GEOTECHNICAL MAPPING SYMBOLS

TOPOGRAPHY

Symbol *Ground Profile*

convex
concave
} well defined or angular break of slope

convex
concave
} poorly defined or smooth change of slope

breaks of slope
changes of slope
} convex and concave too close together to allow the use of separate symbols

sharp
rounded
} ridge crest

3 Cliff or escarpment or sharp break 40° or more (estimated height in metres)

15 Uniform Slope
10 Concave Slope
8 Convex Slope
} Slope direction and angle (Degrees)

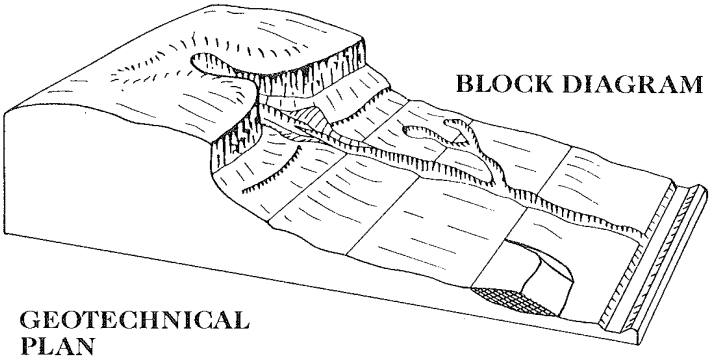
Top
Bottom
} Cut or fill slope, arrows pointing down slope

Hummocky or irregular ground

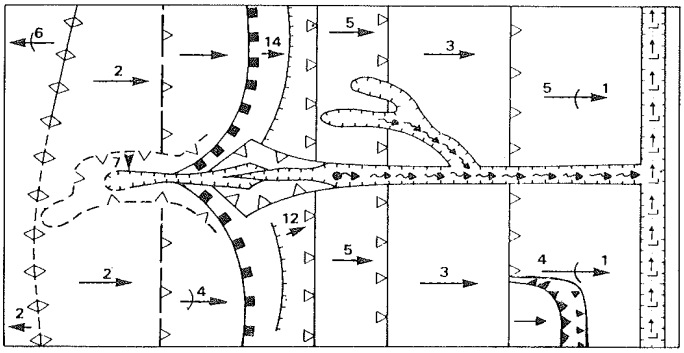
OTHER FEATURES

Boulder
Seepage/spring
Swallow hole for runoff
Natural water course
Open drain, unlined
Open drain, lined
Fenceline
Property boundary
Dry Stone Wall
J —— J 200 Major joint in rock face (opening in millimetres)
– T – T – 10 Tension crack (opening in millimetres)
Masonry or concrete wall
Ponding water
Boggy or swampy area

EXAMPLE OF USE OF TOPOGRAPHIC SYMBOLS:



GEOTECHNICAL PLAN



(After Gardiner, V & Dackombe, R.V. (1983), Geomorphological Field Manual; George Allen & Unwin).

REPORT EXPLANATION NOTES

INTRODUCTION

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

The ground is a product of continuing natural and man-made processes and therefore exhibits a variety of characteristics and properties which vary from place to place and can change with time. Geotechnical engineering involves gathering and assimilating limited facts about these characteristics and properties in order to understand or predict the behaviour of the ground on a particular site under certain conditions. This report may contain such facts obtained by inspection, excavation, probing, sampling, testing or other means of investigation. If so, they are directly relevant only to the ground at the place where and time when the investigation was carried out.

DESCRIPTION AND CLASSIFICATION METHODS

The methods of description and classification of soils and rocks used in this report are based on Australian Standard 1726, the SAA Site Investigation Code. In general, descriptions cover the following properties – soil or rock type, colour, structure, strength or density, and inclusions. Identification and classification of soil and rock involves judgement and the Company infers accuracy only to the extent that is common in current geotechnical practice.

Soil types are described according to the predominating particle size and behaviour as set out in the attached Unified Soil Classification Table qualified by the grading of other particles present (eg. sandy clay) as set out below:

Soil Classification	Particle Size
Clay	less than 0.002mm
Silt	0.002 to 0.06mm
Sand	0.06 to 2mm
Gravel	2 to 60mm

Non-cohesive soils are classified on the basis of relative density, generally from the results of Standard Penetration Test (SPT) as below:

Relative Density	SPT 'N' Value (blows/300mm)
Very loose	less than 4
Loose	4 – 10
Medium dense	10 – 30
Dense	30 – 50
Very Dense	greater than 50

Cohesive soils are classified on the basis of strength (consistency) either by use of hand penetrometer, laboratory testing or engineering examination. The strength terms are defined as follows.

Classification	Unconfined Compressive Strength kPa
Very Soft	less than 25
Soft	25 – 50
Firm	50 – 100
Stiff	100 – 200
Very Stiff	200 – 400
Hard	Greater than 400
Friable	Strength not attainable – soil crumbles

Rock types are classified by their geological names, together with descriptive terms regarding weathering, strength, defects, etc. Where relevant, further information regarding rock classification is given in the text of the report. In the Sydney Basin, 'Shale' is used to describe thinly bedded to laminated siltstone.

SAMPLING

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

Disturbed samples taken during drilling provide information on plasticity, grain size, colour, moisture content, minor constituents and, depending upon the degree of disturbance, some information on strength and structure. Bulk samples are similar but of greater volume required for some test procedures.

Undisturbed samples are taken by pushing a thin-walled sample tube, usually 50mm diameter (known as a U50), into the soil and withdrawing it with a sample of the soil contained 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 used are given on the attached logs.

INVESTIGATION METHODS

The following is a brief summary of investigation methods currently adopted by the Company and some comments on their use and application. All except test pits, hand auger drilling and portable dynamic cone penetrometers require the use of a mechanical drilling rig which is commonly mounted on a truck chassis.

Test Pits: These are normally excavated with a backhoe or a tracked excavator, allowing close examination of the insitu soils if it is safe to descend into the pit. The depth of penetration is limited to about 3m for a backhoe and up to 6m for an excavator. Limitations of test pits are the problems associated with disturbance and difficulty of reinstatement and the consequent effects on close-by structures. Care must be taken if construction is to be carried out near test pit locations to either properly recompact the backfill during construction or to design and construct the structure so as not to be adversely affected by poorly compacted backfill at the test pit location.

Hand Auger Drilling: A borehole of 50mm to 100mm diameter is advanced by manually operated equipment. Premature refusal of the hand augers can occur on a variety of materials such as hard clay, gravel or ironstone, and does not necessarily indicate rock level.

Continuous Spiral Flight Augers: The borehole is advanced using 75mm to 115mm diameter continuous spiral flight augers, which are withdrawn at intervals to allow sampling and insitu testing. This is a relatively economical means of drilling in clays and in sands above the water table. Samples are returned to the surface by the flights or may be collected after withdrawal of the auger flights, but they can be very disturbed and layers may become mixed. Information from the auger sampling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively lower reliability due to mixing or softening of samples by groundwater, or uncertainties as to the original depth of the samples. Augering below the groundwater table is of even lesser reliability than augering above the water table.

Rock Augering: Use can be made of a Tungsten Carbide (TC) bit for auger drilling into rock to indicate rock quality and continuity by variation in drilling resistance and from examination of recovered rock fragments. This method of investigation is quick and relatively inexpensive but provides only an indication of the likely rock strength and predicted values may be in error by a strength order. Where rock strengths may have a significant impact on construction feasibility or costs, then further investigation by means of cored boreholes may be warranted.

Wash Boring: The borehole is usually 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.

Mud Stabilised Drilling: Either Wash Boring or Continuous Core Drilling can use drilling mud as a circulating fluid to stabilise the borehole. The term 'mud' encompasses a range of products ranging from bentonite to polymers such as Revert or Biogel. The mud tends to mask the cuttings and reliable identification is only possible from intermittent intact sampling (eg. from SPT and U50 samples) or from rock coring, etc.

Continuous Core Drilling: A continuous core sample is obtained using a diamond tipped core barrel. Provided full core recovery is achieved (which is not always possible in very low strength rocks and granular soils), this technique provides a very reliable (but relatively expensive) method of investigation. In rocks, an NMLC triple tube core barrel, which gives a core of about 50mm diameter, is usually used with water flush. The length of core recovered is compared to the length drilled and any length not recovered is shown as CORE LOSS. The location of losses are determined on site by the supervising engineer; where the location is uncertain, the loss is placed at the top end of the drill run.

Standard Penetration Tests: Standard Penetration Tests (SPT) are used mainly in non-cohesive soils, but can also be used in cohesive soils as a means of indicating 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 F3.1.

