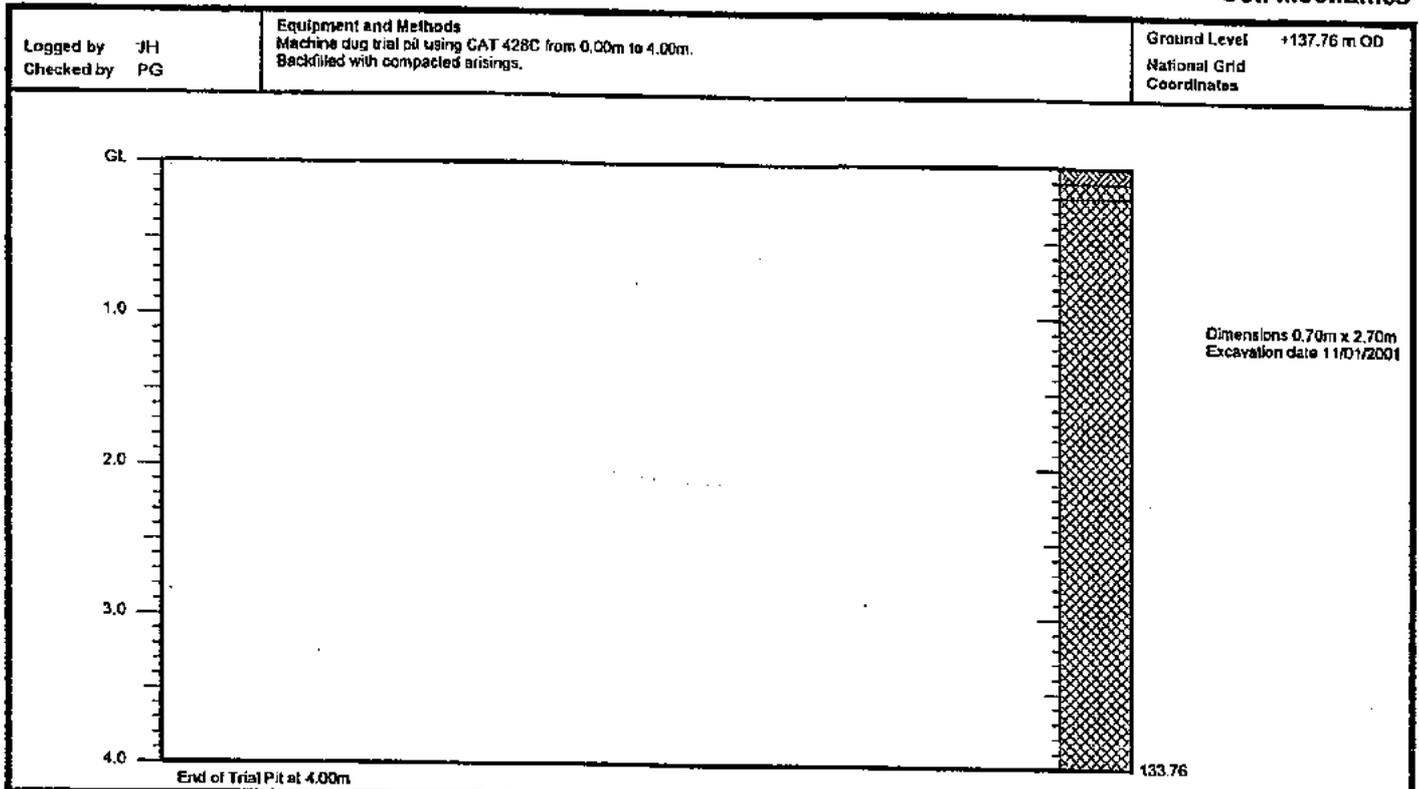
Groundwater Seepage at 1.60m (Face A)	Remarks 1. All faces similar 2. Excavation: Moderate to 3.00m, then difficult. 3. Trial pit abandoned at 3.20m, unable to excavate through cobbles. Stability: Minor collapse around cobbles/water entries, Shoring: None
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07/02/2001 10:20:19 ESGLog v2.02

Trial Pit Log



Soil Mechanics



Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
0.15	E1		0.00-0.10	1	TOPSOIL
			0.10-0.20	2	Dark grey brown slightly sandy GRAVEL. Gravel is subangular medium to coarse of limestone. (MADE GROUND)
0.30	E2		0.20-4.00	3	Very stiff orange brown locally grey CLAY. Frequent angular gravel of mudstone. (Probably MADE GROUND)
1.50	E3				
2.00	E4				
4.00	E5				

Groundwater Seepage at 0.40m (Face A)	Remarks 1. All faces similar 2. Excavation: Moderate Stability: All stable, Shoring: None
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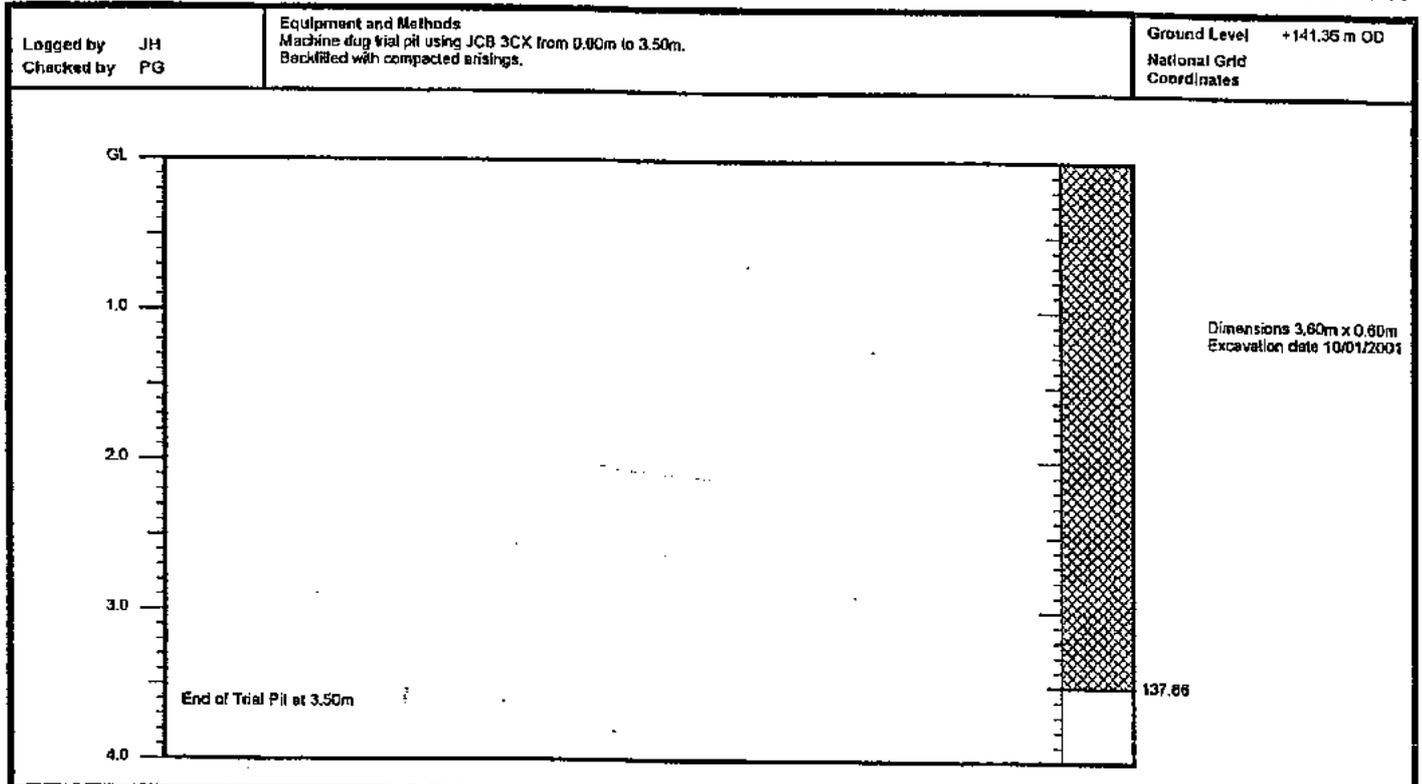
Notes: For explanation of symbols and abbreviations see key sheet. All depths in metres. Scale 1 : 50	Project ROCKINGHAM OPENCAST Project no. 101003 Carried out for RJB Mining UK Limited	Trial Pit TP3 Sheet 1 of 1
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Trial Pit Log



Soil Mechanics

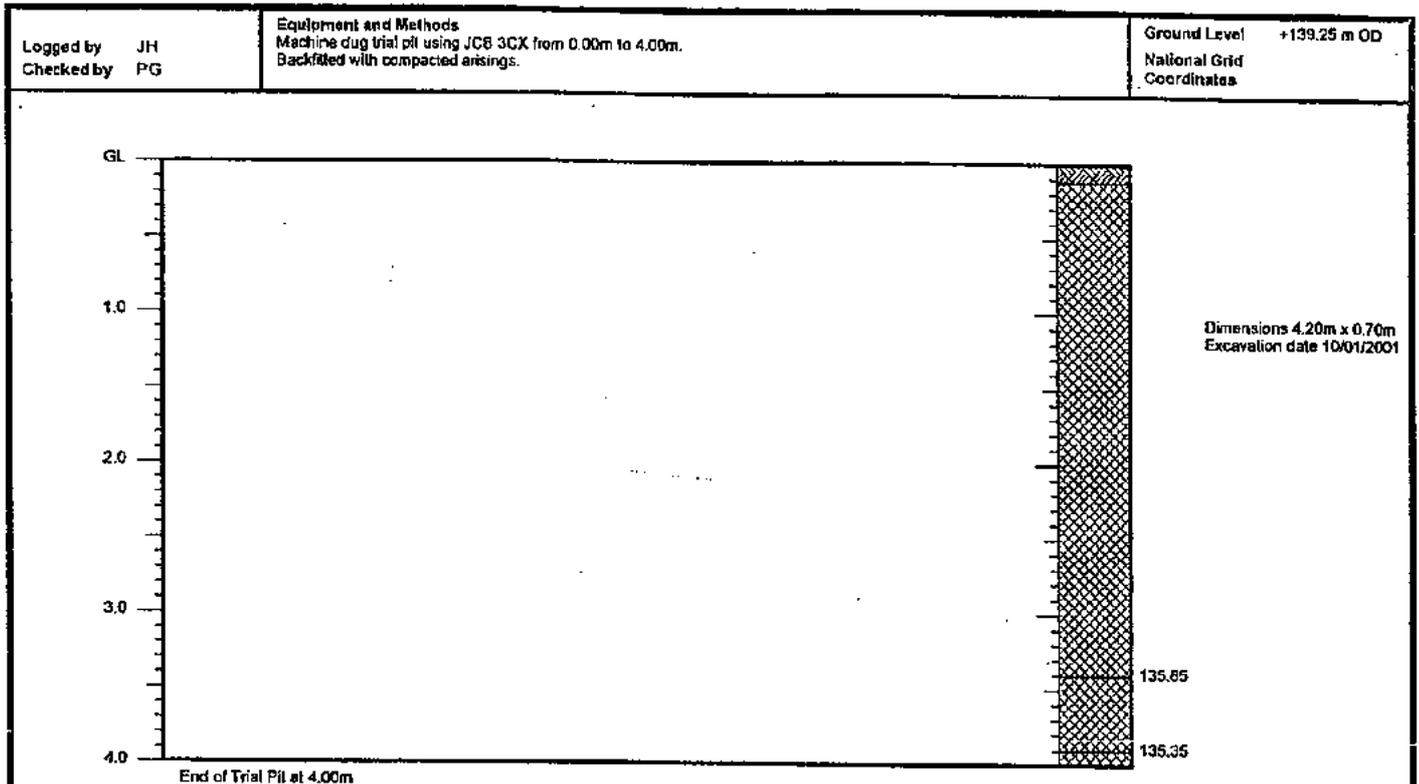


Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
0.50 1.50 2.00 3.50	E1 E2 E3 E4		0.00-3.50	1	Grey clayey locally very clayey GRAVEL. Gravel is angular to subangular of mudstone. Occasional to frequent angular to subangular cobbles of mudstone. Occasional angular boulders of mudstone and sandstone. Locally grades to gravelly clay. (MADE GROUND) Below 3.40m, frequent cobbles and boulders.
Groundwater None encountered				Remarks 1. All faces similar 2. Excavation: Moderate to 3.40m, then difficult. 3. Unable to excavate below 3.50m due to boulders. Stability: All stable, Shoring: None	
Notes: For explanation of symbols and abbreviations see key sheet. All depths in metres. Scale 1: 50			Project ROCKINGHAM OPENCAST Project no. 101003 Carried out for RJB Mining UK Limited		Trial Pit TP4 Sheet 1 of 1

07/02/2001 10:20:23 ESGLop v2.02



Trial Pit Log



Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
0.10	E1		0.00-0.12	1	Dark grey TOPSOIL
0.50	E2		0.12-3.40	2	Stiff grey gravelly to very gravelly CLAY. Gravel is angular to subangular of mudstone. Occasional to frequent angular to subangular cobbles of mudstone. Occasional angular boulders of mudstone (up to 450 x 360 x 240mm). (1 No. boulder 1200 x 830 x 300mm). (MADE GROUND) Below 3.10m, frequent cobbles.
1.50	E3				
2.00	E4				
3.50	E5		3.40-3.90	3	Red brown sandy to very sandy GRAVEL. Gravel is angular to subangular fine to coarse of mudstone. (MADE GROUND)
4.00	E6		3.90-4.00	4	Very stiff grey locally mottled brown CLAY. (Probably MADE GROUND)

Groundwater None encountered	Remarks 1. All faces similar 2. Excavation: Moderate Stability: Minor collapse 3.40-3.90m, Shoring: None
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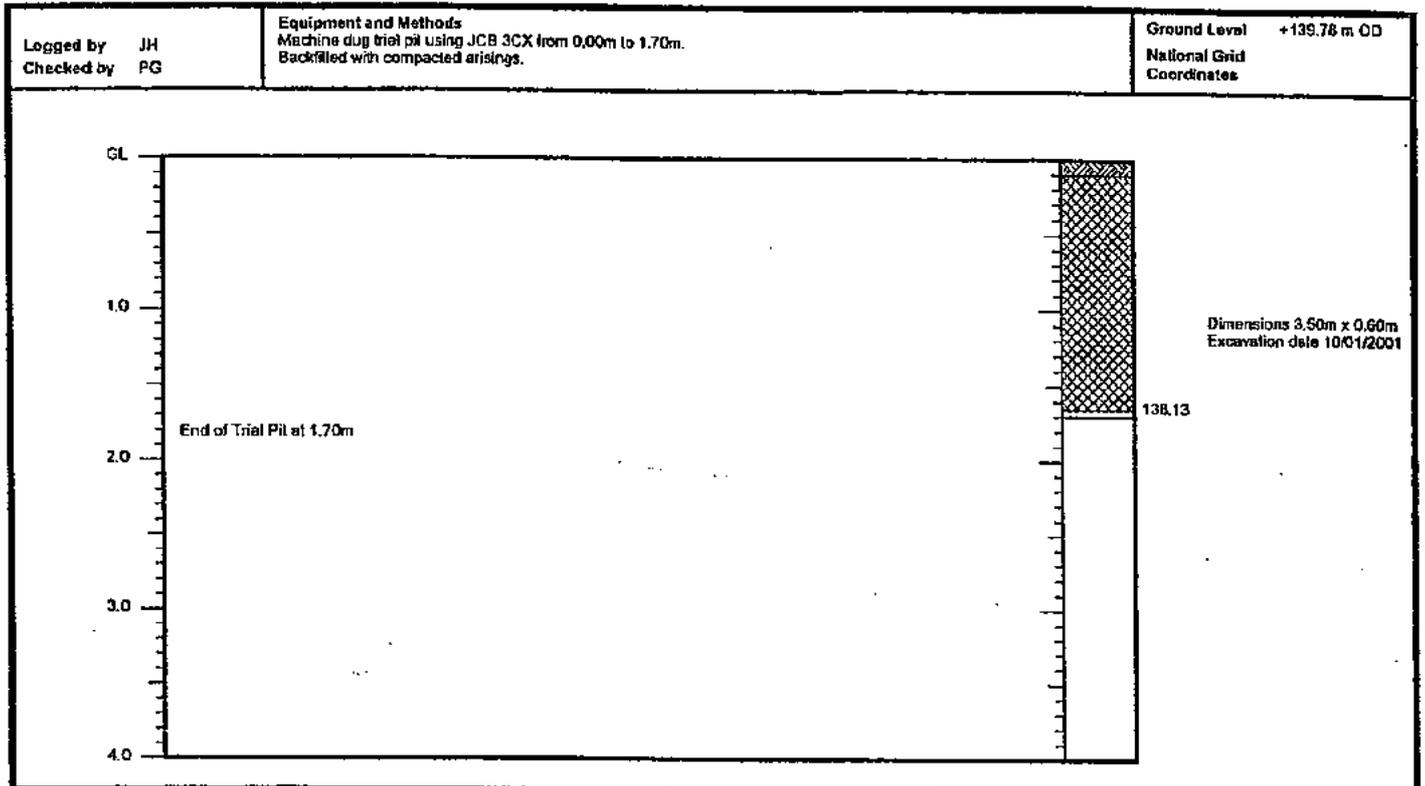
Notes: For explanation of symbols and abbreviations see key sheet. All depths in metres. Scale 1:50	Project ROCKINGHAM OPENCAST Project no. 101003 Carried out for RJB Mining UK Limited	Trial Pit TP5 Sheet 1 of 1
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Trial Pit Log



Soil Mechanics



Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
			0.00-0.10	1	TOPSOIL
0.50	E1		0.10-1.65	2	Red brown locally clayey, sandy to very sandy GRAVEL. Gravel is angular to subangular of mudstone. Occasional angular cobbles of mudstone and rare brick.
1.50	E2				(MADE GROUND)
1.70	E3		1.65-1.70	3	Light brown silty fine to medium grained SANDSTONE. Recovered as gravel and cobble size fragments.

