APPENDIX A

NOTES RELATING TO THIS REPORT
BOREHOLE LOGS – BORES 23B, 57, 91, 94, 97 AND 98
TEST PIT LOGS – PITS 1 TO 158

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NOTES RELATING TO THIS REPORT

Introduction

These notes have been provided to amplify the geotechnical report in regard to classification methods, specialist field procedures and certain matters relating to the Discussion and Comments section. Not all, of course, are necessarily relevant to all reports.

Geotechnical reports are based on information gained from limited subsurface test boring and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Description and Classification Methods

The methods of description and classification of soils and rocks used in this report are based on Australian Standard 1726, Geotechnical Site Investigations Code. In general, descriptions cover the following properties - strength or density, colour, structure, soil or rock type and inclusions.

Soil types are described according to the predominating particle size, qualified by the grading of other particles present (eg. sandy clay) on the following bases:

Soil Classification	Particle Size
Clay	less than 0.002 mm
Silt	0.002 to 0.06 mm
Sand	0.06 to 2.00 mm
Gravel	2.00 to 60.00 mm

Cohesive soils are classified on the basis of strength either by laboratory testing or engineering examination. The strength terms are defined as follows.

Classification	Undrained Shear Strength kPa
Very soft	less than 12
Soft	12—25
Firm	25—50
Stiff	50—100
Very stiff	100—200
Hard	Greater than 200

Non-cohesive soils are classified on the basis of relative density, generally from the results of standard penetration tests (SPT) or Dutch cone penetrometer tests (CPT) as below:

Relative Density	SPT "N" Value (blows/300 mm)	CPT Cone Value (q_c — MPa)
Very loose	less than 5	less than 2
Loose	5—10	2—5
Medium dense	10—30	5—15
Dense	30—50	15—25
Very dense	greater than 50	greater than 25

Rock types are classified by their geological names. Where relevant, further information regarding rock classification is given on the following sheet.

Sampling

Sampling is carried out during drilling to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and, depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are taken by pushing a thin-walled sample tube into the soil and withdrawing with a sample of the soil in a relatively undisturbed state. Such samples yield information on structure and strength, and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Details of the type and method of sampling are given in the report.

Drilling Methods.

The following is a brief summary of drilling methods currently adopted by the Company and some comments on their use and application.

Test Pits — these are excavated with a backhoe or a tracked excavator, allowing close examination of the in-situ soils if it is safe to descent into the pit. The depth of penetration is limited to about 3 m for a backhoe and up to 6 m for an excavator. A potential disadvantage is the disturbance caused by the excavation.

Large Diameter Auger (eg. Pengo) — the hole is advanced by a rotating plate or short spiral auger, generally 300 mm or larger in diameter. The cuttings are returned to the surface at intervals (generally of not more than 0.5 m) and are disturbed but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers, and is usually supplemented by occasional undisturbed tube sampling.

Continuous Sample Drilling — the hole is advanced by pushing a 100 mm diameter socket into the ground and withdrawing it at intervals to extrude the sample. This is the most reliable method of drilling in soils, since moisture content is unchanged and soil structure, strength, etc. is only marginally affected.

Continuous Spiral Flight Augers — the hole is advanced using 90—115 mm diameter continuous spiral flight augers which are withdrawn at intervals to allow sampling or in-situ testing. This is a relatively economical means of drilling in clays and in sands above the water

table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are very disturbed and may be contaminated. Information from the drilling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively lower reliability, due to remoulding, contamination or softening of samples by ground water.

Non-core Rotary Drilling — the hole is advanced by a rotary bit, with water being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from 'feel' and rate of penetration.

Rotary Mud Drilling — similar to rotary drilling, but using drilling mud as a circulating fluid. The mud tends to mask the cuttings and reliable identification is again only possible from separate intact sampling (eg. from SPT).

Continuous Core Drilling — a continuous core sample is obtained using a diamond-tipped core barrel, usually 50 mm internal diameter. Provided full core recovery is achieved (which is not always possible in very weak rocks and granular soils), this technique provides a very reliable (but relatively expensive) method of investigation.

Standard Penetration Tests

Standard penetration tests (abbreviated as SPT) are used mainly in non-cohesive soils, but occasionally also in cohesive soils as a means of determining density or strength and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, "Methods of Testing Soils for Engineering Purposes" — Test 6.3.1.

The test is carried out in a borehole by driving a 50 mm diameter split sample tube under the impact of a 63 kg hammer with a free fall of 760 mm. It is normal for the tube to be driven in three successive 150 mm increments and the 'N' value is taken as the number of blows for the last 300 mm. In dense sands, very hard clays or weak rock, the full 450 mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form.

- In the case where full penetration is obtained with successive blow counts for each 150 mm of say 4, 6 and 7

  as 4, 6, 7
  N = 13

- In the case where the test is discontinued short of full penetration, say after 15 blows for the first 150 mm and 30 blows for the next 40 mm

  as 15, 30/40 mm.

The results of the tests can be related empirically to the engineering properties of the soil.

Occasionally, the test method is used to obtain samples in 50 mm diameter thin walled sample tubes in clays. In such circumstances, the test results are shown on the borelogs in brackets.

Cone Penetrometer Testing and Interpretation

Cone penetrometer testing (sometimes referred to as Dutch cone — abbreviated as CPT) described in this report has been carried out using an electrical friction cone penetrometer. The test is described in Australian Standard 1289, Test 6.4.1.

In the tests, a 35 mm diameter rod with a cone-tipped end is pushed continuously into the soil, the reaction being provided by a specially designed truck or rig which is fitted with an hydraulic ram system. Measurements are made of the end bearing resistance on the cone and the friction resistance on a separate 130 mm long sleeve, immediately behind the cone. Transducers in the tip of the assembly are connected by electrical wires passing through the centre of the push rods to an amplifier and recorder unit mounted on the control truck.

As penetration occurs (at a rate of approximately 20 mm per second) the information is plotted on a computer screen and at the end of the test is stored on the computer for later plotting of the results.

The information provided on the plotted results comprises: —

- Cone resistance — the actual end bearing force divided by the cross sectional area of the cone — expressed in MPa.
- Sleeve friction — the frictional force on the sleeve divided by the surface area — expressed in kPa.
- Friction ratio — the ratio of sleeve friction to cone resistance, expressed in percent.

There are two scales available for measurement of cone resistance. The lower scale (0—5 MPa) is used in very soft soils where increased sensitivity is required and is shown in the graphs as a dotted line. The main scale (0—50 MPa) is less sensitive and is shown as a full line.

The ratios of the sleeve friction to cone resistance will vary with the type of soil encountered, with higher relative friction in clays than in sands. Friction ratios of 1%—2% are commonly encountered in sands and very soft clays rising to 4%—10% in stiff clays.

In sands, the relationship between cone resistance and SPT value is commonly in the range:—

q_c (MPa) = (0.4 to 0.6) N (blows per 300 mm)

In clays, the relationship between undrained shear strength and cone resistance is commonly in the range:—

q_c = (12 to 18) c_u

Interpretation of CPT values can also be made to allow estimation of modulus or compressibility values to allow calculation of foundation settlements.

Inferred stratification as shown on the attached reports is assessed from the cone and friction traces and from experience and information from nearby boreholes, etc. This information is presented for general guidance, but must be regarded as being to some extent interpretive. The test method provides a continuous profile of engineering properties, and where precise information on soil classification is required, direct drilling and sampling may be preferable.

Hand Penetrometers

Hand penetrometer tests are carried out by driving a rod into the ground with a falling weight hammer and measuring the blows for successive 150 mm increments of penetration. Normally, there is a depth limitation of 1.2 m but this may be extended in certain conditions by the use of extension rods.

Two relatively similar tests are used.

- Perth sand penetrometer — a 16 mm diameter flat-ended rod is driven with a 9 kg hammer, dropping 600 mm (AS 1289, Test 6.3.3). This test was developed for testing the density of sands (originating in Perth) and is mainly used in granular soils and filling.
- Cone penetrometer (sometimes known as the Scala Penetrometer) — a 16 mm rod with a 20 mm diameter cone end is driven with a 9 kg hammer dropping 510 mm (AS 1289, Test 6.3.2). The test was developed initially for pavement subgrade investigations, and published correlations of the test results with California bearing ratio have been published by various Road Authorities.

Laboratory Testing

Laboratory testing is carried out in accordance with Australian Standard 1289 "Methods of Testing Soil for Engineering Purposes". Details of the test procedure used are given on the individual report forms.

Bore Logs

The bore logs presented herein are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable, or possible to justify on economic grounds. In any case, the boreholes represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes, the frequency of sampling and the possibility of other than 'straight line' variations between the boreholes.

Ground Water

Where ground water levels are measured in boreholes, there are several potential problems;

- In low permeability soils, ground water although present, may enter the hole slowly or perhaps not at all during the time it is left open.
- A localised perched water table may lead to an erroneous indication of the true water table.
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report.
- The use of water or mud as a drilling fluid will mask any ground water inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water observations are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Engineering Reports

Engineering reports are prepared by qualified personnel and are based on the information obtained and on current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal (eg. a three storey building), the information and interpretation may not be relevant if the design proposal is changed (eg. to a twenty storey building). If this happens, the Company will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface condition, discussion of geotechnical aspects and recommendations or suggestions for design and construction. However, the Company cannot always anticipate or assume responsibility for:

- unexpected variations in ground conditions — the potential for this will depend partly on bore spacing and sampling frequency
- changes in policy or interpretation of policy by statutory authorities
- the actions of contractors responding to commercial pressures.

If these occur, the Company will be pleased to assist with investigation or advice to resolve the matter.

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, the Company requests that it immediately be notified. Most problems are much more readily resolved when conditions are exposed than at some later stage, well after the event.

Reproduction of Information for Contractual Purposes

Attention is drawn to the document "Guidelines for the Provision of Geotechnical Information in Tender Documents", published by the Institution of Engineers, Australia. Where information obtained from this investigation is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section

is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. The Company would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The Company will always be pleased to provide engineering inspection services for geotechnical aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

AN ENGINEERING CLASSIFICATION OF SEDIMENTARY ROCKS IN THE SYDNEY AREA

This classification system provides a standardized terminology for the engineering description of the sandstone and shales in the Sydney area, but the terms and definitions may be used elsewhere when applicable.

Under this system rocks are classified by Rock Type, Degree of Weathering, Strength, Stratification Spacing, and Degree of Fracturing. These terms do not cover the full range of engineering properties. Descriptions of rock may also need to refer to other properties (e.g. durability, abrasiveness, etc.) where these are relevant.

ROCK TYPE DEFINITIONS

Rock Type	Definition
Conglomerate:	More than 50% of the rock consists of gravel sized (greater than 2mm) fragments
Sandstone:	More than 50% of the rock consists of sand sized (.06 to 2mm) fragments
Siltstone:	More than 50% of the rock consists of silt-sized (less than 0.06mm) granular particles and the rock is not laminated
Claystone:	More than 50% of the rock consists of clay or sericitic material and the rock is not laminated
Shale:	More than 50% of the rock consists of silt or clay sized particles and the rock is laminated

Rocks possessing characteristics of two groups are described by their predominant particle size with reference also to the minor constituents, e.g. clayey sandstone, sandy shale.

DEGREE OF WEATHERING

Term	Symbol	Definition
Extremely Weathered	EW	Rock substance affected by weathering to the extent that the rock exhibits soil properties - i.e. it can be remoulded and can be classified according to the Unified Classification System, but the texture of the original rock is still evident.
Highly Weathered	HW	Rock substance affected by weathering to the extent that limonite staining or bleaching affects the whole of the rock substance and other signs of chemical or physical decomposition are evident. Porosity and strength may be increased or decreased compared to the fresh rock usually as a result of iron leaching or deposition. The colour and strength of the original fresh rock substance is no longer recognisable.
Moderately Weathered	MW	Rock substance affected by weathering to the extent that staining or discolouration of the rock substance usually by limonite has taken place. The colour and texture of the fresh rock is no longer recognisable.
Slightly Weathered	SW	Rock substance affected by weathering to the extent that partial staining or discolouration of the rock substance usually by limonite has taken place. The colour and texture of the fresh rock is recognisable.
Fresh	Fs	Rock substance unaffected by weathering, limonite staining along joints.
Fresh	Fr	Rock substance unaffected by weathering.

