

Soil Description Explanation Sheet (1 of 2)

DEFINITION:

In engineering terms soil includes every type of uncemented or partially cemented inorganic or organic material found in the ground. In practice, if the material can be remoulded or disintegrated by hand in its field condition or in water it is described as a soil. Other materials are described using rock description terms.

CLASSIFICATION SYMBOL & SOIL NAME

Soils are described in accordance with the Unified Soil Classification (UCS) as shown in the table on Sheet 2.

PARTICLE SIZE DESCRIPTIVE TERMS

NAME	SUBDIVISION	SIZE
Boulders		>200 mm
Cobbles		63 mm to 200 mm
Gravel	coarse	20 mm to 63 mm
	medium	6 mm to 20 mm
	fine	2.36 mm to 6 mm
Sand	coarse	600 μ m to 2.36 mm
	medium	200 μ m to 600 μ m
	fine	75 μ m to 200 μ m

MOISTURE CONDITION

Dry Looks and feels dry. Cohesive and cemented soils are hard, friable or powdery. Uncemented granular soils run freely through hands.

Moist Soil feels cool and darkened in colour. Cohesive soils can be moulded. Granular soils tend to cohere.

Wet As for moist but with free water forming on hands when handled.

CONSISTENCY OF COHESIVE SOILS

TERM	UNDRAINED STRENGTH S_u (kPa)	FIELD GUIDE
Very Soft	<12	A finger can be pushed well into the soil with little effort.
Soft	12 - 25	A finger can be pushed into the soil to about 25mm depth.
Firm	25 - 50	The soil can be indented about 5mm with the thumb, but not penetrated.
Stiff	50 - 100	The surface of the soil can be indented with the thumb, but not penetrated.
Very Stiff	100 - 200	The surface of the soil can be marked, but not indented with thumb pressure.
Hard	>200	The surface of the soil can be marked only with the thumbnail.
Friable	–	Crumbles or powders when scraped by thumbnail.

DENSITY OF GRANULAR SOILS

TERM	DENSITY INDEX (%)
Very loose	Less than 15
Loose	15 - 35
Medium Dense	35 - 65
Dense	65 - 85
Very Dense	Greater than 85

MINOR COMPONENTS

TERM	ASSESSMENT GUIDE	PROPORTION OF MINOR COMPONENT IN:
Trace of	Presence just detectable by feel or eye, but soil properties little or no different to general properties of primary component.	Coarse grained soils: <5% Fine grained soils: <15%
With some	Presence easily detected by feel or eye, soil properties little different to general properties of primary component.	Coarse grained soils: 5 - 12% Fine grained soils: 15 - 30%

SOIL STRUCTURE

ZONING	CEMENTING
Layers Continuous across exposure or sample.	Weakly cemented Easily broken up by hand in air or water.
Lenses Discontinuous layers of lenticular shape.	Moderately cemented Effort is required to break up the soil by hand in air or water.
Pockets Irregular inclusions of different material.	

GEOLOGICAL ORIGIN

WEATHERED IN PLACE SOILS

Extremely weathered material Structure and fabric of parent rock visible.

Residual soil Structure and fabric of parent rock not visible.

TRANSPORTED SOILS

Aeolian soil Deposited by wind.

Alluvial soil Deposited by streams and rivers.

Colluvial soil Deposited on slopes (transported downslope by gravity).

Fill Man made deposit. Fill may be significantly more variable between tested locations than naturally occurring soils.

Lacustrine soil Deposited by lakes.

Marine soil Deposited in ocean basins, bays, beaches and estuaries.









Soil Description Explanation Sheet (2 of 2)