Groundwater None encountered	Remarks 1. All faces similar 2. Excavation: Moderate Stability: All stable, Shoring: None
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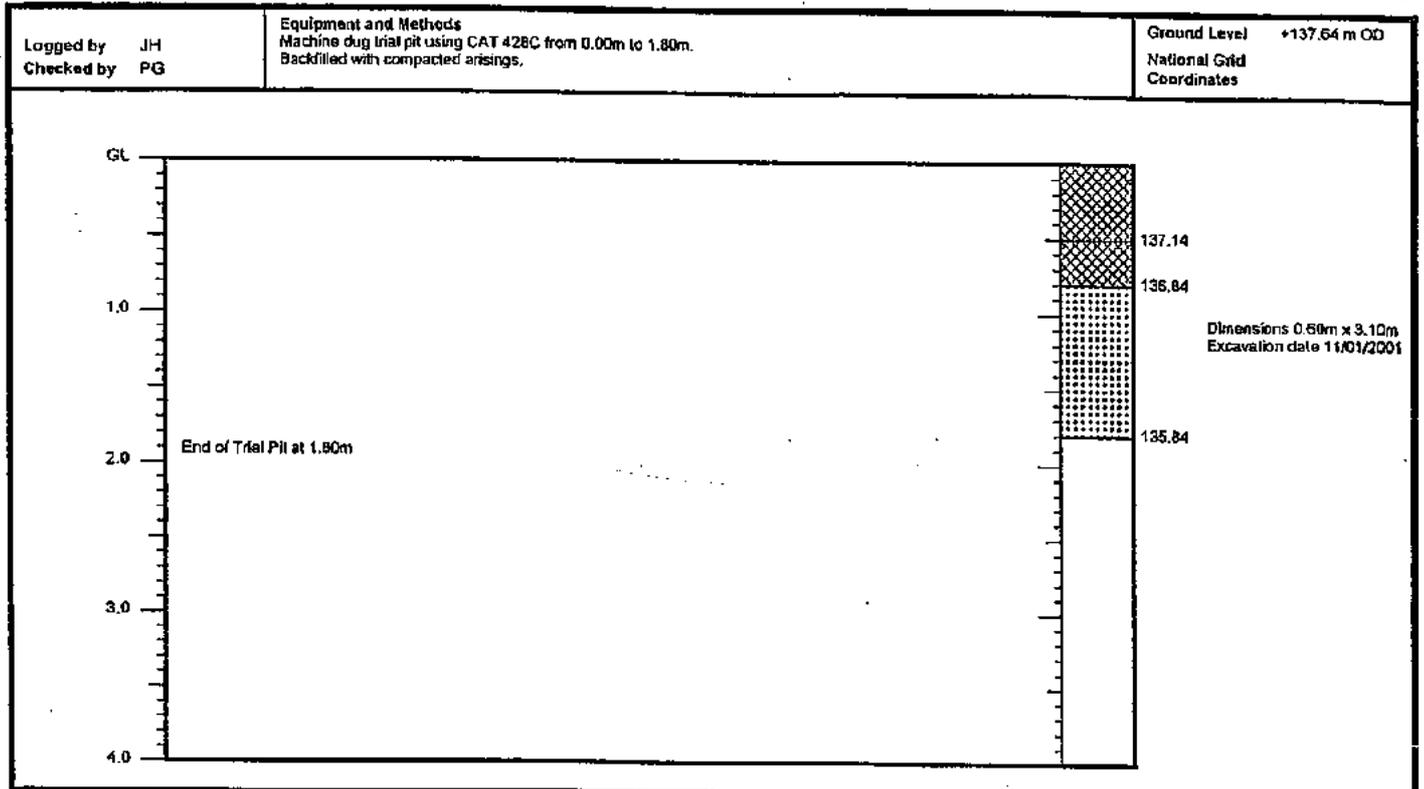
Notes: For explanation of symbols and abbreviations see key sheet. All depths in metres. Scale 1 : 50	Project ROCKINGHAM OPENCAST Project no. 101003 Carried out for RJB Mining UK Limited	Trial Pit TP6 Sheet 1 of 1
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Trial Pit Log



Soil Mechanics



Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
0.30	E1		0.00-0.50	1	Grey clayey to very clayey GRAVEL. Gravel is angular to subangular of mudstone and rare metal. Occasional to frequent angular to subangular cobbles and boulders of mudstone (up to 570 x 450 x 150mm). (MADE GROUND)
0.60	E2		0.50-0.80	2	Stiff orange brown mottled grey slightly sandy CLAY. Rare angular fine gravel of mudstone. (Probably MADE GROUND)
1.70	E3		0.80-1.80	3	Orange brown locally stained black silty fine to medium grained SANDSTONE. Recovered as tabular gravel and cobble size fragments.

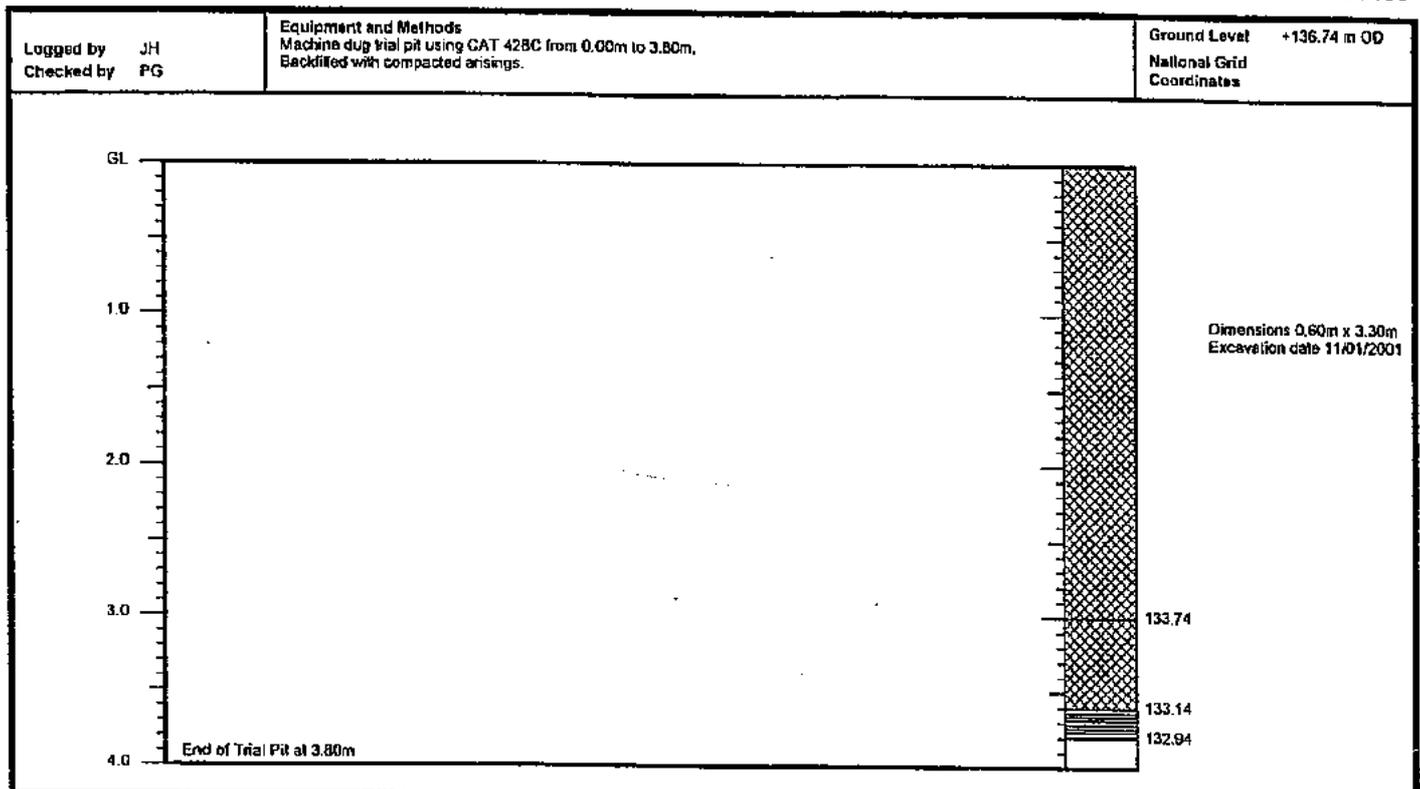
Groundwater None encountered	Remarks 1. All faces similar 2. Excavation: Moderate to 1.60m, then difficult. Stability: All stable, Shoring: None
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Notes: For explanation of symbols and abbreviations see key sheet. All depths in metres. Scale 1: 50	Project ROCKINGHAM OPENCAST Project no. 101003 Carried out for RJB Mining UK Limited	Trial Pit TP7 Sheet 1 of 1
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07/02/2001 10:20:28 ESSLog v2.02



Trial Pit Log



Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
0.50	E1	Chemical sample	0.00-3.00	1	Stiff greenish grey very gravelly CLAY. Gravel is angular to subangular of mudstone. Occasional angular to subangular cobbles and boulders of mudstone (up to 700 x 300 x 200mm). (MADE GROUND) 0.20 to 0.40m, reddish brown Below 0.70m, grey. Below 2.00m, frequent cobbles.
0.80	E2				
1.50	E3				
2.00	E4				
2.30	W7				
3.10	E5		3.00-3.60	2	Stiff orange brown mottled grey CLAY. Rare angular fine to medium gravel of mudstone. (Probably MADE GROUND)
3.80	E6		3.60-3.80	3	Brown locally stained black highly weathered MUDSTONE. Recovered as tabular gravel size fragments.

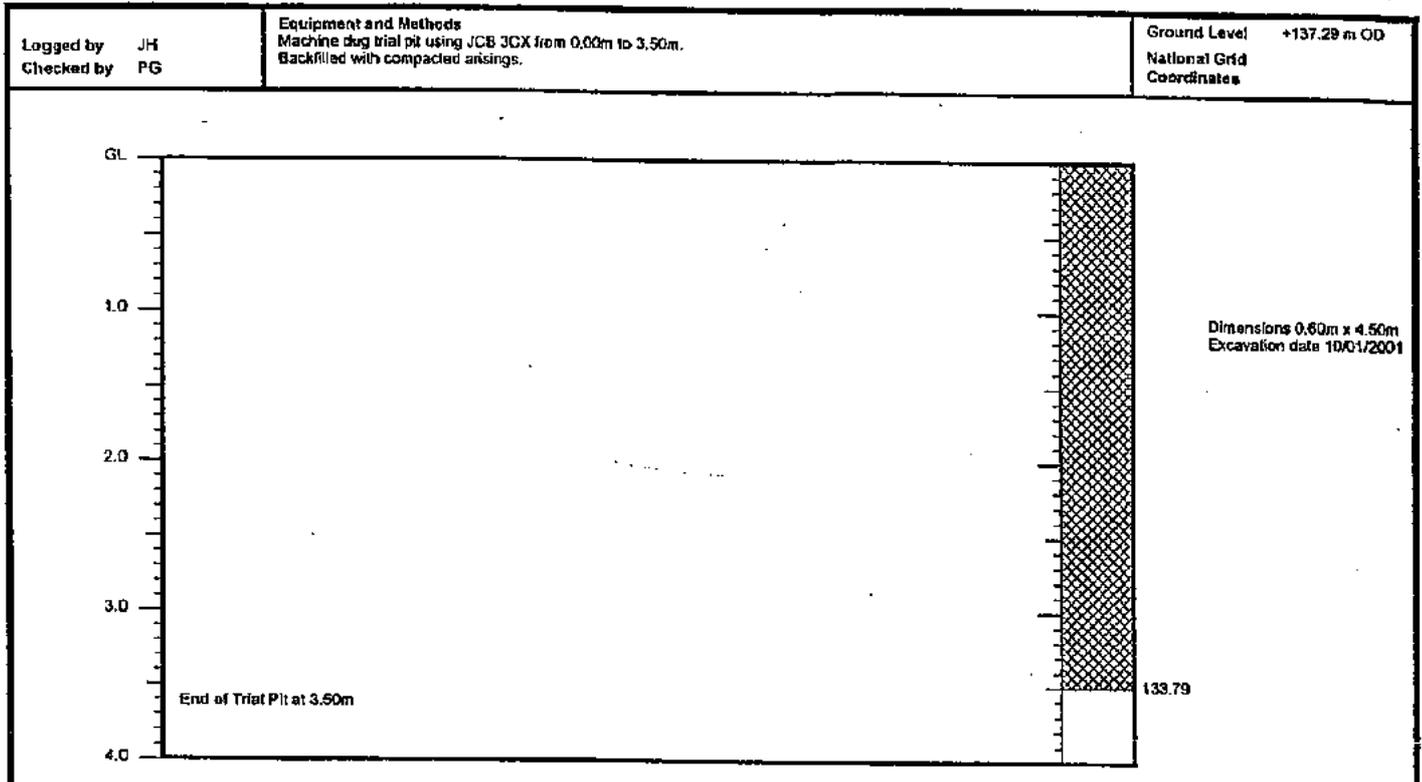
Groundwater Entry at 2.30m	Remarks 1. All faces similar 2. Excavation: Moderate to 3.60m, then difficult. Stability: All stable, Shoring: None
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07/02/2001 10:20:29 ESGLeg v2.02

Notes: For explanation of symbols and abbreviations see key sheet. All depths in metres. Scale 1 : 50	Project ROCKINGHAM OPENCAST Project no. 101003 Carried out for RJB Mining UK Limited	Trial Pit TP8 Sheet 1 of 1
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Trial Pit Log



Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
0.50 1.50 2.00 3.50	E1 E2 E3 E4		0.00-3.50	1	Firm greenish grey gravelly to very gravelly CLAY. Gravel is angular to subangular of mudstone. Occasional angular cobbles and tabular boulders of mudstone (up to 500 x 300 x 150mm). (MADE GROUND) Below 2.10m, frequent cobbles and boulders.

Groundwater Seepage at 1.15m (Face C) Seepage at 3.50m	Remarks 1. All faces similar 2. Excavation: Moderate to 2.10m, then difficult. 3. Unable to excavate below 3.50m due to boulders. Stability: All stable, Shoring: None Hole backfill: 0.00m to 3.50m.
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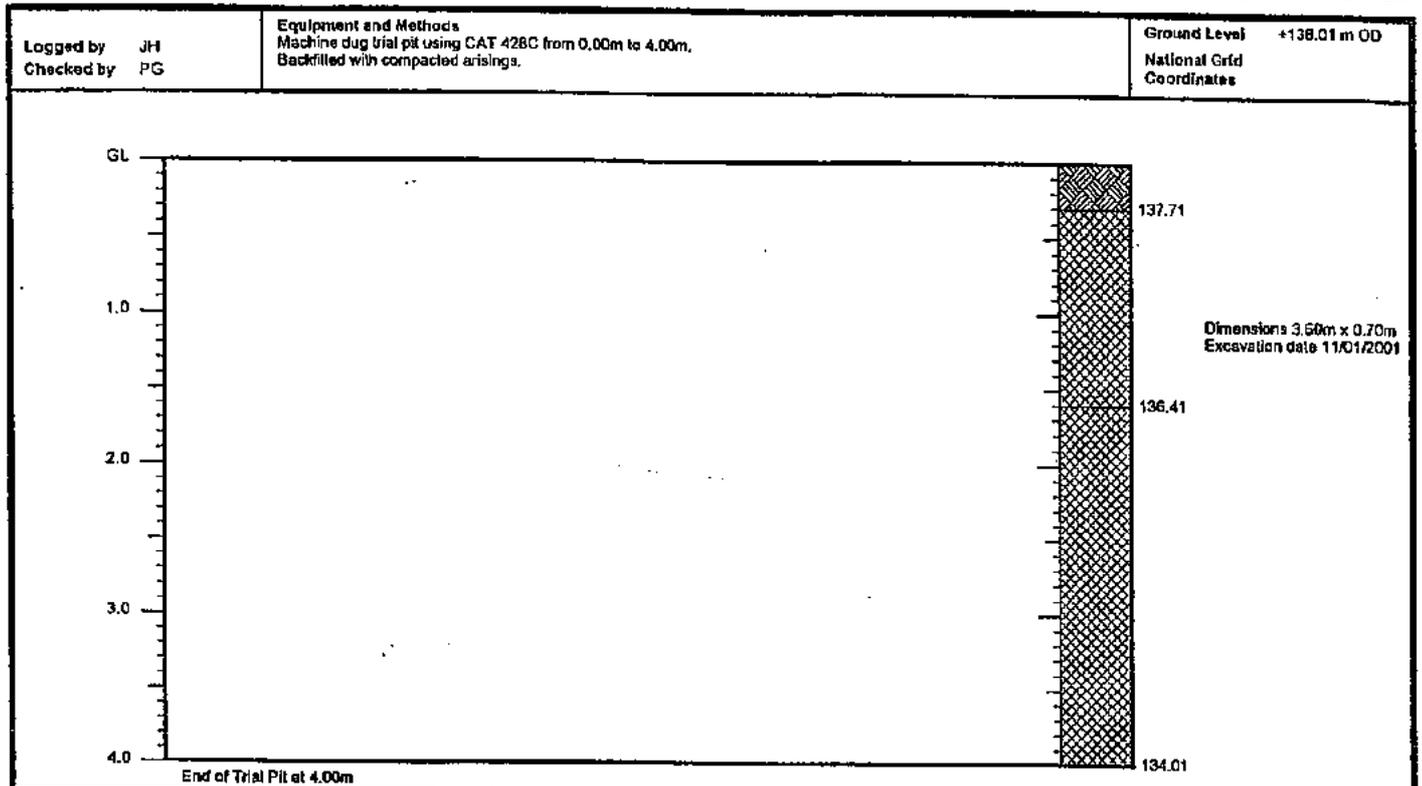
Notes: For explanation of symbols and abbreviations see key sheet. All depths in metres. Scale 1 : 50	Project ROCKINGHAM OPENCAST Project no. 101003 Carried out for RJB Mining UK Limited	Trial Pit TP9 Sheet 1 of 1
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07/02/2001 10:20:31 ESGL09 v2.02

Trial Pit Log



Soil Mechanics



Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
			0.00-0.30	1	TOPSOIL
0.60 1.60	E1 E2		0.30-1.60	2	Grey slightly clayey GRAVEL. Gravel is angular to subangular of mudstone and sandstone. Frequent angular to subangular cobbles and boulders of mudstone and sandstone (up to 920 x 500 x 300mm). (MADE GROUND)
2.00 4.00	E3 E4		1.60-4.00	3	Stiff dark grey slightly sandy gravelly CLAY. Gravel is angular to subangular of mudstone, coal and rare wood. Occasional gravel to cobble size pockets of red brown gravel (to 1.90m). (MADE GROUND) Below 2.00m, locally grades to clayey gravel.