STRATIFICATION SPACING

Term	Separation of Stratification Planes
Thinly laminated	<6 mm
Laminated	6 mm to 20 mm
Very thinly bedded	20 mm to 60 mm
Thinly bedded	60 mm to 0.2 m
Medium bedded	0.2 m to 0.6 m
Thickly bedded	0.6 m to 2 m
Very thickly bedded	>2 m

ROCK STRENGTH

Rock strength is defined by the Point Load Strength Index (Is 50) and refers to the strength of the rock substance in the direction normal to the bedding. The test procedure is described by the International Society of Rock Mechanics (Reference).

Strength Term	Is(50) MPa	Field Guide	Approx. qu MPa*
Extremely Low:	0.03	Easily remoulded by hand to a material with soil properties	0.7
Very Low:	0.1	May be crumbled in the hand. Sandstone is “sugary” and friable.	2.4
Low:	0.3	A piece of core 150 mm long x 50 mm dia. may be broken by hand and easily scored with a knife. Sharp edges of core may be friable and break during handling.	7
Medium:	1	A piece of core 150 mm long x 50 mm dia. can be broken by hand with considerable difficulty. Readily scored with knife.	24
High:	3	A piece of core 150 mm long x 50 mm dia. cannot be broken by unaided hands, can be slightly scratched or scored with knife.	70
Very High:	10	A piece of core 150 mm long x 50 mm dia. may be broken readily with hand held hammer. Cannot be scratched with pen knife.	240
Extremely High:		A piece of core 150 mm long x 50 mm dia. is difficult to break with hand held hammer. Rings when struck with a hammer.	

* The approximate unconfined compressive strength (qu) shownin the table is based on an assumed ratio to the point load index of 24:1. This ratio may vary widely.

DEGREE OF FRACTURING

This classification applies to diamond drill cores and refers to the spacing of all types of natural fractures along which the core is discontinuous. These include bedding plane partings, joints and other rock defects, but exclude known artificial fractures such as drilling breaks

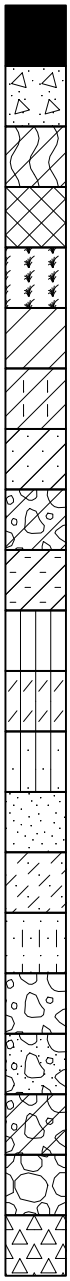
Term	Description
Fragmented:	The core is comprised primarily of fragments of length less than 20 mm, and mostly of width less than the core diameter.
Highly Fractured:	Core lengths are generally less than 20 mm - 40 mm with occasional fragments.
Fractured:	Core lengths are mainly 30 mm - 100 mm with occasional shorter and longer sections.
Slightly Fractured:	Core lengths are generally 300 mm - 1000 mm with occasional longer sections and occasional sections of 100 mm - 300 mm.
Unbroken:	The core does not contain any fracture.

REFERENCE

International Society of Rock Mechanics, Commission on Standardisation of Laboratory and Field Tests, Suggested Methods for Determining the Uniaxial Compressive Strength of Rock Materials and the Point Load Strength Index, Committee on Laboratory Tests Document No. 1 Final Draft October 1972

GRAPHIC SYMBOLS FOR SOIL & ROCK

SOIL



BITUMINOUS CONCRETE

CONCRETE

TOPSOIL

FILLING

PEAT

CLAY

SILTY CLAY

SANDY CLAY

GRAVELLY CLAY

SHALY CLAY

SILT

CLAYEY SILT

SANDY SILT

SAND

CLAYEY SAND

SILTY SAND

GRAVEL

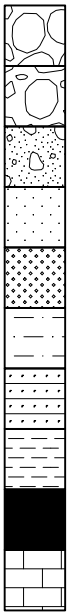
SANDY GRAVEL

CLAYEY GRAVEL

COBBLES/BOULDERS

TALUS

SEDIMENTARY ROCK



BOULDER CONGLOMERATE

CONGLOMERATE

CONGLOMERATIC SANDSTONE

SANDSTONE FINE GRAINED

SANDSTONE COARSE GRAINED

SILTSTONE

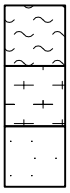
LAMINITE

MUDSTONE, CLAYSTONE, SHALE

COAL

LIMESTONE

METAMORPHIC ROCK

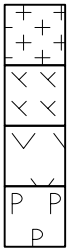


SLATE, PHYLITTE, SCHIST

GNEISS

QUARTZITE

IGNEOUS ROCK



GRANITE

DOLERITE, BASALT

TUFF

PORPHYRY

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BOREHOLE LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 23B
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		FILLING - Generally comprising dark grey to brown clayey silt with some fine to coarse sized gravel (coal, ash, siltstone)							
	2.5			A,PID	2.5		<1 ppm		
	2.55	FILLING - Generally comprising light brown silty clay with some sand (siltstone / claystone filling), M~Wp							
	2.7	SILTSTONE - Extremely low strength, extremely weathered, light brown siltstone		S,PID			3,5,6 N = 11 <1 ppm		
		COAL - Extremely low to very low strength, extremely weathered, dull black coal with some claystone and siltstone bands			2.95				
	3.6	SILTSTONE - Extremely low to very low strength, extremely to moderately weathered, light brown siltstone							
				S	4.0		15, refusal		
	4.15	Bore discontinued at 4.15m, refusal			4.15				

RIG: 4WD Utility Mounted Drilling Rig **DRILLER:** Foody **LOGGED:** Reid **CASING:** Uncased

TYPE OF BORING: 100mm diameter solid flight auger (v-bit refusal at 4.15m)

WATER OBSERVATIONS: Free groundwater observed at 2m

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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BOREHOLE LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 57
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		FILLING - Generally comprising orange-brown sandy silt with trace fine grained gravel and coal / coal chitter fragments, humid		A,PID	0.1		<1 ppm		
				A,PID	0.5		<1 ppm		
	0.9								
	1	FILLING - Generally comprising dark grey brown and orange-brown claystone and siltstone filling with some coal chitter fragments, humid to damp		A,PID	1.0		<1 ppm		1
				S,PID			2,4,4 N = 8 <1 ppm		
					1.45				
	2			A,PID	2.0		<1 ppm		2
				A,PID	2.5		<1 ppm		
				S,PID			3,3,4 N = 7 <1 ppm		
	3				2.95				3
	4	from 4m, some sandstone fragments							4

RIG: 4WD Utility Mounted Drilling Rig **DRILLER:** Foody **LOGGED:** Reid **CASING:** Uncased

TYPE OF BORING: 100mm diameter solid flight auger (v-bit refusal at 6.65m then tc-bit refusal at 6.7m)

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧗ Water level

CHECKED
Initials:
Date:

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BOREHOLE LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 57
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		FILLING - Generally comprising dark grey brown and orange-brown claystone and siltstone filling with some coal chitter fragments, humid to damp *(continued)*		A,PID	5.0		<1 ppm		
				A,PID	5.5		<1 ppm		
				S,PID			3,4,4 N = 8 <1 ppm		
	6				5.95				6
				A,PID	6.5		<1 ppm		
	6.6	SILTSTONE/SANDSTONE - Medium to high strength,							
	6.7	fresh, light grey siltstone / sandstone							
		Bore discontinued at 6.7m, refusal							
	7								7
	8								8
	9								9

RIG: 4WD Utility Mounted Drilling Rig **DRILLER:** Foody **LOGGED:** Reid **CASING:** Uncased

TYPE OF BORING: 100mm diameter solid flight auger (v-bit refusal at 6.65m then tc-bit refusal at 6.7m)

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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BOREHOLE LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 91
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		FILLING - Generally comprising brown and red-brown silty clay with some sand and gravel and trace coal chitter, M~Wp		A,PID	0.1		<1 ppm		
	0.3	FILLING - Generally comprising dark brown-black and light brown coal chitter and siltstone / claystone filling, dry		A,PID	0.5		<1 ppm		
	0.6	FILLING - Generally comprising light brown siltstone and claystone filling with some sand and gravel with trace coal chitter			1.0				
1				A,S,PID			3,6,10 N = 16 <1 ppm		1
					1.45				
2				A,PID	2.0		<1 ppm		2
				A,PID	2.5		<1 ppm		
				S,PID			<1 ppm, 3,6,10/60mm		
					2.86				
3		at 2.85m, refusal on low to medium strength cobbles, boulders							3
				A,PID	3.5		<1 ppm		
	3.7	FILLING - Generally comprising light brown and light orange-brown sandstone / siltstone / claystone filling, dry							
4					4.0				4
				A,S,PID			6,12,12 N = 24 <1 ppm		
					4.45				

RIG: 4WD Utility Mounted Drilling Rig **DRILLER:** Foody **LOGGED:** Reid **CASING:** Uncased

TYPE OF BORING: 100mm diameter solid flight auger (v-bit refusal at 2.85m then tc-bit to refusal)

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧗ Water level

CHECKED
Initials:
Date:

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Geotechnics · Environment · Groundwater

BOREHOLE LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 91
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
				A,PID	5.0		<1 ppm		
	5.1	SILTSTONE - Extremely low to very low strength, extremely to highly weathered, grey-brown and orange-brown siltstone							
					5.5				
				A,S,PID			12,13,14 N = 27 <1 ppm		
	6				5.95				6
				A,PID	6.5		<1 ppm		
	7				7.0				7
				A,S,PID			<1 ppm, 20, refusal		
	7.15	Bore discontinued at 7.15m, limit of investigation			7.15				
	8								8
	9								9

RIG: 4WD Utility Mounted Drilling Rig **DRILLER:** Foody **LOGGED:** Reid **CASING:** Uncased

TYPE OF BORING: 100mm diameter solid flight auger (v-bit refusal at 2.85m then tc-bit to refusal)

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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BOREHOLE LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 94
PROJECT No: 39663C
DATE: 01 Nov 07
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		FILLING - Generally comprising light brown clayey silt with some sand and gravel, coal chitter (siltstone / claystone / sandstone / filling), dry to humid		A,PID	0.1		<1 ppm		
				A,PID	0.5		<1 ppm		
	1				1.0				1
				A,S,PID			1,2,2 N = 4 <1 ppm		
					1.45				
	2			A,PID	2.0		1.1 ppm		2
				A,PID	2.5		1.6 ppm		
				S,PID			2,3,4 N = 7 1 ppm		
	3				2.95				3
				A,PID	3.5		<1 ppm		
	3.7	FILLING - Generally comprising grey-brown and orange-brown siltstone and sandstone filling with some coal chitter, sand, silt and gravel, dry to humid							
	4				4.0				4
				A,S,PID			3,4,5 N = 9 <1 ppm		
					4.45				

RIG: 4WD Utility Mounted Drilling Rig **DRILLER:** Foody **LOGGED:** Reid **CASING:** Uncased

TYPE OF BORING: 100mm diameter solid flight auger (v-bit refusal at 8.3m then tc-bit refusal at 8.6m)

WATER OBSERVATIONS: Seepage observed at 8m

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧗ Water level

CHECKED	
Initials:	
Date:	