SOIL CLASSIFICATION INCLUDING IDENTIFICATION AND DESCRIPTION

FIELD IDENTIFICATION PROCEDURES (Excluding particles larger than 60 mm and basing fractions on estimated mass)					USC	PRIMARY NAME			
COARSE GRAINED SOILS More than 50% of materials less than 63 mm is larger than 0.075 mm	(A 0.075 mm particle is about the smallest particle visible to the naked eye)	GRAVELS More than half of coarse fraction is larger than 2.36 mm	CLEAN GRAVELS (Little or no fines)		Wide range in grain size and substantial amounts of all intermediate particle sizes.	GW	GRAVEL		
					Predominantly one size or a range of sizes with more intermediate sizes missing.	GP	GRAVEL		
			GRAVELS WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML below)		GM	SILTY GRAVEL		
				Plastic fines (for identification procedures see CL below)		GC	CLAYEY GRAVEL		
		SANDS More than half of coarse fraction is smaller than 2.36 mm	CLEAN SANDS (Little or no fines)		Wide range in grain sizes and substantial amounts of all intermediate sizes	SW	SAND		
					Predominantly one size or a range of sizes with some intermediate sizes missing.	SP	SAND		
			SANDS WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML below).		SM	SILTY SAND		
				Plastic fines (for identification procedures see CL below).		SC	CLAYEY SAND		
		FINE GRAINED SOILS More than 50% of material less than 63 mm is smaller than 0.075 mm	(A 0.075 mm particle is about the smallest particle visible to the naked eye)	IDENTIFICATION PROCEDURES ON FRACTIONS <0.2 mm.					
				SILTS & CLAYS Liquid limit less than 50	DRY STRENGTH	DILATANCY	TOUGHNESS		
None to Low	Quick to slow				None	ML	SILT		
Medium to High	None				Medium	CL	CLAY		
Low to medium	Slow to very slow				Low	OL	ORGANIC SILT		
SILTS & CLAYS Liquid limit greater than 50	Low to medium			Slow to very slow	Low to medium	MH	SILT		
	High			None	High	CH	CLAY		
	Medium to High			None	Low to medium	OH	ORGANIC CLAY		
HIGHLY ORGANIC SOILS	Readily identified by colour, odour, spongy feel and frequently by fibrous texture.				Pt	PEAT			
• Low plasticity – Liquid Limit w_L less than 35%. • Medium plasticity – w_L between 35% and 50%. • High plasticity – w_L greater than 50%.									

• Low plasticity – Liquid Limit w_L less than 35%. • Medium plasticity – w_L between 35% and 50%. • High plasticity – w_L greater than 50%.

COMMON DEFECTS IN SOIL

TERM	DEFINITION	DIAGRAM	TERM	DEFINITION	DIAGRAM
PARTING	A surface or crack across which the soil has little or no tensile strength. Parallel or sub parallel to layering (eg bedding). May be open or closed.		SOFTENED ZONE	A zone in clayey soil, usually adjacent to a defect in which the soil has a higher moisture content than elsewhere.	
JOINT	A surface or crack across which the soil has little or no tensile strength but which is not parallel or sub parallel to layering. May be open or closed. The term 'fissure' may be used for irregular joints <0.2 m in length.		TUBE	Tubular cavity. May occur singly or as one of a large number of separate or inter-connected tubes. Walls often coated with clay or strengthened by denser packing of grains. May contain organic matter	
SHEARED ZONE	Zone in clayey soil with roughly parallel near planar, curved or undulating boundaries containing closely spaced, smooth or slickensided, curved intersecting joints which divide the mass into lenticular or wedge shaped blocks.		TUBE CAST	Roughly cylindrical elongated body of soil different from the soil mass in which it occurs. In some cases the soil which makes up the tube cast is cemented.	
SHEARED SURFACE	A near planar curved or undulating, smooth, polished or slickensided surface in clayey soil. The polished or slickensided surface indicates that movement (in many cases very little) has occurred along the defect.		INFILLED SEAM	Sheet or wall like body of soil substance or mass with roughly planar to irregular near parallel boundaries which cuts through a soil mass. Formed by infilling of open joints.	

Rock Description Explanation Sheet (1 of 2)

The descriptive terms used by Coffey are given below. They are broadly consistent with Australian Standard AS1726-1993.

DEFINITIONS: Rock substance, defect and mass are defined as follows:

Rock Substance In engineering terms rock substance is any naturally occurring aggregate of minerals and organic material which cannot be disintegrated or remoulded by hand in air or water. Other material is described using soil descriptive terms. Effectively homogenous material, may be isotropic or anisotropic.

Defect Discontinuity or break in the continuity of a substance or substances.

Mass Any body of material which is not effectively homogeneous. It can consist of two or more substances without defects, or one or more substances with one or more defects.

SUBSTANCE DESCRIPTIVE TERMS:

ROCK NAME Simple rock names are used rather than precise geological classification.