Groundwater Seepage at 1.60m (Face A)	Remarks 1. All faces similar 2. Excavation: Moderate. Stability: Minor collapse 0.00 - 1.50m, Shoring: None
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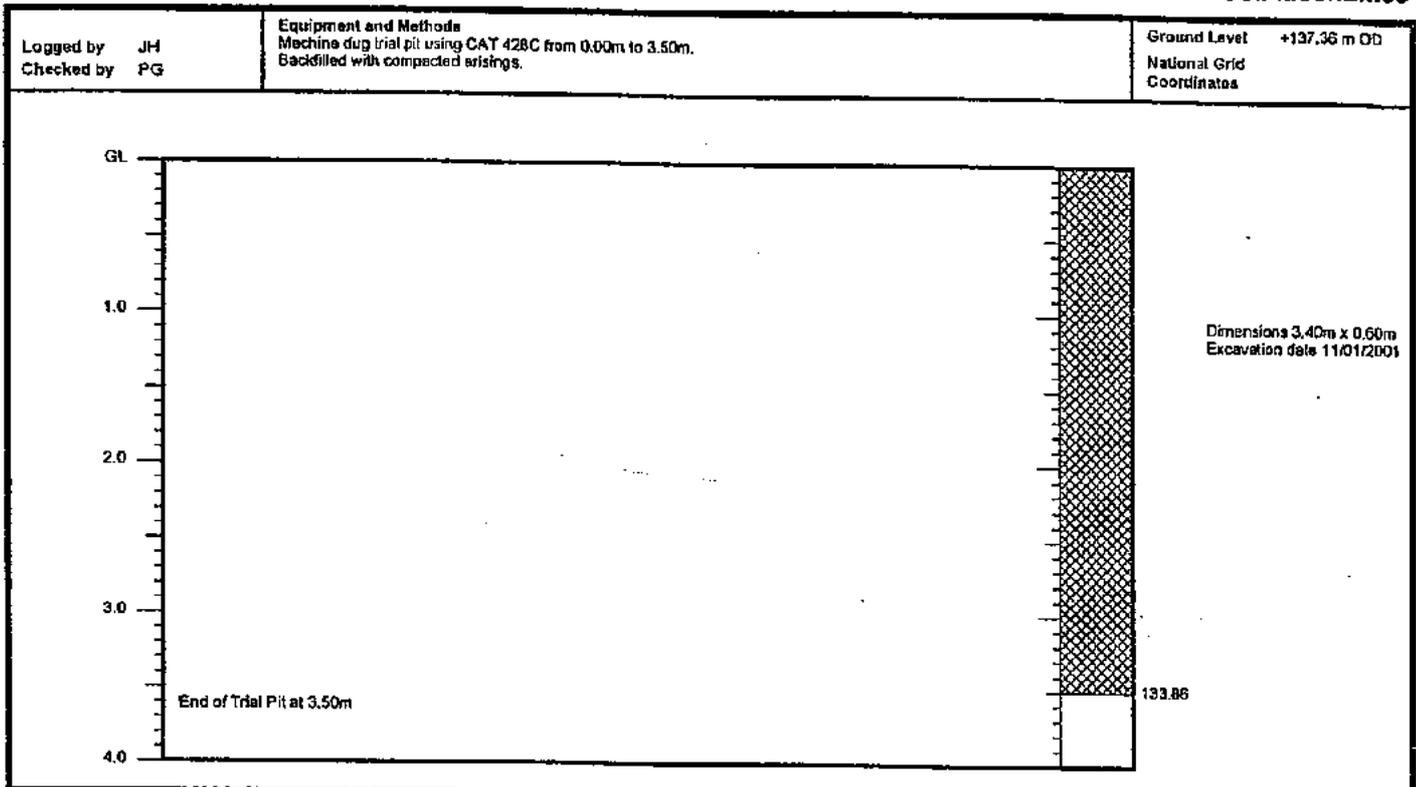
Notes: For explanation of symbols and abbreviations see key sheet. All depths in metres. Scale 1:50	Project ROCKINGHAM OPENCAST Project no. 101003 Carried out for RJB Mining UK Limited	Trial Pit TP10 Sheet 1 of 1
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07/02/2001 10:20:13 ESGLog v2.02

Trial Pit Log



Soil Mechanics



Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
0.50	E1		0.00-3.50	1	Grey very clayey GRAVEL. Gravel is angular to subangular of mudstone and occasionally sandstone. Occasional to frequent angular to subangular cobbles and boulders of mudstone (up to 750 x 330 x 250mm). (MADE GROUND) 0.10 to 0.40m, gravelly clay. Below 1.40m, reddish brown, slightly clayey, frequent cobbles.
1.50	E2				
2.00	E3				
3.00	E4				

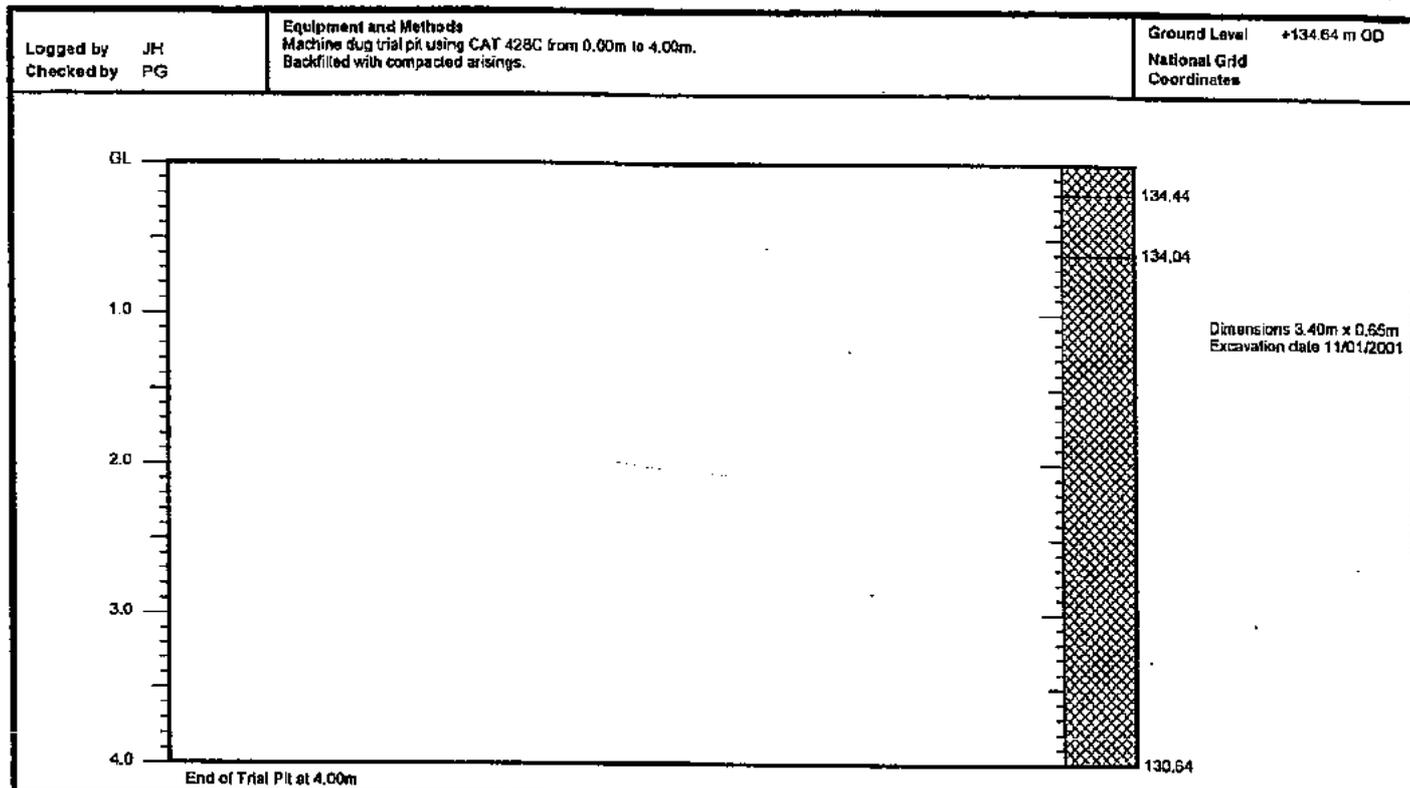
Groundwater None encountered	Remarks 1. All faces similar 2. Excavation: Moderate to 1.40m, difficult to 3.00m, then extremely difficult. 3. Unable to excavate below 3.50m due to cobble/boulder content. Stability: All stable, Shoring: None Hole backfill: 0.00m to 3.50m.
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Notes: For explanation of symbols and abbreviations see key sheet. All depths in metres. Scale 1:50	Project ROCKINGHAM OPENCAST Project no. 101003 Carried out for RJB Mining UK Limited	Trial Pit TP11 Sheet 1 of 1
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07/02/2001 10:20:14 ESGLeg v2.D2



Trial Pit Log



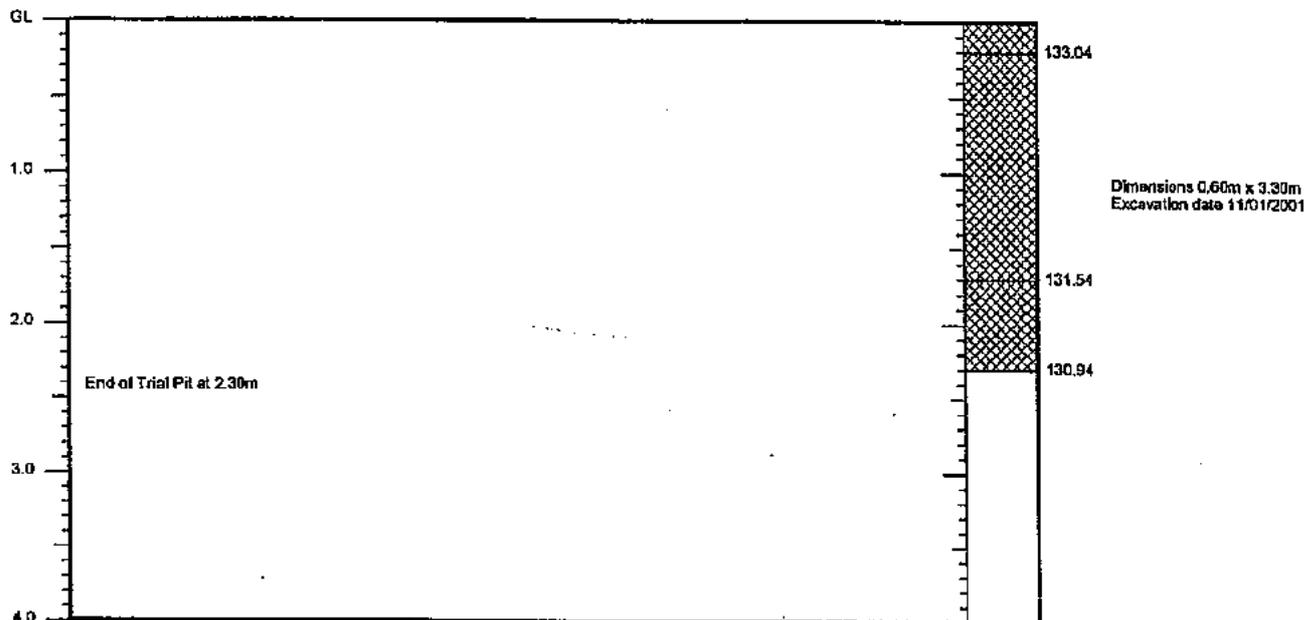
Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
0.10	E1		0.00-0.20	1	Firm yellow brown gravelly CLAY. Gravel is subangular of mudstone and sandstone. (MADE GROUND)
0.40	E2		0.20-0.60	2	Firm grey gravelly to very gravelly CLAY. Gravel is angular to subangular of mudstone. (MADE GROUND)
0.70 1.50 2.00 4.00	E3 E4 E5 E6		0.60-4.00	3	Stiff dark grey slightly sandy, very gravelly CLAY. Gravel is angular to subangular of mudstone, sandstone, coal and rare wood. Locally grades to very clayey gravel. (MADE GROUND) At 1.85m, 2 No. diameter rebars (Face D).
Groundwater None encountered				Remarks 1. All faces similar 2. Excavation: Moderate Stability: All stable, Shoring: None	
Notes: For explanation of symbols and abbreviations see key sheet. All depths in metres. Scale 1:50			Project ROCKINGHAM OPENCAST Project no. 101003 Carried out for RJB Mining UK Limited		Trial Pit TP12 Sheet 1 of 1

07/02/2001 10:20:16 ESSCLog v2.02



Trial Pit Log

Logged by JH Checked by PG	Equipment and Methods Machine dug trial pit using CAT 426C from 0.00m to 2.30m. Backfilled with compacted arisings.	Ground Level +133.24 m OD National Grid Coordinates
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Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
0.10	E1		0.00-0.20	1	Firm light brown slightly gravelly CLAY. Gravel is subangular of mudstone and sandstone. Frequent rootlets. (MADE GROUND)
0.50 1.70	E2 E3		0.20-1.70	2	Stiff grey very gravelly CLAY. Gravel is angular to subangular of mudstone. (MADE GROUND) Below 1.00m, locally grades to very clayey gravel.
2.00	E4		1.70-2.30	3	Stiff dark grey locally slightly sandy (ashy) gravelly to very gravelly CLAY. Gravel is angular to subangular of mudstone, coal and rare wood. (MADE GROUND) At 2.30m, boulders of mudstone and sandstone (undeterminate size)

Groundwater None encountered	Remarks 1. All faces similar 2. Excavation: Moderate. 3. Unable to excavate below 2.30m due to boulder obstructions. Stability: All stable, Shoring: None
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Notes: For explanation of symbols and abbreviations see key sheet. All depths in metres. Scale 1 : 50	Project ROCKINGHAM OPENCAST Project no. 101003 Carried out for RJB Mining UK Limited	Trial Pit TP13 Sheet 1 of 1
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07/02/2001 10:20:18 ESGLog v2.02

Contract No.	F12741	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery				-
		Drilling Rig	Dando 150	Ground Level	-
Client	Mott MacDonald	Driller	IM	Orientation	Vertical
		Logged by	SA	Date Started	20/02/2003
Consultant	Mott MacDonald			Date Completed	20/02/2003

PROGRESS						BORING DETAILS			
Date	Time	Hole depth	Casing depth	Water depth	Remarks	Hard Strata from depth	Hard Strata to depth	Chiselling hours	Remarks
20/02/2003		4.60	4.10	DRY		4.10	4.60	1.00	

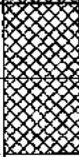
CASING				WATER STRIKES							
Hole diam.	Max depth of hole at dia.	Casing diameter	Max depth of casing of dia.	Date	Time	Strike at depth	Rise to depth	Time taken to rise	Flow	Casing depth at strike time	Casing depth to seal flow
150	4.60	150	4.10								

GENERAL NOTES				SPT DETAILS					
1. Service inspection pit hand excavated to 1.20m. 2. Cable percussive boring complete at 4.60m. 3. Standpipe installed, slotted from 1.00m to 4.10m.				Depth	Type	Incremental blow count/penetration		Casing	Water Depth
				1.20	C	N=19 (4,4,5,4,6,5)		1.20	DRY
				4.40	S	50/60mm (25/60,50/60)		4.40	DRY
				* Seating blows only.					

NOTES: All depths in metres, all diameters in millimetres, water strike rise time in minutes, chiselling time in hours.

Form	ARIAL CP HEADER
Version	3.01
Revised	26/11/2002

Contract No.	F12741	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery				-
Client	Mott MacDonald	Drilling Rig	Dando 150	Ground Level	-
Consultant	Mott MacDonald	Driller	JM	Orientation	Vertical
		Logged by	SA	Date Started	20/02/2003
				Date Completed	20/02/2003

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling	SPT N & (U blows)	SPT type & depth	Installation	
MADE GROUND: Dark grey gravelly clay. Gravel is angular to subangular fine to coarse of mudstone.				ES1 0.50				
				ES2 1.00 D3 1.00 D4 1.20 - 1.65	C19	C	1.20	
				ES5 1.50			1.65	
				ES6 2.00 D7 2.00				
				ES8 3.00 D9 3.00				
				3.80				
MADE GROUND: Yellowish brown gravelly clay. Gravel is angular to subangular of mudstone.				ES10 4.00 D11 4.00				
			4.10					
MADE GROUND: Grey angular to subangular fine to medium gravel of mudstone.				D12 4.40	S50/60mm	S	4.40	
Cable Percussion boring complete at 4.60 m.							4.60	

NOTES: All depths in metres, all diameters in millimetres.
See header sheet for details of boring, progress and water strikes. See legend sheet for key to symbols.

Form	ARIAL CP LOG
Version	3.02
Revised	23/12/2002

Contract No.	F12741	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery				-
Client	Mott MacDonald	Drilling Rig	Dando 150	Ground Level	-
Consultant	Mott MacDonald	Driller	IM	Orientation	Vertical
		Logged by	SA	Date Started	20/02/2003
				Date Completed	20/02/2003

PROGRESS						BORING DETAILS			
Date	Time	Hole depth	Casing depth	Water depth	Remarks	Hard Strata from depth	Hard Strata to depth	Chiselling hours	Remarks
20/02/2003		4.50	4.05	DRY		4.05	4.50	1.00	

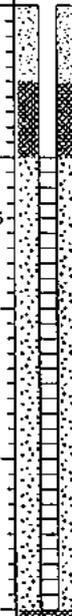
CASING				WATER STRIKES							
Hole diam.	Max depth of hole at dia.	Casing diameter	Max depth of casing of dia.	Date	Time	Strike at depth	Rise to depth	Time taken to rise	Flow	Casing depth at strike time	Casing depth to seal flow
150	4.50	150	4.05	20/02/2003		1.30	NR	NR	Seepage	NR	NR

GENERAL NOTES				SPT DETAILS						
1. Service inspection pit hand excavated to 1.20m. 2. Cable percussive boring complete at 4.50m. 3. Standpipe installed, slotted from 1.00m to 4.00m.				Depth	Type	Incremental blow count/penetration			Casing	Water Depth
				1.20	C	N=20 (2.5,4.3,6.7)			1.20	DRY
				4.20	S	50/75mm (25/80,50)			4.05	DRY
* Seating blows only.										

NOTES: All depths in metres, all diameters in millimetres, water strike rise time in minutes, chiselling time in hours.

Form	ARIAL CP HEADER
Version	3.01
Revised	25/11/2002

Contract No.	F12741	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery				
		Drilling Rig	Dando 150	Ground Level	-
Client	Mott MacDonald	Driller	IM	Orientation	Vertical
		Logged by	SA	Date Started	20/02/2003
Consultant	Mott MacDonald			Date Completed	20/02/2003

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling		SPT N & (U blows)	SPT type & depth	Installation
				Sample ID	Depth (m)			
MADE GROUND: Dark grey gravelly clay. Gravel is angular to subangular fine to coarse of mudstone.				ES1	0.50	C20	C	
				D3	1.00			
				D4	1.20 - 1.85			
				ES5	1.50			
				D7	2.00			
				D7	2.00			
				ES8	3.00			
				D9	3.00			
				D9	3.00			
				ES10	4.00			
MADE GROUND: Grey angular to subangular fine to medium gravel of mudstone.				D11	4.00	S50/75mm	S	
				D12	4.20			
				D12	4.20			
Cable Percussion boring complete at 4.50 m.								

NOTES: All depths in metres, all diameters in millimetres.
See header sheet for details of boring, progress and water strikes. See legend sheet for key to symbols.

Form	ARIAL CP LOG
Version	3.02
Revised	23/12/2002

Contract No.	F12741	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery				
		Drilling Rig	Dando	Ground Level	-
Client	Mott MacDonald	Driller	IM	Orientation	Vertical
		Logged by	SA	Date Started	17/02/2003
Consultant	Mott MacDonald			Date Completed	18/02/2003

PROGRESS						BORING DETAILS			
Date	Time	Hole depth	Casing depth	Water depth	Remarks	Hard Strata from depth	Hard Strata to depth	Chiselling hours	Remarks
17/02/2003	1730	3.00	3.00	DRY		1.80	2.05	0.75	
18/02/2003	0730	3.00	3.00	DRY		3.80	4.40	1.50	
18/02/2003	1730	4.40	3.80	DRY					

CASING				WATER STRIKES							
Hole diam.	Max depth of hole at dia.	Casing diameter	Max depth of casing of dia.	Date	Time	Strike at depth	Rise to depth	Time taken to rise	Flow	Casing depth at strike time	Casing depth to seal flow
150	4.40	150	3.80								

GENERAL NOTES				SPT DETAILS						
1. Service inspection pit hand excavated to 1.20m. 2. Cable Percussive boring complete at 4.40m. 3. Standpipe installed, slotted from 1.00m to 3.90m.				Depth	Type	Incremental blow count/penetration		Casing	Water Depth	
				1.20	S	N=17 (2,4,5,4,4,4)		1.20	DRY	
				4.00	S	50/0mm (25/0,50/0)		3.80	DRY	
				* Sealing blows only.						

NOTES: All depths in metres, all diameters in millimetres, water strike rise time in minutes, chiselling time in hours.