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BOREHOLE LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 94
PROJECT No: 39663C
DATE: 01 Nov 07
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		FILLING - Generally comprising grey-brown and orange-brown siltstone and sandstone filling with some coal chitter, sand, silt and gravel, dry to humid *(continued)*		A,PID	5.0		<1 ppm		
				A,S,PID	5.5		5,7,9 N = 16 <1 ppm		
	6								6
				A,PID	6.5		<1 ppm		
	7				7.0				7
				A,S,PID			6,6,12 N = 18 <1 ppm		
					7.45				
	7.6	FILLING - Generally comprising dull black coal chitter, clay							
	8	from 8m, saturated		A,PID	8.0		<1 ppm	▼	8
	8.2	LAMINITE - Low to medium strength, fresh, light grey and grey laminite at 8.3m, v-bit refusal		A,S,PID	8.3 8.31		<1 ppm		
	8.6	Bore discontinued at 8.6m, refusal							
	9								9

RIG: 4WD Utility Mounted Drilling Rig **DRILLER:** Foody **LOGGED:** Reid **CASING:** Uncased

TYPE OF BORING: 100mm diameter solid flight auger (v-bit refusal at 8.3m then tc-bit refusal at 8.6m)

WATER OBSERVATIONS: Seepage observed at 8m

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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BOREHOLE LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 97
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		FILLING - Generally comprising brown clayey sandy silt with some gravel and coal chitter fragments, humid		A,PID	0.1		<1 ppm		
				A,PID	0.5		<1 ppm		
		from 0.5m, humid to damp							
	0.6	FILLING - Generally comprising (firm to stiff), grey-brown silty clay with some sand, gravel and coal chitter fragments, M>Wp							
	1			A,PID	1.0		<1 ppm		1
		from 1m, some siltstone and sandstone rock fragments, M<Wp		S,PID,pp			2,3,4 N = 7 <1 ppm, 80-120 kPa		
					1.45				
	2			A,PID	2.0		<1 ppm		2
	2.1	FILLING - Generally comprising grey and brown siltstone / claystone filling with some clay and gravel and coal chitter, humid							
				A,PID	2.5		<1 ppm		
				S,PID			3,2,3 N = 5 <1 ppm		
	3				2.95				3
				A,PID	3.5		<1 ppm		
	4			A,PID	4.0		<1 ppm		4
				S,pp			2,4,4 N = 8 <1 ppm		
					4.45				

RIG: 4WD Utility Mounted Drilling Rig **DRILLER:** Foody **LOGGED:** Reid **CASING:** Uncased

TYPE OF BORING: 100mm diameter solid flight auger (v-bit refusal at 8.5m)

WATER OBSERVATIONS: Free groundwater observed at 6.6m

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED	
Initials:	
Date:	

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BOREHOLE LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 97
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		FILLING - Generally comprising grey and brown siltstone / claystone filling with some clay and gravel and coal chitter, humid *(continued)*		A,PID	5.0		<1 ppm		
	5.3	FILLING - Generally comprising orange-brown and red-brown clayey sand / sandy clay with some sandstone fragments, moist to wet, M>Wp		A,PID	5.5		<1 ppm		
				S,PID			2,2,2 N = 4 <1 ppm		
	6				5.95				6
				A,PID	6.5		<1 ppm	▼	
	6.7	SANDY CLAY - Soft, grey and orange-brown sandy clay with ironcemented bands, M>Wp							
	7			A,PID	7.0		<1 ppm		7
				S,PID,pp			2,1,3 N = 4 <1 ppm, 40 kPa		
					7.45				
	8			pp	8.0		40 kPa		8
	8.45								
	8.5	SANDSTONE - Very low to low strength, orange-brown fine to medium grained sandstone			8.5				
		Bore discontinued at 8.5m, refusal		S					
					8.95				
	9								9

RIG: 4WD Utility Mounted Drilling Rig **DRILLER:** Foody **LOGGED:** Reid **CASING:** Uncased

TYPE OF BORING: 100mm diameter solid flight auger (v-bit refusal at 8.5m)

WATER OBSERVATIONS: Free groundwater observed at 6.6m

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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BOREHOLE LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 98
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		FILLING - Generally comprising brown sandy silt with gravel and rock and coal chitter fragments, dry to humid							
	0.25	FILLING - Generally comprising brown pebbly sandstone filling with some sand and gravel, dry							
		at 0.3m, v-bit refusal		A,PID	0.5		<1 ppm		
	0.7	FILLING - Generally comprising dark brown-black coal and coal chitter with sand, gravel and silt, some tuff and siltstone (2mm-150mm diameter), humid							
	1			A,PID	1.0		<1 ppm		1
				S			3,4,5 N = 9		
					1.45				
	2			A	2.0				2
		from 2.1m, (loose)							
					2.5				
				S			1,1,1 N = 2		
	3				2.95				3
	3.2	SILTY CLAY - Soft to firm, grey-brown silty clay with trace sand, M>Wp						▼	
				A,PID,pp	3.5		<1 ppm, 80 kPa		
	4			A,PID,pp	4.0		<1 ppm, <25 kPa		4
		from 4m, very soft to soft		S			1,1,2 N = 3		
					4.45				

RIG: 4WD Utility Mounted Drilling Rig **DRILLER:** Foody **LOGGED:** Reid **CASING:** Uncased

TYPE OF BORING: 100mm diameter solid flight auger (v-bit refusal at 0.3m then tc-bit refusal to 2m, then v-bit refusal)

WATER OBSERVATIONS: Seepage observed at 3.2m

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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BOREHOLE LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 98
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		SILTY CLAY - Soft to firm, grey-brown silty clay with trace sand, M>Wp *(continued)*							
	5.3	SILTY CLAY - Stiff to very stiff, grey-brown and orange-brown silty clay with some sand, tuffaceous claystone fragments and ironcemented bands			5.5				
				pp	5.7		220-260 kPa		
				S			4,6,10 N = 16		
				pp	5.9		350 kPa		
	5.95	Bore discontinued at 5.95m, limit of investigation			5.95				
6									6
7									7
8									8
9									9

RIG: 4WD Utility Mounted Drilling Rig **DRILLER:** Foody **LOGGED:** Reid **CASING:** Uncased

TYPE OF BORING: 100mm diameter solid flight auger (v-bit refusal at 0.3m then tc-bit refusal to 2m, then v-bit refusal)

WATER OBSERVATIONS: Seepage observed at 3.2m

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧗ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 1
PROJECT No: 39663C
DATE: 29 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILLING - Grey-black gravelly sandy silt (including ash and concrete fragments), damp		D,PID	0.1		<1 ppm		
		from 0.1m, concrete footing, porcelain plate and glass bottle							
	0.35	CLAYEY SILT - Grey clayey silt, humid		D,PID	0.4		<1 ppm		
	0.5	CLAY - Hard, light grey mottled orange clay, M<<Wp							
				D,PID,pp	0.7		<1 ppm, >400 kPa		
	0.8	SILTSTONE / CLAYSTONE - Extremely low strength, extremely weathered, grey / grey mottled orange siltstone and claystone							
	1	from 0.95m, very low to low strength, fragmented							1
	1.55	Pit discontinued at 1.55m, refusal							
	2								2
	3								3
	4								4

RIG: JCB 3CX Backhoe, 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 2
PROJECT No: 39663C
DATE: 29 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILLING - Grey-brown gravelly sandy silt (including ash and coal), moist		D,PID	0.15		<1 ppm		
		from 0.1m, damp							
	0.55	FILLING - Intermixed grey-brown clay (M<Wp), and gravelly sandy silt, damp		D,PID	0.6		<1 ppm		
	0.9	CLAY - Grey-brown clay with some intermixed dark grey clay and trace fine to medium grained subangular gravel, M>Wp		D,PID,pp	1.0		<1 ppm, 210-240 kPa		
	1								1
		from 1.5m, hard, increased gravel content, some organics, ≤Wp		D,PID,pp	1.6		<1 ppm, >400 kPa		
	2								2
	2.35	CLAYSTONE - Extremely low strength, extremely weathered, light grey claystone with some dark brown silty claystone bands to 2.9m		D,PID	2.4		<1 ppm		
		from 2.9m, light grey mottled orange							
	3								3
	3.0	Pit discontinued at 3.0m, limit of investigation							
	4								4

RIG: JCB 3CX Backhoe, 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED	
Initials:	
Date:	

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TEST PIT LOG

CLIENT: Coal and Allied
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 3
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILL - Grey / brown clayey silt with some fine to coarse grained subangular gravel, damp							
		from 0.1m, some clay clumps and cobbles to 200mm		D/PID	0.2		<1		
	0.5	CLAY - Very stiff to hard grey / brown clay with some silt, m>Wp		D/PID pp	0.6		<1 310 - >400 kPa		
	1	from1.0m, very stiff grey mottled orange		D/PID pp	1.1		<1 210 - 320 kPa		1
	1.4	CLAYSTONE - Extremely low strength, extremely weathered light grey claystone with some iron staining							
	2	from 1.9m, very low strength, fragmented							2
	2.3	Pit discontinued at 2.3m, refusal							
	3								3

RIG: JCB 3CX Backhoe, 600mm bucket with teeth
LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

Douglas Partners
Geotechnics · Environment · Groundwater

TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 4
PROJECT No: 39663C
DATE: 29 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILLING - Grey-brown sandy silt with some fine to medium grained subangular gravel (including coal and ash), moist		D,PID	0.1		<1 ppm		
		from 0.45m, increased gravel content (coal and ash)		D,PID	0.5		<1 ppm		
	0.8								
	1	FILLING - Grey silty clay with some fine to medium grained sand, M≫Wp, and fine to coarse grained subangular and subrounded gravel		D,PID,pp	1.0		<1 ppm, 260-380 kPa		1
				D,PID,pp	1.7		<1 ppm		
	1.8								
	2	CLAYSTONE - Extremely low strength, extremely weathered, light grey claystone with some orange sand pockets							2
	2.7								
		Pit discontinued at 2.7m, refusal							
	3								3
	4								4

RIG: JCB 3CX Backhoe, 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

Douglas Partners
Geotechnics · Environment · Groundwater

TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 4A
PROJECT No: 39663C
DATE: 29 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.2	FILLING - Grey-brown clayey silt with some fine to coarse grained subangular gravel, moist		D,PID	0.1		<1 ppm		
		at 0.05m, plastic sheet							
		FILLING - Grey-brown clay with some silt and fine to coarse grained subangular gravel with plastic, glass bottle and bone inclusions in upper 1.0m, M>Wp		D,PID,pp	0.4		<1 ppm, 280-320 kPa		
	1			D,PID	1.1		<1 ppm		
		at 1.3m, metal sheet							
	2			D,PID,pp	2.0		<1 ppm, 180-370 kPa		
	2.7	Pit discontinued at 2.7m							
	3								
	4								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: JCB 3CX Backhoe, 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Pit within filled excavation

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧗ Water level

CHECKED	
Initials:	
Date:	

Douglas Partners
Geotechnics · Environment · Groundwater

TEST PIT LOG

CLIENT: Coal and Allied
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 5
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILL - Orange / brown sandy fine to coarse grained subangular and subrounded gravel, moist							
	0.5	FILL - Brown clayey silt with some gravel (including coal), moist		D/PID	0.6		<1		
	0.7	CLAY - Stiff to very stiff grey / brown clay, m>Wp		D/PID pp	0.8		<1 190 - 280 kPa		
	1	from 1.0m, grey mottled orange, trace to some sand							
	1.7	Pit discontinued at 1.7m, refusal							
	2								
	3								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: JCB 3CX Backhoe, 600mm bucket with teeth
LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧭ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal and Allied
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 6
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILL - Grey / brown gravelly sandy silt (including coal and ash), moist							
		from 0.2m to 0.4m increased gravel content (ash)		D/PID	0.25		<1		
	0.7	FILL - Grey / brown clayey silt with trace fine to coarse grained subangular gravel, moist							
		at 0.9m, glass bottle observed		D/PID	0.8		<1		
1	1.0	CLAYEY SILTSTONE - Very low strength, highly weathered light grey mottled orange clayey siltstone							1
	1.75	Pit discontinued at 1.75m, refusal							
2									2
3									3