PARTICLE SIZE Grain size terms for sandstone are:
Coarse grained Mainly 0.6mm to 2mm
Medium grained Mainly 0.2mm to 0.6mm
Fine grained Mainly 0.06mm (just visible) to 0.2mm

FABRIC Terms for layering of penetrative fabric (eg. bedding, cleavage etc.) are:

Massive No layering or penetrative fabric.

Indistinct Layering or fabric just visible. Little effect on properties.

Distinct Layering or fabric is easily visible. Rock breaks more easily parallel to layering of fabric.

CLASSIFICATION OF WEATHERING PRODUCTS

Term	Abbreviation	Definition	Term	Abbreviation	Point Load Index, $I_{s(50)}$ (MPa)	Field Guide
Residual Soil	RS	Soil derived from the weathering of 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.	Very Low	VL	Less than 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with a knife; pieces up to 30mm thick can be broken by finger pressure.
Extremely Weathered Material	XW	Material is weathered to such an extent that it has soil properties, ie, it either disintegrates or can be remoulded in water. Original rock fabric still visible.	Low	L	0.1 to 0.3	Easily scored with a knife; indentations 1mm to 3mm show with firm bows of a pick point; has a dull sound under hammer. Pieces of core 150mm long by 50mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Highly Weathered Rock	HW	Rock strength is changed by weathering. The whole of the rock substance is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Some minerals are decomposed to clay minerals. Porosity may be increased by leaching or may be decreased due to the deposition of minerals in pores.	Medium	M	0.3 to 1.0	Readily scored with a knife; a piece of core 150mm long by 50mm diameter can be broken by hand with difficulty.
Moderately Weathered Rock	MW	The whole of the rock substance is discoloured, usually by iron staining or bleaching, to the extent that the colour of the fresh rock is no longer recognisable.	High	H	1 to 3	A piece of core 150mm long by 50mm can not be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Slightly Weathered Rock	SW	Rock substance affected by weathering to the extent that partial staining or partial discolouration of the rock substance (usually by limonite) has taken place. The colour and texture of the fresh rock is recognisable; strength properties are essentially those of the fresh rock substance.	Very High	VH	3 to 10	Hand specimen breaks after more than one blow of a pick; rock rings under hammer.
Fresh Rock	FR	Rock substance unaffected by weathering.	Extremely High	EH	More than 10	Specimen requires many blows with geological pick to break; rock rings under hammer.







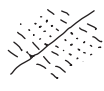



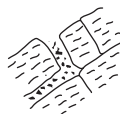

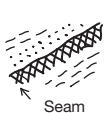

Notes on Weathering:

- AS1726 suggests the term "Distinctly Weathered" (DW) to cover the range of substance weathering conditions between XW and SW. For projects where it is not practical to delineate between HW and MW or it is judged that there is no advantage in making such a distinction. DW may be used with the definition given in AS1726.
- Where physical and chemical changes were caused by hot gasses and liquids associated with igneous rocks, the term "altered" may be substituted for "weathering" to give the abbreviations XA, HA, MA, SA and DA.

Notes on Rock Substance Strength:

- In anisotropic rocks the field guide to strength applies to the strength perpendicular to the anisotropy. High strength anisotropic rocks may break readily parallel to the planar anisotropy.
- The term "extremely low" is not used as a rock substance strength term. While the term is used in AS1726-1993, the field guide therein makes it clear that materials in that strength range are soils in engineering terms.
- The unconfined compressive strength for isotropic rocks (and anisotropic rocks which fall across the planar anisotropy) is typically 10 to 25 times the point load index $I_{s(50)}$. The ratio may vary for different rock types. Lower strength rocks often have lower ratios than higher strength rocks.

Rock Description Explanation Sheet (2 of 2)