Form	ARIAL CP HEADER
Version	3.01
Revised	28/11/2002

Contract No.	F12741	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery				
		Drilling Rig	Dando	Ground Level	-
Client	Mott MacDonald	Driller	IM	Orientation	Vertical
		Logged by	SA	Date Started	17/02/2003
Consultant	Mott MacDonald			Date Completed	18/02/2003

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling		SPT N & (U blows)	SPT type & depth	Installation	
				Sample ID	Depth (m)				
MADE GROUND: Grey gravelly clay. Gravel size fragments angular to subangular fine to coarse of mudstone with occasional angular cobble size fragments of sandstone.				ES1	0.50				
				ES2	1.00				
				D3	1.00				
				D4	1.20 - 1.65	S17	S	1.20	1.65
				ES5	1.50				
				ES6	2.00				
				D7	2.00				
				ES8	3.00				
				D9	3.00				
		MADE GROUND: Hard yellow sandstone. (Driller's description)		3.80		D10	3.80	S50/0mm	S
Cable Percussion boring complete at 4.40 m.		4.40							

NOTES: All depths in metres, all diameters in millimetres.
See header sheet for details of boring, progress and water strikes. See legend sheet for key to symbols.

Form	ARIAL CP LOG
Version	3.02
Revised	23/12/2002

Contract No.	F12741	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery				-
Client	Mott MacDonald	Drilling Rig	Dando	Ground Level	-
		Driller	IM	Orientation	Vertical
Consultant	Mott MacDonald	Logged by	SA	Date Started	17/02/2003
				Date Completed	17/02/2003

PROGRESS						BORING DETAILS			
Date	Time	Hole depth	Casing depth	Water depth	Remarks	Hard Strata from depth	Hard Strata to depth	Chiselling hours	Remarks
17/02/2003	0000	7.60	7.30	DRY		1.40 2.10 7.30	1.70 2.35 7.60	0.75 0.50 1.00	

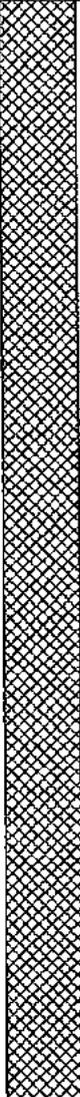
CASING				WATER STRIKES							
Hole diam.	Max depth of hole at dia.	Casing diameter	Max depth of casing of dia.	Date	Time	Strike at depth	Rise to depth	Time taken to rise	Flow	Casing depth at strike time	Casing depth to seal flow
150	7.60	150	7.30								

GENERAL NOTES				SPT DETAILS				
1. Service inspection pit hand excavated to 1.20m. 2. Cable Percussive boring complete at 7.60m. 3. Standpipe installed, slotted from 1.00m to 7.10m.				Depth	Type	Incremental blow count/penetration	Casing	Water Depth
				1.20	S	50/125mm (3,5,8,44/50)	1.20	DRY
				5.00	S	N=29 (3,3,6,8,5,10)	4.70	DRY
				7.60	S	50/0mm (25/50,50/0)	7.30	DRY
				* Seating blows only.				

NOTES: All depths in metres, all diameters in millimetres, water strike rise time in minutes, chiselling time in hours.

Form	ARIAL CP HEADER
Version	3.01
Revised	25/11/2002

Contract No.	F12741	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery				-
		Drilling Rig	Dando	Ground Level	-
Client	Mott MacDonald	Driller	IM	Orientation	Vertical
		Logged by	SA	Date Started	17/02/2003
Consultant	Mott MacDonald			Date Completed	17/02/2003

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling		SPT N & (U blows)	SPT type & depth	Installation		
				ES	D					
MADE GROUND: Grey gravelly clay. Gravel size fragments angular to subangular fine to coarse of mudstone. Driller noted occasional large sandstone boulders.				ES1	0.50					
				ES2	1.00					
				D3	1.00					
				D4	1.20 - 1.45	S50/125mm	S	1.20		
				ES5	1.50				1.48	
				ES6	2.00					
				D7	2.00					
				ES8	3.00					
				D9	3.00					
				ES10	4.00					
				D11	4.00					
				ES12	5.00			S29	S	5.00
				D13	5.00					5.45
				D14	5.00 - 5.45					
		ES15	6.00							
		D16	6.00							
		ES17	7.00							
		D18	7.00							
		D19	7.00							
MADE GROUND: Orangish brown angular to subangular gravel of mudstone.		7.30								
Cable Percussion boring complete at 7.60 m.		7.60				S50/0mm	S	7.50		
								7.55		

NOTES: All depths in metres, all diameters in millimetres.
See header sheet for details of boring, progress and water strikes. See legend sheet for key to symbols.

Form	ARIAL CP LOG
Version	3.02
Revised	23/12/2002

Contract No.	F12741	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery				-
		Drilling Rig	Dando 150	Ground Level	-
Client	Mott MacDonald	Driller	IM	Orientation	Vertical
		Logged by	SA	Date Started	20/02/2003
Consultant	Mott MacDonald			Date Completed	20/02/2003

PROGRESS						BORING DETAILS			
Date	Time	Hole depth	Casing depth	Water depth	Remarks	Hard Strata from depth	Hard Strata to depth	Chiselling hours	Remarks
20/02/2003		4.25	3.90	DRY		3.90	4.25	1.00	

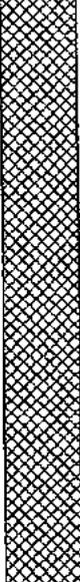
CASING				WATER STRIKES							
Hole diam.	Max depth of hole at dia.	Casing diameter	Max depth of casing of dia.	Date	Time	Strike at depth	Rise to depth	Time taken to rise	Flow	Casing depth at strike time	Casing depth to seal flow
150	4.25	150	3.90	20/02/2003		4.10	NR	NR	Seepage	NR	NR

GENERAL NOTES				SPT DETAILS				
1. Service inspection pit hand excavated to 1.20m. 2. Cable percussive boring complete at 4.25m. 3. Standpipe installed, slotted from 1.00m to 3.90m.				Depth	Type	Incremental blow count/penetration	Casing	Water Depth
				1.20	C	N=12 (1,2,3,3,2,4)	1.20	DRY
				4.00	C	50/50mm (25/20,50/50)		NR
				* Seating blows only.				

NOTES: All depths in metres, all diameters in millimetres, water strike rise time in minutes, chiselling time in hours.

Form	ARIAL CP HEADER
Version	1.01
Revised	25/11/2002

Contract No.	F12741	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery				-
		Drilling Rig	Dando 150	Ground Level	-
Client	Mott MacDonald	Driller	IM	Orientation	Vertical
		Logged by	SA	Date Started	20/02/2003
Consultant	Mott MacDonald			Date Completed	20/02/2003

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling		SPT N & (U blows)	SPT type & depth	Installation
				ES	D			
MADE GROUND: Grey gravelly clay. Gravel size fragments of angular to subangular fine to coarse of mudstone.		0.00		ES1	0.50	C12	C	1.20
				ES2	1.00			
				D3	1.00			
				D4	1.20 - 1.65			
				ES5	1.50			
				ES6	2.00			
				D7	2.00			
				ES8	3.00			
				D9	3.00			
MADE GROUND: Grey angular to subangular fine to coarse gravel of mudstone.		3.90		D10	4.00	E50/50mm	C	4.00
Cable Percussion boring complete at 4.25 m.		4.25						4.07

NOTES: All depths in metres, all diameters in millimetres.
See header sheet for details of boring, progress and water strikes. See legend sheet for key to symbols.

Form	ARIAL CP LOG
Version	3.02
Revised	23/12/2002

Contract No.	F12741	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery				
		Drilling Rig	Dando	Ground Level	-
Client	Mott MacDonald	Driller	IM	Orientation	Vertical
		Logged by	SA	Date Started	13/02/2003
Consultant	Mott MacDonald			Date Completed	13/02/2003

PROGRESS						BORING DETAILS			
Date	Time	Hole depth	Casing depth	Water depth	Remarks	Hard Strata from depth	Hard Strata to depth	Chiselling hours	Remarks
13/02/2003	1730	13.00	12.55	DRY		1.80 2.40 7.80 12.55	2.00 2.70 8.00 13.00	0.50 0.75 0.50 1.50	

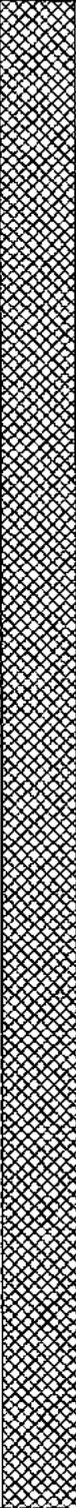
CASING				WATER STRIKES							
Hole diam.	Max depth of hole at dia.	Casing diameter	Max depth of casing of dia.	Date	Time	Strike at depth	Rise to depth	Time taken to rise	Flow	Casing depth at strike time	Casing depth to seal flow
150	13.00	150	12.55								

GENERAL NOTES				SPT DETAILS						
1. Service inspection pit hand excavated to 1.20m. 2. Cable Percussive boring complete at 13.00m. 3. Standpipe installed, slotted from 1.00m to 12.55m.				Depth	Type	Incremental blow count/penetration			Casing	Water Depth
				1.20	S	N=21 (5,5,7,3,5,8)			1.20	DRY
				5.00	S	N=24 (2,4,3,5,8,8)			4.80	DRY
				9.00	S	N=38 (8,8,8,7,10,11)			7.80	DRY
				12.80	S	50/105mm (25/50,27,23/30)			12.55	DRY
				* Seating blows only.						

NOTES: All depths in metres, all diameters in millimetres, water strike rise time in minutes, chiselling time in hours.

Form	ARIAL CP HEADER
Version	301
Revised	25/11/2002

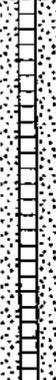
Contract No.	F12741	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery				-
		Drilling Rig	Dando	Ground Level	-
Client	Mott MacDonald	Driller	IM	Orientation	Vertical
		Logged by	SA	Date Started	13/02/2003
Consultant	Mott MacDonald			Date Completed	13/02/2003

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling		SPT N & (U blows)	SPT type & depth	Installation	
				Start	End				
MADE GROUND: Dark grey gravelly clay. Gravel is angular to subangular fine to coarse of mudstone.				D1	0.50				
				D2	1.00				
				D3	1.00				
				D4	1.20 - 1.65	S21	S	1.20	1.65
				D5	1.60				
				D6	2.00				
				D7	2.00				
				D8	3.00				
				D9	3.00				
				D10	4.00				
				D11	4.00				
				D12	5.00	S24	S	5.00	5.45
				D13	5.00				
				D14	5.00 - 5.45				
				D15	8.00				
				D16	8.00				
				D17	7.00				
				D18	7.00				
				D19	8.00				
				D20	8.00				
				D21	9.00	S36	S	9.00	9.45
				D22	9.00				
				D23	9.00 - 9.45				

NOTES: All depths in metres, all diameters in millimetres.
See header sheet for details of boring, progress and water strikes. See legend sheet for key to symbols.

Form	ARIAL CP LOG
Version	3.02
Revised	23/12/2002

Contract No.	F12741	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery				
		Drilling Rig	Dando	Ground Level	-
Client	Mott MacDonald	Driller	IM	Orientation	Vertical
		Logged by	SA	Date Started	13/02/2003
Consultant	Mott MacDonald			Date Completed	13/02/2003

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling	SPT N & (U blows)	SPT type & depth	Installation
MADE GROUND: Dark grey gravelly clay. Gravel is angular to subangular fine to coarse of mudstone.				D24 10.00			
				D25 10.00			
				D26 11.00 D27 11.00			
MADE GROUND: Light orangish brown slightly sandy slightly gravelly clay. Gravel is angular to subangular fine to coarse of sandstone and mudstone.				D28 12.00			
				D29 12.00			
MADE GROUND: Grey angular to subangular fine to medium gravel of mudstone. Cable Percussion boring complete at 13.00 m.				D30 12.80 - 12.95	S50/105mm	S 12.80 12.96	

NOTES: All depths in metres, all diameters in millimetres.
See header sheet for details of boring, progress and water strikes. See legend sheet for key to symbols.

Form	ARIAL CP LOG
Version	3.02
Revised	23/12/2002

Contract No.	F12741	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery				-
		Drilling Rig	Dando 150	Ground Level	-
Client	Mott MacDonald	Driller	IM	Orientation	Vertical
		Logged by	SA	Date Started	19/02/2003
Consultant	Mott MacDonald			Date Completed	19/02/2003

PROGRESS						BORING DETAILS			
Date	Time	Hole depth	Casing depth	Water depth	Remarks	Hard Strata from depth	Hard Strata to depth	Chiselling hours	Remarks
19/02/2003	0600	12.30	4.80	DRY		11.80	12.30	1.00	

CASING				WATER STRIKES							
Hole diam.	Max depth of hole at dia.	Casing diameter	Max depth of casing of dia.	Date	Time	Strike at depth	Rise to depth	Time taken to rise	Flow	Casing depth at strike time	Casing depth to seal flow
150	12.30	150	4.80								

GENERAL NOTES		SPT DETAILS				
1. Service inspection pit hand excavated to 1.20m. 2. Cable percussive boring complete at 12.30m. 3. Standpipe installed, slotted from 1.00m to 11.80m.		Depth	Type	Incremental blow count/penetration	Casing	Water Depth
		1.20	C	N=19 (4,4,2,5,5,7)	1.20	DRY
		5.00	C	N=30 (1,6,3,4,7,16)	4.80	DRY
		9.00	C	N=28 (5,7,6,7,5,10)	4.80	DRY
		12.10	C	50/0mm (25/60,50/0)		NR
* Seating blows only.						

NOTES: All depths in metres, all diameters in millimetres, water strike rise time in minutes, chiselling time in hours.

Form	ARIAL CP-HEADER
Version	3.01
Revised	25/11/2002

Contract No.	F12741	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery				-
Client	Mott MacDonald	Drilling Rig	Dando 150	Ground Level	-
		Driller	IM	Orientation	Vertical
Consultant	Mott MacDonald	Logged by	SA	Date Started	19/02/2003
				Date Completed	19/02/2003

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling		SPT N & (U blows)	SPT type & depth	Installation		
				ES	D					
MADE GROUND: Dark grey gravelly clay. Gravel is angular to subangular of mudstone and coal.				ES1	0.50					
				ES2	1.00					
				D3	1.00					
				D4	1.20 - 1.65	C19	C	1.20		
				ES5	1.50				1.65	
				D6	2.00					
				ES7	2.00					
				ES8	3.00					
				D9	3.00					
				ES10	4.00					
				D11	4.00					
				ES12	5.00			C30	C	5.00
				D13	5.00					5.45
				D14	5.00 - 5.45					
				ES15	6.00					
				D16	6.00					
				ES17	7.00					
				D18	7.00					
				ES19	8.00					
				D20	8.00					
				ES21	9.00			C28	C	9.00
				D22	9.00					9.45
				D23	9.00 - 9.45					

NOTES: All depths in metres, all diameters in millimetres.
See header sheet for details of boring, progress and water strikes. See legend sheet for key to symbols.

Form	ARIAL CP LOG
Version	3.02
Revised	23/12/2002

Contract No.	F12741	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery				-
		Drilling Rig	Dando 150	Ground Level	-
Client	Mott MacDonald	Driller	IM	Orientation	Vertical
		Logged by	SA	Date Started	19/02/2003
Consultant	Mott MacDonald			Date Completed	19/02/2003

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling	SPT N & (U blows)	SPT type & depth	Instab-ation
MADE GROUND: Dark grey gravelly clay. Gravel is angular to subangular of mudstone and coal.				ES24 D25	10.00 10.00		
				ES26 D27	11.00 11.00		
MADE GROUND: Grey angular to subangular fine to coarse gravel of mudstone.		11.80					
Cable Percussion boring complete at 12.30 m.		12.30		D28	12.10	C50/0mm	

NOTES: All depths in metres, all diameters in millimetres.
See header sheet for details of boring, progress and water strikes. See legend sheet for key to symbols.

Form	ARIAL CP LOG
Version	3.02
Revised	23/12/2002

Contract No.	F12741	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery				-
		Drilling Rig	Dando 150	Ground Level	-
Client	Mott MacDonald	Driller	IM	Orientation	Vertical
		Logged by	SA	Date Started	18/02/2003
Consultant	Mott MacDonald			Date Completed	18/02/2003

PROGRESS						BORING DETAILS			
Date	Time	Hole depth	Casing depth	Water depth	Remarks	Hard Strata from depth	Hard Strata to depth	Chiselling hours	Remarks
18/02/2003	0700	3.00	3.00	DRY		5.20	5.40	0.50	
18/02/2003	1730	3.00	3.00	DRY		12.10	12.40	1.00	
19/02/2003		12.40	6.60	DRY					

CASING				WATER STRIKES							
Hole diam.	Max depth of hole at dia.	Casing diameter	Max depth of casing of dia.	Date	Time	Strike at depth	Rise to depth	Time taken to rise	Flow	Casing depth at strike time	Casing depth to seal flow
150	12.40	150	6.60								

GENERAL NOTES				SPT DETAILS						
1. Service inspection pit hand excavated to 1.20m. 2. Cable percussive boring complete at 12.40m. 3. Standpipe installed, slotted from 1.00m to 12.00m.				Depth	Type	Incremental blow count/penetration			Casing	Water Depth
				1.20	C	N=14 (1,3,3,4,3,4)			1.20	DRY
				5.00	C	45/135mm - Abandoned			4.80	DRY
				9.00	C	N=32 (2,5,8,4,7,13)			6.60	DRY
				12.40	C	50/0mm (25/30,50/0)			6.60	DRY
* Seating blows only.										

NOTES: All depths in metres, all diameters in millimetres, water strike rise time in minutes, chiselling time in hours.

Form	ARIAL CP HEADER
Version	3.01
Revised	25/11/2002

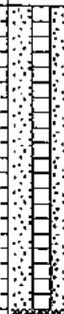
Contract No.	F12741	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery				-
		Drilling Rig	Dando 150	Ground Level	-
Client	Mott MacDonald	Driller	IM	Orientation	Vertical
		Logged by	SA	Date Started	18/02/2003
Consultant	Mott MacDonald			Date Completed	18/02/2003

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling		SPT N & (U blows)	SPT type & depth	Installation	
MADE GROUND: Dark grey gravelly clay. Gravel is angular to subangular fine to medium of mudstone.				ES1	0.50				
				ES2	1.00				
				D3	1.00				
				D4	1.20 - 1.65	C14	C	1.20	
				ES5	1.50				1.65
				ES6	2.00				
				D7	2.00				
				ES8	3.00				
				D9	3.00				
				ES10	4.00				
				D11	4.00				
				ES12	5.00				
				D13	5.00				
				D14	5.00				5.29
				ES15	6.00				
				D16	6.00				
				ES17	7.00				
				D18	7.00				
				ES19	8.00				
				D20	8.00				
				ES21	9.00				
				D22	9.00				
				D23	9.00 - 9.45				9.45

NOTES: All depths in metres, all diameters in millimetres.
See header sheet for details of boring, progress and water strikes. See legend sheet for key to symbols.

Form	ARRAL CP LOG
Version	3.02
Revised	23/12/2002

Contract No.	F12741	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery				-
		Drilling Rig	Dando 150	Ground Level	-
Client	Mott MacDonald	Driller	IM	Orientation	Vertical
		Logged by	SA	Date Started	18/02/2003
Consultant	Mott MacDonald			Date Completed	18/02/2003

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling	SPT N & (U blows)	SPT type & depth	Installation
MADE GROUND: Dark grey gravelly clay. Gravel is angular to subangular fine to medium of mudstone.				ES24 D25	10.00 10.00		
				ES28 D27	11.00 11.00		
Very weak grey MUDSTONE. Distinctly weathered. Recovered as angular to subangular fine to medium gravel. Cable Percussion boring complete at 12.40 m.			12.10 12.40	ES28 D29	12.00 12.00		
				D30	12.40 - 12.43	C50/0mm	C

NOTES: All depths in metres, all diameters in millimetres.
See header sheet for details of boring, progress and water strikes. See legend sheet for key to symbols.