RIG: JCB 3CX Backhoe, 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧭ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal and Allied
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 6A
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		CLAYEY SILT - Grey clayey silt, moist		D/PID	0.1		<1		
	0.25	CLAY - Hard light grey mottled orange clay, m ≤ Wp		D/PID pp	0.4		<1 >400 kPa		
	0.85	CLAYSTONE - Extremely low strength, extremely weathered light grey claystone							
	1								1
		from 1.7m, some iron staining							
	2								2
	2.5	Pit discontinued at 2.5m, refusal							
	3								3

5 10 15 20

RIG: JCB 3CX Backhoe, 600mm bucket with teeth
LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 7
PROJECT No: 39663C
DATE: 25 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILLING - Grey gravel, generally comprising rock, concrete, brick and trace ash sandy silt with some subangular cobbles to 300mm and inclusions of brick and metal, humid		D,PID	0.1		<1 ppm		
	0.3	FILLING - Grey fine to coarse grained subangular gravel and cobbles to 300mm with some clay (ripped sandstone)							
	0.65	at 0.6m, timber plank		D,PID	0.6		<1 ppm		
		CLAYSTONE - Very low strength, highly weathered grey mottled orange claystone, fractured							
	1	from 0.9m, low strength claystone and siltstone with occassional extremely low strength clayey lenses							1
	2								2
	2.1	Pit discontinued at 2.1m, refusal							
	3								3
	4								4

RIG: JCB 3CX Backhoe with 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 8
PROJECT No: 39663C
DATE: 25 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		SILTY SAND - Brown silty fine to medium grained sand with some fine to medium grained subangular gravel and clay clumps (M<<Wp), damp		D,PID	0.1		<1 ppm		
	0.25	CLAYSTONE - Extremely low strength, extremely weathered, grey mottled orange claystone, highly fragmented (possible fill to 1.4m)		D,PID	0.4		<1 ppm		
		from 0.8m, low strength							
	1								1
		from 1.4m to 1.6m, extremely low strength							
	2								2
	2.1	Pit discontinued at 2.1m, refusal							
	3								3
	4								4

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: JCB 3CX Backhoe with 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 9
PROJECT No: 39663C
DATE: 25 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILLING - Brown gravelly silty fine to medium grained sand with some cobbles to 250mm and inclusions of coke, metallic ash, brick and metal railway sleepers, damp		D,PID	0.1		2.0 ppm		
		at 0.6m, timber sleepers and metal bar							
	0.7	FILLING - Intermixed brown silty fine to medium grained sand, dark grey coal reject generally comprising 55% carbonaceous siltstone, 40% silty sand, 5% coal		D,PID	0.8		3.4 ppm		
1	1.0	FILLING - Fine to coarse gravel, cobbles and boulders to 450mm, (ripped siltstone and claystone)							1
	1.3	CLAYSTONE - Extremely low strength, extremely weathered, light grey claystone with some orange mottling, highly fragmented							
		from 1.6m, low strength							
2									2
	2.1	Pit discontinued at 2.1m, limit of investigation							
3									3
4									4

RIG: JCB 3CX Backhoe with 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 10
PROJECT No: 39663C
DATE: 29 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.2	CLAYEY SILT - Grey-brown clayey silt with some fine to medium grained subangular gravel (possible fill)		D,PID	0.1		<1 ppm		
	0.8	FILLING - Grey clay, fine to coarse grained subangular gravel and cobbles to 250mm		D,PID	0.5		<1 ppm		
	1.2	CLAYSTONE - Low strength, moderately weathered, grey mottled orange claystone, fragmented							
	1.55	SANDY SILTSTONE - Very low strength, highly weathered, orange sandy siltstone							
	1.9	CLAYSTONE - Very low strength, highly weathered, light grey mottled orange claystone							
		Pit discontinued at 1.9m, refusal							

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20; 1, 2, 3, 4

RIG: JCB 3CX Backhoe, 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED	
Initials:	
Date:	

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 11
PROJECT No: 39663C
DATE: 25 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILLING - Grey gravelly silty sand including trace fine to medium grained gravel sized ash, humid		D,PID	0.1		<1 ppm		
	0.45								
	0.55	FILLING - Dark grey clayey sandy fine to medium grained gravel (ash), damp		D,PID	0.5		<1 ppm		
		CLAY - Very stiff, grey mottled orange clay, M≫Wp from 0.7m, grading into claystone		D,PID,pp	0.7		<1 ppm, 220-250 kPa		
1	1.0	CLAYSTONE - Extremely low strength, extremely weathered, grey mottled orange claystone, silty and orange sandy in parts, fragmented, strength increasing with depth							1
		from 1.6m, light grey, low strength							
	1.9	Pit discontinued at 1.9m, refusal							
2									2
3									3
4									4

RIG: JCB 3CX Backhoe with 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 12
PROJECT No: 39663C
DATE: 25 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.15	FILLING - Brown silty fine to medium grained sand with some fine to medium subangular and subrounded gravel (ash), damp		D,PID	0.2		<1 ppm		
	0.5	FILLING - Dark grey fine to medium grained subangular and subrounded gravel (ash) with some intermixed brown silty sand, humid from 0.35m, increased silty sand content							
		FILLING - Very stiff, grey mottled orange clay with trace fine grained subangular gravel, M≫Wp		D,PID,pp	0.7		<1 ppm, 240-320 kPa		
1		from 1.1m, stiff to very stiff grey clay, M>Wp		D,PID,pp	1.2		<1 ppm, 180-220 kPa		1
		from 1.4m, slightly sandy grey mottled orange clay (ripped claystone)							
	1.55			D,PID,pp	1.6		<1 ppm, 150-220 kPa		
	1.65	FILLING - Stiff to very stiff, dark grey-brown organic silty clay, M>Wp							
		FILLING - Very stiff intermixed light grey mottled orange gravelly clay and grey clay, M>Wp		D,PID,pp	1.8		<1 ppm, 200-350 kPa		
	1.9								
2		CLAYSTONE - Extremely low strength, extremely weathered, light grey mottled orange claystone, highly fragmented							2
		from 2.8m, very low strength, highly weathered							
3	3.0	Pit discontinued at 3.0m, limit of investigation							3
4									4

RIG: JCB 3CX Backhoe with 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧗ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 13
PROJECT No: 39663C
DATE: 29 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILLING - Dark grey-brown gravelly silt with some sand (including ash and coal) with brick, timber and metal inclusions, moist		D,PID	0.1		<1 ppm		
	0.5	CLAY - Very stiff to hard, grey mottled orange clay, M>Wp		D,PID,pp	0.6		<1 ppm, 340-400 kPa		
1	1.0	CLAYSTONE - Extremely low strength, extremely weathered, light grey claystone, fragmented		D,PID	1.1		<1 ppm		1
2	2.2	Pit discontinued at 2.2m, refusal							2
3									3
4									4

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: JCB 3CX Backhoe, 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 14
PROJECT No: 39663C
DATE: 25 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.2	FILLING - Brown gravelly silty fine to medium grained sand including trace coal, humid		D,PID	0.1		<1 ppm		
		CLAY - Very stiff, grey mottled orange clay, M≫Wp		D,PID,pp	0.4		<1 ppm, 300-380 kPa		
	1			pp	1.0		220-320 kPa		1
	1.35	CLAYSTONE - Very low strength, highly weathered, light grey mottled orange claystone, highly fragmented from 1.6m to 2.7m, extremely low strength, light grey							
	2								2
	3								3
	3.0	Pit discontinued at 3.0m, limit of investigation							
	4								4

RIG: JCB 3CX Backhoe with 600mm bucket with teeth
LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 15
PROJECT No: 39663C
DATE: 25 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
	0.05	FILLING - Grey-brown silty sand with some fine to medium grained subangular and subrounded gravel (including brick fragments), humid		D,PID	0.2		1.8 ppm		
	0.1	FILLING - Light grey sandy silt with some fine to medium grained gravel (ash), humid							
		FILLING - Dark grey-black fine to coarse grained sand and gravel sized coal reject, generally comprising 50% coal, 45% carbonaceous siltstone, 5% ash		D	0.5				
		at 0.15m, timber sleeper							
	0.95	CLAYSTONE - Extremely low strength, extremely weathered, light grey mottled orange claystone, highly fragmented							
		from 1.55m, low strength							
	1.7	Pit discontinued at 1.7m, refusal							

RIG: JCB 3CX Backhoe with 600mm bucket with teeth
LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧗ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal and Allied
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 16
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.1	CLAYEY SILT - Grey / brown clayey silt, moist							
		CLAY - Hard, grey / brown clay, m<Wp		D/PID pp	0.2		<1 >400 kpa		
		from 0.8m, very stiff light grey mottled orange, m≤Wp		D/PID pp	0.9		<1 250 - 340 kpa		
	1.3	CLAYSTONE - Extremely low strength, extremely weathered light grey mottled orange claystone with some iron staining, fragmented							
		from 2.2m, very low strength							
	2.6	Pit discontinued at 2.6m, refusal							

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: JCB 3CX Backhoe, 600mm bucket with teeth
LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧗ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 17
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILLING - Dark grey-brown slightly sandy silt with some clay and fine to medium grained gravel sized coal and ash, moist		D,PID	0.1		<1 ppm		
	0.4	FILLING - Grey-brown silty fine to medium grained sand with some clay and trace to some fine to medium grained gravel including coal and ash, moist		D,PID	0.5		<1 ppm		
	0.7	CLAY - Stiff to very stiff, grey mottled orange-red clay with trace fine to medium grained sand and trace fine grained subangular gravel, M>Wp		D,PID,pp	0.9		<1 ppm, 190-270 kPa		
	1			D,PID,pp	1.4		<1 ppm, >400 kPa		1
	2	from 2m, M⩽Wp		D	2.4				2
	2.5	CLAYSTONE - Extremely low to very low strength, highly weathered grey claystone							
	3 3.0	Pit discontinued at 3.0m, limit of investigation							3
	4								4

RIG: JCB 3CX Backhoe, 600mm bucket with teeth
LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

Douglas Partners
Geotechnics · Environment · Groundwater

TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 18
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.1	TOPSOIL - Grey-brown clayey silt with some fine to medium grained sand, moist		D,PID	0.05		<1 ppm		
		CLAY - Stiff to very stiff, grey mottled orange-red clay with trace fine to medium grained subangular gravel, M>Wp		D,PID,pp	0.2		<1 ppm, 180-280 kPa		
		from 0.5m, light grey mottled orange, trace cobbles to 100mm		D,PID,pp	0.7		<1 ppm, 190-290 kPa		
	1								1
		from 1.2m, hard		pp	1.2		>400 kPa		
		from 1.4m, increasing silt content, grading into siltstone, M ≤Wp							
	1.6	SILTSTONE - Extremely low strength, extremely weathered, light grey mottled orange siltstone		D	1.8				
	2								2
	2.1	CLAYSTONE - Extremely low strength, extremely weathered, light grey mottled orange-red claystone							
		from 2.7m, extremely low to very low strength, some ironstaining/cementing							
	3								3
	3.0	Pit discontinued at 3.0m, limit of investigation							
	4								4

RIG: JCB 3CX Backhoe, 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

Douglas Partners
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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 19
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
	0.15	FILLING - Dark grey-brown clayey silt with some sand, trace fine to coarse gravel including coal and ash, and minor metal and procelain fragment inclusions, moist		D,PID	0.1		<1 ppm		
		FILLING - Stiff, grey, dark grey and orange-brown clay with some silt and sand, trace to some fine to coarse gravel including ash and minor metal, porcelain and glass inclusions, moist at 0.3m, brick inclusions		D,PID,pp	0.3		<1 ppm, 110-140 kPa		
	0.7	CLAY - Very stiff, light grey mottled orange clay, M>Wp		D,PID,pp	0.8		<1 ppm, 270-320 kPa		
	1								1
		from 1.2m, hard		pp	1.2		>400 kPa		
	1.4	SILTSTONE - Very low strength, highly weathered, grey mottled orange siltstone, sandy in parts							
	2								2
	2.1	CLAYSTONE - Very low strength, highly weathered, grey claystone with some ironstaining / cementing from 2.4m, low strength, moderately weathered							
	2.7	Pit discontinued at 2.7m, refusal							
	3								3
	4								4