The test is carried out in a borehole by driving a 50mm diameter split sample tube with a tapered shoe, under the impact of a 63kg hammer with a free fall of 760mm. It is normal for the tube to be driven in three successive 150mm increments and the 'N' value is taken as the number of blows for the last 300mm. In dense sands, very hard clays or weak rock, the full 450mm 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 150mm of, say, 4, 6 and 7 blows, as

  N = 13
  4, 6, 7

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

  N>30
  15, 30/40mm

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

Occasionally, the drop hammer is used to drive 50mm diameter thin walled sample tubes (U50) in clays. In such circumstances, the test results are shown on the borehole logs in brackets.

A modification to the SPT test is where the same driving system is used with a solid 60° tipped steel cone of the same diameter as the SPT hollow sampler. The solid cone can be continuously driven for some distance in soft clays or loose sands, or may be used where damage would otherwise occur to the SPT. The results of this Solid Cone Penetration Test (SCPT) are shown as 'N_c' on the borehole logs, together with the number of blows per 150mm penetration.

Static Cone Penetrometer Testing and Interpretation: Cone penetrometer testing (sometimes referred to as a Dutch Cone) described in this report has been carried out using a Cone Penetrometer Test (CPT). The test is described in Australian Standard 1289, Test F5.1.

In the tests, a 35mm or 44mm diameter rod with a conical tip is pushed continuously into the soil, the reaction being provided by a specially designed truck or rig which is fitted with a hydraulic ram system. Measurements are made of the end bearing resistance on the cone and the frictional resistance on a separate 134mm or 165mm long sleeve, immediately behind the cone. Transducers in the tip of the assembly are electrically connected by 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 20mm per second) the information is output as incremental digital records every 10mm. The results given in this report have been plotted from the digital data.

The information provided on the charts comprise:

- 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 as a percentage.

  The ratios of the sleeve resistance to cone resistance will vary with the type of soil encountered, with higher relative friction in clays than in sands. Friction ratios of 1% to 2% are commonly encountered in sands and occasionally very soft clays, rising to 4% to 10% in stiff clays and peats. Soil descriptions based on cone resistance and friction ratios are only inferred and must not be considered as exact.

Correlations between CPT and SPT values can be developed for both sands and clays but may be site specific.

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

Stratification can be inferred from the cone and friction traces and from experience and information from nearby boreholes etc. Where shown, this information is presented for general guidance, but must be regarded as interpretive. The test method provides a continuous profile of engineering properties but, where precise information on soil classification is required, direct drilling and sampling may be preferable.

Portable Dynamic Cone Penetrometers: Portable Dynamic Cone Penetrometer (DCP) tests are carried out by driving a rod into the ground with a sliding hammer and counting the blows for successive 100mm increments of penetration.

Two relatively similar tests are used:

- Cone penetrometer (commonly known as the Scala Penetrometer) – a 16mm rod with a 20mm diameter cone end is driven with a 9kg hammer dropping 510mm (AS1289, Test F3.2). The test was developed initially for pavement subgrade investigations, and correlations of the test results with California Bearing Ratio have been published by various Road Authorities.
- Perth sand penetrometer – a 16mm diameter flat ended rod is driven with a 9kg hammer, dropping 600mm (AS1289, Test F3.3). This test was developed for testing the density of sands (originating in Perth) and is mainly used in granular soils and filling.

LOGS

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

The attached explanatory notes define the terms and symbols used in preparation of the logs.

Interpretation of the information shown on the logs, and its application to design and construction, should therefore take into account the spacing of boreholes or test pits, the method of drilling or excavation, the frequency of sampling and testing and the possibility of other than 'straight line' variations between the boreholes or test pits. Subsurface conditions between boreholes or test pits may vary significantly from conditions encountered at the borehole or test pit locations.

GROUNDWATER

Where groundwater levels are measured in boreholes, there are several potential problems:

- Although groundwater may be present, in low permeability soils it 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 and may not be the same at the time of construction.
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must be washed out of the hole or 'reverted' chemically if water observations are to be made.

More reliable measurements can be made by installing standpipes which are read after stabilising at intervals ranging from several days to 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 perched water tables or surface water.

FILL

The presence of fill materials can often be determined only by the inclusion of foreign objects (eg. bricks, steel, etc) or by distinctly unusual colour, texture or fabric. Identification of the extent of fill materials will also depend on investigation methods and frequency. Where natural soils similar to those at the site are used for fill, it may be difficult with limited testing and sampling to reliably determine the extent of the fill.

The presence of fill materials is usually regarded with caution as the possible variation in density, strength and material type is much greater than with natural soil deposits. Consequently, there is an increased risk of adverse engineering characteristics or behaviour. If the volume and quality of fill is of importance to a project, then frequent test pit excavations are preferable to boreholes.

LABORATORY TESTING

Laboratory testing is normally 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.

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 conditions, 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 be partially dependent on borehole spacing and sampling frequency as well as investigation technique.
- Changes in policy or interpretation of policy by statutory authorities.
- The actions of persons or contractors responding to commercial pressures.

If these occur, the company will be pleased to assist with investigation or advice to resolve any problems occurring.

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 that 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.

REVIEW OF DESIGN

Where major civil or structural developments are proposed or where only a limited investigation has been completed or where the geotechnical conditions/ constraints are quite complex, it is prudent to have a joint design review which involves a senior geotechnical engineer.

SITE INSPECTION

The company will always be pleased to provide engineering inspection services for geotechnical aspects of work to which this report is related.

Requirements could range from:

i) a site visit to confirm that conditions exposed are no worse than those interpreted, to

ii) a visit to assist the contractor or other site personnel in identifying various soil/rock types such as appropriate footing or pier founding depths, or

iii) full time engineering presence on site.

GRAPHIC LOG SYMBOLS FOR SOILS AND ROCKS

SOIL


FILL


TOPSOIL


CLAY (CL, CH)


SILT (ML, MH)


SAND (SP, SW)


GRAVEL (GP, GW)


SANDY CLAY (CL, CH)


SILTY CLAY (CL, CH)


CLAYEY SAND (SC)


SILTY SAND (SM)


GRAVELLY CLAY (CL, CH)


CLAYEY GRAVEL (GC)


SANDY SILT (ML)