COMMON DEFECTS IN ROCK MASSES		Diagram	Map Symbol	Graphic Log (Note 1)	DEFECT SHAPE	TERMS
Term	Definition				Planar	The defect does not vary in orientation
Parting	A surface or crack across which the rock has little or no tensile strength. Parallel or sub parallel to layering (eg bedding) or a planar anisotropy in the rock substance (eg, cleavage). May be open or closed.		20 Bedding 20 Cleavage		Curved	The defect has a gradual change in orientation
Joint	A surface or crack across which the rock has little or no tensile strength, but which is not parallel or sub parallel to layering or planar anisotropy in the rock substance. May be open or closed.		60		Undulating	The defect has a wavy surface
Sheared Zone (Note 3)	Zone of rock substance with roughly parallel near planar, curved or undulating boundaries cut by closely spaced joints, sheared surfaces or other defects. Some of the defects are usually curved and intersect to divide the mass into lenticular or wedge shaped blocks.		35		Stepped	The defect has one or more well defined steps
Sheared Surface (Note 3)	A near planar, curved or undulating surface which is usually smooth, polished or slickensided.		40		Irregular	The defect has many sharp changes of orientation
Crushed Seam (Note 3)	Seam with roughly parallel almost planar boundaries, composed of disoriented, usually angular fragments of the host rock substance which may be more weathered than the host rock. The seam has soil properties.		50		ROUGHNESS TERMS	
Infilled Seam	Seam of soil substance usually with distinct roughly parallel boundaries formed by the migration of soil into an open cavity or joint, infilled seams less than 1mm thick may be described as veneer or coating on joint surface.		65		Slickensided	Grooved or striated surface, usually polished
Extremely Weathered Seam	Seam of soil substance, often with gradational boundaries. Formad by weathering of the rock substance in place.		32		Polished	Shiny smooth surface
					Smooth	Smooth to touch. Few or no surface irregularities
					Rough	Many small surface irregularities (amplitude generally less than 1mm). Feels like fine to coarse sand paper.
					Very Rough	Many large surface irregularities (amplitude generally more than 1mm). Feels like, or coarser than very coarse sand paper.
					COATING TERMS	
					Clean	No visible coating
					Stained	No visible coating but surfaces are discoloured
					Veneer	A visible coating of soil or mineral, too thin to measure; may be patchy
					Coating	A visible coating up to 1mm thick. Thicker soil material is usually described using appropriate defect terms (eg, infilled seam). Thicker rock strength material is usually described as a vein.
					BLOCK SHAPE TERMS	
					Blocky	Approximately equidimensional
					Tabular	Thickness much less than length or width
					Columnar	Height much greater than cross section

Notes on Defects:

1. Usually borehole logs show the true dip of defects and face sketches and sections the apparent dip.
2. Partings and joints are not usually shown on the graphic log unless considered significant.
3. Sheared zones, sheared surfaces and crushed seams are faults in geological terms.

Engineering Log - Excavation

Excavation No. **CTP01**

Sheet 1 of 1

Project No: **GEOTWOLL03229AB**

Client: **TCG PLANNING**

Date started: **25.9.2012**

Principal:

Date completed: **25.9.2012**Project: **PRELIMINARY GEOTECH ASSESSMENT**

Logged by: **CA**

Test pit location: **WARWICK ST, BERKELEY NSW**

Checked by: **SM**

equipment type and model: 5T EXCAVATOR					Pit Orientation:					Easting: m					R.L. Surface:				
excavation dimensions: 2m long 0.45m wide					Northing: m					datum:									
excavation information						material substance													
method	penetration			support	water	notes samples, tests, etc	depth RL metres	graphic log	classification symbol	material soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro- meter kPa	structure and additional observations					
	1	2	3																
E					NONE OBSERVED					FILL;CLAY: High plasticity, brown, with some roots and some fine grained sand.	<Wp	F		TOPSOIL/FILL					
						0.5			FILL;CLAY: High plasticity, orange/brown, with some fine to medium grained sand and fine to coarse grained gravel, with a trace of roots,latite cobbles and boulders up to 350mm in diameter.	F/H				FILL (POSSIBLY COMPACTED IN SOME LAYERS?)					
						1.0													
						1.5													
						2.0	CH		CLAY: High plasticity, brown, with a trace of fine to medium grained sand and a trace of roots.	H				RESIDUAL?					
								LATITE: Low strength, mottled red/brown/yellow. Test pit CTP01 terminated at 2.3m						WEATHERED ROCK?/RESIDUAL End on very slow progress					

Sketch

method		support	notes, samples, tests	classification symbols and soil description	consistency/density index
N	natural exposure	S shoring N nil	U ₅₀ undisturbed sample 50mm diameter	based on unified classification system	VS very soft
X	existing excavation		U ₆₃ undisturbed sample 63mm diameter		S soft
BH	backhoe bucket		D disturbed sample	F firm	
B	bulldozer blade		V vane shear (kPa)	St stiff	
R	ripper		Bs bulk sample	VS _t very stiff	
E	excavator		E environmental sample	D hard	
			R refusal	Fb friable	
				VL very loose	
				Wp plastic limit	
				W _L liquid limit	
					MD medium dense
					D dense
					VD very dense