RIG: JCB 3CX Backhoe, 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

Douglas Partners
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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 20
PROJECT No: 39663C
DATE: 31 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILLING - grey mottled orange clay with some silt and trace fine to coarse grained subangular gravel (including trace coal) in upper 250mm, M>Wp		D,PID,pp	0.2		<1 ppm, 190-230 kPa		
		from 0.8m, some cobbles and boulders to 300mm							
	1								1
	1.2	CLAYSTONE - Extremely low strength, extremely weathered, grey mottled orange claystone, fractured							
		from 1.5m, very low strength							
	1.8	Pit discontinued at 1.8m							
	2								2
	3								3
	4								4

RIG: JCB 3CX Backhoe, 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 21
PROJECT No: 39663C
DATE: 31 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILLING - Grey-brown clayey silt with some fine to medium grained sand and fine to medium grained subangular and subrounded gravel, minor coal and metal inclusions, damp		D,PID	0.3		<1 ppm		
	0.7	FILLING - Grey sandy silt with some fine to medium grained sub angular gravel, humid (possible natural)		D,PID	0.8		<1 ppm		
1	0.95	CLAY - Hard, grey mottled orange clay with some silt, M<Wp		D,PID,pp	1.1		<1 ppm, >400 kPa		1
		from 1.3m, very stiff, reduced silt content, M>Wp		pp	1.4		300-370 kPa		
		from 1.7m, very stiff to hard, some sand and silt		pp	1.9		380->400 kPa		
2	2.0	CLAYEY SILTSTONE - Extremely low strength, extremely weathered, grey mottled orange clayey siltstone with some ironstaining							2
	2.5	Pit discontinued at 2.5m, refusal							
3									3
4									4

RIG: JCB 3CX Backhoe, 600mm bucket with teeth
LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧗ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 22
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILLING - Dark grey-brown gravelly silt with some sand and clay, gravel generally comprising ash and metal, moist		D,PID	0.15		<1 ppm		
	0.4	FILLING - Very stiff, grey-dark grey clay with some silt, trace to some fine to coarse grained gravel including coal and ash and gloss and porcelain inclusions, M>Wp		D,PID,pp	0.5		<1 ppm, 220-270 kPa		
	0.7	CLAY - Hard, light grey mottled orange clay, M≫Wp		D,PID,pp	0.9		<1 ppm, >400 kPa		
	1.4	CLAYSTONE - Extremely low strength, extremely weathered, grey mottled orange claystone from 1.8m, very low strength, highly weathered from 2.3m, extremely low strength, extremely weathered							
	2.6	CLAYEY SILT - Dark grey-black clayey silt (extremely weathered coal)		D	2.7				
	3.2	CLAYSTONE - Extremely low strength, extremely weathered, grey claystone							
	3.4	Pit discontinued at 3.4m, limit of investigation							

RIG: JCB 3CX Backhoe, 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 23
PROJECT No: 39663C
DATE: 31 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILLING - Grey-brown clayey silt with some fine to coarse grained subangular gravel, including trace coal and brick fragments, moist		D,PID	0.1		<1 ppm		
		frm 0.3m, increased gravel content, some cobbles to 200mm							
	0.4	FILLING - Hard grey clay with some silt and trace fine to medium grained subangular gravel, M<Wp		D,PID,pp	0.5		<1 ppm, >400 kPa		
	1	from 0.9m, intermixed grey and light grey clay, increased gravel content		D,PID,pp	1.0		<1 ppm, >400 kPa		1
	1.4	SAND - Grey mottled fine to coarse grained sand with some clay and fine grained gravel, moist		D,PID	1.5		<1 ppm		
	1.65	CLAY - Very stiff, light grey clay with some fine to medium grained subangular gravel, M≤Wp		pp	1.7		240-280 kPa		
	1.8	CLAY - Very stiff laminated grey and dark grey-black organic clay with some silt, M>Wp		D,PID,pp	2.0		<1 ppm, 240-280 kPa		
	2								2
		from 2.6m, grading into extremely weathered carbonaceous siltstone and coal							
	3	3.0 Pit discontinued at 3.0m, limit of investigation							3
	4								4

RIG: JCB 3CX Backhoe, 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 23A
PROJECT No: 39663C
DATE: 31 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILLING - Dark grey-brown slightly clayey silt with some fine to coarse grained gravel (coal, ash, and carbonaceous siltstone), and brick and glass inclusions, moist							
		from 0.4m, increased clay content							
1	1.0	FILLING - Loose, brown clayey fine to coarse grained gravel with numerous timber, brick and glass bottle inclusions, slight hydrocarbon colouration, saturated						▼	1
		from 1.5m, increased clay content		D,PID	1.5		<1 ppm		
2	2.0	Pit discontinued at 2.0m, pit walls collapsing							2
3									3
4									4

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: JCB 3CX Backhoe, 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: Free groundwater observed at 1m

REMARKS: Within filled pit

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 24
PROJECT No: 39663C
DATE: 31 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILLING - Grey-brown clayey silt with some fine to coarse grained subangular gravel, humid		D,PID	0.1		<1 ppm		
		from 0.1m, clay and gravel content increasing							
	0.3	FILLING - Grey clay, fine to coarse grained subangular gravel, cobbles and boulders to 300mm, damp							
	0.65	FILLING - Grey mottled orange clay with trace fine to coarse grained subangular gravel and cobbles to 200mm, M>Wp		D,PID,pp	0.7		<1 ppm, 190-300 kPa		
	0.9	CLAYSTONE - Extremely low strength, highly weathered, light grey mottled orange claystone, fractured with some low strength boulders							
1		from 1.5m, very low strength							1
2	2.0	Pit discontinued at 2.0m, refusal							2
3									3
4									4

5 10 15 20

RIG: JCB 3CX Backhoe, 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧗ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal and Allied
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 25
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		CLAYEY SILT - Grey clayey silt with some fine to coarse grained subangular gravel, damp		D/PID	0.1		<1		
	0.2	CLAY - Hard grey mottled orange clay with some fine to coarse grained subangular gravel, m≤Wp		D/PID pp	0.3		<1 >400 kPa		
		from 0.6m, light grey mottled orange, increased gravel content							
		from 0.9m, grading into claystone							
	1								1
	1.4	CLAYSTONE - Extremely low strength, extremely weathered ligth grey mottled orange claystone							
		from 1.9, very low strength							
	2								2
	2.6	Pit discontinued at 2.6m, refusal							
	3								3

RIG: JCB 3CX Backhoe, 600mm bucket with teeth
LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS: No apparent slope failure

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 26
PROJECT No: 39663C
DATE: 26 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.1	CLAYEY SILTY SAND - Brown clayey silty fine to medium grained sand with some fine to medium grained subangular and subrounded gravel (possible fill), moist		D,PID	0.15		<1 ppm		
	0.35	SILTY SAND, GRAVEL AND COBBLES - Light grey silty fine to coarse grained sand, subangular gravel and cobbles to 250mm (extremely weathered sandstone, possible fill), humid		D,PID,pp	0.4		<1 ppm, >400 kPa		
	0.5	CLAY - Hard, grey mottled orange clay with trace fine grained subangular gravel, M<<Wp							
		CLAYSTONE - Very low strength, highly weathered, light grey claystone, highly fragmented, silty in parts							
1									1
	1.9	COAL/CLAYSTONE - Extremely low strength, extremely weathered brown, yellow-brown, dark grey-black and light grey claystone and coal		D,PID,pp	2.0		<1 ppm, 180-340 kPa		
2		from 2.3m, light grey							2
	2.7	CLAYSTONE - Very low strength, highly weathered grey claystone, fragmented							
3	3.0	Pit discontinued at 3.0m, limit of investigation							3
4									4

RIG: JCB 3CX Backhoe with 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED	
Initials:	
Date:	

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 27
PROJECT No: 39663C
DATE: 31 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
	0.12	FILLING - Brown clayey silt with some fine to medium grained sand and trace fine to medium grained subangular gravel (chitter), moist		D,PID	0.2		<1 ppm		
	0.35	FILLING - Grey-brown coal reject generally comprising 55% carbonaceous siltstone, 40% clay, 5% coal, damp							
		FILLING - Orange-brown clay, fine to coarse grained subangular gravel and cobbles to 150mm (ripped claystone/siltstone), moist		D,PID	0.5		<1 ppm		
		from 0.8m, grey-brown some boulders to 350mm							
	1								1
		from 1.2m, grey, increased clay content		D,PID	1.25		<1 ppm		
	1.65	FILLING - Stiff to very stiff, grey to dark grey slightly silty clay with some fine to coarse grained subangular gravel, M>>Wp		D,PID,pp	1.8		<1 ppm, 140-200 kPa		
	2								2
	2.1	CLAY - Very stiff, grey mottled orange clay, M>Wp		D,PID,pp	2.3		<1 ppm, 200-300 kPa		
	2.6	CLAYSTONE - Extremely low strength, highly weathered, light grey mottled pink-orange claystone							
	3 3.0	Pit discontinued at 3.0m, limit of investigation							3
	4								4

RIG: JCB 3CX Backhoe, 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧗ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal and Allied
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 28
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.05	FILL - Brown silt with abundant organics, moist							
		FILL - Light grey / brown clayey, fine to coarse grained subangular gravel, cobbles and boulders to 250mm (ripped claystone), damp		D/PID	0.3		<1		
	1			D/PID	1.0		<1		1
	1.3	FILL - Hard grey mottled orange / red clay with some fine to coarse grained subangular gravel, m⩽Wp (possible natural)		D/PID pp	1.6		<1 >400 kPa		
	1.9	SANDY SILT - Grey mottled orange / red sandy silt, humid		D/PID	2.0		<1		2
	2.1	CLAY - Hard grey mottled orange / red clay with some silt, m⩽Wp		pp	2.2		>400 kPa		
	2.3	CLAYSTONE / SILTSTONE - Low strength, moderatly weathered grey mottled orang claystone / siltstone, fragmented							
	2.6	Pit discontinued at 2.6m, refusal							
	3								3

RIG: JCB 3CX Backhoe, 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 29
PROJECT No: 39663C
DATE: 26 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
	0.05	SANDY CLAYEY SILT - Brown sandy clayey silt, moist							
		CLAYEY SILT - Grey-brown clayey silt with some fine grained sand, humid		D,PID	0.1		<1 ppm		
	0.45	CLAY - Hard, grey mottled orange clay, M≤Wp		D,PID,pp	0.6		<1 ppm, >400 kPa		
		from 0.8m, very stiff, M>Wp		pp	0.8		280-360 kPa		
	1			D,PID,pp	1.1		<1 ppm, 290-340 kPa		1
		from 1.4m, grading into claystone							
	1.6	CLAYSTONE - Extremely low strength, extremely weathered, light grey mottled orange claystone, fractured							
	2								2
		from 2.2m, very low to low strength, moderately weathered							
	2.5	Pit discontinued at 2.5m, limit of investigation							
	3								3
	4								4

RIG: JCB 3CX Backhoe with 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Sandstone boulder outcropping at northern end of pit