Form	ARIAL CP LOG
Version	3.02
Revised	23/12/2002

Contract No.	F12741	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery				-
		Drilling Rig	Dando	Ground Level	-
Client	Mott MacDonald	Driller	IM	Orientation	Vertical
		Logged by	SA	Date Started	18/02/2003
Consultant	Mott MacDonald			Date Completed	18/02/2003

PROGRESS						BORING DETAILS			
Date	Time	Hole depth	Casing depth	Water depth	Remarks	Hard Strata from depth	Hard Strata to depth	Chiselling hours	Remarks
18/02/2003	0000	13.40	11.60	DRY		13.05	13.40	1.00	

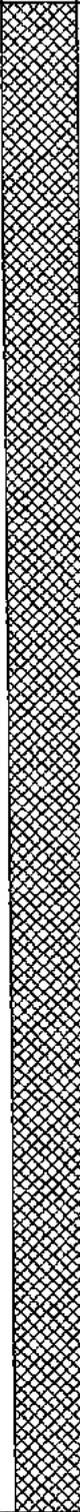
CASING				WATER STRIKES							
Hole diam.	Max depth of hole at dia.	Casing diameter	Max depth of casing of dia.	Date	Time	Strike at depth	Rise to depth	Time taken to rise	Flow	Casing depth at strike time	Casing depth to seal flow
150	13.40	150	11.60								

GENERAL NOTES		SPT DETAILS				
1. Service inspection pit hand excavated to 1.20m. 2. Cable Percussive boring complete at 13.40m. 3. Standpipe installed, slotted from 1.00m to 13.00m.		Depth	Type	Incremental blow count/penetration	Casing	Water Depth
		1.20	S	N=18 (2,8,3,4,7)	1.20	DRY
		5.00	S	N=25 (4,4,4,6,6,9)	4.80	DRY
		9.00	S	N=26 (2,5,3,4,7,12)	7.70	DRY
		13.00	S	50/0mm (26/40,50/0)	-	DRY
* Sealing blows only.						

NOTES: All depths in metres, all diameters in millimetres, water strike rise time in minutes, chiselling time in hours.

Form	ARIAL CP HEADER
Version	3.01
Revised	25/11/2002

Contract No.	F12741	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery				-
		Drilling Rig	Dando	Ground Level	-
Client	Mott MacDonald	Driller	IM	Orientation	Vertical
		Logged by	SA	Date Started	18/02/2003
Consultant	Mott MacDonald			Date Completed	18/02/2003

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling		SPT N & (U blows)	SPT type & depth	Installation		
				ES	D					
MADE GROUND: Dark greyish brown gravelly clay. Gravel size fragments are angular to subangular fine to coarse of mudstone and coal.				ES1	0.50					
				ES2	1.00					
				D3	1.00					
				D4	1.20 - 1.65	S18	S	1.20		
				ES5	1.50				1.65	
				ES6	2.00					
				D7	2.00					
				ES8	3.00					
				D9	3.00					
				ES10	4.00					
				D11	4.00					
				ES12	5.00			S25	S	5.00
				D13	5.00					5.45
				D14	5.00 - 5.45					
				ES15	6.00					
				D16	6.00					
				ES17	7.00					
				D18	7.00					
				ES19	8.00					
				D20	8.00					
		ES21	9.00			S26	S	9.00		
		D22	9.00					9.45		
		D23	9.00 - 9.45							

NOTES: All depths in metres, all diameters in millimetres.
See header sheet for details of boring, progress and water strikes. See legend sheet for key to symbols.

Form	ARIAL CP LOG
Version	3.02
Revised	23/12/2002

Contract No.	F12741	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery				-
		Drilling Rig	Dando	Ground Level	-
Client	Mott MacDonald	Driller	IM	Orientation	Vertical
		Logged by	SA	Date Started	18/02/2003
Consultant	Mott MacDonald			Date Completed	18/02/2003

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling	SPT N & (U blows)	SPT type & depth	Installation
MADE GROUND: Dark greyish brown gravelly clay. Gravel size fragments are angular to subangular fine to coarse of mudstone and coal.				ES24 D25	10.00 10.00		
				ES26 D27	11.00 11.00		
				ES28 D29	12.00 12.00		
MADE GROUND: Hard white sandstone. (Driller's description)		13.05		ES30 D31	13.00 13.00	550/0mm S	13.00
Cable Percussion boring complete at 13.40 m.		13.40					13.04

NOTES: All depths in metres, all diameters in millimetres.
See header sheet for details of boring, progress and water strikes. See legend sheet for key to symbols.

Form	AFR1AL CP LOG
Version	3.02
Revised	23/12/2002

Contract No. F12741	Method	Cable Percussion & Rotary	Coordinates	-
Project Rockingham Colliery	Drilling Rig	Dando/T30	Ground Level	-
Client Mott MacDonald	Drillers	IM/DD	Orientation	Vertical
Consultant Mott MacDonald	Logged by	SA	Date Started	10/02/2003
	Core barrel	OH	Date Completed	13/02/2003
	Core bit	3/4 inch		

PROGRESS						CABLE PERCUSSION DETAILS			
Date	Time	Hole depth	Casing depth	Water depth	Remarks	Hard Strata from depth	Hard Strata to depth	Chiselling Hours	Remarks
10/02/2003	1730	5.30	4.90	DRY		2.70 4.90	2.80 6.30	0.25 1.00	

CASING				WATER STRIKES							
Hole diam.	Max depth of hole at dia.	Casing diameter	Max depth of casing of dia.	Date	Time	Strike at depth	Rise to depth	Time taken to rise	Flow	Casing depth at strike time	Casing depth to seal flow
150	5.30	150	4.90								

ROTARY DRILLING DETAILS					SPT DETAILS				
From depth	To depth	Flush type	Flush return	Core diameter	Depth	Type	Incremental blow count/penetration in mm	Casing	Water Depth
					1.20	S	N=24 (3,5,6,6,7,5)	1.20	DRY
					5.10	S	50/50mm (25/70,50/50)	4.90	DRY

GENERAL NOTES
1. Cable Percussive boring complete at 4.90m. 2. Rotary Openhole drilling complete at 13.50m. 3. Standpipe installed, slotted from 1.00m to 13.50m.

* Sealing blows only.

NOTES: All depths in metres, all diameters in millimetres, water strike rise time in minutes, hard strata time in hours

Form	ARIAL COMBINED HEADER
Version	3.01
Revised	25/11/2002

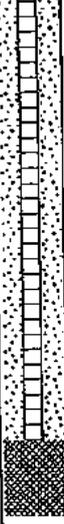
Contract No.	F12741	Method	Cable Percussion & Rotary	Coordinates	-
Project	Rockingham Colliery			Ground Level	-
Client	Mott MacDonald	Drilling Rig	Dando/T30	Orientation	Vertical
		Drillers	IM/DD	Date Started	10/02/2003
		Logged by	SA	Date Completed	13/02/2003
Consultant	Mott MacDonald	Core Barrel	OH		
		Core Bit	3/4 inch		

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling & coring	Blow Count			SPT type, N & depth	Installation
					TCR	SCR	RQD		
MADE GROUND: Grey gravelly clay. Gravel is angular to subangular fine to coarse of mudstone.				D1	0.50				
				D2	1.00				
				D3	1.00				
				D4	1.20-1.65			1.20	1.65
				D5	1.50				
				D6	2.00				
MADE GROUND: Brown gravelly clay. Gravel is angular to subangular fine to coarse of mudstone and sandstone.		3.00		D8	3.00				
				D9	3.00				
				D10	4.00				
Very weak dark grey MUDSTONE distinctly weathered. Recovered as angular to subangular fine to medium gravel of mudstone.		4.90		D12	5.10-5.23			5.10	5.22
From 5.30m to 13.50m rotary openhole drilling MADE GROUND: Sandstone. (Driller's description)		5.30							

NOTES: All depths in metres, all diameters in millimetres.
See header sheet for details of boring, progress and water strikes. See legend sheet for key to symbols.

Form	ARIAL COMBINED LOG
Version	1.03
Revised	31/01/2003

Contract No.	F12741	Method	Cable Percussion & Rotary	Coordinates	-
Project	Rockingham Colliery	Drilling Rig	Dando/T30	Ground Level	-
Client	Mott MacDonald	Drillers	IM/DD	Orientation	Vertical
Consultant	Mott MacDonald	Logged by	SA	Date Started	10/02/2003
		Core Barrel	OH	Date Completed	13/02/2003
		Core Bit	3/4 inch		

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling & coring	Blow Count			SPT type, N & depth	Installation
					TCR	SCR	RCD		
From 5.30m to 13.50m rotary openhole drilling MADE GROUND: Sandstone. (Driller's description)									
Borehole complete at 13.50 m.		13.50							

NOTES: All depths in metres, all diameters in millimetres.
See header sheet for details of boring, progress and water strikes. See legend sheet for key to symbols.

Form	ARIAL COMBINED LOG
Version	3.03
Revised	31/01/2003

Contract No.	F12741	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery			Ground Level	-
Client	Mott MacDonald	Drilling Rig	IM	Orientation	Vertical
		Logged by	SA	Date Started	11/02/2003
Consultant	Mott MacDonald			Date Completed	11/02/2003

PROGRESS						BORING DETAILS			
Date	Time	Hole depth	Casing depth	Water depth	Remarks	Hard Strata from depth	Hard Strata to depth	Chiselling hours	Remarks
11/02/2003	0000	3.20	2.80	DRY		2.80	3.20	1.25	

CASING				WATER STRIKES							
Hole diam.	Max depth of hole at dia.	Casing diameter	Max depth of casing of dia.	Date	Time	Strike at depth	Rise to depth	Time taken to rise	Flow	Casing depth at strike time	Casing depth to seal flow
150	3.20	150	2.80								

GENERAL NOTES		SPT DETAILS				
1. Service inspection pit hand excavated to 1.20m. 2. Cable Percussive boring complete at 2.80m.		Depth	Type	Incremental blow count/penetration	Casing	Water Depth
		1.20	S	N=90 (5,9,10,10,65,5)	1.20	DRY

* Seating blows only.

NOTES: All depths in metres, all diameters in millimetres, water strike rise time in minutes, chiselling time in hours.

Form	ARIAL CP HEADER
Version	3.01
Revised	25/11/2002

Contract No.	F12741-	Method	Cable Percussion	Coordinates	-
Project	Rockingham Colliery			Ground Level	-
Client	Mott MacDonald	Drilling Rig		Orientation	Vertical
		Driller	IM	Date Started	11/02/2003
		Logged by	SA	Date Completed	11/02/2003
Consultant	Mott MacDonald				

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling		SPT N & (U blows)	SPT type & depth	Installation
MADE GROUND: Brownish grey gravelly clay. Gravel is angular to subangular fine to coarse of mudstone.				D1	0.50	590	S 1.20	
				D2	1.00			
				D3	1.00			
				D4	1.20 - 1.65			
				D5	1.50			
				D6	2.00			
				D7	2.00			
MADE GROUND: Large sandstone boulder. (Driller's description)			2.80					
Cable Percussion boring complete at 3.20 m.			3.20					

NOTES: All depths in metres, all diameters in millimetres.
See header sheet for details of boring, progress and water strikes. See legend sheet for key to symbols.

Form	ARIAL CP LOG
Version	3.02
Revised	23/12/2002

Contract No. F12741	Method	Cable Percussion & Rotary	Coordinates	-
Project Rockingham Colliery				
Client Mott MacDonald	Drilling Rig		Ground Level	-
Consultant Mott MacDonald	Drillers	IM/DD	Orientation	Vertical
	Logged by	SA	Date Started	11/02/2003
	Core barrel	OH	Date Completed	14/02/2003
	Core bit	3/4 Rockbit.		

PROGRESS						CABLE PERCUSSION DETAILS			
Date	Time	Hole depth	Casing depth	Water depth	Remarks	Hard Strata from depth	Hard Strata to depth	Chiselling Hours	Remarks
11/02/2003	1730	13.00	12.30	DRY		3.70	4.00	0.75	
12/02/2003	0730	13.00	12.30	DRY		5.20	5.40	0.50	
12/02/2003	1730	14.37	13.90	DRY		13.90	14.35	1.50	

CASING				WATER STRIKES							
Hole diam.	Max depth of hole at dia.	Casing diameter	Max depth of casing of dia.	Date	Time	Strike at depth	Rise to depth	Time taken to rise	Flow	Casing depth at strike time	Casing depth to seal flow
150	14.37	150	13.90								

ROTARY DRILLING DETAILS					SPT DETAILS				
From depth	To depth	Flush type	Flush return	Core diameter	Depth	Type	Incremental blow count/penetration in mm	Casing	Water Depth
					1.20	S	N=31 (4,6,10,8,6,7)	1.20	DRY
					5.00	S	50/60mm (10,13,50/60)	4.80	DRY
					9.00	S	N=20 (3,2,5,4,3,8)	9.00	DRY
					13.00	S	N=39 (6,8,10,8,11,10)	13.00	DRY
					14.20	S	50/95mm (25/70,30,20/20)	13.90	DRY

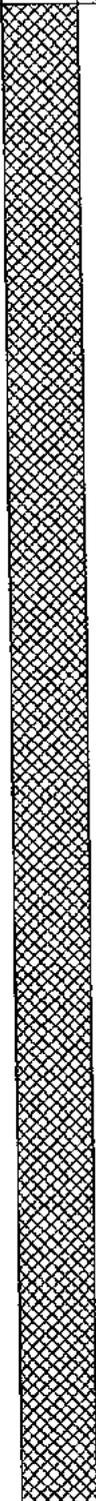
GENERAL NOTES				
1. Cable Percussive boring complete at 14.35m. 2. Rotary Openhole drilling complete at 22.50m. 3. Standpipe installed slotted from 1.00m to 22.50m.				

NOTES: All depths in metres, all diameters in millimetres, water strike rise time in minutes, hard strata time in hours

Form	ARIAL COMBINED HEADER
Version	3.01
Revised	25/11/2002

* Sealing blows only.

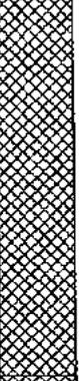
Contract No.	F12741	Method	Cable Percussion & Rotary	Coordinates	-
Project	Rockingham Colliery				
Client	Mott MacDonald	Drilling Rig	IM/DD	Ground Level	-
Consultant	Mott MacDonald	Loggers	SA	Orientation	Vertical
		Core Barrel	OH	Date Started	11/02/2003
		Core Bit	3% Rockbit.	Date Completed	14/02/2003

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling & coring	Blow Count			SPT type, N & depth	Installation	
					TCR	SCR	RQD			
MADE GROUND: Dark grey gravelly clay. Gravel is angular to subangular fine to coarse of mudstone. (With occasional sandstone boulder. (Driller's description))				D1 0.50						
				D2 1.00						
				D3 1.00						
				D4 1.25-1.65				1.20	1.65	
				D6 1.50						
				D6 2.00						
				D7 2.00						
				D8 3.00						
				D9 3.00						
				D10 4.00						
				D11 4.00						
				D12 5.00				5.00	5.21	
				D13 5.00						
				D14 5.00-5.25				S60/60mm		
		D15 6.00								
		D16 6.00								
		D17 7.00								
		D18 7.00								
		D19 8.00								
		D20 8.00								
		D21 9.00				9.00	9.45			
		D22 9.00								
		D23 9.00-9.45				S20				

NOTES: All depths in metres, all diameters in millimetres.
See header sheet for details of boring, progress and water strikes. See legend sheet for key to symbols.

Form	ARIAL COMBINED LOG
Version	3.03
Revised	31/01/2003

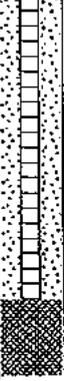
Contract No.	F12741	Method	Cable Percussion & Rotary	Coordinates	-
Project	Rockingham Colliery	Drilling Rig		Ground Level	-
Client	Mott MacDonald	Drillers	IM/DD	Orientation	Vertical
Consultant	Mott MacDonald	Logged by	SA	Date Started	11/02/2003
		Core Barrel	OH	Date Completed	14/02/2003
		Core Bit	3/4 Rockbit.		

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling & coring	Blow Count			SPT type, N & depth	Installation
					TCR	SCR	ROD		
MADE GROUND: Dark grey gravelly clay. Gravel is angular to subangular fine to coarse of mudstone. (With occasional sandstone boulder. (Driller's description))				D24 D25	10.00 10.00				
				D26 D27	11.00 11.00				
				D28 D29	12.00 12.00				
MADE GROUND: Orangish brown and dark grey gravelly clay. Gravel is angular to subangular fine to coarse of mudstone and sandstone. Driller noted occasional large sandstone boulders.		12.50		D30 D31 D32	13.00 13.00 13.00-13.45			13.00 13.45 S38	
MADE GROUND: Grey angular to subangular fine to medium gravel.		13.90		D33	14.20-14.37			14.20 14.37 S50/95mm	
From 14.37m to 22.50m rotary openhole drilling MADE GROUND sandstone and mudstone. (Driller's description)		14.37							

NOTES: All depths in metres, all diameters in millimetres.
See header sheet for details of boring, progress and water strikes. See legend sheet for key to symbols.

Form	ARIAL COMBINED LOG
Version	3.03
Revised	31/01/2003

Contract No.	F12741	Method	Cable Percussion & Rotary	Coordinates	-
Project	Rockingham Colliery				
Client	Mott MacDonald	Drilling Rig		Ground Level	-
		Drillers	IM/DD	Orientation	Vertical
		Logged by	SA	Date Started	11/02/2003
Consultant	Mott MacDonald	Core Barrel	OH	Date Completed	14/02/2003
		Core Bit	3 3/4 Rockbit.		

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling & coring	Blow Count			SPT type, N & depth	Installation
					TCR	SCR	ROD		
From 14.37m to 22.50m rotary openhole drilling MADE GROUND sandstone and mudstone. (Driller's description)									
Borehole complete at 22.50 m.		22.50							

NOTES: All depths in metres, all diameters in millimetres.
See header sheet for details of boring, progress and water strikes. See legend sheet for key to symbols.

Form	ARIAL COMBINED LOG
Version	3.03
Revised	31/01/2003

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG - CABLE & ROTARY

Hole ID.
BH12
 Header

Project No.	502741	Method	Cable Percussion & Rotary	Coordinates	-
Location	Wolverhampton Colliery	Drilling Rig	Dando/T30	Ground Level	-
Client	McDonald	Drillers	IM/DD	Orientation	Vertical
Contract No.	McDonald	Logged by	SA	Date Started	12/02/2002
		Core barrel	OH	Date Completed	12/02/2002
		Core bit	3/4 Rockbit		

Date	Time	PROGRESS			CABLE PERCUSSION DETAILS				
		Hole depth	Casing depth	Water depth	Remarks	Hard Strata from depth	Hard Strata to depth	Chiselling Hours	Remarks
		10.00	9.20	DRY					

CASING				WATER STRIKES							
Hole dia.	Max depth of hole at dia.	Casing diameter	Max depth of casing of dia.	Date	Time	Strike at depth	Rise to depth	Time taken to rise	Flow	Casing depth at strike time	Casing depth to seal flow
		150	9.20								

ROTARY DRILLING DETAILS					SPT DETAILS				
From depth	To depth	Flush type	Flush return	Core diameter	Depth	Type	Incremental blow count/penetration in mm	Casing	Water Depth
					1.20	S	N=20 (2,3,4,7,5,4)	1.20	DRY
					5.00	S	N=22 (1,3,8,1,4,8)	4.80	DRY
					9.00	S	50/95mm (10,12,16,32/20)	NR	NR

GENERAL NOTES

- Cable Percussive boring complete at 10.00m.
- Rotary Openhole drilling complete at 18.00m.
- Standpipe installed, slotted from 1.00m to 18.00m.