PEAT AND ORGANIC SOILS

ROCK


CONGLOMERATE


SANDSTONE


SHALE


SILTSTONE, MUDSTONE, CLAYSTONE


LIMESTONE


PHYLLITE, SCHIST


TUFF


GRANITE, GABBRO


DOLERITE, DIORITE


BASALT, ANDESITE


QUARTZITE

DEFECTS AND INCLUSIONS


CLAY SEAM


SHEARED OR CRUSHED SEAM


BRECCIATED OR SHATTERED SEAM/ZONE


IRONSTONE GRAVEL


ORGANIC MATERIAL

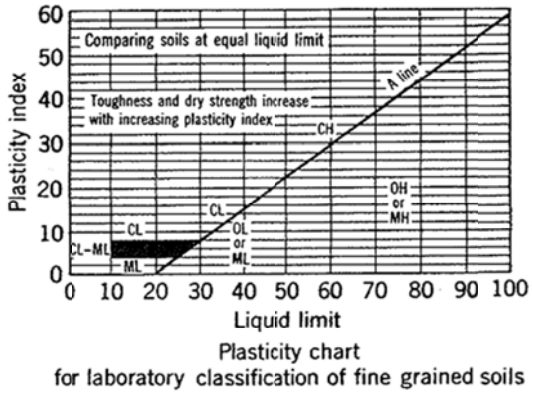
OTHER MATERIALS


CONCRETE


BITUMINOUS CONCRETE, COAL


COLLUVIUM

Field Identification Procedures (Excluding particles larger than 75 μm and basing fractions on estimated weights)				Group Symbols [a]	Typical Names	Information Required for Describing Soils	Laboratory Classification Criteria
Coarse-grained soils More than half of material is *larger* than 75 μm sieve size[b] (The 75 μm sieve size is about the smallest particle visible to naked eye)	Gravels More than half of coarse fraction is larger than 4 mm sieve size	Clean gravels (little or no fines)	Wide range in grain size and substantial amounts of all intermediate particle sizes	*GW*	Well graded gravels, gravel-sand mixtures, little or no fines	Give typical name; indicate approximate percentages of sand and gravel; maximum size; angularity, surface condition, and hardness of the coarse grains; local or geologic name and other pertinent descriptive information; and symbols in parentheses For undisturbed soils add information on stratification, degree of compactness, cementation, moisture conditions and drainage characteristics Example: *Silty sand*, gravelly; about 20% hard, angular gravel particles 12 mm maximum size; rounded and subangular sand grains coarse to fine, about 15% non-plastic fines with low dry strength; well compacted and moist in place; alluvial sand; (*SM*)	Use grain size curve in identifying the fractions as given under field identification Determine percentages of gravel and sand from grain size curve Depending on percentage of fines (fraction smaller than 75 μm sieve size) coarse grained soils are classified as follows: Less than 5% *GW, GP, SW, SP* More than 12% *GM, GC, SM, SC* 5% to 12% *Borderline* cases requiring use of dual symbols $C_U = \frac{D_{60}}{D_{10}}$ Greater than 4 $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3 Not meeting all gradation requirements for *GW* Atterberg limits below "A" line, or *PI* less than 4 / Atterberg limits above "A" line, with *PI* greater than 7 — Above "A" line with *PI* between 4 and 7 are *borderline* cases requiring use of dual symbols $C_U = \frac{D_{60}}{D_{10}}$ Greater than 6 $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3 Not meeting all gradation requirements for *SW* Atterberg limits below "A" line or *PI* less than 5 / Atterberg limits below "A" line with *PI* greater than 7 — Above "A" line with *PI* between 4 and 7 are *borderline* cases requiring use of dual symbols
		Gravels with fines (appreciable amount of fines)	Predominantly one size or a range of sizes with some intermediate sizes missing	*GP*	Poorly graded gravels, gravel-sand mixtures, little or no fines		
			Nonplastic fines (for identification procedures see *ML* below)	*GM*	Silty gravels, poorly graded gravel-sand-silt mixtures		
			Plastic fines (for identification procedures, see *CL* below)	*GC*	Clayey gravels, poorly graded gravel-sand-clay mixtures		
	Sands More than half of coarse fraction is smaller than 4 mm sieve size	Clean sands (little or no fines)	Wide range in grain sizes and substantial amounts of all intermediate particle sizes	*SW*	Well graded sands, gravelly sands, little or no fines		
			Predominantly one size or a range of sizes with some intermediate sizes missing	*SP*	Poorly graded sands, gravelly sands, little or no fines		
		Sands with fines (appreciable amount of fines)	Nonplastic fines (for identification procedures, see *ML* below)	*SM*	Silty sands, poorly graded sand-silt mixtures		
			Plastic fines (for identification procedures, see *CL* below)	*SC*	Clayey sands, poorly graded sand-clay mixtures		
Fine-grained soils More than half of material is *smaller* than 75 μm sieve size (The 75 μm sieve size is about the smallest particle visible to naked eye)	Identification Procedures on Fraction Smaller than 380 μm Sieve Size						
		Dry Strength (crushing characteristics)	Dilatancy (reaction to shaking)	Toughness (consistency near plastic limit)			
	Silts and clays liquid limit less than 50	None to slight	Quick to slow	None	*ML*	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with slight plasticity	Give typical name; indicate degree and character of plasticity, amount and maximum size of coarse grains; colour in wet condition, odour if any, local or geologic name, and other pertinent descriptive information, and symbol in parentheses For undisturbed soils add information on structure, stratification, consistency in undisturbed and remoulded states, moisture and drainage conditions Example: *Clayey silt*, brown; slightly plastic; small percentage of fine sand; numerous vertical root holes; firm and dry in place; loess; (*ML*)
		Medium to high	None to very slow	Medium	*CL*	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
		Slight to medium	Slow	Slight	*OL*	Organic silts and organic silt-clays of low plasticity	
	Silts and clays liquid limit greater than 50	Slight to medium	Slow to none	Slight to medium	*MH*	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	
		High to very high	None	High	*CH*	Inorganic clays of high plasticity, fat clays	
		Medium to high	None to very slow	Slight to medium	*OH*	Organic clays of medium to high plasticity	
Highly Organic Soils		Readily identified by colour, odour, spongy feel and frequently by fibrous texture			*Pt*	Peat and other highly organic soils	



Plasticity chart
for laboratory classification of fine grained soils

Note: 1 Soils possessing characteristics of two groups are designated by combinations of group symbols (eg. GW-GC, well graded gravel-sand mixture with clay fines).
2 Soils with liquid limits of the order of 35 to 50 may be visually classified as being of medium plasticity.

LOG SYMBOLS

LOG COLUMN	SYMBOL	DEFINITION
Groundwater Record	▼	Standing water level. Time delay following completion of drilling may be shown.
	C	Extent of borehole collapse shortly after drilling.
	▶	Groundwater seepage into borehole or excavation noted during drilling or excavation.
Samples	ES	Soil sample taken over depth indicated, for environmental analysis.
	U50	Undisturbed 50mm diameter tube sample taken over depth indicated.
	DB	Bulk disturbed sample taken over depth indicated.
	DS	Small disturbed bag sample taken over depth indicated.
	ASB	Soil sample taken over depth indicated, for asbestos screening.
	ASS	Soil sample taken over depth indicated, for acid sulfate soil analysis.
	SAL	Soil sample taken over depth indicated, for salinity analysis.
Field Tests	N = 17 4, 7, 10	Standard Penetration Test (SPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration. 'R' as noted below.
	N_c = 5 7 3R	Solid Cone Penetration Test (SCPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration for 60 degree solid cone driven by SPT hammer. 'R' refers to apparent hammer refusal within the corresponding 150mm depth increment.
	VNS = 25	Vane shear reading in kPa of Undrained Shear Strength.
	PID = 100	Photoionisation detector reading in ppm (Soil sample headspace test).
Moisture Condition (Cohesive Soils)	MC>PL	Moisture content estimated to be greater than plastic limit.
	MC≈PL	Moisture content estimated to be approximately equal to plastic limit.
	MC<PL	Moisture content estimated to be less than plastic limit.
(Cohesionless Soils)	D	DRY – Runs freely through fingers.
	M	MOIST – Does not run freely but no free water visible on soil surface.
	W	WET – Free water visible on soil surface.
Strength (Consistency) Cohesive Soils	VS	VERY SOFT – Unconfined compressive strength less than 25kPa
	S	SOFT – Unconfined compressive strength 25-50kPa
	F	FIRM – Unconfined compressive strength 50-100kPa
	St	STIFF – Unconfined compressive strength 100-200kPa
	VSt	VERY STIFF – Unconfined compressive strength 200-400kPa
	H	HARD – Unconfined compressive strength greater than 400kPa
	( )	Bracketed symbol indicates estimated consistency based on tactile examination or other tests.
Density Index/ Relative Density (Cohesionless Soils)		**Density Index (I_D) Range (%)** / **SPT 'N' Value Range (Blows/300mm)**
	VL	Very Loose <15 0-4
	L	Loose 15-35 4-10
	MD	Medium Dense 35-65 10-30
	D	Dense 65-85 30-50
	VD	Very Dense >85 >50
	( )	Bracketed symbol indicates estimated density based on ease of drilling or other tests.
Hand Penetrometer Readings	300 250	Numbers indicate individual test results in kPa on representative undisturbed material unless noted otherwise.
Remarks	'V' bit	Hardened steel 'V' shaped bit.
	'TC' bit	Tungsten carbide wing bit.
	T 60	Penetration of auger string in mm under static load of rig applied by drill head hydraulics without rotation of augers.

LOG SYMBOLS continued

ROCK MATERIAL WEATHERING CLASSIFICATION

TERM	SYMBOL	DEFINITION
Residual Soil	RS	Soil developed on extremely weathered rock; the mass structure and substance fabric are no longer evident; there is a large change in volume but the soil has not been significantly transported.
Extremely weathered rock	XW	Rock is weathered to such an extent that it has "soil" properties, ie it either disintegrates or can be remoulded, in water.
Distinctly weathered rock	DW	Rock strength usually changed by weathering. The rock may be highly discoloured, usually by ironstaining. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.
Slightly weathered rock	SW	Rock is slightly discoloured but shows little or no change of strength from fresh rock.
Fresh rock	FR	Rock shows no sign of decomposition or staining.

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 Journal of Rock Mechanics, Mining, Science and Geomechanics. Abstract Volume 22, No 2, 1985.

TERM	SYMBOL	Is (50) MPa	FIELD GUIDE
Extremely Low:	EL		Easily remoulded by hand to a material with soil properties.
----------	----------	0.03	
Very Low:	VL		May be crumbled in the hand. Sandstone is "sugary" and friable.
----------	----------	0.1	
Low:	L		A piece of core 150mm long x 50mm dia. may be broken by hand and easily scored with a knife. Sharp edges of core may be friable and break during handling.
----------	----------	0.3	
Medium Strength:	M		A piece of core 150mm long x 50mm dia. can be broken by hand with difficulty. Readily scored with knife.
----------	----------	1	
High:	H		A piece of core 150mm long x 50mm dia. core cannot be broken by hand, can be slightly scratched or scored with knife; rock rings under hammer.
----------	----------	3	
Very High:	VH		A piece of core 150mm long x 50mm dia. may be broken with hand-held pick after more than one blow. Cannot be scratched with pen knife; rock rings under hammer.
----------	----------	10	
Extremely High:	EH		A piece of core 150mm long x 50mm dia. is very difficult to break with hand-held hammer. Rings when struck with a hammer.