Engineering Log - Excavation

Excavation No. **CTP02**

Sheet 1 of 1

Project No: **GEOTWOLL03229AB**

Client: **TCG PLANNING**

Date started: **25.9.2012**

Principal:

Date completed: **25.9.2012**Project: **PRELIMINARY GEOTECH ASSESSMENT**

Logged by: **CA**

Test pit location: **WARWICK ST, BERKELEY NSW**

Checked by: **SM**

excavation information						material substance								
method	penetration 1 2 3			support	water	notes samples, tests, etc	depth RL metres	graphic log	classification symbol	material soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro- meter kPa 100 200 300 400	structure and additional observations
E						NONE OBSERVED				FILL; CLAY: Medium to high plasticity, orange/brown with a trace of grey pockets, with some fine to medium grained sand, some fine to medium grained latite and sandstone rock.	<Wp	F/H		FILL Gyprock, cement, cobbles, plastic, steel car parts.
							0.5						x	
							1.0							
							1.5			Sandy CLAY: Medium plasticity, orange/brown, with a trace of fine to medium grained sandstone gravel.		H	550	RESIDUAL
							2.0							
							2.5			SANDSTONE: Fine to medium grained, orange/brown, low to medium strength. Test pit CTP02 terminated at 2.4m				HW/MW SANDSTONE ROCK End on near refusal
							3.0							

Sketch

method		support	notes, samples, tests	classification symbols and soil description	consistency/density index
N	natural exposure	S shoring N nil	U ₅₀ undisturbed sample 50mm diameter	based on unified classification system	VS very soft
X	existing excavation		U ₆₃ undisturbed sample 63mm diameter		S soft
BH	backhoe bucket		D disturbed sample	F firm	
B	bulldozer blade		V vane shear (kPa)	St stiff	
R	ripper		Bs bulk sample	VSt very stiff	
E	excavator		E environmental sample	H hard	
			R refusal	Fb friable	
				VL very loose	
				L loose	
				MD medium dense	
				D dense	
				VD very dense	

Engineering Log - Excavation

Client: **TCG PLANNING**

Principal:

Project: **PRELIMINARY GEOTECH ASSESSMENT**

Test pit location: **WARWICK ST, BERKELEY NSW**

Excavation No. **CTP03**

Sheet 1 of 1

Project No: **GEOTWOLL03229AB**

Date started: **25.9.2012**

Date completed: **25.9.2012**

Logged by: **CA**

Checked by: **SM**

equipment type and model: 5T EXCAVATOR Pit Orientation: Easting: m R.L. Surface:
excavation dimensions: 2.5m long 0.45m wide Northing: m datum:

excavation information					material substance									
method	penetration			support	water	notes samples, tests, etc	depth metres	graphic log	classification symbol	material soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro- meter kPa	structure and additional observations
E	1	2	3											

Sketch

method N natural exposure X existing excavation BH backhoe bucket B bulldozer blade R ripper E excavator	support S shoring N nil penetration 1 2 3 4 no resistance ranging to refusal water ▼ water level on date shown ▶ water inflow ◀ water outflow	notes, samples, tests U ₅₀ undisturbed sample 50mm diameter U ₆₃ undisturbed sample 63mm diameter D disturbed sample V vane shear (kPa) Bs bulk sample E environmental sample R refusal	classification symbols and soil description based on unified classification system moisture D dry M moist W wet W _p plastic limit W _L liquid limit	consistency/density index VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Excavation No. **CTP04**

Engineering Log - Excavation

Sheet 1 of 1

Project No: **GEOTWOLL03229AB**

Client: **TCG PLANNING**

Date started: **25.9.2012**

Principal:

Date completed: **25.9.2012**

Project: **PRELIMINARY GEOTECH ASSESSMENT**

Logged by: **CA**





Test pit location: **WARWICK ST, BERKELEY NSW**

Checked by: **SM**

equipment type and model: 5T EXCAVATOR Pit Orientation: Easting: m R.L. Surface:
excavation dimensions: 2.5m long 0.45m wide Northing: m datum:

excavation information					material substance										
method	penetration			support	water	notes samples, tests, etc	depth metres	graphic log	classification symbol	material soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro- kPa	meter	structure and additional observations
E	1	2	3												
							</								