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal and Allied
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 30
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILL - Hard light grey / brown silty gravelly clay with some subangular cobbles to 100mm, m<Wp		D/PID pp	0.1		<1 >400 kPa		
	0.4	FILL - Grey mottled orange clayey silt, humid (possible natural)		D/PID	0.5		<1		
	0.75	FILL - Hard grey mottled orange clay with some fine to coarse grained subangular gravel, m<Wp (possible natural)		D/PID pp	0.9		<1 >400 kPa		
1	1.0	FILL - Grey subangular cobbles and boulders to 500mm with some clay (possible natural low to moderate strength claystone)							1
	1.25	CLAYSTONE - Extremely low strength, extremely weathered light grey claystone from 1.35m, very low strength							
	1.5	Pit discontinued at 1.5m, refusal							
2									2
3									3

RIG: JCB 3CX Backhoe, 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal and Allied
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 31
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL - Brown silt with trace some fine to medium grained gravel (coal and ash)		D/PID	0.2		<1		
		from 0.2m increased gravel content (ash), damp							
	0.45	CLAYEY SILT - Grey clayey silt, humid		D/PID	0.5		<1		
	0.75	CLAY - Very stiff to hard grey mottled orange clay, m>Wp		D/PID pp	0.8		<1 300 - 400 kPa		
	1.1	SILTSTONE - Very low strength, highly weathered light grey mottled siltstone, clayey in parts							
	1.9	CLAYSTONE - Extremely low to very low strength, extremely weathered light grey claystone, fragmented							
	2.7	Pit discontinued at 2.7m, limit of investigation							

RIG: JCB 3CX Backhoe, 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 32
PROJECT No: 39663C
DATE: 26 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILLING - Grey-brown clayey silt with trace fine to medium grained subangular gravel (including coal), humid		D,PID	0.1		<1 ppm		
	0.55	CLAY - Hard, grey mottled orange-red clay with some roots and rootlets in upper 500mm, M≤Wp		D,PID,pp	0.6		<1 ppm, >400 kPa		
	1			D,PID,pp	1.1		<1 ppm, >400 kPa		1
		from 1.5m, grading into claystone							
	1.7	CLAYSTONE - Very low strength, highly weathered, grey mottled orange claystone, highly fragmented							
	2	from 2m, low strength							2
	2.3	Pit discontinued at 2.3m, refusal							
	3								3
	4								4

RIG: JCB 3CX Backhoe with 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED	
Initials:	
Date:	

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TEST PIT LOG

CLIENT: Coal and Allied
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 33
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILL - Intermixed clay, silty sand, fine to coarse grained subrounded gravel and cobbles to 150mm with asphalt inclusions, damp		D/PID	0.2		<1		
	0.35	SANDY SILT - Grey / brown sandy silt, humid at 0.4m, root		D/PID	0.5		<1		
	0.7	SILTY SANDSTONE - Very low strength, highly weathered orange silty sandstone, clayey in parts							
	1.0	Pit discontinued at 1.0m, refusal							

RIG: JCB 3CX Backhoe, 600mm bucket with teeth
LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS: within fill stockpile

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧭ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 34
PROJECT No: 39663C
DATE: 26 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	CLAYEY SILT - Grey clayey silt with some fine to medium grained sand, damp		D,PID	0.2		<1 ppm		
		from 0.1m, light grey, humid							
	0.5	CLAY - Hard grey mottled orange clay, M≤Wp		pp	0.6		>400 kPa		
		from 0.8m, some silt and sand							
	1.4	CLAYSTONE - Extremely low strength, extremely weathered, light grey mottled orange claystone, fragmented							
	2.5	Pit discontinued at 2.5m, limit of investigation							

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: JCB 3CX Backhoe with 600mm bucket with teeth
LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 35
PROJECT No: 39663C
DATE: 26 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	CLAYEY SILT - Grey-brown clayey silt with trace fine to medium grained subangular gravel, including coal (disturbed / possible fill), moist		D,PID	0.1		<1 ppm		
		from 0.3m, light grey, some fine to medium grained sand, humid		D,PID	0.4		<1 ppm		
	0.6	CLAY - Hard, grey mottled orange-red clay with some fine to medium grained subangular gravel, M≤Wp		D,PID,pp	0.7		<1 ppm, >400 kPa		
	1								1
	2								2
	2.5	Pit discontinued at 2.5m, limit of investigation							
	3								3
	4								4

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: JCB 3CX Backhoe with 600mm bucket with teeth
LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 36
PROJECT No: 39663C
DATE: 24 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		SILT - Light grey-brown silt, damp							
	0.4	CLAY - Hard, red-brown clay, M<Wp		D,PID,pp	0.5		<1 ppm, >400 kPa		
	1	from 1m, grey mottled pink							
	2	from 1.8m, grey mottled orange, some ironstaining, grading into extremely weathered claystone							
	2.2	Pit discontinued at 2.2m, limit of investigation							
	3								
	4								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: CAT 428 Backhoe, 450mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Appears to be within pothole, clay profile curves into depression (see photos)

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED	
Initials:	
Date:	

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 37
PROJECT No: 39663C
DATE: 24 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
	0.0	FILLING - Grey-brown silty clay, M<Wp (possible fill)		D,PID,pp	0.1		<1 ppm, >400 kPa		
	0.3	FILLING - Intermixed grey-brown and grey mottled orange clay with trace fine to medium subangular gravel, M>Wp		D,PID,pp	0.6		<1 ppm, >400 kPa		
	1			D,PID	1.1		<1 ppm		1
	1.5	SILTY CLAY - Stiff to very stiff, grey-brown silty clay with some fine grained sand and rootlets, M>Wp		D,PID,pp	1.7		<1 ppm, 150-220 kPa		
	2								2
	2.4	SANDY CLAY - Stiff to very stiff, grey, mottled orange sandy clay with some silt, M>Wp		D,PID,pp	2.6		<1 ppm, 170-250 kPa		
	2.9	SILTSTONE - Low strength, moderately weathered, dark grey carbonaceous siltstone							
	3								3
	3.1	Pit discontinued at 3.1m, limit of investigation							
	4								4

RIG: CAT 428 Backhoe, 450mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 38
PROJECT No: 39663C
DATE: 26 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
	0.2	FILLING - Grey silty sandy fine to coarse grained subangular and subrounded gravel and cobbles to 200mm (claystone and some coal), with some clay, humid							
		FILLING - Orange-brown sandy fine to medium grained subangular and subrounded gravel (ripped sandstone / conglomerate), humid		D,PID	0.4		<1 ppm		
	0.65	FILLING - Grey, fine to coarse grained subangular gravel, cobbles and boulders to 450mm with trace clay (ripped claystone), humid							
	1								1
		from 1.4m, grey-brown, increased clay content, trace coal		D,PID	1.45		<1 ppm		
	1.7	FILLING - Grey-yellow and black clayey fine to coarse grained gravel and cobbles to 200mm (burnt coal reject), generally comprising 40% ash / coke, 25% claystone / siltstone, 25% clay		D,PID	1.9		3.2 ppm		
	2								2
	2.4	Pit discontinued at 2.4m, refusal							
	3								3
	4								4

RIG: JCB 3CX Backhoe with 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Refusal on possible claystone bedrock

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧗ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 39
PROJECT No: 39663C
DATE: 26 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.05	FILLING - Grey-brown clayey sandy silt with some fine to medium grained subangular and subrounded gravel, damp		D,PID,pp	0.2		<1 ppm, >400 kPa		
		FILLING - Hard, grey-brown silty sandy gravelly clay, M<<Wp							
	0.65	from 0.6m, timber post and metal frame 1.2m in length							
		FILLING - Dark grey clay and fine to coarse grained gravel and cobble (to 150mm) sized coal reject, generally comprising 50% clay, 30% coal, 20% carbonaceous siltstone							
	1	at 1m, metal turbine		D,PID	1.3		4.3 ppm		
	1.45	FILLING - Orange-brown clayey gravelly fine to medium grained sand (ripped sandstone), moist		D,PID	1.6		<1 ppm		
	1.7	FILLING - Grey fine to coarse grained subangular gravel, cobbles and boulders to 500mm with some clay (ripped claystone), moist							
	2	from 1.8m to 2.6m, light grey-brown fine to medium grained sand pocket in southern edge of pit		D,PID	2.0		<1 ppm		
	2.6	FILLING - Dark grey clayey fine to coarse grained subangular gravel (including claystone, carbonaceous siltstone and trace coal), moist to wet		D,PID	2.8		<1 ppm		
	3								
	3.1	Pit discontinued at 3.1m, limit of investigation							
	4								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: JCB 3CX Backhoe with 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 40
PROJECT No: 39663C
DATE: 24 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILLING - Brown silty fine to medium grained sand with some fine to medium grained subangular gravel (carbonaceous siltstone and gravel), and clay clumps, damp		D,PID	0.2		<1 ppm		
	0.5	FILLING - Stiff to very stiff, grey and grey-brown clay with some subangular gravel and cobbles to 200mm (ripped claystone and siltstone), M>Wp		D,PID,pp	0.7		<1 ppm, 160-220 kPa		
	1			D,PID	1.2		<1 ppm		
	2								
	2.6	GRAVELLY CLAY - Firm to stiff, grey gravelly clay, generally comprising fine to medium grained subangular and subrounded gravel, M>>Wp		pp	2.8		70-170 kPa		
	3								
	3.0	Pit discontinued at 3.0m, limit of investigation							
	4								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: CAT 428 Backhoe, 450mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧗ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 41
PROJECT No: 39663C
DATE: 25 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.2	FILLING - Grey silt, clay and fine to coarse grained subangular gravel, humid		D,PID	0.1		<1 ppm		
	1	FILLING - Light grey-brown clayey fine to coarse grained subangular gravel, cobbles and boulders to 300mm (ripped claystone, trace coal), humid from 1m, increased clay content (stiff to very stiff, M>Wp)		D,PID,pp	1.1		<1 ppm, 180-240 kPa		
	2	from 1.6m, grey-brown to dark grey		D,PID	2.0		<1 ppm		
	3								
	3.3	Pit discontinued at 3.3m, limit of investigation							
	4								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: JCB 3CX Backhoe with 600mm bucket with teeth
LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 42
PROJECT No: 39663C
DATE: 24 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILLING - Intermixed hard grey clay (M<<Wp), silty sand and subangular gravel, cobbles and boulders to 300mm (ripped claystone, sandstone, trace coal, cobbles), some rootlets, humid		D,PID	0.2		<1 ppm		
	1	from 0.9m to 1.5m, asphaltic concrete, possibly containing coal tar and slag surrounding wooden column / pile in slightly weathered edge of pit, slight PAH odour							
		from 1.2m, intermixed grey mottled orange clay, M≫ Wp, and subangular gravel, cobbles and boulders to 400mm (ripped claystone, possibly natural in northern end of pit)		D,PID	1.2		4.6 ppm		
	1.9								
	2	CLAYSTONE - Very low strength, highly weathered, claystone, fragmented							
		timber column to 2.5m adjacent to edge of pit, with more coal tar at base							
	2.8								
		Pit discontinued at 2.8m, refusal							
	3								
	4								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: CAT 428 Backhoe, 450mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS: See photos, also former borehole evident

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 43
PROJECT No: 39663C
DATE: 24 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILLING - Intermixed hard, grey lay (M<<Wp), gravel and cobbles to 200mm (ripped claystone and siltstone)		D,PID,pp	0.1		<1 ppm, >400 kPa		
	0.5	FILLING - Intermixed stiff grey mottled orange clay, gravel and cobbles to 200mm (ripped claystone, siltstone and trace coal)		D,PID,pp	0.6		<1 ppm, 120-170 kPa		
1	1.0	CLAYSTONE - Extremely low strength, extremely weathered, grey mottled orange claystone, fractured with some clay lenses		D,PID	1.1		<1 ppm		1
2									2
	2.5	Pit discontinued at 2.5m, refusal on medium to high strength claystone							
3									3
4									4