ABBREVIATIONS USED IN DEFECT DESCRIPTION

ABBREVIATION	DESCRIPTION	NOTES
Be	Bedding Plane Parting	Defect orientations measured relative to the normal to the long core axis (ie relative to horizontal for vertical holes)
CS	Clay Seam	
J	Joint	
P	Planar	
Un	Undulating	
S	Smooth	
R	Rough	
IS	Ironstained	
XWS	Extremely Weathered Seam	
Cr	Crushed Seam	
60t	Thickness of defect in millimetres	

APPENDIX A

Borehole Log

Borehole No.	LS/BH1
Sheet	1 of 2
Job No.	2757
Location :	SEE FIGURE 2
Collar Level :	APPROX. RL 18.1m
Angle From Vertical :	0°
Bearing :	--

CLIENT: TAYLOR THOMSON WHITTING PTY. LTD.

PROJECT: NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI

Equipment Type : JACRO 200 , SOLID FLIGHT AUGERS
Hole Diameter : 100mm

Samples	Water	Casing	R.L. / Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type : Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure.	Consistency or Relative Density	Field Test Results	Geological Profile
					GW	CLAYEY SANDY GRAVEL with COBBLES, grey-brown, moist, medium plasticity fines, fragments of bricks, concrete and sandstone.	LOOSE TO MEDIUM DENSE		FILL
SPT1			1.0		SC	changing to CLAYEY SAND with SANDSTONE COBBLES, grey-brown, medium plasticity, fine to coarse grained, moist, SPT1 shoe damaged on sandstone boulder/cobble.		SPT1:6,12,22 N = 34	
						TC BIT REFUSAL AT 1.15m, COMMENCED CORING: CORED THROUGH SANDSTONE BOULDER OF 300mm SIZE, CONTINUED CORE DRILLING THROUGH CLAYEY GRAVELLY SAND FILL TO 3.1m, AT 3.1m CORING THROUGH SANDSTONE AGAIN.			
			2.0						
			3.0						
			4.0						
			5.0						
			6.0						
			7.0						
			8.0						
			9.0						
			10.0						

Logged By : P.M. Date : 28.6.1990.

Checked By : P.M. Date : 30.7.1990.

PJB

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TAYLOR THOMSON WHITTING
NEW SCHOOL DEVELOPMENT
LORETO - KIRRIBILLI
JOB NO 2757
BOREHOLE NO LS/BH1
BOX 1 OF 1
DEPTH 1.15 TO 5.90 M
PJB
LS/BH1
START 1.15m
CORE LOSS
CORE LOSS
2
3
4
5
6

Cored Borehole Log

Borehole No.	LS/BH1
Sheet	2 of 2
CLIENT: TAYLOR THOMSON WHITTING PTY. LTD.	Job No. 2757
PROJECT: NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI	Location : SEE FIGURE 2
Drill Type : TRUCK MOUNTED JACRO 200 Barrel Type, Length, Drilling fluid: NMLC, 3.0m, WATER	Collar Level : APPROX. RL = 18.1m Angle From Horizontal 90° Bearing : --

Method/Casing	R.Q.D./Lift	Water	R.L Depth Metres	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range	Is(50) MPa (D=diam A=axial)	Core Length (mm)	Defects	Defect Description
AUGER TC-BIT			1.0		FOR AUGER LOG SEE SHEET 1 OF 2.						STARTED CORING AT 1.15m.
NMLC CORING	0%	NOT MONITORED	2.0		CORE LOSS (probably FILL).						
					SANDSTONE, red-brown, medium grained, boulder.	HW					N/A
			3.0		CORE LOSS (probably FILL).	N/A					
					FILL, fragments of bricks, nails etc.			D=0.7			40mm clayey sand
					CORE LOSS (probably FILL).			A=1.4 D=0.7			
	100%		4.0		SANDSTONE, orange-grey-brown, medium grained, ironstained.	MW/ SW		D=0.9 D=1.0			
			5.0					A=1.9 *D=0.5 *D=0.7			10mm clayey sand seam
			6.0		CASING COLLAPSED AT 5.9m, BOREHOLE TERMINATED.						
			7.0								
			8.0								
			9.0								
			10.0								

DEFECTS ARE BEDDING PLANE PARTINGS, SMOOTH, CLEAN, IRONSTAINED, 10 TO 30 DEGRESS FROM HORIZONTAL UNLESS OTHERWISE STATED

Logged By : P.M. Date : 28.6.1990.	Checked By : P.M. Date : 30.7.1990.

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Borehole Log

Borehole No. LS/BH2

Sheet 1 of 2

Job No. 2757

CLIENT: TAYLOR THOMSON WHITTING PTY. LTD.

PROJECT: NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI

Location : SEE FIGURE 2

Collar Level : APPROX. RL=18.2m

Equipment Type : JACRO 200

Hole Diameter : 100mm

Angle From Vertical : 0°

Bearing : --

Samples	Water	Casing	R.L. / Depth Metres	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type : Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure.	Consistency or Relative Density	Field Test Results	Geological Profile
		SOLID FLIGHT AUGER			SW	CLAYEY GRAVELLY SAND, brown, fine to coarse, low to medium plasticity fines, moist, fragments of sandstone, tiles, bricks, ash etc. recovered from augers.	LOOSE		FILL
			1.0		SM	SILTY SAND, yellow-orange, fine to medium grained, moist. sandstone boulder from 1.3 to 1.5 metres.	VERY LOOSE		
SPT1			2.0		SC	CLAYEY GRAVELLY SAND, as above, with fragments of bricks, tiles, etc, becoming wet at 1.9m, very difficult augering with TC Bit from 2.1m.	LOOSE	SPT1: 2,4,5 N = 9	
						START CORING AT 2.15 metres.			
			3.0						
			4.0						
			5.0						
			6.0						
			7.0						
			8.0						
			9.0						
			10.0						

Logged By : P.M. Date : 28.6.1990. Checked By : P.M. Date : 30.7.1990.

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TAYLOR THOMSON WHITTING
NEW SCHOOL DEVELOPMENT
LORETO - KIRRIBILLI
JOB NO 2757
BOREHOLE NO LS/BH2
BOX 1 OF 1
DEPTH 2.15 TO 6.95 M
PJB
LS/BH2
START 2·15m
3
4
5
6
7

Cored Borehole Log

Borehole No.	LS/BH2
Sheet	2 of 2
CLIENT:	TAYLOR THOMSON WHITTING PTY. LTD.
Job No.	2757
PROJECT:	NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI
Location :	SEE FIGURE 2
Drill Type :	TRUCK MOUNTED JACRO 200
Barrel Type, Length, Drilling fluid:	NMLC, 3.0m, WATER
Collar Level :	APPROX. RL = 18.2m
Angle From Horizontal	90°
Bearing :	--

Method/Casing	R.Q.D./Lift	Water	R.L / Depth (Metres)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range	Is(50) MPa (D=diam A=axial)	Core Length (mm)	Defects	Defect Description
AUGER - TC BIT			1.0		SEE SHEET 1 OF 2 FOR DETAILS OF NON-CORED SECTIONS.						
			2.0								START CORING AT 2.15m.
NMLC CORING	95%	NOT MONITORED	3.0		SANDSTONE, red-brown, medium grained, ironstained.	MW/SW		D=0.7 D=0.8			DEFECTS ARE BEDDING PLANE PARTINGS, CLEAN, PLANAR, SMOOTH, IRONSTAINED UNLESS OTHERWISE STATED
					becoming grey-white.	SW/Fr		D=1.0			
			4.0					D=1.2 D=1.3			1mm clay smear
	95%		5.0					D=0.9 D=0.9			1mm clay smear 1mm clay smear
			6.0					D=1.1 D=1.2			
			7.0					D=1.3 D=1.3			
					BOREHOLE LS/BH2 TERMINATED AT 6.95m.						
			8.0								
			9.0								
			10.0								

Logged By : P.M. Date : 28.6.1990.

Checked By : P.M. Date : 30.7.1990.

Peter J. Burgess & Associates Pty Ltd

Borehole Log

Borehole No.	LS/BH3
Sheet	1 of 2
Job No.	2757

CLIENT: TAYLOR THOMSON WHITTING PTY. LTD.