Sketch

method	support	notes, samples, tests	classification symbols and soil description	consistency/density index
N natural exposure X existing excavation BH backhoe bucket B bulldozer blade R ripper E excavator	S shoring N nil penetration 1 2 3 4  no resistance ranging to refusal water  water level on date shown  water inflow  water outflow	U ₅₀ undisturbed sample 50mm diameter U ₆₃ undisturbed sample 63mm diameter D disturbed sample V vane shear (kPa) Bs bulk sample E environmental sample R refusal	based on unified classification system moisture D dry M moist W wet Wp plastic limit WL liquid limit	VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense

Engineering Log - Excavation

Client: **TCG PLANNING**

Principal:

Project: **PRELIMINARY GEOTECH ASSESSMENT**

Test pit location: **WARWICK ST, BERKELEY NSW**

Excavation No. **CTP05**

Sheet 1 of 1

Project No: **GEOTWOLL03229AB**

Date started: **25.9.2012**

Date completed: **25.9.2012**

Logged by: **CA**

Checked by: **SM**

equipment type and model: 5T EXCAVATOR Pit Orientation: Easting: 301649 m R.L. Surface:
excavation dimensions: 2.5m long 0.45m wide Northing: 6183548 m datum:

excavation information						material substance								
method	penetration			support	water	notes samples, tests, etc	depth metres	graphic log	classification symbol	material soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro- meter kPa	structure and additional observations
E	1	2	3											

Sketch

method	support	notes, samples, tests	classification symbols and soil description	consistency/density index
N natural exposure X existing excavation BH backhoe bucket B bulldozer blade R ripper E excavator	S shoring N nil penetration 1 2 3 4 no resistance ranging to refusal water water level on date shown water inflow water outflow	U ₅₀ undisturbed sample 50mm diameter U ₆₃ undisturbed sample 63mm diameter D disturbed sample V vane shear (kPa) Bs bulk sample E environmental sample R refusal	based on unified classification system moisture D dry M moist W wet Wp plastic limit W _L liquid limit	VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense

Engineering Log - Excavation

Client: **TCG PLANNING**

Principal:

Project: **PRELIMINARY GEOTECH ASSESSMENT**

Test pit location: **WARWICK ST, BERKELEY NSW**

Excavation No. **CTP06**

Sheet 1 of 1

Project No: **GEOTWOLL03229AB**

Date started: **25.9.2012**

Date completed: **25.9.2012**





Logged by: **CA**

Checked by: **SM**

equipment type and model: 5T EXCAVATOR Pit Orientation: Easting: m R.L. Surface:
excavation dimensions: 2m long 0.45m wide Northing: m datum:

excavation information						material substance									
method	penetration			support	water	notes samples, tests, etc	depth metres	RL	graphic log	classification symbol	material soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro- meter kPa	structure and additional observations
E	1	2	3												

Sketch

method	support	notes, samples, tests	classification symbols and soil description	consistency/density index
N natural exposure X existing excavation BH backhoe bucket B bulldozer blade R ripper E excavator	S shoring N nil penetration 1 2 3 4  no resistance ranging to refusal water  water level on date shown  water inflow  water outflow	U ₅₀ undisturbed sample 50mm diameter U ₆₃ undisturbed sample 63mm diameter D disturbed sample V vane shear (kPa) Bs bulk sample E environmental sample R refusal	based on unified classification system moisture D dry M moist W wet Wp plastic limit WL liquid limit	VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense

Engineering Log - Excavation

Client: **TCG PLANNING**

Principal:

Project: **PRELIMINARY GEOTECH ASSESSMENT**

Test pit location: **WARWICK ST, BERKELEY NSW**

Excavation No. **CTP07**

Sheet 1 of 1

Project No: **GEOTWOLL03229AB**



Date started: **25.9.2012**

Date completed: **25.9.2012**

Logged by: **CA**

Checked by: **SM**

equipment type and model: 5T EXCAVATOR Pit Orientation: Easting: 301575 m R.L. Surface:
excavation dimensions: 2.5m long 0.45m wide Northing: 6183452 m datum:

excavation information						material substance					
method	penetration	support	water	notes samples, tests, etc	depth metres	graphic log	classification symbol	material	moisture condition	consistency/ density index	structure and additional observations
E	1 2 3	NONE OBSERVED			0.5			TOPSOIL;CLAY: Medium plasticity, brown, with some roots and some fine grained sand, with a trace of fine to coarse grained gravel. Sandy CLAY: Medium plasticity, orange brown, with some fine to coarse grained angular sandstone gravel, sand fraction is fine to medium grained.	<Wp	S	TOPSOIL
					1.0			SANDSTONE: Fine grained, orange/brown, low to medium strength. Test pit CTP07 terminated at 1.1m		H	RESIDUAL SOIL
					1.5						HW/MW SANDSTONE
					2.0						End on near refusal
					2.5						
					3.0						

Sketch

method	support	notes, samples, tests	classification symbols and soil description	consistency/density index
N natural exposure X existing excavation BH backhoe bucket B bulldozer blade R ripper E excavator	S shoring N nil penetration 1 2 3 4 no resistance ranging to refusal water water level on date shown water inflow water outflow	U ₅₀ undisturbed sample 50mm diameter U ₆₃ undisturbed sample 63mm diameter D disturbed sample V vane shear (kPa) Bs bulk sample E environmental sample R refusal	based on unified classification system moisture D dry M moist W wet Wp plastic limit WL liquid limit	VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense

Engineering Log - Excavation

Client: **TCG PLANNING**

Principal:

Project: **PRELIMINARY GEOTECH ASSESSMENT**

Test pit location: **WARWICK ST, BERKELEY NSW**

Excavation No. **CTP08**

Sheet 1 of 1

Project No: **GEOTWOLL03229AB**

Date started: **25.9.2012**

Date completed: **25.9.2012**

Logged by: **CA**

Checked by: **SM**

equipment type and model: 5T EXCAVATOR Pit Orientation: Easting: m R.L. Surface:
excavation dimensions: m long 0.45m wide Northing: m datum:

excavation information						material substance								
method	penetration			support	water	notes samples, tests, etc	depth metres	graphic log	classification symbol	material soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro- meter kPa	structure and additional observations
E	1	2	3							TOPSOIL;CLAY: Medium plasticity, brown, with some tree roots and some fine grained sand, with a trace of fine to coarse grained gravel.	<Wp	St/VSt	100 200 300 400	TOPSOIL
				NONE OBSERVED			0.5			Sandy CLAY: Medium plasticity, orange/brown, with some fine to coarse grained angular sandstone gravel, sand fraction is fine to coarse grained.		H	600	RESIDUAL SOIL
							1.0			SANDSTONE: Fine grained, pale orange/brown, low strength.				HW/MW SANDSTONE
							1.5			Test pit CTP08 terminated at 1.3m				End on near refusal
							2.0							
							2.5							
							3.0							

Sketch

method	support	notes, samples, tests	classification symbols and soil description	consistency/density index
N natural exposure X existing excavation BH backhoe bucket B bulldozer blade R ripper E excavator	S shoring N nil penetration 1 2 3 4 no resistance ranging to refusal water water level on date shown water inflow water outflow	U ₅₀ undisturbed sample 50mm diameter U ₆₃ undisturbed sample 63mm diameter D disturbed sample V vane shear (kPa) Bs bulk sample E environmental sample R refusal	based on unified classification system moisture D dry M moist W wet Wp plastic limit WL liquid limit	VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense

Engineering Log - Excavation

Client: **TCG PLANNING**

Principal:

Project: **PRELIMINARY GEOTECH ASSESSMENT**

Test pit location: **WARWICK ST, BERKELEY NSW**

Excavation No. **CTP09**

Sheet 1 of 1

Project No: **GEOTWOLL03229AB**

Date started: **25.9.2012**

Date completed: **25.9.2012**

Logged by: **CA**

Checked by: **SM**

equipment type and model: 5T EXCAVATOR Pit Orientation: Easting: m R.L. Surface:
excavation dimensions: 2.5m long 0.45m wide Northing: m datum:

excavation information						material substance					
method	penetration	support	water	notes samples, tests, etc	depth metres	graphic log	classification symbol	material	moisture condition	consistency/ density index	structure and additional observations
E	1 2 3	NONE OBSERVED			0.5			TOPSOIL; Sandy CLAY: Medium plasticity, brown, with some roots.	<Wp	St	TOPSOIL
					1.0			Sandy CLAY: Medium plasticity, orange/brown, with some fine to coarse grained angular sandstone gravel, sand fraction is fine to medium grained.		H	RESIDUAL SOIL
					1.5			SANDSTONE: Fine grained, orange/brown, low to medium strength.			HW/MW SANDSTONE
					2.0			Test pit CTP09 terminated at 1.1m			End on near refusal
					2.5						
					3.0						