* Sealing blows only.

NOTES: All depths in metres, all diameters in millimetres, water strike rise time in minutes, hard strata time in hours

Form ARIAL COMBINED HEADER
 Version 3.01
 Revised 25/11/2002

Contract No.	F12741	Method	Cable Percussion & Rotary	Coordinates	-
Project	Rockingham Colliery	Drilling Rig	Dando/T30	Ground Level	-
Client	Mott MacDonald	Drillers	IM/DD	Orientation	Vertical
Consultant	Mott MacDonald	Logged by	SA	Date Started	12/02/2002
		Core Barrel	OH	Date Completed	12/02/2002
		Core Bit	3/4 Rockbit		

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling & coring	Blow Count			SPT type, N & depth	Installation	
					TCR	SCR	RCD			
MADE GROUND: Grey mottled yellowish brown gravelly clay. Gravel is angular to subangular fine to coarse of mudstone.				D1 0.50						
				D2 1.00 D3 1.00 D4 1.20-1.65				1.20 1.65 S20		
				D5 1.50						
				D6 2.00 D7 2.00						
				D8 3.00 D9 3.00						
				D10 4.00 D11 4.00						
				D12 5.00 D13 5.00 D14 5.00-5.45				5.00 5.45 S22		
				D15 6.00 D16 6.00						
				D17 7.00 D18 7.00						
				D19 8.00 D20 8.00						
				D21 9.00 D22 9.00 D23 9.00-9.25				9.00 9.25 S50/85mm		
		MADE GROUND: Grey angular to subangular fine to coarse gravel of mudstone.		9.20						

NOTES: All depths in metres, all diameters in millimetres.
See header sheet for details of boring, progress and water strikes. See legend sheet for key to symbols.

Form	ARIAL COMBINED LOG
Version	3.03
Revised	31/01/2003

Contract No.	F12741	Method	Cable Percussion & Rotary	Coordinates	-
Project	Rockingham Colliery				
Client	Mott MacDonald	Drilling Rig	Dando/T30	Ground Level	-
Consultant	Mott MacDonald	Drillers	IM/DD	Orientation	Vertical
		Logged by	SA	Date Started	12/02/2002
		Core Barrel	OH	Date Completed	12/02/2002
		Core Bit	3 3/4 Rockbit		

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling & coring	Blow Count			SPT type, N & depth	Installation
					TCR	SCR	ROD		
From 10.00m to 18.00m rotary openhole drilling. SANDSTONE. (Driller's description)		10.00							
Borehole complete at 18.00 m.		18.00							

NOTES: All depths in metres, all diameters in millimetres.
See header sheet for details of boring, progress and water strikes. See legend sheet for key to symbols.

Form	ARIAL COMBINED LOG
Version	3 03
Revised	31/01/2003

SUPPORTING FACTUAL DATA

SECTION B

**EXPLORATORY HOLE RECORDS AND
FIELD DATA**

TRIAL PIT RECORDS

Contract No.	F12741	Method	Machine Excavated	Coordinates	-
Project	Rockingham Colliery	Equipment	JCB 3CX	Ground Level	-
Client	Mott MacDonald	Logged by	SA	Date Started	11/02/2003
Consultant	Mott MacDonald			Date Completed	11/02/2003

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling	Remarks
TOPSOIL.		0.20			
MADE GROUND: Dark grey clayey angular to subangular fine to coarse gravel of mudstone with occasional angular cobbles and boulders.		0.80		D1 0.50	
MADE GROUND: Greyish brown clayey angular to subangular gravel of mudstone and sandstone.		1.50 1.80		D2 1.00 D3 1.00	
MADE GROUND: Dark reddish brown fine to medium sand and angular to subangular gravel of mudstone and brick.		1.85		D4 2.00	
MADE GROUND: Dark grey angular to subangular fine to medium gravel of burnt coal.		2.80		D5 3.00	
MADE GROUND: Light grey slightly sandy clay.		4.00		D6 4.00	
MADE GROUND: Friable light orangish brown slightly gravelly clay. Gravel is angular to subangular fine to coarse of mudstone. ---from 3.30m to 4.00m gravelly					
Trial pit complete at 4.00 m.					

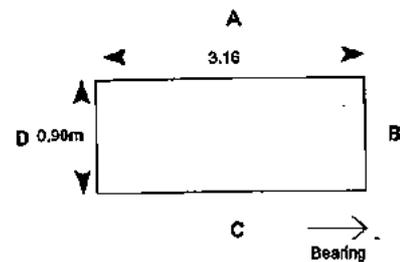
Stability All faces stable

Shoring None used

Groundwater Slight seepage at 1.50m

Remarks 1. Trial pit complete at 4.00m.

Sketch Plan of Trial Pit



Hand Vane Test Readings

Depth	HV Peak	HV Remoulded	Remarks

NOTES: All depths in metres, all soil strengths in KPa.
See legend sheet for key to symbols and abbreviations.
All bearings given relate to magnetic North

Form	ARIAL TP LOG
Version	3.02
Revised	23/12/2002

Contract No.	F12741	Method	Machine Excavated	Coordinates	-
Project	Rockingham Colliery	Equipment	JCB 3CX	Ground Level	-
Client	Mott MacDonald	Logged by	SA	Date Started	11/02/2003
Consultant	Mott MacDonald			Date Completed	11/02/2003

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling	Remarks
TOPSOIL.		0.20		D1 0.50	
MADE GROUND: Grey gravelly clay with occasional angular to subangular cobble size fragments. Gravel size fragments are angular to subangular of mudstone.		1.00		D2 1.00 D3 1.00	
MADE GROUND: Reddish brown angular to subangular fine to coarse gravel with occasional angular to subangular gravel of mudstone and brick.		2.50		D4 2.00 D5 2.50	
MADE GROUND: Brownish grey clayey angular to subangular fine to coarse gravel of mudstone.		4.20		D6 3.50 D7 4.20	

Trial pit complete at 4.20 m.					

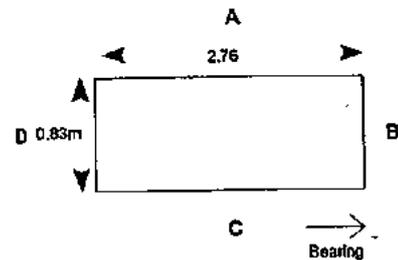
Stability All faces stable

Shoring No shoring used

Groundwater Seepage at 1.80m rising to 1.70m

Remarks
1. Trial pit complete at 4.20m.
2. Insufficient water to sample.

Sketch Plan of Trial Pit



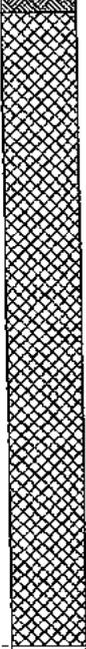
Hand Vane Test Readings

Depth	HV Peak	HV Remoulded	Remarks

NOTES: All depths in metres, all soil strengths in KPa.
See legend sheet for key to symbols and abbreviations.
All bearings given relate to magnetic North

Form	ARIAL TP LOG
Version	3.02
Revised	23/12/2002

Contract No.	F12741	Method	Machine Excavated	Coordinates	-
Project	Rockingham Colliery	Equipment	JCB 3CX	Ground Level	-
Client	Mott MacDonald	Logged by	SA	Date Started	11/02/2003
Consultant	Mott MacDonald			Date Completed	11/02/2003

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling		Remarks
				Depth	Interval	
TOPSOIL.		0.10				
MADE GROUND: Dark grey clayey angular to subangular fine to coarse gravel of mudstone with occasional angular cobbles and boulders of mudstone.				D1	0.50	
				D2	1.00	
				D3	1.00	
				D4	2.00	
				D5	3.00	
				D6	4.00	
Trial pit complete at 4.30 m.		4.30				

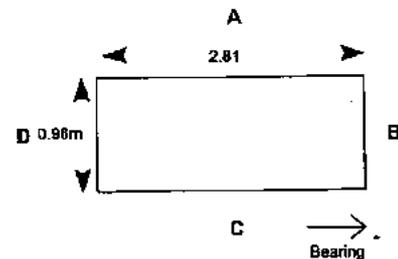
Stability All faces stable

Shoring None required

Groundwater Trial pit dry

Remarks 1. Trial pit complete at 4.30m.

Sketch Plan of Trial Pit



Hand Vane Test Readings

Depth	HV Peak	HV Remoulded	Remarks

NOTES: All depths in metres, all soil strengths in KPa.
See legend sheet for key to symbols and abbreviations.
All bearings given relate to magnetic North

Form	ARIAL TP LOG
Version	3 02
Revised	23/12/2002

Contract No.	F12741	Method	Machine Excavated	Coordinates	-
Project	Rockingham Colliery	Equipment	JCB 3CX	Ground Level	-
Client	Mott MacDonald	Logged by	SA	Date Started	11/02/2003
Consultant	Mott MacDonald			Date Completed	11/02/2003

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling		Remarks
TOPSOIL.		0.05				
MADE GROUND: Dark grey gravelly clay. Gravel is angular to subangular fine to medium of mudstone.				D1	0.50	
				D2	1.00	
			1.20	D3	1.00	
MADE GROUND: Grey clayey sandy angular to subangular fine to coarse gravel of mudstone with occasional angular cobbles and boulders of mudstone.				D4	2.00	
				D5	3.00	
			D6	4.00		
Trial pit complete at 4.10 m.		4.10				

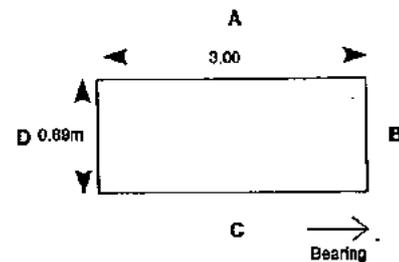
Stability All faces stable

Shoring None required

Groundwater None encountered

Remarks 1. Trial pit complete at 4.10m.

Sketch Plan of Trial Pit



Hand Vane Test Readings

Depth	HV Peak	HV Remoulded	Remarks

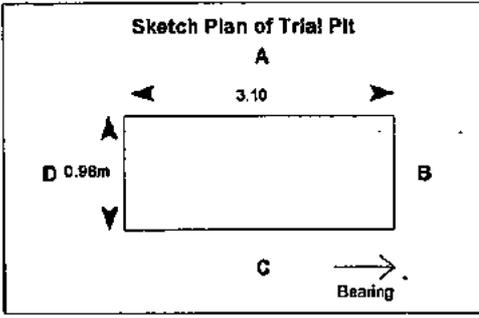
NOTES: All depths in metres, all soil strengths in KPa.
See legend sheet for key to symbols and abbreviations.
All bearings given relate to magnetic North

Form	ARIAL TP LOG
Version	3 02
Revised	23/12/2002

Contract No.	F12741	Method	Machine Excavated	Coordinates	-
Project	Rockingham Colliery	Equipment	JCB 3CX	Ground Level	-
Client	Mott MacDonald	Logged by	SA	Date Started	12/02/2003
Consultant	Mott MacDonald			Date Completed	12/02/2003

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling	Remarks
TOPSOIL.		0.05			
MADE GROUND: Dark grey gravelly clay. Gravel size fragments are angular to subangular fine to coarse of mudstone.				ES1 0.50	
				ES2 1.00 D3 1.00	
				ES4 2.00 ES5 2.00	
--from 2.40m occasional angular boulder size fragments				ES6 3.00	
				ES7 4.00	
Trial pit complete at 4.20 m.			4.20		

Stability	All faces similar
Shoring	None required
Groundwater	None encountered
Remarks	1. Trial pit complete at 4.20m.

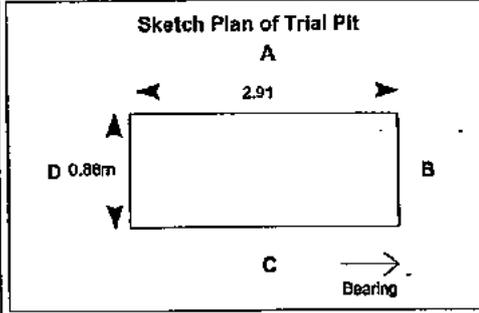


Hand Vane Test Readings			
Depth	HV Peak	HV Remoulded	Remarks

Contract No.	F12741	Method	Machine Excavated	Coordinates	-
Project	Rockingham Colliery				-
		Equipment	JCB 3CX	Ground Level	-
Client	Mott MacDonald			Date Started	12/02/2003
		Logged by	SA	Date Completed	12/02/2003
Consultant	Mott MacDonald				

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling		Remarks
				ES	DS	
TOPSOIL.		0.06 0.15				
MADE GROUND: Grey gravelly clay. Gravel size fragments are angular to subangular fine to coarse of mudstone.				ES1	0.50	
MADE GROUND: Dark reddish brown fine to medium sand angular to subangular fine to coarse gravel of burnt mudstone.		1.00		ES2 DS	1.00 1.00	
MADE GROUND: Bluish grey slightly clayey fine to medium sand and angular to subangular gravel of mudstone with occasional angular cobble and boulder size fragments.				ES4	2.00	
				ES5	3.00	
				ES6	4.00	
Trial pit complete at 4.30 m.		4.30				

Stability	All faces stable
Shoring	None required
Groundwater	None encountered
Remarks	1. Trial pit complete at 4.30m.



Hand Vane Test Readings			
Depth	HV Peak	HV Remoulded	Remarks

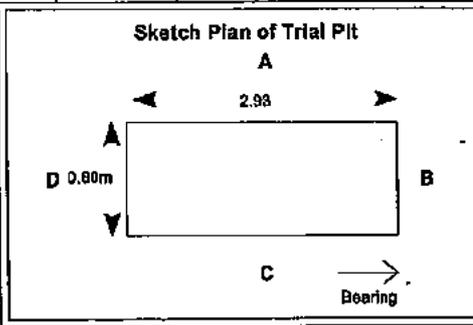
NOTES: All depths in metres, all soil strengths in KPa.
See legend sheet for key to symbols and abbreviations.
All bearings given relate to magnetic North

Form	ARRAL TP LOG
Version	3.02
Revised	23/12/2002

Contract No.	F12741	Method	Machine Excavated	Coordinates	-
Project	Rockingham Colliery	Equipment	JCB 3CX	Ground Level	-
Client	Mott MacDonald	Logged by	SA	Date Started	12/02/2003
Consultant	Mott MacDonald			Date Completed	12/02/2003

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling	Remarks	
TOPSOIL.		0.05				
		0.20				
MADE GROUND: Friable yellowish brown slightly sandy gravelly clay. Gravel size fragments are angular to subangular fine to coarse of sandstone.					ES1 0.50	
MADE GROUND: Bluish grey slightly sandy gravelly clay with occasional angular boulder size fragments. Gravel size fragments are angular to subangular of mudstone.			1.20		ES2 1.00 D3 1.00	
MADE GROUND: Dark grey slightly clayey fine to medium sand and angular to subangular fine to coarse gravel size fragments of mudstone.					ES4 2.00	
					ES5 3.00	
				ES6 4.00		
Trial pit complete at 4.30 m.		4.30				

Stability	All faces stable
Shoring	None required
Groundwater	None encountered
Remarks	1. Trial pit complete at 4.30m.



Hand Vane Test Readings			
Depth	HV Peak	HV Remoulded	Remarks

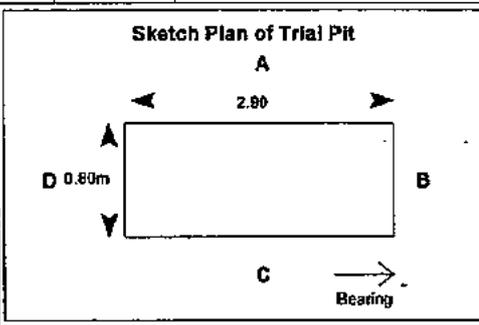
NOTES: All depths in metres, all soil strengths in KPa.
See legend sheet for key to symbols and abbreviations.
All bearings given relate to magnetic North

Form	ARIAL TP LOG
Version	3 02
Revised	28/12/2002

Contract No.	F12741	Method	Machine Excavated	Coordinates	-
Project	Rockingham Colliery	Equipment	JCB 3CX	Ground Level	-
Client	Mott MacDonald	Logged by	SA	Date Started	12/02/2003
Consultant	Mott MacDonald			Date Completed	12/02/2003

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling	Remarks
TOPSOIL.		0.05			
MADE GROUND: Grey slightly sandy gravelly clay. Gravel size fragments are angular to subangular fine to coarse of mudstone with occasional cobble size fragments.		ES1	0.50		
		ES2 D8	1.00 1.00		
MADE GROUND: Dark grey slightly clayey fine to medium sand and angular to subangular fine to coarse gravel size fragments of mudstone.		ES4	2.00		
		ES5	3.00		
		ES6	4.00		
Trial pit complete at 4.50 m.		4.50			

Stability	All faces stable
Shoring	None required
Groundwater	Strike at 1.40m rose to 1.35m
Remarks	1. Trial pit complete at 4.50m. 2. Insufficient water sample.



Hand Vane Test Readings			
Depth	HV Peak	HV Remoulded	Remarks

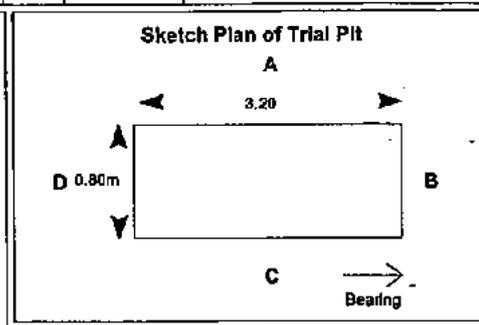
NOTES: All depths in metres, all soil strengths in KPa.
See legend sheet for key to symbols and abbreviations.
All bearings given relate to magnetic North

Form	ARIAL TP LOG
Version	3.02
Revised	23/12/2002

Contract No.	F12741	Method	Machine Excavated	Coordinates	-
Project	Rockingham Colliery	Equipment	JCB 3CX	Ground Level	-
Client	Mott MacDonald	Logged by	SA	Date Started	12/02/2003
Consultant	Mott MacDonald			Date Completed	12/02/2003

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling		Remarks
				Sample ID	Depth (m)	
TOPSOIL.		0.05				
MADE GROUND: Grey slightly sandy gravelly clay. Gravel size fragments are angular to subangular fine to coarse of mudstone with occasional angular cobble and boulder size fragments.		ES1	0.50			
		ES2	1.00			
		ES3	1.00			
MADE GROUND: Dark grey slightly sandy gravelly clay. Gravel size fragments are angular to subangular fine to medium of mudstone. Slight sulphuric odour.		ES4	2.00			
		ES5	3.00			
	ES6	4.00				
Trial pit complete at 4.30 m.		4.30				

Stability	All faces stable
Shoring	None required
Groundwater	None encountered
Remarks	1. Trial pit complete at 4.30m.