PROJECT: NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI

Location : SEE FIGURE 2

Collar Level : APPROX. RL=16.2m
Angle From Vertical : 0°
Bearing : --

Equipment Type : TRUCK MOUNTED JACRO 200
Hole Diameter : 100mm

Samples	Water	Casing	R.L. / Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type : Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure.	Consistency or Relative Density	Field Test Results	Geological Profile
	NOT ENCOUNTERED	SOLID FLIGHT AUGER	1.0		SC	CLAYEY GRAVELLY SAND, brown, fine to coarse grained, low plasticity fines, moist, bricks, tiles and sandstone cobbles throughout.	LOOSE		FILL
			2.0			charcoal and slag from 2.0m within above material			
			3.0		SC	CLAYEY SAND, orange-yellow-brown, fine to medium grained, medium plasticity fines, moist.	MEDIUM DENSE		RESIDUAL SOIL/ EW SANDSTONE
			4.0			DIFFICULT DRILLING WITH TC BIT, COMMENCED CORING AT 3.65m.			
			5.0						
			6.0						
			7.0						
			8.0						
			9.0						
			10.0						

Logged By : P.M. Date : 29.6.1990.

Checked By : P.M. Date : 30.7.1990.

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Peter J. Burgess & Associates Pty Ltd


TAYLOR THOMSON WHITTING
NEW SCHOOL DEVELOPMENT
LORETO - KIRRIBILLI
JOB NO 2757
BOREHOLE NO LS/BH 3
BOX 1 OF 1
DEPTH 3.65 TO 6.80 M
PJB
LS/BH3
START CORING AT 3.65m
CORE LOSS
4
5
6
7

Cored Borehole Log

Borehole No.	LS/BH3
Sheet	2 of 2
Job No.	2757

CLIENT: TAYLOR THOMSON WHITTING PTY. LTD.

PROJECT: NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI

Location : SEE FIGURE 2

Drill Type : TRUCK MOUNTED JACRO 200
Barrel Type, Length, Drilling fluid: NMLC, 3.0m, WATER

Collar Level : APPROX. RL=16.2m
Angle From Horizontal 90°
Bearing : --

Method/Casing	R.Q.D./Lift	Water	R.L / Depth (Metres)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range	Is(50) MPa (D=diam A=axial)	Core Length (mm)	Defects	Defect Description
SOLID FLIGHT AUGER - TC BIT / HAND AUGER		NOT MONITORED	1.0		SEE SHEET 1 OF 2 FOR DETAILS OF NON CORED SECTIONS.						
			2.0								
			3.0		STARTED CORING AT 3.65m.						
NMLC CORING					CORE LOSS						
	55%		4.0		SANDSTONE, yellow-orange-red, fine to medium grained.	MW/ SW		D=0.3 D=0.3			40mm clayey sand
			5.0		becoming pink-yellow-grey.			D=0.9			110mm clayey sand 20mm clayey sand 20mm clayey sand
			6.0					D=1.0 D=1.0 D=1.0			
	90%		7.0		BOREHOLE LS/BH3 TERMINATED AT 6.80m.						20mm clayey sand
			8.0								
			9.0								
			10.0								

DEFECTS ARE BEDDING PLANE PARTINGS, CLEAN, PLANAR, IRONSTAINED UNLESS OTHERWISE STATED

Logged By : P.M. Date : 29.6.1990.

Checked By : P.M. Date : 30.7.1990.

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Borehole Log

Borehole No.	LS/BH4
Sheet	1 of 2
Job No.	2757
CLIENT:	TAYLOR THOMSON WHITTING PTY. LTD.
PROJECT:	NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI
Location :	SEE FIGURE 2
Collar Level :	APPROX. RL=16.8m
Angle From Vertical :	0°
Bearing :	--
Equipment Type :	JACRO 200
Hole Diameter :	100mm

Samples	Water	Casing	R.L. / Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure (Soil Type : Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure.)	Consistency or Relative Density	Field Test Results	Geological Profile
						100mm REINFORCED CONCRETE over 100mm CLEAN SAND BEDDING.			PAVEMENT
	DIA-TUBE				SC	CLAYEY SAND, brown-orange, fine to medium grained, medium plasticity, moist, derived from EW Sandstone, some fragments of HW Sandstone within clayey sand matrix.	LOOSE TO VERY LOOSE		FILL
SPT1		FLIGHT AUGER	1.0					SPT1: 1,2,1 N = 3	
			2.0		SM	SILTY SAND, black, fine to medium grained, low plasticity, moist to wet, roots throughout.	VERY LOOSE		FILL/TOPSOIL (POSSIBLY ORIG.SURFACE)
					SM	SILTY SAND, orange-brown, medium grained, low plasticity fines, moist to wet.	V.LOOSE		
			3.0			VERY DIFFICULT DRILLING WITH TC BIT, COMMENCED CORING AT 2.2m.			
			4.0						
			5.0						
			6.0						
			7.0						
			8.0						
			9.0						
			10.0						

Logged By :	P.M.	Checked By :	P.M.
Date :	29.6.1990.	Date :	30.7.1990.

PJB

Peter J. Burgess & Associates Pty Ltd


TAYLOR THOMSON WHITTING
NEW SCHOOL DEVELOPMENT
LORETO - KIRRIBILLI
JOB NO 2757
BOREHOLE NO LS/BH4
BOX 1 OF 1
DEPTH 2.20 TO 4.40 M
LS/BH4
START CORING AT 2.20m
3
4
5

Cored Borehole Log

Borehole No.	LS/BH4
Sheet	2 of 2
CLIENT:	TAYLOR THOMSON WHITTING PTY. LTD.
Job No.	2757
PROJECT:	NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI
Location :	SEE FIGURE 2
Drill Type :	TRUCK MOUNTED JACRO 200
Barrel Type, Length, Drilling fluid:	NMLC, 3.0m, WATER
Collar Level :	APPROX. RL=16.8m
Angle From Horizontal	90°
Bearing :	--

Method/Casing	R.Q.D./Lift	Water	R.L. / Depth Metres	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range	Is(50) MPa (D=diam A=axial)	Core Length (mm)	Defects	Defect Description
HQ CASING			1.0		FOR AUGER LOG DETAILS SEE SHEET 1 OF 2.						
			2.0		STARTED CORING AT 2.20m.						
NMLC CORING		NOT MONITORED	3.0		SANDSTONE, yellow-grey, medium grained. CORE LOSS	MW/SW		D=0.04 D=0.05			
	85%		4.0		SANDSTONE, yellow-orange-grey, and pink-white, fine to medium grained.	MW/SW		D=0.2 D=0.1 D=0.4 D=0.5 D=0.7 D=0.8			40mm clayey sand; 10mm clayey sand; 45mm clayey sand. DEFECTS ARE BEDDING PLANE PARTINGS, SMOOTH, PLANAR, CLEAN UNLESS OTHERWISE STATED
			5.0		BOREHOLE LS/BH4 TERMINATED AT 4.40m.						
			6.0								
			7.0								
			8.0								
			9.0								
			10.0								

Logged By : P.M. Date : 29.6.1990.

Checked By : P.M. Date : 30.7.1990.

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Borehole Log

Borehole No.	LS/BH5
Sheet	1 of 2
Job No.	2757

CLIENT: TAYLOR THOMSON WHITTING PTY. LTD.

PROJECT: NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI

Location : SEE FIGURE 2

Equipment Type : JACRO 200
Hole Diameter : 100mm

Collar Level : APPROX. RL=16.9m
Angle From Vertical : 0°
Bearing : --

Samples	Water	Casing	R.L. / Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure (Soil Type : Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure.)	Consistency or Relative Density	Field Test Results	Geological Profile
			0.0			100mm REINFORCED CONCRETE REO-MESH 20mm below concrete) and 50mm CLEAN BEDDING SAND.	N/A		PAVEMENT
		SOLID FLIGHT AUGER			SC	CLAYEY SAND, brown-orange, fine to medium grained, medium plasticity, moist.	LOOSE		FILL
			1.0		SC	CLAYEY SAND, white-cream, fine to coarse grained, medium plasticity fines, moist.	MEDIUM DENSE TO DENSE		RESIDUAL SOIL/ EW SANDSTONE
						DIFFICULT DRILLING WITH TC BIT, COMMENCED CORING AT 1.60m.			
			2.0						
			3.0						
			4.0						
			5.0						
			6.0						
			7.0						
			8.0						
			9.0						
			10.0						

Logged By : P.M. Date : 29.6.1990. Checked By : P.M. Date : 30.7.1990.