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: CAT 428 Backhoe, 450mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 44
PROJECT No: 39663C
DATE: 24 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.05	FILLING - Dark grey coal reject and sandy silt, generally comprising 50% sandy silt, 40% carbonaceous siltstone and 10% coal, humid		D,PID	0.1		<1 ppm		
	0.35	FILLING - Orange sandy fine to coarse grained subangular and subrounded gravel with some cobbles to 100mm and trace clay, damp		D,PID	0.5		5.4 ppm		
		FILLING - Dark grey-black coal reject, generally comprising 70% carbonaceous siltstone, 15% clay, 15% coal		D	0.6 0.8				
1	1.1	CLAY - Stiff to very stiff, grey clay with some organics, (roots), and cobbles to 150mm in upper 0.4m, M>Wp		D,PID,pp	1.2		<1 ppm, 160-240 kPa		
2	2.1	CLAYSTONE - Extremely low strength, extremely weathered, grey mottled orange claystone, grading into siltstone							
3	3.0	Pit discontinued at 3.0m, limit of investigation							
4									

RIG: CAT 428 Backhoe, 450mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 45
PROJECT No: 39663C
DATE: 24 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0	FILLING - Intermixed hard grey clay (M<<Wp), and subangular gravel, cobbles and boulders to 300mm (claystone, sandstone, trace coal)		D,PID,pp	0.2		<1 ppm, >400 kPa		
		from 0.5m, stiff to very stiff, M≯ Wp		D,PID,pp	0.7		<1 ppm, 150-220 kPa		
	1								1
	2			D,PID	2.0		<1 ppm		2
	3								3
	3.1	Pit discontinued at 3.1m, limit of investigation							
	4								4

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: CAT 428 Backhoe, 450mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧗ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 46
PROJECT No: 39663C
DATE: 24 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILLING - Intermixed grey-brown clay, subangular gravel, cobbles and boulders to 300mm (ripped claystone, siltstone and some coal), damp		D,PID	0.2		<1 ppm		
				D,PID	0.8		<1 ppm		
	1.5	FILLING - Dark grey-black coal reject, generally comprising 45% clay, 35% carbonaceous siltstone, 20% coal, damp from 1.9m, plastic and metals inclusions		D,PID	1.6		6.1 ppm		
	2.0	FILLING - Brown gravelly sandy silt (including some coal), damp		D,PID	2.2		<1 ppm		
	3.5	Pit discontinued at 3.5m, limit of investigation							

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: CAT 428 Backhoe, 450mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 47
PROJECT No: 39663C
DATE: 25 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILLING - Dark grey-black sand and fine to coarse gravel sized coal reject generally comprising 60% coal, 20% carbonaceous siltstone, 10% ash, 10% clay		D,PID	0.0		4.9 ppm		
	0.25				0.25				
		FILLING - Orange-brown sandy fine to medium grained subangular gravel (ripped sandstone)		D,PID	0.3		5.6 ppm		
	0.35			D,PID	0.4		6.6 ppm		
		FILLING - Dark grey-black sand, gravel and cobble sized coal / coal reject generally comprising 90% coal, 5% carbonaceous siltstone, 5% clay, hydrocarbon odour / PAH odour, humid							
	0.65			D,PID	0.7		4.5 ppm		
	0.8	FILLING - Grey-brown gravelly fine to medium grained sand, moist							
1		COAL - Black silt, fine to medium grained gravel sized coal, becoming coarser with depth		D	1.0				1
		from 1.5m to 1.55m, light grey clay band							
2									2
	2.2	CLAYSTONE - Very low strength, highly weathered, light grey claystone, fractured		D,PID	2.3		4.2 ppm		
3	3.0	Pit discontinued at 3.0m, limit of investigation							3
4									4

RIG: JCB 3CX Backhoe with 600mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 48
PROJECT No: 39663C
DATE: 24 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.1	FILLING - Grey sandy fine grained subangular gravel, possibly stabilised with tar at surface, humid		D,PID	0.0 0.05		<1 ppm		
		FILLING - Stiff to very stiff, grey mottled orange clay with some fine to coarse grained subangular gravel (ripped claystone), M≫Wp		D,PID,pp	0.2		<1 ppm, 180-220 kPa		
	0.8	CLAYSTONE - Very low strength, extremely weathered, light grey mottled orange claystone, highly fragmented		D,PID	0.85		<1 ppm		
1									1
	1.8	CLAYEY SILT - Dark brown organic clayey silt (extremely weathered coal), damp							
2				D,PID	2.0		6.5 ppm		2
	2.45	CLAYSTONE - Extremely low strength, highly weathered, grey mottled pink claystone / shale		PID	2.5		<1 ppm		
3	3.0	Pit discontinued at 3.0m, limit of investigation							3
4									4

RIG: CAT 428 Backhoe, 450mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Slag skulls to 100mm diameter at surface adjacent to pit

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 49
PROJECT No: 39663C
DATE: 24 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		GRAVELLY CLAY - Hard, grey gravelly clay with some cobbles to 150mm, M<<Wp		D,PID,pp	0.1		<1 ppm, >400 kPa		
	0.35	CLAY - Hard, grey mottled orange-red clay with some fine to coarse grained gravel and cobbles to 100mm, M<Wp		D,PID,pp	0.5		<1 ppm, >400 kPa		
	0.6	CLAYSTONE/ SILTSTONE - Very low strength, extremely weathered, grey mottled orange fragmented claystone / siltstone with some ironstaining							
	2.2	Pit discontinued at 2.2m, refusal							

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: CAT 428 Backhoe, 450mm bucket with teeth

LOGGED: Collins

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

Douglas Partners
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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 50
PROJECT No: 39663C
DATE: 01 Nov 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILLING - Generally comprising brown clayey silt, trace sub-rounded gravel up to 5mm, some rootlets, humid		D,PID	0.0		<1ppm		
	0.15				0.15				
		FILLING - Generally comprising clayey silt with some fine grained sandy gravel sized coal chitter (1-2%) and slag (1%), humid		D,PID	0.2		<1ppm		
	0.35				0.3				
	0.5	CLAYEY SILT - (Stiff) brown clayey silt with some fine grained sand, trace rootlets, humid							
		GRAVELLY SILTY CLAY - Hard red mottled grey gravelly silty clay, sub-angular gravel							
					0.8		<1ppm 400kPa		
	1			D, PID, pp	1.0				1
	1.2								
		SILTY CLAY - Hard grey silty clay with sub-angular gravel from 1.2m, grading to extremely low strength, extremely weathered conglomerate							
					1.6		<1ppm 310kPa		
				D, PID, pp	1.8				
	1.9								
		Pit discontinued at 1.9m, refusal on conglomerate							
	2								2
	3								3
	4								4

RIG: Backhoe, 450mm bucket with teeth

LOGGED: Karpiel

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 51
PROJECT No: 39663C
DATE: 01 Nov 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
					0.0		<1ppm		5 10 15 20
		FILLING - Generally comprising brown clayey silt, trace sub-rounded gravel with trace (1-2%) gravel sized coal chitter, humid		D, PID	0.15				
		from 0.6m, becoming moist							
	0.7	FILLING - Generally comprising brown clayey sandy gravel, gravel generally comprising gravel sized coal chitter (50%)			0.8		<1ppm		
	1			D, PID	1.0				1
	1.9	CLAYEY SAND - Firm, grey mottled red rounded fine grained clayey sand with some trace sub-rounded gravel							
	2			D, PID, pp	2.0		<1ppm 70kPa	▽	2
					2.2				
					2.8		<1ppm		
	3			D, PID	3.0				3
	3.6	Pit discontinued at 3.6m, refusal on conglomerate							
	4								4

RIG: Backhoe, 450mm bucket with teeth

LOGGED: Karpiel

WATER OBSERVATIONS: Water seepage at 2.1m

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 52
PROJECT No: 39663C
DATE: 01 Nov 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
					0.0		<1ppm		5 10 15 20
		FILLING - Generally comprising brown clayey sandy silt, some sub-angular gravel including trace coal chitter (1-2%) up to 4mm, trace porceline and scrap metal, with rootlets to 0.15m, humid		D, PID	0.15				
	0.3	FILLING - Generally comprising grey mottled red brown silty clay, trace sand and gravel sized coal chitter (1-2%), humid		D, PID	0.3		Aggressivity <1ppm		
					0.5				
	0.7	SILTY CLAY - Very stiff, grey mottled orange brown silty clay with some sub-angular gravel, M<P							
1									1
					1.3		<1ppm 320kPa		
				D, PID, pp	1.5				
	1.7	CLAYEY SAND - (Medium dense) grey mottled orange brown clayey fine grained sand							
2		from 2.1m, becoming moist							2
3	3.0	Pit discontinued at 3.0m, limit of investigation							3
4									4

RIG: Backhoe, 450mm bucket with teeth

LOGGED: Karpiel

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 53
PROJECT No: 39663C
DATE: 01 Nov 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0			D, PID	0.0		<1ppm		
	0.2	FILLING - Generally comprising brown clayey silt with some sub-angular gravel, trace inclusion of sand (2%), coal chitter (1-2%), abundant rootlets, humid			0.15				
		FILLING - Generally comprising dark brown and black silty sandy gravel, generally comprising gravel sized coal/coal chitter (80%)		D, PID	0.3		<1ppm		
	0.6				0.5				
		FILLING - Generally comprising light brown silty sandy gravel, gravel predominantly ash (70%), ranging up to 50mm, humid		D, PID	0.8		<1ppm		
1					1.0				1
	1.1	FILLING - Generally comprising light brown silty sandy gravel, generally comprising sub-angular siltstone/conglomerate and some coal chitter (5%), humid							
2	2.0	SILTY CLAY - Firm grey mottled red brown silty clay, trace sub-rounded gravel (angular ironstone) (possibly filling)		D, PID	2.2				2
					2.3				
	2.4	Pit discontinued at 2.4m, refusal on conglomerate							
3									3
4									4

RIG: Backhoe, 450mm bucket with teeth

LOGGED: Karpiel

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Sandstone/siltstone boulders up to 0.5m mid in eastern end of tip 1.2m to 1.5m

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧗ Water level

CHECKED
Initials:
Date:

Douglas Partners
Geotechnics · Environment · Groundwater

TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 54
PROJECT No: 39663C
DATE: 01 Nov 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
					0.0		<1ppm		5 10 15 20
		FILLING - Generally comprising brown clayey silt with some sub-angular gravel (siltstone mudstone 3-5% and coal chitter 1%)		D, PID	0.15				
	0.6	FILLING - Generally comprising brown silty clay with some sub-angular gravel (siltstone/conglomerate (40%)) and trace coal chitter (5%) ranging up to 80mm in parts			0.8				
1				D, PID	1.0				1
		from 1.2m, with some fine grained sand							
2	2.0	CLAYEY GRAVELLY SAND - Orange brown mottled grey clayey gravelly sand predominantly conglomerate gravel (siltstone/conglomerate) with some green mottling in parts							2
				D, PID, pp	2.5		126kPa		
					2.7				
3				D, PID, pp	3.0		130kPa		3
					3.2				
	3.4	Pit discontinued at 3.4m, due to maximum reach of backhoe							
4									4

RIG: Backhoe, 450mm bucket with teeth

LOGGED: Karpiel

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 55
PROJECT No: 39663C
DATE: 01 Nov 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILLING - Generally comprising brown sandy gravel, predominately angular sand and gravel sized coal/coal chitter ranging up to 20mm (50%), silt (20%), clay (30%), humid		D, PID	0.0 0.02		<1ppm		
	0.4	FILLING - Generally comprising brown silty clayey sand with some angular gravel (siltstone/mudstone) and minor coal/coal chitter (5-10%) up to 40mm, trace rootlets, humid		D, PID	0.8 1.0		<1ppm		
	1.4	SILTY CLAY - Stiff grey brown mottled red brown silty clay, trace rootlets to 2.7m from 2.4m, colour change to grey mottled red		D, PID, pp	1.5 1.7		<1ppm 150kPa		
	2.7	Pit discontinued at 2.7m, due to slow progress							