Hand Vane Test Readings			
Depth	HV Peak	HV Remoulded	Remarks

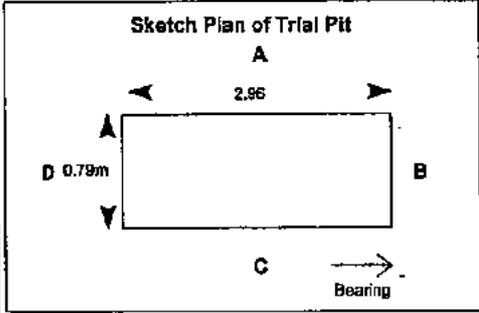
NOTES: All depths in metres, all soil strengths in KPa.
See legend sheet for key to symbols and abbreviations.
All bearings given relate to magnetic North

Form	ARIAL TP LOG
Version	3.02
Revised	23/12/2002

Contract No.	F12741	Method	Machine Excavated	Coordinates	-
Project	Rockingham Colliery	Equipment	JCB 3CX	Ground Level	-
Client	Mott MacDonald	Logged by	SA	Date Started	12/03/2002
Consultant	Mott MacDonald			Date Completed	12/03/2002

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling	Remarks
TOPSOIL.		0.05			
		0.15			
MADE GROUND: Friable yellowish brown slightly sandy gravelly clay. Gravel size fragments are angular to subangular fine to coarse of sandstone.		ES1	0.50		
MADE GROUND: Bluish grey slightly sandy gravelly clay with occasional boulder size fragments of mudstone. Gravel size fragments are angular to subangular fine to coarse of mudstone.		ES2 D3	1.00 1.00		
				D4	2.00
Trial pit complete at 2.40 m.		2.40			

Stability	All faces stable
Shoring	None required
Groundwater	None encountered
Remarks	1. Trial pit abandoned due to mudstone boulder obstruction. Pit moved 1m and redug. See TP10A.



Hand Vane Test Readings			
Depth	HV Peak	HV Remoulded	Remarks

Contract No.	F12741	Method	Machine Excavated	Coordinates	-
Project	Rockingham Colliery				-
		Equipment	JCB 3CX	Ground Level	-
Client	Mott MacDonald			Date Started	12/02/2003
		Logged by	SA	Date Completed	12/02/2003
Consultant	Mott MacDonald				

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling	Remarks
TOPSOIL.		0.05			
MADE GROUND: Friable yellowish brown slightly sandy gravelly clay. Gravel is angular to subangular fine to coarse of mudstone with occasional cobble size fragments.		0.20			
MADE GROUND: Bluish grey slightly sandy gravelly clay with occasional angular cobbles. Gravel size fragments are angular to subangular fine to coarse of mudstone.		1.80			
MADE GROUND: Dark grey clayey fine to medium sand and angular to subangular fine to coarse gravel size fragments of mudstone with occasional clay pockets (100-1000mm).				ES5 3.00	
				ES6 4.00	
Trial pit complete at 4.30 m.		4.30			

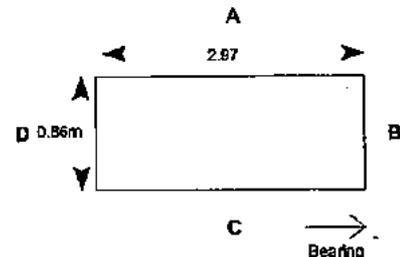
Stability All faces stable

Shoring None required

Groundwater None encountered

Remarks
1. Trial pit complete at 4.30m.
2. Refer to TP10

Sketch Plan of Trial Pit



Hand Vane Test Readings

Depth	HV Peak	HV Remoulded	Remarks

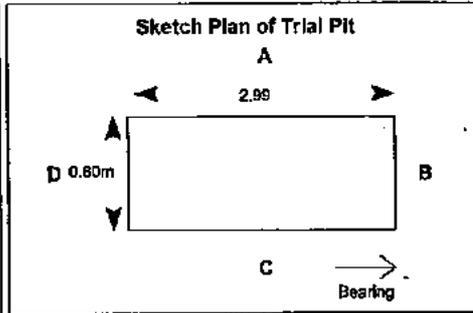
NOTES: All depths in metres, all soil strengths in KPa.
See legend sheet for key to symbols and abbreviations.
All bearings given relate to magnetic North

Form	ARIAL TP LOG
Version	3.02
Revised	23/12/2002

Contract No.	F12741	Method	Machine Excavated	Coordinates	-
Project	Rockingham Colliery	Equipment	JCB 3CX	Ground Level	-
Client	Mott MacDonald	Logged by	SA	Date Started	13/02/2003
Consultant	Mott MacDonald			Date Completed	13/02/2003

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling	Remarks
MADE GROUND: Light orangish brown slightly gravelly slightly gravelly clay. Gravel size fragments are angular to subangular of mudstone.		0.20		ES1 0.50	
MADE GROUND: Bluish grey fine to medium sand and angular to subangular fine to coarse gravel size fragments with occasional angular cobble and boulder size fragments.		1.00		ES2 1.00 D3 1.00	
MADE GROUND: Dark grey slightly sandy slightly gravelly clay. Gravel size fragments are angular to subangular fine to coarse of mudstone.		1.20			
MADE GROUND: Dark grey fine to medium sand and angular to subangular fine to coarse gravel size fragments of mudstone, sandstone and coal.				ES4 2.00	
				ES5 3.00	
				ES6 4.00	
Trial pit complete at 4.50 m.		4.50			

Stability	All faces stable
Shoring	None required
Groundwater	None encountered
Remarks	1. Trial pit complete at 4.50m.



Hand Vane Test Readings			
Depth	HV Peak	HV Remoulded	Remarks

NOTES: All depths in metres, all soil strengths in KPa.
See legend sheet for key to symbols and abbreviations.
All bearings given relate to magnetic North

Form	AFR/AL TP LOG
Version	3.02
Revised	23/12/2002

Contract No.	F12741	Method	Machine Excavated	Coordinates	-
Project	Rockingham Colliery				-
		Equipment	JCB 3CX	Ground Level	-
Client	Mott MacDonald			Date Started	13/02/2003
		Logged by	SA	Date Completed	13/02/2003
Consultant	Mott MacDonald				

Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling	Remarks
TOPSOIL.		0.05			
MADE GROUND: Yellowish brown slightly sandy gravelly clay. Gravel size fragments are angular to subangular fine to coarse of sandstone.				ES1 0.50	
		1.00		ES2 1.00 D3 1.00	
MADE GROUND: Dark grey slightly clayey fine to medium sand and angular to subangular fine to coarse gravel size fragments of mudstone.				ES4 2.00	
				ES5 3.00	
				ES6 4.00	
Trial pit complete at 4.50 m.		4.50			

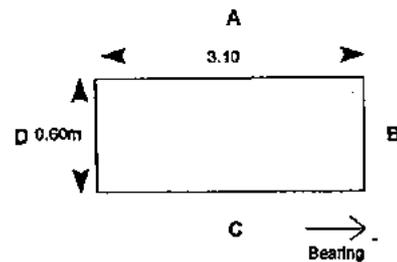
Stability All faces stable

Shoring None required

Groundwater None encountered

Remarks 1. Trial pit complete at 4.50m.

Sketch Plan of Trial Pit



Hand Vane Test Readings

Depth	HV Peak	HV Remoulded	Remarks

NOTES: All depths in metres, all soil strengths in KPa.
See legend sheet for key to symbols and abbreviations.
All bearings given relate to magnetic North

Form	ARIAL TP LOG
Version	3.02
Revised	23/12/2002

Contract No.	F12741	Method	Machine Excavated	Coordinates	-
Project	Rockingham Colliery				
		Equipment	JCB 3CX	Ground Level	-
Client	Mott MacDonald			Date Started	13/02/2003
		Logged by	SA	Date Completed	13/02/2003
Consultant	Mott MacDonald				

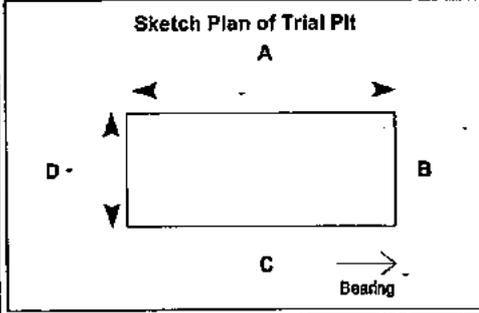
Description of Strata	Legend	Depth Below G.L.	Datum Level	Sampling		Remarks
				Sample ID	Depth (m)	
TOPSOIL.		0.05				
MADE GROUND: Grey slightly sandy gravelly clay with occasional angular cobbles and boulder size fragments. Gravel size fragments are angular to subangular fine to coarse of mudstone.		ES1	0.50			
		ES2 D3	1.00			
		ES4	2.00			
		ES5	3.00			
		ES6	4.00			
Trial pit complete at 4.50 m.		4.50				

Stability

Shoring

Groundwater

Remarks



Hand Vane Test Readings

Depth	HV Peak	HV Remoulded	Remarks

APPENDIX F – GROUND GAS & WATER LEVEL MONITORING

SUPPORTING FACTUAL DATA

SECTION B

**EXPLORATORY HOLE RECORDS AND
FIELD DATA**

GAS MONITORING READINGS

TABLE 2: RESULTS OF INSTALLATION GAS MONITORING

Hole I.D	Well Type	Date	Time	Meas Gas State	Methane CH ₄		CO ₂ %v/v	O ₂ %v/v	Atmos. Press. mb	H ₂ S ppm	Water Level m.b.g.l	Gas Flow l/hr
					LEL %	Total %v/v						
BH01	G.W											
BH02	G.W											
BH03	G.W	02/20/03		S.S	N.D	N.D	N.D	20.5	1009	N.R	3.9	N.R
BH04	G.W	02/20/03		S.S	N.D	N.D	N.D	20.4	1008	N.R	5.72	N.R
BH05	G.W											
BH06	G.W	02/20/03		S.S	N.D	N.D	N.D	20.6	1011	N.R	DRY	N.R
BH07	G.W	02/20/03		S.S	N.D	N.D	N.D	20.5	1010	N.R	DRY	N.R
BH08	G.W	02/20/03		S.S	N.D	N.D	N.D	20.3	1011	N.R	DRY	N.R
BH09	G.W	02/20/03		S.S	N.D	N.D	N.D	20.3	1011	N.R	9.14	N.R
BH10	G.W	02/20/03		S.S	N.D	N.D	N.D	20.4	1010	N.R	12.3	N.R
BH11A	G.W	02/20/03		S.S	N.D	N.D	N.D	20.4	1010	N.R	8.6	N.R
BH12	G.W	02/20/03		S.S	N.D	N.D	N.D	20.5	1008	N.R	DRY	N.R

COMMENTS: V1=Valve 1, V2=Valve 2 (suspended pipe). N.D=Not Detected.

NOTES:

GAS ANALYSER: Geotech Instrum.GA94 RECORDED BY: S. Amos
 TYPE OF WELL: O.B=Open Borehole/ Pit, G.W=Gas Well, S.P=Standpipe, S=Spike Hole.
 MEASURED GAS STATE: P=Peak Value, S.S=Steady State Value, C.F= Circulated Flow Value
 FOR MULTIPLE GAS VALVES: Record number or type of valve in the ' Well Type ' column.

Form No
GM 01

TABLE 2: RESULTS OF INSTALLATION GAS MONITORING

Hole I.D	Well Type	Date	Time	Meas Gas State	Methane CH ₄		CO ₂ %v/v	O ₂ %v/v	Atmos. Press. mb	H ₂ S ppm	Water Level m.b.g.l	Gas Flow l/hr
					LEL %	Total %v/v						
BH01	G.W	03/25/03		S.S	N.D	N.D	1.7	18.3	1007	N.R	2.93	N.R
BH02	G.W	03/25/03		S.S	N.D	N.D	7.5	10.3	1006	N.R	N.R	N.R
BH03	G.W	03/25/03		S.S	N.D	N.D	4.8	13.2	1008	N.R	DRY	N.R
BH04	G.W	03/25/03		S.S	N.D	N.D	3.4	15.8	1007	N.R	5.85	N.R
BH05	G.W	03/25/03		S.S	N.D	N.D	4.6	13.9	1008	N.R	N.R	N.R
BH06	G.W	03/25/03		S.S	N.D	N.D	1.9	18.2	1010	N.R	N.R	N.R
BH07	G.W	03/25/03		S.S	N.D	N.D	N.R	N.R	N.R	N.R	N.R	N.R
BH08	G.W	03/25/03		S.S	N.D	N.D	N.D	20.2	1007	N.R	7.87	N.R
BH09	G.W	03/25/03		S.S	N.D	N.D	N.D	20.2	1009	N.R	8.84	N.R
BH10	G.W	03/25/03		S.S	N.D	N.D	4.6	6.2	1008	N.R	DRY	N.R
BH11A	G.W	03/25/03		S.S	N.D	N.D	5.9	9.8	1010	N.R	DRY	N.R
BH12	G.W	03/25/03		S.S	N.D	N.D	8.8	4.7	1009	N.R	16.12	N.R

COMMENTS: V1=Valve 1, V2=Valve 2 (suspended pipe). N.D=Not Detected.

NOTES:

GAS ANALYSER: Geotech Instrum.GA94 RECORDED BY: SAH
 TYPE OF WELL: O.B=Open Borehole/ Pit, G.W=Gas Well, S.P=Standpipe, S=Spike Hole.
 MEASURED GAS STATE: P=Peak Value, S.S=Steady State Value, C.F= Circulated Flow Value
 FOR MULTIPLE GAS VALVES: Record number or type of valve in the ' Well Type ' column.
 WATER SAMPLES: BH01, BH04, BH08, BH09.

Form No
GM 01

TABLE 2: RESULTS OF INSTALLATION GAS MONITORING

Hole I.D	Well Type	Date	Time	Meas Gas State	Methane CH ₄		CO ₂ %v/v	O ₂ %v/v	Atmos. Press. mb	H ₂ S ppm	Water Level m.b.g.l	Gas Flow l/hr
					LEL %	Total %v/v						
BH01	G.W	03/28/03		S.S	N.D	N.D	1.0	18.3	1008	N.R	3.18	N.R
BH02	G.W	03/28/03		S.S	N.D	N.D	7.9	9.7	1007	N.R	3.85	N.R
BH03	G.W	03/28/03		S.S	N.D	N.D	ND	19.5	1008	N.R	3.36	N.R
BH04	G.W	03/28/03		S.S	N.D	N.D	1.4	18.7	1008	N.R	5.82	N.R
BH05	G.W	03/28/03		S.S	N.D	N.D	ND	19.8	1009	N.R	N.R	N.R
BH06	G.W	03/28/03		S.S	N.D	N.D	4.1	15.3	1008	N.R	5.65	N.R
BH07	G.W	03/28/03		S.S	N.D	N.D	ND	19.8	1009	N.R	10.32	N.R
BH08	G.W	03/28/03		S.S	N.D	N.D	0.1	17.6	1009	N.R	8.15	N.R
BH09	G.W	03/28/03		S.S	N.D	N.D	0.1	19.5	1008	N.R	8.75	N.R
BH10	G.W	03/28/03		S.S	N.D	N.D	6.8	1.1	1008	N.R	12.64	N.R
BH11A	G.W	03/28/03		S.S	N.D	N.D	12.8	1.9	1009	N.R	DRY	N.R
BH12	G.W	03/28/03		S.S	N.D	N.D	10.8	1.0	1008	N.R	16.48	N.R

COMMENTS: V1=Valve 1, V2=Valve 2 (suspended pipe). N.D=Not Detected.

NOTES:
 GAS ANALYSER: Geotech Instrum.GA94 RECORDED BY: PAR
 TYPE OF WELL: O.B=Open Borehole/ Pit, G.W=Gas Well, S.P=Standpipe, S=Spike Hole.
 MEASURED GAS STATE: P=Peak Value, S.S=Steady State Value, C.F= Circulated Flow Value
 FOR MULTIPLE GAS VALVES: Record number or type of valve in the ' Well Type ' column.

Form No
GM 01

APPENDIX G – CHEMICAL RESULTS

Appendix I

Results of Chemical Testing by ALcontrol Geochem

ALcontrol Geochem Analytical Services

Table Of Results

Preliminary

Validated

Job Number: 03/02069/02/01 **Sample Type:** SOIL
Client: Mott MacDonald UK **Location:** Rockingham
Date of Receipt: 19/02/03 **Client Contact:** Dan Adams
 (of first sample) **Client Ref. No.:** F12741

Sample Number	Sample Identity	Depth (m)	UKAS Accredited		Arsenic		Boron (Water Soluble)		Cadmium		Chromium		Copper		Mercury		Nickel		Lead		Selenium		Total Sulphate by ICP		Vanadium		Zinc		Solvent Extractable Matter		PAH Screen On Leachate		Total PAH Screen by TLC	
			mg/kg GC-EZ <10	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg Soxtec <10	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1	mg/kg ICP <1
12	BH6	10.00	-	36	2	<1	7	48	<1	<1	25	25	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	5672	13	44	1431	<1	<1	<1	<1	<1	<1		
19	BH10	4.00	-	<1	<1	<1	18	20	<1	<1	8	8	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	126	18	93	295	<1	<1	<1	<1	<1	<1		
23	BH11	2.00	-	7	1	<1	14	35	<1	<1	13	13	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	893	14	70	536	<1	<1	<1	<1	<1	<1		
37	BH11A	12.00	-	10	2	<1	11	43	<1	<1	31	21	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2778	14	62	2657	<1	<1	<1	<1	<1	<1		
48	BH12	9.00	-	<1	<1	<1	18	26	<1	<1	32	11	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	747	16	93	302	<1	<1	<1	<1	<1	<1		
49	TP01	0.50	-	<1	1	<1	17	30	<1	<1	34	11	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	797	15	90	262	-	-	-	-	-	-		
50	TP01	1.00	<10	<1	<1	<1	13	18	<1	<1	22	12	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	491	13	80	307	<1	<1	<1	<1	<1	<1		
52	TP01	2.00	<10	5	<1	<1	6	45	<1	<1	14	18	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	911	12	30	228	-	-	-	-	-	-		
53	TP01	3.50	-	12	<1	<1	9	25	<1	<1	21	15	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	3509	10	58	236	-	-	-	-	-	-		
54	TP02	0.50	<10	2	2	<1	16	28	<1	<1	34	12	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1903	14	83	354	-	-	-	-	-	-		
55	TP02	1.00	<10	2	<1	<1	19	25	<1	<1	28	9	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1647	20	70	296	<1	<1	<1	<1	<1	<1		
56	TP02	2.00	-	2	1	<1	18	16	<1	<1	23	8	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	4537	23	54	208	-	-	-	-	-	-		
58	TP02	3.50	-	<1	<1	<1	16	22	<1	<1	29	11	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1078	16	88	182	-	-	-	-	-	-		
60	TP03	0.50	-	11	1	<1	16	29	<1	<1	37	11	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	490	16	101	884	<1	<1	<1	<1	<1	<1		
62	TP03	2.00	-	<1	<1	<1	16	27	<1	<1	35	11	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	663	14	94	1765	-	-	-	-	-	-		
64	TP03	4.00	-	4	<1	<1	15	24	<1	<1	31	12	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	286	13	92	274	-	-	-	-	-	-		
66	TP04	1.00	-	<1	<1	<1	16	26	<1	<1	30	9	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	461	13	84	250	-	-	-	-	-	-		
67	TP04	2.00	-	<1	<1	<1	16	21	<1	<1	30	9	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	285	14	79	357	<1	<1	<1	<1	<1	<1		
68	TP04	3.00	-	<1	1	<1	15	23	<1	<1	29	11	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	516	14	89	245	-	-	-	-	-	-		
70	TP05	0.50	-	<1	<1	<1	16	27	<1	<1	34	11	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	703	15	94	349	-	-	-	-	-	-		