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BOREHOLE NO LS/BH5
BOX 1 OF 1
DEPTH 1.60 TO 4.55 M
TAYLOR THOMSON WHITTING
NEW SCHOOL DEVELOPMENT
LORETO - KIRRIBILLI
JOB NO 2757
LS/BH5
STARTED CORING AT 1.60
2
3
4

Cored Borehole Log

Borehole No.	LS/BH5
Sheet	2 of 2
Job No.	2757
CLIENT:	TAYLOR THOMSON WHITTING PTY. LTD.
PROJECT:	NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI
Location :	SEE FIGURE 2
Drill Type :	TRUCK MOUNTED JACRO 200
Barrel Type, Length, Drilling fluid:	NMLC, 3.0m, WATER
Collar Level :	APPROX. RL=16.9m
Angle From Horizontal	90°
Bearing :	--

Method/Casing	R.Q.D./Lift	Water	R.L / Depth Metres	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range	Is(50) MPa (D=diam A=axial)	Core Length (mm)	Defects	Defect Description
HQ CASING			1.0		FOR AUGER HOLE DETAILS SEE SHEET 1 OF 2. START CORING AT 1.60m.						
NMLC CORING	100%	NOT MONITORED	2.0		SANDSTONE, yellow-orange-red, fine to medium grained.	SW		D=0.4 D-0.4			60mm clayey sand 20mm clayey sand
			3.0		becoming grey-white.	Fr		D=0.9 D=1.1			
			4.0					D=1.2 D=1.2 D=1.3 D=1.3			
			5.0		BOREHOLE LS/BH5 TERMINATED AT 4.55m.						
			6.0								
			7.0								
			8.0								
			9.0								
			10.0								

DEFECTS ARE BEDDING PLANE PARTINGS, CLEAN, PLANAR, 10 TO 30 DEGREES FROM HORIZONTAL UNLESS OTERWISE STATED

Logged By :	P.M.	Date :	29.6.1990.
Checked By :	P.M.	Date :	30.7.1990.

Peter J. Burgess & Associates Pty Ltd

Borehole Log

Borehole No. LS/BH6

Sheet 1 of 2

CLIENT: TAYLOR THOMSON WHITTING PTY. LTD.

Job No. 2757

PROJECT: NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI

Location : SEE FIGURE 2

Equipment Type : TRUCK MOUNTED JACRO 200
Hole Diameter : 100mm

Collar Level : APPROX. RL=16.9m
Angle From Vertical : 0°
Bearing : --

Samples	Water	Casing	R.L. / Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure (Soil Type : Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure.)	Consistency or Relative Density	Field Test Results	Geological Profile
			0			REINFORCED CONCRETE - 120mm.			PAVEMENT
					SW	SILTY CLAYEY SAND, fine to medium grained, brown, some clay, some sandstone gravel.	LOOSE		FILL
					SC	CLAYEY SAND, fine grained, orange, medium plasticity fines.	LOOSE		RESIDUAL SOIL
			1.0			CORING STARTED AT 0.6m.			
						SEE SHEET 2 FOR DETAILS.			
			2.0						
			3.0						
			4.0						
			5.0						
			6.0						
			7.0						
			8.0						
			9.0						
			10.0						

Logged By : S.C. Date : 6.7.1990. Checked By : P.M. Date : 30.7.1990.

PJB Peter J. Burgess & Associates Pty Ltd


TAYLOR THOMSON WHITTING
NEW SCHOOL DEVELOPMENT
LORETO - KIRRIBILLI
JOB NO 2757
BOREHOLE NO LS/BH6
BOXES 1 & 2 OF 2
DEPTH 0.80 TO 6.25 M
PJB
LS/BH6
1
2
3
4
5
6

Cored Borehole Log

Borehole No.	LS/BH6
Sheet	2 of 2
Job No.	2757

CLIENT: TAYLOR THOMSON WHITTING PTY. LTD.

PROJECT: NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI

Location : SEE FIGURE 2

Drill Type : TRUCK MOUNTED JACRO 200
Barrel Type, Length, Drilling fluid: NMLC, 3.0m, WATER.

Collar Level : APPROX. RL=16.9m
Angle From Horizontal 90°
Bearing : --

Method/Casing	R.Q.D./Lift	Water	R.L / Depth (Metres)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range	Is(50) MPa (D=diam A=axial)	Core Length (mm)	Defects	Defect Description
HQ CAS.					SEE SHEET 1 FOR DETAILS.						
					CORING STARTED AT 0.6m.						
NMLC TRIPLE TUBE		NOT MONITORED	1.0		FILL, SILTY CLAY, high plasticity						Water pipe - auger stopped on pipe, sand
					CLAYEY SAND, medium grained, orange - RESIDUAL SOIL.	HW/FW		D=1.4			Clay seam, 160mm
	80%				SANDSTONE, medium grained, orange/grey, sugary texture, some ironstaining, massive.	MW		D=0.96			Clay seam, 0°, 25mm
			2.0			SW					
						MW		D=1.12			
								D=1.04			*BP - clay coating, ironstaning
											Joint, 5°
			3.0			SW/Fr					BP
								D=1.68			
								D=1.72			
			4.0								BP - along carbonaceous lense
								D=1.32			BP
	100%							D-1.16			
			5.0					D=1.44			
								D=1.44			BP
											Joint, 5°, planar, rough
			6.0					D=0.92			
								D=0.96			BP
					HOLE TERMINATED AT 6.25m.						
			7.0								
					*BP - BEDDING PLANE PARTING.						
			8.0								
			9.0								
			10.0								

Logged By : S.C. Date : 6.7.1990.

Checked By : P.M. Date : 30.7.1990.

Peter J. Burgess & Associates Pty Ltd

Borehole Log

Borehole No. LS/BH7

Sheet 1 of 2

CLIENT: TAYLOR THOMSON WHITTING PTY. LTD.

Job No. 2757

PROJECT: NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI

Location : SEE FIGURE 2

Equipment Type : TRUCK MOUNTED JACRO 200
Hole Diameter : 100mm

Collar Level : APPROX. RL=16.8m
Angle From Vertical : 0°
Bearing : --

Samples	Water	Casing	R.L. / Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure (Soil Type : Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure.)	Consistency or Relative Density	Field Test Results	Geological Profile
		FLIGHT AUGER TC - BIT				REINFORCED CONCRETE - 120mm.			PAVEMENT
					SC	CLAYEY SAND, medium grained, orange/grey mottled, some sandstone gravel, well graded.	LOOSE		FILL
SPT1			1.0		SW	SILTY CLAYEY SAND, fine to medium grained, brown, some clay, moist.	LOOSE	SPT1: 2,4 - BOUNCE 50cm TC BIT REFUSA	
					SW	SAND, medium grained, mottled orange/red/grey, trace of clay, well graded, some sandstone cobbles	LOOSE		
						CORING STARTED AT 1.25m ON TC BIT REFUSAL.			
			2.0			SEE SHEET 2 FOR DETAILS.			
			3.0						
			4.0						
			5.0						
			6.0						
			7.0						
			8.0						
			9.0						
			10.0						

Logged By : S.C. Date : 6.7.1990.

Checked By : P.M. Date : 30.7.1990.

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TAYLOR THOMSON WHITTING
NEW SCHOOL DEVELOPMENT
LORETO - KIRRIBILLI
JOB NO 2757
BOREHOLE NO LS/BH7
BOX 1 OF 1
DEPTH 1.25 TO 4.15 M
LS/BH7
2
3
4

Cored Borehole Log

Borehole No.	LS/BH7
Sheet	2 of 2
Job No.	2757

CLIENT: TAYLOR THOMSON WHITTING PTY. LTD.

PROJECT: NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI

Location : SEE FIGURE 2

Drill Type : TRUCK MOUNTED JACRO 200
Barrel Type, Length, Drilling fluid: NMLC, 3.0m, WATER

Collar Level : APPROX. RL=16.8m
Angle From Horizontal 90°
Bearing : --

Method/Casing	R.Q.D./Lift	Water	R.L. Depth Metres	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range	Is(50) MPa (D=diam A=axial)	Core Length (mm)	Defects	Defect Description
HQ CASING			1.0		SEE SHEET 1 FOR DETAILS. CORING STARTED AT 1.25m.						
NMLC TRIPLE TUBE	85%	NOT MONITORED	2.0		SANDSTONE, orange/red/grey, massive, some ironstaining.	SW MW		D=0.2 D=0.28 D=0.56 D=-.72			BP Clay seam, 5mm BP, ironstaining, clay smear, 2mm BP, ironstained Joint, 5°, irregular, rough, leached
			3.0		As above but with some carbonaceous wisps along bedding Bedding is about 90° to core axis	MW SW		D=1.16 D=0.84			Clay seam, 40mm, sandy clay BP Clay seam, 40mm, sandy clay
			4.0		HOLE TERMINATED AT 4.15m.			D=0.88 D=1.2			Joint, 5-7°, planar, rough, ironstained
			5.0								
			6.0								
			7.0								
			8.0								
			9.0								
			10.0								

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Borehole Log

Borehole No. LS/BH8

Sheet 1 of 2

CLIENT: TAYLOR THOMSON WHITTING PTY. LTD.