RIG: Backhoe, 450mm bucket with teeth

LOGGED: Karpiel

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 56
PROJECT No: 39663C
DATE: 01 Nov 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILLING - Generally comprising brown clayey silt with some fine grained silt, angular rock fragments (siltstone and mudstone) some siltstone and brock fragments ranging up to 60mm		D,PID	0.0 0.15		<1ppm		
	0.5	CLAYEY SAND - (Dense) grey clayey sand with some angular rock fragments (siltstone conglomerate)		D,PID, pp	0.8 1.0		<1ppm 320kPa		
	1								1
		from 1.1m, grading to weathered, low strength conglomerate							
	1.3	CONGLOMERATE - Low strength, weathered grey conglomerate		D, PID	1.3		<1ppm		
	1.5	Pit discontinued at 1.5m, refusal on conglomerate			1.5				
	2								2
	3								3
	4								4

RIG: Backhoe, 450mm bucket with teeth

LOGGED: Karpiel

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧗ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 58
PROJECT No: 39663C
DATE: 02 Nov 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
	0.0	FILLING - Generally comprising brown silty clay, slightly gravelly with abundant rootlets to 0.1m		D, PID	0.1		<1ppm		
					0.3				
	0.4	FILLING - Generally comprising brown and grey gravelly silty clay, slightly sandy, predominately angular siltstone/sandstone ranging up to 200mm, humid to moist		D, PID	0.8		21ppm		
	1				1.0				1
	2							▼	2
	2.3	FILLING - Generally comprising black clayey gravel, predominately coal/coal chitter (80%), moist to wet		D, PID	2.5		4ppm		
					2.7				
	3								3
	3.1	Pit discontinued at 3.1m, refusal on sandstone							
	4								4

RIG: Backhoe, 450mm bucket with teeth

LOGGED: Karpiel

WATER OBSERVATIONS: Free groundwater observed at 2.3m

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 59
PROJECT No: 39663C
DATE: 01 Nov 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILLING - Generally comprising dark brown silt with some angular gravel/coal chitter (up to 70% in parts) with abundant rootlets to 0.75m, humid		D	0.0 0.15				
	0.4	CLAYEY SILT - (Firm to stiff) brown clayey silt with some fine grained sand, M<P		D, A	0.5 0.6		Aggresivity		
	0.8	SANDY CLAY - Very stiff grey mottled red brown sandy clay with some angular rock fragments (siltstone/mudstone), M<P		A, pp	0.8 1.0		310kPa		
	1			D, pp	1.3 1.5				1
	1.7	CONGLOMERATE - Weathered, low strength conglomerate comprising fine grained sand clay and angular to sub-rounded rock fragments							
	1.8	Pit discontinued at 1.8m, refusal on rock							
	2								2
	3								3
	4								4

RIG: Backhoe, 450mm bucket with teeth

LOGGED: Karpiel

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 60
PROJECT No: 39663C
DATE: 31 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILLING - Generally comprising dark brown silty sand with some gravel and comprising siltstone (15%) coal chitter (20%) up to 40mm		D, PID	0.0		<1ppm		
					0.15				
				D, PID	0.3		<1ppm		
					0.5				
1									1
	1.3	FILLING - Generally comprising black gravelly sand, predominantly medium grained coal/coal chitter (90%) with some silt (10%), humid		D, PID	1.3		<1ppm		
					1.5				
	1.9	FILLING - Generally comprising brown mottled red brown silty clay trace (3%) coal chitter gravel up to 30mm, humid		D, PID	2.0		<1ppm		
2									2
	2.3				2.2				
	2.4	FILLING - Generally comprising red brown mottled red silty clay with some ironstone gravel							
		SANDY CLAY/CLAYEY SAND - Grey sandy clay/clayey sand, trace gravel and organics							
				D, PID, pp	2.8		<1ppm 50kPa		
3					3.0			▽	3
					3.5		<1ppm		
				D, PID					
	3.7	Pit discontinued at 3.7m, practical reach of backhoe			3.7				
4									4

RIG: Backhoe, 450mm bucket with teeth

LOGGED: Karpiel

WATER OBSERVATIONS: Water seepage at 3.3m

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 61
PROJECT No: 39663C
DATE: 02 Nov 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILLING - Generally comprising brown gravelly sandy clay, gravel predominately angular sandstone and siltstone, humid		D, PID	0.3		<1ppm		
					0.5				
	0.6	FILLING - Generally comprising brown clayey sand with some angular sandstone (10%) coal chitter gravel (10%), humid		D, PID	0.8		<1ppm		
	1				1.0				1
	1.3	FILLING - Generally comprising brown fine grained sand, humid							
	1.4	Pit discontinued at 1.4m, due to possible services							
	2								2
	3								3
	4								4

RIG: Backhoe, 450mm bucket with teeth

LOGGED: Karpiel

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 61A
PROJECT No: 39663C
DATE: 02 Nov 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.15	FILLING - Generally comprising brown clayey sand with some angular gravel, some rootlets, humid							
		FILLING - Generally comprising yellow/orange clayey sand with some angular cobble sized sandstone/crushed sandstone up to 150mm, humid		D, PID	0.8		<1ppm		
	1				1.0				
				D, PID	1.9		<1ppm		
	2								
	2.1	Pit discontinued at 2.1m, refusal in fill			2.1				
	3								
	4								

RIG: Backhoe, 450mm bucket with teeth

LOGGED: Karpiel

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 62
PROJECT No: 39663C
DATE: 02 Nov 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILLING - Generally comprising light brown gravelly clayey grained sand gravel sized angular sandstone (15%) coal chitter(<2%) with abundant rootlets to 2m, humid		D, PID	0.3		<1ppm		
	0.5	SILTY CLAY - Very stiff, grey mottled red silty clay, trace rootlets, humid, M<P		D, PID, pp	0.5 0.8 1.0		<1ppm 310kPa		
	1								1
	1.3	CLAYEY SILT - Very stiff dark brown clayey silt							
	1.4	SANDY CLAY/CLAYEY SAND - Very stiff/medium dense brown mottled red borwn sandy clay		D, PID, pp	1.5 1.7		<1ppm 360kPa		
	2								2
	2.4	Pit discontinued at 2.4m, refusal on sandstone							
	3								3
	4								4

RIG: Backhoe, 450mm bucket with teeth

LOGGED: Karpiel

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 63
PROJECT No: 39663C
DATE: 02 Nov 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILLING - Generally comprising brown gravelly sandy clay, gravel sized sandstone (10%) coal chitter (5%), humid		D, PID	0.3		<1ppm Aggresivity		
					0.5				
	0.7	FILLING - Generally comprising yellow brown gravelly clayey sand with some sandstone cobbles, humid		D, PID	0.8		<1ppm		
	1				1.0				1
	1.2	FILLING - Generally comprising brown gravelly sandy silt with some clay, gravel predominately sub-angular sandstone (70%) trace coal chitter (2-5%), humid		D, PID	1.3		<1pm		
					1.5				
	2								2
	2.1	CLAYEY SAND/SANDY CLAY - (Hard/medium dense) brown mottled red clayey sand/sandy clay, M<P		D, PID, pp	2.5		<1ppm 450kPa		
					2.7				
	3								3
	3.1	Pit discontinued at 3.1m, refusal on sandstone							
	4								4

RIG: Backhoe, 450mm bucket with teeth

LOGGED: Karpiel

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 64
PROJECT No: 39663C
DATE: 02 Nov 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
	0.0	FILLING - Generally comprising light grey clayey silt, trace angular gravel, some rootlets, dry		D, PID	0.0 0.15		<1ppm		
	0.2	FILLING - Generally comprising light brown silty clay with some angular gravel, trace rootlets, dry		D, PID	0.3 0.5		<1ppm		
	1.3	FILLING - Generally comprising dark brown clayey silt, trace inlusion of grey silty clay and angular gravel (siltstone)		D, PID	1.3 1.5		<1ppm		
	1.4	FILLING - Generally comprising grey mottled red brown silty clay, trace rootlets, dry to humid							
	1.9	CLAYEY SILT - Brown (firm) clayey silt, trace angular gravel (siltstone), trace rootlets (possibly filling)		D, PID	2.0 2.2		<1ppm 370kPa, residual topsoil		
	2.4	SANDY CLAY/CLAYEY SAND - Very stiff grey mottled orange brown sandy clay, trace rootlets, M<P							
	2.7	Pit discontinued at 2.7m, refusal on sandstone							

RIG: Backhoe, 450mm bucket with teeth

LOGGED: Karpiel

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 65
PROJECT No: 39663C
DATE: 31 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.25	FILLING - Generally comprising dark brown/black silty sand, predominately coal chitter (40%), ash (30%) gravel ranging up to 20mm (silt 10%, sand 20%), trace rootlets		D, PID	0.0 0.15		<1ppm		
	1.2	FILLING - Generally comprising black gravelly sand, predominately sandy gravel sized coal chitter (40%)) and some sandstone to 30mm (40%)		D, PID	0.3 0.5		<1ppm		
	2.6	FILLING - Generally comprising grey mottled orange brown silty clay, trace gravel		D, PID	1.3 1.5		<1ppm		
	3.5	SILTY CLAY - Stiff grey mottled orange brown silty clay, M<P		D, PID, pp	2.8 3.0		<1ppm 150kPa		
	3.7	SILTY CLAY - Stiff grey silty clay		D, PID, pp	3.55 3.7		<1ppm 110kPa		
		Pit discontinued at 3.7m, limit of investigation							

RIG: Backhoe, 450mm bucket with teeth

LOGGED: Karpiel

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 66
PROJECT No: 39663C
DATE: 02 Nov 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILLING - Generally comprising brown clayey silt angular gravel predominately comprising coal chitter (50-60%), abundant rootlets to 0.2m, dry		D, PID	0.3		<1ppm		
	0.6				0.5				
		SANDY CLAY/CLAYEY SAND - Very stiff grey mottled orange brown sandy clay/clayey sand, trace rootlets, M<P		D, PID, pp	0.8		<1ppm 150kPa		
	1				1.0				1
	1.1	Pit discontinued at 1.1m, refusal on sandstone							
	2								2
	3								3
	4								4

RIG: Backhoe, 450mm bucket with teeth

LOGGED: Karpiel

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 67
PROJECT No: 39663C
DATE: 02 Nov 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILLING - Generally comprising brown clayey silt with some travel sandstone cobbles, trace rootlets, dry							
		from 0.3m, abundant fibre cement pieces up to 20mm and some corrogated metal sheeting between 0.3-0.5m		D, PID	0.3		<1ppm		
				D, PID	0.5		<1ppm		
	0.7	Pit discontinued at 0.7m, refusal on sandstone			0.6				
	1								1
	2								2
	3								3
	4								4

RIG: Backhoe, 450mm bucket with teeth

LOGGED: Karpiel

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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TEST PIT LOG

CLIENT: Coal & Allied Pty Ltd
PROJECT: Preliminary Geo-Contamination Assessment
LOCATION: Minmi

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 68
PROJECT No: 39663C
DATE: 30 Oct 07
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
	0.1	TOPSOIL - Generally comprising dark silty sand with some clay, abundant rootlets, humid							
		SILTY CLAY - Very stiff brown silty clay, trace rootlets, M<P		D, PID, pp	0.3		<1ppm 290kPa		
					0.5				
	0.6	CLAY - Hard grey mottled orange brown clay, trace rootlets, M<P							
	1			D, PID, pp	1.1		<1ppm 600kPa		1
	1.35	Pit discontinued at 1.35m, refusal in hard clay (weathered mudstone)			1.3				
	2								2
	3								3
	4								4

RIG: Backhoe, 450mm bucket with teeth

LOGGED: Karpiel

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED
Initials:
Date:

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