Note: METHOD DETECTION LIMITS ARE NOT ALWAYS ACHIEVABLE DUE TO VARIOUS CIRCUMSTANCES BEYOND OUR CONTROL. **NDP = NO DETERMINATION POSSIBLE**
Checked By: David O'Hare **NFP = NO FIBRES PRESENT**

ALcontrol Geochem Analytical Services

Table Of Results

Preliminary

Validated

Job Number: 03/02069/02/01

Sample Type: SOIL

Client: Mott MacDonald UK

Location: Rockingham

Date of Receipt: 19/02/03
(of first sample)

Client Contact: Dan Adams

Client Ref. No.: F12741

Sample Number	Sample Identity	Depth (m)	UKAS Accredited		Arsenic		Boron (Water Soluble)		Cadmium		Chromium		Copper		Mercury		Nickel		Lead		Selenium		Total Sulphate by ICP		Vanadium		Zinc		Solvent Extractable Matter		PAH Screen On Leachate		Total PAH Screen by TLC	
			mg/kg GC-EZ	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP	mg/kg ICP
102	TP11	2.00	-	22	3	<1	7	43	<1	<1	15	18	<1	43	<1	<1	15	18	<1	15	18	<1	<1	3575	14	55	1138	-	245					
103	TP11	3.00	-	22	3	<1	7	33	<1	<1	20	15	<1	33	<1	<1	20	15	<1	20	15	<1	4421	9	41	821	-	221						
105	TP12	0.50	-	<1	1	<1	16	12	<1	<1	15	5	<1	12	<1	<1	15	5	<1	15	5	<1	558	17	67	26	<1	<10						
107	TP12	2.00	-	<1	4	<1	16	29	<1	<1	34	12	<1	29	<1	<1	34	12	<1	34	12	<1	963	14	56	52	-	<10						
109	TP22	4.00	-	<1	1	<1	14	27	<1	<1	31	17	<1	27	<1	<1	31	17	<1	31	17	<1	905	13	82	229	-	26						
111	TP13	1.00	-	19	2	<1	5	49	<1	<1	22	16	<1	49	<1	<1	22	16	<1	22	16	<1	702	11	27	1300	-	200						
112	TP13	2.00	-	7	2	<1	7	41	<1	<1	26	15	<1	41	<1	<1	26	15	<1	26	15	<1	725	13	45	1176	<1	221						
113	TP13	3.00	-	<1	2	<1	12	29	<1	<1	35	16	<1	29	<1	<1	35	16	<1	35	16	<1	1127	13	45	1176	<1	<10						
116	TP14	1.00	-	<1	2	<1	16	30	<1	<1	35	11	<1	30	<1	<1	35	11	<1	35	11	<1	1176	14	89	343	-	32						
118	TP14	3.00	-	<1	1	<1	10	25	<1	<1	28	28	<1	25	<1	<1	28	28	<1	28	28	<1	908	23	72	120	-	11						
119	TP14	4.00	-	<1	2	<1	12	33	<1	<1	31	12	<1	33	<1	<1	31	12	<1	31	12	<1	1215	17	82	311	<1	46						
125	BH1	3.00	-	6	<1	<1	21	27	<1	<1	44	20	<1	27	<1	<1	44	20	<1	44	20	<1	403	17	108	844	<1	<10						
132	BH2	4.00	-	5	<1	<1	19	27	<1	<1	40	16	<1	27	<1	<1	40	16	<1	40	16	<1	843	15	109	565	<1	47						
135	BH3	1.50	-	<1	4	<1	18	21	<1	<1	32	10	<1	21	<1	<1	32	10	<1	32	10	<1	718	19	78	581	<1	227						
146	BH4	7.00	-	4	<1	<1	17	15	<1	<1	24	11	<1	15	<1	<1	24	11	<1	24	11	<1	693	12	77	581	<1	69						
151	BH5	3.00	-	2	<1	<1	17	24	<1	<1	32	12	<1	24	<1	<1	32	12	<1	32	12	<1	637	13	80	480	<1	38						
164	BH7	11.00	-	35	2	<1	8	49	<1	<1	21	23	<1	49	<1	<1	21	23	<1	21	23	<1	13440	18	40	2392	<1	530						
171	BH8	5.00	-	37	2	<1	12	55	<1	<1	34	24	<1	55	<1	<1	34	24	<1	34	24	<1	5085	21	57	1645	<1	638						
178	BH8	12.00	-	39	2	<1	10	61	<1	<1	35	23	<1	61	<1	<1	35	23	<1	35	23	<1	2530	20	55	2074	<1	553						
190	BH9	10.00	-	40	2	<1	8	62	<1	<1	28	29	<1	62	<1	<1	28	29	<1	28	29	<1	11820	18	69	2631	<1	543						

Note: METHOD DETECTION LIMITS ARE NOT ALWAYS ACHIEVABLE DUE TO VARIOUS CIRCUMSTANCES BEYOND OUR CONTROL

NDP = NO DETERMINATION POSSIBLE

Checked By: David O'Hare

NFP = NO FIBRES PRESENT

ALcontrol Geochem Analytical Services

Table Of Results

Preliminary
 Validated

Job Number: 03/02069/02/01

Client: Mott MacDonald UK

Date of Receipt: 19/02/03
 (of first sample)

Sample Type: SOIL

Location: Rockingham

Client Contact: Dan Adams

Client Ref. No.: F12741

UKAS Accredited		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Detection Method	GC-EZ	ICP	TLC																
Method Detection Limit	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10
Sample Identity																			
Depth (m)																			
Sample Number																			
	TPH Screen C8-40 by GC-EZ Flash																		
	Arsenic																		
	Boron (Water Soluble)																		
	Cadmium																		
	Chromium																		
	Copper																		
	Mercury																		
	Nickel																		
	Lead																		
	Selenium																		
	Total Sulphate by ICP																		
	Vanadium																		
	Zinc																		
	Solvent Extractable Matter																		
	PAH Screen On Leachate																		
	Total PAH Screen by TLC																		

Note: METHOD DETECTION LIMITS ARE NOT ALWAYS ACHIEVABLE DUE TO VARIOUS CIRCUMSTANCES BEYOND OUR CONTROL

Checked By _____ David O'Hare

NDP = NO DETERMINATION POSSIBLE
 NFP = NO FIBRES PRESENT

ALcontrol Geochem Analytical Services

Table Of Results

Preliminary
 Validated

Job Number: 03/02069/02/01 **Sample Type:** SOIL
Client: Mott MacDonald UK **Location:** Rockingham
Date of Receipt: 19/02/03 **Client Contact:** Dan Adams
(of first sample) **Client Ref. No.:** F12741

Sample Number	Sample Identity	Depth (m)	UKAS Accredited		mg/kg		mg/l		mg/kg		mg/l										
			Units	Method	Spectro																
72	TP05	1.00	<5	<0.3	-	-	-	-	<0.01	<0.05	<0.01	<0.05	<0.01	<1.00	<100	<1	<1	<1	<1	<1	<1.0
73	TP05	2.00	<5	<0.3	<0.03	<0.03	39	<0.05	<0.01	<0.05	<0.01	6.87	7.05	-	-	<1	<1	<1	<1	190	
75	TP05	4.00	<5	<0.3	-	-	-	-	<0.01	<0.05	<0.01	-	7.24	-	-	-	-	-	-	-	-
76	TP06	0.50	<5	<0.3	<0.03	<0.03	145	<0.05	<0.01	<0.05	<0.01	6.38	6.87	140	<1	<1	<1	<1	<1	179	
77	TP06	1.00	<5	<0.3	-	-	-	-	<0.01	<0.05	<0.01	-	7.31	244	-	-	-	-	-	-	-
78	TP06	2.00	<5	<0.3	-	-	-	-	<0.01	<0.05	<0.01	-	7.35	-	-	-	-	-	-	-	-
79	TP06	3.00	<5	<0.3	-	-	-	-	<0.01	<0.05	<0.01	-	7.63	-	-	-	-	-	-	-	-
81	TP07	0.50	<5	<0.3	-	-	-	-	<0.01	<0.05	<0.01	-	7.01	-	-	-	-	-	-	-	-
83	TP07	2.00	<5	<0.3	<0.03	<0.03	51	<0.05	<0.01	<0.05	<0.01	7.30	8.25	-	-	1	<1	<1	<1	179	
85	TP07	4.00	<5	<0.3	-	-	-	-	<0.01	<0.05	<0.01	-	7.90	-	-	-	-	-	-	-	-
87	TP08	1.00	<5	<0.3	-	-	-	-	<0.01	<0.05	<0.01	-	7.65	-	-	-	-	-	-	-	-
88	TP08	2.00	<5	<0.3	-	-	-	-	0.06	<0.05	0.06	-	7.18	-	-	-	-	-	-	-	-
89	TP08	3.00	<5	<0.3	<0.03	<0.03	24	<0.05	0.04	<0.01	<0.01	7.29	7.79	-	-	<1	<1	<1	<1	184	
91	TP09	0.50	<5	<0.3	<0.03	<0.03	65	<0.05	0.04	<0.01	<0.01	6.86	7.28	-	-	<1	<1	<1	<1	178	
92	TP09	1.00	<5	<0.3	-	-	-	-	<0.01	<0.05	<0.01	-	7.14	-	-	-	-	-	-	-	-
94	TP09	4.00	101	<0.3	-	-	-	-	<0.01	<0.05	<0.01	-	7.56	-	-	-	-	-	-	-	-
95	TP10	0.50	39	<0.3	-	-	-	-	<0.01	<0.05	<0.01	-	5.18	-	-	-	-	-	-	-	-
97	TP10	2.00	<5	<0.3	-	-	-	-	<0.01	<0.05	<0.01	-	7.13	-	-	-	-	-	-	-	-
99	TP10A	4.00	<5	<0.3	<0.03	<0.03	53	<0.05	0.02	<0.01	<0.01	6.93	7.86	-	-	<1	<1	<1	<1	183	
101	TP11	1.00	11	<0.3	<0.03	<0.03	115	<0.05	0.01	<0.01	<0.01	6.74	6.91	-	-	<1	<1	<1	<1	187	

Note: METHOD DETECTION LIMITS ARE NOT ALWAYS ACHIEVABLE DUE TO VARIOUS CIRCUMSTANCES BEYOND OUR CONTROL

Checked By _____

David O'Hare

NDP = NO DETERMINATION POSSIBLE

NFP = NO FIBRES PRESENT

ALcontrol Geochem Analytical Services

Table Of Results

Preliminary
 Validated

Job Number: 03/02069/02/01 **Sample Type:** SOIL
Client: Mott MacDonald UK **Location:** Rockingham
Date of Receipt: 19/02/03 **Client Contact:** Dan Adams
(of first sample) **Client Ref. No.:** F12741

Sample Number	Sample Identity	Depth (m)	UKAS Accredited		ug/l		ug/l		ug/l		ug/l		ug/l		ug/l		ug/l		
			ICP MS	<0.4	ICP MS	<1	ICP MS	<1	ICP MS	<1	ICP MS	<1	ICP MS						
12	BH6	10.00	0.5	<1	3	3	5	<1	63	<1	<1	1062	<1	<1	<1	<1	<1	<1	<1
19	BH10	4.00	<0.4	<1	9	2	14	<1	<1	<1	<1	84	<1	<1	<1	<1	<1	<1	<1
23	BH11	2.00	<0.4	<1	3	<1	<1	<1	<1	<1	<1	52	<1	<1	<1	<1	<1	<1	<1
37	BH11A	12.00	<0.4	<1	3	3	<1	<1	1	<1	1	51	<1	<1	<1	<1	<1	<1	<1
48	BH12	9.00	<0.4	<1	3	<1	<1	<1	30	<1	<1	41	<1	<1	<1	<1	<1	<1	<1
50	TP01	1.00	<0.4	<1	3	<1	<1	<1	41	<1	<1	51	<1	<1	<1	<1	<1	<1	<1
55	TP02	1.00	<0.4	<1	3	<1	<1	<1	51	<1	<1	51	<1	<1	<1	<1	<1	<1	<1
60	TP03	0.50	0.5	<1	4	<1	<1	<1	2	<1	2	51	<1	<1	<1	<1	<1	<1	<1
67	TP04	2.00	<0.4	<1	9	3	13	<1	113	<1	1	113	<1	<1	<1	<1	<1	<1	<1
73	TP05	2.00	<0.4	<1	8	4	3	<1	91	<1	<1	91	<1	<1	<1	<1	<1	<1	<1
76	TP06	0.50	<0.4	<1	4	1	2	<1	96	<1	<1	96	<1	<1	<1	<1	<1	<1	<1
83	TP07	2.00	<0.4	<1	5	<1	2	<1	32	<1	1	32	<1	<1	<1	<1	<1	<1	<1
89	TP08	3.00	<0.4	<1	4	<1	<1	<1	57	<1	1	57	<1	<1	<1	<1	<1	<1	<1
91	TP09	0.50	<0.4	<1	4	2	2	<1	77	<1	<1	77	<1	<1	<1	<1	<1	<1	<1
99	TP10A	4.00	<0.4	<1	5	<1	<1	<1	78	<1	<1	78	<1	<1	<1	<1	<1	<1	<1
101	TP11	1.00	<0.4	<1	4	3	1	<1	125	<1	<1	125	<1	<1	<1	<1	<1	<1	<1
105	TP12	0.50	<0.4	<1	5	<1	<1	<1	113	<1	1	113	<1	<1	<1	<1	<1	<1	<1
112	TP13	2.00	<0.4	<1	4	<1	<1	<1	61	<1	2	61	<1	<1	<1	<1	<1	<1	<1
119	TP14	4.00	<0.4	<1	3	1	<1	<1	47	<1	<1	47	<1	<1	<1	<1	<1	<1	<1
125	BH1	3.00	3.5	14	6	49	2	4	537	1	1	537	1	1	1	1	1	1	1

Notes: METHOD DETECTION LIMITS ARE NOT ALWAYS ACHIEVABLE DUE TO VARIOUS CIRCUMSTANCES BEYOND OUR CONTROL.
NDP = NO DETERMINATION POSSIBLE
NFP = NO FIBRES PRESENT
 Checked By: David O'Hare

ALcontrol Geochem Analytical Services

Table Of Results

Preliminary
 Validated

Job Number: 03/02069/02/01 **Sample Type:** WATER
Client: Moti MacDonald UK **Location:** Rockingham
Date of Receipt: 19/02/03 **Client Contact:** Dan Adams
(of first sample) **Client Ref. No.:** F12741

UKAS Accredited	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Detection Method	SPECTRO	SPECTRO	SPECTRO	SPECTRO	Colour	CVAAS	Grav	HPLC	HPLC	HPLC	ICP MS					
Method Detection Limit	<1	<10	<0.05	<3	<0.2	<0.05	<1	<0.05	<0.05	<0.01	<0.025	<1.00	<1	<10	<0.4	<1
Sample Number	120															
Sample Identity	TP13															
Depth (m)	3.50															
Total PAH Screen by TLC	1	59														
Chloride		14														
COD On Unfiltered Sample		<0.1														
Sulphide In Water		541														
Sulphate (soluble)		<0.2														
Ammoniacal Nitrogen as NH4-N		<0.05														
Mercury Low Dutch Target AA		2														
Solvent Ext. Matter Water		<0.05														
Free sulphur Water		<0.05														
Total Phenols HPLC		1.670														
Electrical Conductivity		<1														
pH Value In Water		7.53														
Arsenic by ICP-MS		<1														
Boron by ICP-MS		<10														
Cadmium by ICP-MS		1.5														
Chromium by ICP-MS		<1														

Note: METHOD DETECTION LIMITS ARE NOT ALWAYS ACHIEVABLE DUE TO VARIOUS CIRCUMSTANCES BEYOND OUR CONTROL
NDP = NO DETERMINATION POSSIBLE
NFP = NO FIBRES PRESENT
 Checked By: David O'Hare

APPENDIX H – RISK ASSESSMENT METHODOLOGY

Contaminant Linkage Assessment & Terms

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Table 6.3 Classification of consequence

Classification	Definition	Examples
Severe	Short-term (acute) risk to human health likely to result in “significant harm” as defined by the Environment Protection Act 1990, Part 11A. Short-term risk of pollution (note: Water Resources Act contains no scope for considering significance of pollution) of sensitive water resource. Catastrophic damage to buildings/property. A short-term risk to a particular ecosystem, or organism forming part of such ecosystem (note: the definitions of ecological systems within the Draft Circular on Contaminated Land, DETR, 2000).	High concentrations of cyanide on the surface of an informal recreation area. Major spillage of contaminants from site into controlled water. Explosion, causing building collapse (can also equate to a short-term human health risk if buildings are occupied).
Medium	Chronic damage to Human Health (“significant harm” as defined in DETR, 2000). Pollution of sensitive water resources (note: Water Resources Act contains no scope for considering significance of pollution). A significant change in a particular ecosystem, or organism forming part of such ecosystem (note: the definitions of ecological systems within Draft Circular on Contaminated Land, DETR, 2000).	Concentrations of a contaminant from site exceed the generic or site-specific assessment criteria. Leaching of contaminants from a site to a major or minor aquifer. Death of a species within a designated nature reserve.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services (“significant harm” as defined in the Draft Circular on Contaminated Land, DETR, 2000). Damage to sensitive buildings/structures/services or the environment.	Pollution of non-classified groundwater. Damage to building rendering it unsafe to occupy (e.g. foundation damage resulting in instability).
Minor	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve. Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc.) Easily reparable effects of damage to buildings, structures and services.	The presence of contaminants at such concentrations that protective equipment is required during site works. The loss of plants in a landscaping scheme. Discoloration of concrete.

Table 6.4 Classification of probability

Classification	Definition
High Likelihood	There is a pollution linkage and an event that appears both very likely in the short term and almost inevitable over the long term or there is evidence at the receptor of harm or pollution.
Likely	There is a pollution linkage and all the elements are present and in the right place, which means that it is probably that an event will occur Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.
Low likelihood	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term.
Unlikely	There is pollution linkage but circumstances are such that it is improbable that an event would occur even in the long term.

Table 6.5 Comparison of consequence against probability

		Consequence			
		Severe	Medium	Mild	Minor
Probability	High likelihood	Very high risk	High risk	Moderate risk	Moderate/ low risk
	Likely	High risk	Moderate risk	Moderate/ low risk	Low risk
	Low likelihood	Moderate risk	Moderate/ low risk	Low risk	Very low risk
	Unlikely	Moderate/ low risk	Low risk	Very low risk	Very low risk

Table 6.6 Description of the classified risks and likely action required

Very high risk	<p>There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening.</p> <p>This risk, if realised, is likely to result in a substantial liability.</p>
High risk	<p>Urgent investigation (if not undertaken already) and remediation are likely to be required.</p> <p>Harm is likely to arise to a designated receptor from an identified hazard.</p> <p>Realisation of the risk is likely to present a substantial liability.</p> <p>Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the longer term.</p>
Moderate risk	<p>It is possible that harm could arise to a designated receptor from an identified hazard.</p> <p>However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild.</p> <p>Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.</p>
Low risk	<p>It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.</p>
Very low risk	<p>There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.</p>