Job No. 2757

PROJECT: NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI

Location : SEE FIGURE 2

Equipment Type : TRUCK MOUNTED JACRO 200
Hole Diameter : 100mm

Collar Level : APPROX. RL=17.1m
Angle From Vertical : 0°
Bearing : --

Samples	Water	Casing	R.L. / Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure (Soil Type : Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure.)	Consistency or Relative Density	Field Test Results	Geological Profile
						REINFORCED PAVEMENT - 100mm.			PAVEMENT
		FLIGHT AUGER			SW	SILTY SAND, medium grained, orange/brown, trace of clay, well graded.	LOOSE		FILL
					SC	CLAYEY SAND, fine grained, brown, well graded.	LOOSE	TC BIT REFUSAL	
			1.0			CORING STARTED AT 0.75m ON TC BIT REFUSAL.			
						SEE SHEET 2 FOR DETAILS.			
			2.0						
			3.0						
			4.0						
			5.0						
			6.0						
			7.0						
			8.0						
			9.0						
			10.0						

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TAYLOR THOMSON WHITTING
NEW SCHOOL DEVELOPMENT
LORETO - KIRRIBILLI
JOB NO 2757
BOREHOLE NO LS/BH8
BOX 1 OF 1
DEPTH 0.75 TO 5.50 M
JB
LS/BH8
CORING STARTED AT 0.75m
1
2
3
4
5

Cored Borehole Log

Borehole No.	LS/BH8
Sheet	2 of 2
Job No.	2757

CLIENT: TAYLOR THOMSON WHITTING PTY. LTD.

PROJECT: NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI

Location : SEE FIGURE 2

Collar Level : APPROX. RL=17.1m
Angle From Horizontal 90°
Bearing : --

Drill Type : TRUCK MOUNTED JACRO 200
Barrel Type, Length, Drilling fluid: NMLC, 3.0m, WATER

Method/Casing	R.Q.D./Lift	Water	R.L / Depth (Metres)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range	Is(50) MPa (D=diam A=axial)	Core Length (mm)	Defects	Defect Description
HQ CASING					SEE SHEET 1 FOR DETAILS.						
					CORING STARTED AT 0.75m.						
			1.0	CAVED	SANDSTONE BOULDER.						
					CORE LOSS - 0.85m.						
NMLC TRIPLE TUBE	40%	NOT MONITORED	2.0		SAND, medium grained, orange - fill?.	V.D.L.W.		D=1.04			Sand layer
						HW/ MW		D=1.24			*BP
					SANDSTONE, medium grained, orange/grey, massive, some ironstaining, some leaching.						Joint, 5°, planar, rough
						SW					BP
			3.0					D=1.32			
						MW/ HW		D=1.2			
	95%										Sandy clay seam, 40mm
			4.0					D=1.56			BP, ironstained
								D=1.84			
						SW					BP
					SANDSTONE, grey, some ironstaining, bedding is sub-horizontal, some carbonaceous wisps along bedding.	Fr		D=1.2			
			5.0					D=1.52			
								D=1.48			BP
								D=1.52			
					HOLE TERMINATED AT 5.5m.						
			6.0								
					*BP - BEDDING PARTING.						
			7.0								
			8.0								
			9.0								
			10.0								

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Borehole Log

Borehole No. LS/BH9

Sheet 1 of 2

CLIENT: TAYLOR THOMSON WHITTING PTY. LTD.

Job No. 2757

PROJECT: NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI

Location : SEE FIGURE 2

Equipment Type : TRUCK MOUNTED JACRO 200
Hole Diameter : 100mm

Collar Level : APPROX. RL=17.2m
Angle From Vertical : 0°
Bearing : --

Samples	Water	Casing	R.L. / Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure (Soil Type : Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure.)	Consistency or Relative Density	Field Test Results	Geological Profile
			0.0			REINFORCED CONCRETE - 100mm.			PAVEMENT
		FLIGHT AUGER			SW	GRAVELLY SAND, medium grained, brown, some sandstone gravel, well graded.	LOOSE		FILL
					SC	CLAYEY SILTY SAND, fine grained, orange, trace of sandstone gravel.	LOOSE		RESIDUAL SOIL
			1.0		SC	As above, but grey/red.	LOOSE		
						CORING STARTED AT 0.95m.			
						SEE SHEET 2 FOR DETAILS.			
			2.0						
			3.0						
			4.0						
			5.0						
			6.0						
			7.0						
			8.0						
			9.0						
			10.0						

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TAYLOR THOMSON WHITTING
NEW SCHOOL DEVELOPMENT
LORETO - KIRRIBILLI
JOB NO 2757
BOREHOLE NO LS/BH9
BOX 1 OF 1
DEPTH 0.95 TO 5.60 M
JB
LS/BH9
CORING STARTED AT 0.95m
1
2
3
4
5

Cored Borehole Log

Borehole No.	LS/BH9
Sheet	2 of 2
Job No.	2757

CLIENT: TAYLOR THOMSON WHITTING PTY. LTD.

PROJECT: NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI

Location : SEE FIGURE 2

Drill Type : TRUCK MOUNTED JACRO 200
Barrel Type, Length, Drilling fluid: NMLC, 3.0m, WATER

Collar Level : APPROX. RL=17.2m
Angle From Horizontal 90°
Bearing : --

Method/Casing	R.Q.D./Lift	Water	R.L / Depth (Metres)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range	Is(50) MPa (D=diam A=axial)	Core Length (mm)	Defects	Defect Description
HQ CASING					SEE SHEET 1 FOR DETAILS						
			1.0		CORING STARTED AT 0.95m.						
					CORE LOSS - 70mm.						Core loss
					CLAYEY SAND, with sandstone(EW) white, red, ironstained.	EW					Clay seam, 40mm Fracture zone, 60mm Sandy clay zone, 150mm
NMLC TRIPLE TUBE			2.0		SANDSTONE, medium grained, massive.	MW		D=1.28 D=1.4			*BP BP BP
	85%	NOT MONITORED			SANDSTONE, medium grained, bedding is sub-perpendicular to core axis, some cross bedding evident.	SW/ Fr					Clay Seam
			3.0					D=1.84 D=1.52			
			4.0					D=1.96 D=1.96			Joint, 5°, clay coating, 5mm BP
	95%		5.0					D=1.52 D=1.4 D=1.48 D=1.6			*BP, 5°, along cross bedding
			6.0		HOLE TERMINATED AT 5.6m.						
					*BP - BEDDING PARTING.						
			7.0								
			8.0								
			9.0								
			10.0								

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Borehole Log

Borehole No.	LS/BH10
Sheet	1 of 2
Job No.	2757
CLIENT:	TAYLOR THOMSON WHITTING PTY. LTD.
PROJECT:	NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI
Location :	SEE FIGURE 2
Collar Level :	APPROX. RL=16.8m
Angle From Vertical :	0°
Bearing :	--
Equipment Type :	TRUCK MOUNTED JACRO 200
Hole Diameter :	100mm

Samples	Water	Casing	R.L. / Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure (Soil Type : Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure.)	Consistency or Relative Density	Field Test Results	Geological Profile
						REINFORCED CONCRETE - 100mm.			PAVEMENT
		SOLID FLIGHT AUGER			SW	SILTY GRAVELLY SAND, medium grained, brown, some gravel sandstone fragments, trace of clay.	LOOSE		FILL
					SW	SAND, fine to medium grained, mottled orange/ yellow, trace of clay, some sandstone gravel.	LOOSE		
SPT1			1.0			As above with some gravel fragments i.e. basalt.		SPT1: 1,2,2 N = 4	
					SM	SILTY SAND, fine grained, brown, trace of clay trace of basalt gravel fragments.	LOOSE		RESIDUAL SOIL
			2.0		SC	CLAYEY SAND, fine to medium grained, orange/ grey, some clay, trace of sandstone gravel fragments.	LOOSE		
						CORING STARTED AT 2.05m.			
			3.0			SEE SHEET 2 FOR DETAILS.			
			4.0						
			5.0						
			6.0						
			7.0						
			8.0						
			9.0						
			10.0						

Logged By :	S.C.	Date : 9.7.1990.	Checked By : P.M. Date : 30.7.1990.

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TAYLOR THOMSON WHITTING
NEW SCHOOL DEVELOPMENT
LORETO - KIRRIBILLI
JOB NO 2757
BOREHOLE NO LS/BH10
BOX 1 OF 1
DEPTH 2.05 TO 5.60 M
JB
LS/ BH10
3
4
5

Cored Borehole Log

Borehole No.	LS/BH10
Sheet	2 of 2
Job No.	2757

CLIENT: TAYLOR THOMSON WHITTING PTY. LTD.

PROJECT: NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI

Location : SEE FIGURE 2

Drill Type : TRUCK MOUNTED JACRO 200
Barrel Type, Length, Drilling fluid: NMLC, 3.0m, WATER

Collar Level : APPROX. RL=16.8m
Angle From Horizontal 90°
Bearing : --

Method/Casing	R.Q.D./Lift	Water	R.L / Depth (Metres)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range	Is(50) MPa (D=diam A=axial)	Core Length (mm)	Defects	Defect Description
HQ CASING			1.0		SEE SHEET 1 FOR DETAILS.						
			2.0		CORING STARTED AT 2.05m.						
NMLC TRIPLE TUBE		NOT MONITORED			SANDSTONE, medium grained, bedding is sub-perpendicular to core axis, orange/light grey, some ironstaining.	MW/SW		D=2.04 D=1.36			Joint, 70°, planar, rough Joint, 10°, planar, rough
	95%		3.0		CORE LOSS - 50mm.						Core loss Joint, 5°, on edge of fracture zone, 30mm
			4.0		As above.	MW/SW SW		D=1.16 D=1.36 D=0.98 D-0.4**			Joint, 5°, planar, rough, ironstaiging Joint, 5°, planar, rough *BP, along carbonaceous lenses
	90%		5.0		SANDSTONE, fine to medium grained, bedding sub-perpendicular to core axis, light grey, some carbonaceous wisps and lenses along bedding.	SW		D=1.16 D=1.44			
			6.0		BORE HOLE TERMINATED AT 5.6m. *BP - BEDDING PARTING ** - BROKE ALONG BEDDING.						
			7.0								
			8.0								
			9.0								
			10.0								

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Borehole Log

Borehole No.	LS/BH11(A)
Sheet	1 of 3
Job No.	2757
CLIENT:	TAYLOR THOMSON WHITTING PTY. LTD.
PROJECT:	NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI
Location :	SEE FIGURE 2
Equipment Type :	TRUCK MOUNTED JACRO 200
Hole Diameter :	100mm
Collar Level :	APPROX. RL=16.7m
Angle From Vertical :	0°
Bearing :	--

Samples	Water	Casing	R.L. / Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure (Soil Type : Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure.)	Consistency or Relative Density	Field Test Results	Geological Profile
						REINFORCED CONCRETE - 170mm.			PAVEMENT
					SW	GRAVELLY SAND, fine grained, orange, some sandstone and basalt gravel fragments.	LOOSE		FILL
			1.0		SC	CLAYEY SAND, fine grained, light grey, some clay, trace of sandstone gravel.	LOOSE		
						FOUND OBSTRUCTION AT 0.7m - MOVED TO LS/BH11(b), ABOUT 1.0m NW.			
			2.0						
			3.0						
			4.0						
			5.0						
			6.0						
			7.0						
			8.0						
			9.0						
			10.0						

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Borehole Log

Borehole No.	LS/BH11(B)
Sheet	2 of 3
Job No.	2757
Location :	SEE FIGURE 2
Collar Level :	APPROX. RL=16.7m
Angle From Vertical :	0°
Bearing :	--

CLIENT: TAYLOR THOMSON WHITTING PTY. LTD.

PROJECT: NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI

Equipment Type : TRUCK MOUNTED JACRO 200
Hole Diameter : 100mm

Samples	Water	Casing	R.L. Depth Metres	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type : Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure.	Consistency or Relative Density	Field Test Results	Geological Profile
						REINFORCED CONCRETE - 150mm.			PAVEMENT
		FLIGHT AUGER			SW	GRAVELLY SAND, medium grained, orange/brown, trace of clay, some sandstone and basalt gravel.	LOOSE		FILL
			1.0		SC	CLAYEY SAND, fine grained, grey/red, some clay, some sandstone gravel.	LOOSE		
						STARTED CORING AT 1.0m.			
						SEE SHEET 3 FOR DETAILS.			
			2.0						
			3.0						
			4.0						
			5.0						
			6.0						
			7.0						
			8.0						
			9.0						
			10.0						

Logged By : S.C. Date : 9.7.1990. Checked By : P.M. Date : 30.7.1990.


TAYLOR THOMSON WHITTING
NEW SCHOOL DEVELOPMENT
LORETO - KIRRIBILLI
JOB NO 2757
BOREHOLE NO LS/BH11
BOX 1 OF 1
DEPTH 1.00 TO 5.60 M
LS/BH11
CORING STARTED 1.0m
1
2
3
4
5
6

Cored Borehole Log

Borehole No.	LS/BH11(B)
Sheet	3 of 3
Job No.	2757

CLIENT: TAYLOR THOMSON WHITTING PTY. LTD.

PROJECT: NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI

Location : SEE FIGURE 2

Collar Level : APPROX. RL=16.7m
Angle From Horizontal 90°
Bearing : --

Drill Type : TRUCK MOUNTED JACRO 200
Barrel Type, Length, Drilling fluid: NMLC, 3.0m, WATER

Method/Casing	R.Q.D./Lift	Water	R.L. Depth Metres	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range	Is(50) MPa (D=diam A=axial)	Core Length (mm)	Defects	Defect Description
HQ CASING			1.0		SEE SHEET 2 FOR DETAILS. CORING STARTED AT 1.0m.						
NMLC TRIPLE TUBE	90%	NOT MONITORED	2.0		SANDSTONE, massive, grey/red, some ironstaining and some iron leaching along bedding planes.	EW/HW		D=1.4 D=1.28			Clay seam, 100mm *BP Clay seam, 20mm Clay seam, 30mm
			3.0		SANDSTONE, grey, some ironstaining, bedding is sub-perpendicular to core axis, some cross bedding, some carbonaceous wisps along bedding.	MW/SW		D=0.68** D=0.76**			Joint, 10°, irregular, rough, ironstaining Joint, 20-25°, planar, rough, ironstained BP BP, along carbonaceous lense
			4.0					D=2.14 D 2.24			BP, ironstained Clay seam, 20mm BP, ironstained BP, along carbonaceous lense
	100%		5.0					D=1.56 D=1.4 D=1.36 D=1.58			BP, along carbonaceous lense
			6.0		HOLE TERMINATED AT 5.58m. *BP - BEDDING PARTING ** - BROKE ALONG BEDDING.						
			7.0								
			8.0								
			9.0								
			10.0								

Logged By : S.C. Date : 9.7.1990.

Checked By : P.M. Date : 30.7.1990.

Peter J. Burgess & Associates Pty Ltd

Borehole Log

Borehole No.	LS/BH12
Sheet	1 of 3
Job No.	2757

CLIENT: TAYLOR THOMSON WHITTING PTY. LTD.

PROJECT: NEW SCHOOL DEVELOPMENT - LORETO KIRRIBILLI

Location : SEE FIGURE 2

Equipment Type : TRUCK MOUNTED JACRO 200
Hole Diameter : 100mm

Collar Level : APPROX. RL=15.8m
Angle From Vertical : 0°
Bearing : --

Samples	Water	Casing	R.L. / Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure (Soil Type : Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure.)	Consistency or Relative Density	Field Test Results	Geological Profile
						CONCRETE - 140mm.			PAVEMENT
						SAND, medium grained, yellow-brown, poorly graded			FILL
		SOLID FLIGHT AUGER	1.0		SW	SILTY GRAVELLY SAND, fine to medium grained, orange/brown, trace of clay, some sandstone gravel fragments, well graded.	LOOSE		
SPT1					SW/GW	GRAVELLY SAND, fine to medium grained, orange/grey, trace of clay, some sandstone gravel, some sandstone cobbles upto 30mm, well graded.	LOOSE	SPT1: 2,3, -	BOUNCE (100mm)
			2.0			STARTED CORING AT 2.0m.			
						SEE SHEET 2 FOR DETAILS.			
			3.0						
			4.0						
			5.0						
			6.0						
			7.0						
			8.0						
			9.0						
			10.0						

Logged By : S.C. Date : 9.7.1990.

Checked By : P.M. Date : 30.7.1990.

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Peter J. Burgess & Associates Pty Ltd


TAYLOR THOMSON WHITTING
NEW SCHOOL DEVELOPMENT
LORETO - KIRRIBILLI
JOB NO 2757
BOREHOLE NO LS/BH12
BOXES 1 & 2 OF 2
DEPTH 2.00 TO 10.15 M
LS/BH12
CORING STARTED AT 2.0m
2
3
4
5
6
7
8
9
10
11