Sketch

method	support	notes, samples, tests	classification symbols and soil description	consistency/density index
N natural exposure X existing excavation BH backhoe bucket B bulldozer blade R ripper E excavator	S shoring N nil penetration 1 2 3 4 no resistance ranging to refusal water water level on date shown water inflow water outflow	U ₅₀ undisturbed sample 50mm diameter U ₆₃ undisturbed sample 63mm diameter D disturbed sample V vane shear (kPa) Bs bulk sample E environmental sample R refusal	based on unified classification system moisture D dry M moist W wet Wp plastic limit WL liquid limit	VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense

Engineering Log - Excavation

Client: **TCG PLANNING**

Principal:

Project: **PRELIMINARY GEOTECH ASSESSMENT**

Test pit location: **WARWICK ST, BERKELEY NSW**

Excavation No. **CTP10**

Sheet 1 of 1

Project No: **GEOTWOLL03229AB**

Date started: **25.9.2012**

Date completed: **25.9.2012**

Logged by: **CA**

Checked by: **SM**

equipment type and model: 5T EXCAVATOR Pit Orientation: Easting: m R.L. Surface:
excavation dimensions: 2.5m long 0.45m wide Northing: m datum:

excavation information						material substance					
method	penetration	support	water	notes samples, tests, etc	depth metres	graphic log	classification symbol	material	moisture condition	consistency/ density index	structure and additional observations
E	1 2 3				RL			soil type: plasticity or particle characteristics, colour, secondary and minor components.			
					0.5			TOPSOIL;CLAY: Medium plasticity, brown, with some roots and some fine grained sand.	<Wp	St	TOPSOIL
					1.0			Sandy CLAY: Medium plasticity, orange/brown with some fine to coarse grained angular latite gravels, with a trace of high strength cobble ?? stones, sand fraction is fine to medium grained.		H	RESIDUAL
					1.5			LATITE: Mottled orange/red/brown, medium to high strength.			HW/MW (LATITE?) ROCK
					2.0			Test pit CTP10 terminated at 1.6m			End on refusal
					2.5						
					3.0						

Sketch

method	support	notes, samples, tests	classification symbols and soil description	consistency/density index
N natural exposure X existing excavation BH backhoe bucket B bulldozer blade R ripper E excavator	S shoring N nil penetration 1 2 3 4 no resistance ranging to refusal water water level on date shown water inflow water outflow	U ₅₀ undisturbed sample 50mm diameter U ₆₃ undisturbed sample 63mm diameter D disturbed sample V vane shear (kPa) Bs bulk sample E environmental sample R refusal	based on unified classification system moisture D dry M moist W wet Wp plastic limit WL liquid limit	VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense

Engineering Log - Excavation

Client: **TCG PLANNING**

Principal:

Project: **PRELIMINARY GEOTECH ASSESSMENT**

Test pit location: **WARWICK ST, BERKELEY NSW**

Excavation No. **CTP11**

Sheet 1 of 1

Project No: **GEOTWOLL03229AB**


Date started: **25.9.2012**

Date completed: **25.9.2012**

Logged by: **CA**

Checked by: **SM**

equipment type and model: 5T EXCAVATOR Pit Orientation: Easting: m R.L. Surface:
excavation dimensions: 2.5m long 0.45m wide Northing: m datum:

excavation information						material substance								
method	penetration			support	water	notes samples, tests, etc	depth metres	graphic log	classification symbol	material	moisture condition	consistency/ density index	pocket penetro- meter kPa	structure and additional observations
E	1	2	3							soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	100 200 300 400	
							0.5			TOPSOIL;CLAY: Medium plasticity, dark brown/black, some silt, some roots, with a trace of fine grained sand.	<Wp	St		TOPSOIL
							1.0			CLAY: Medium to high plasticity, orange/brown, with some pockets mottled black and grey, fine to coarse grained sand.	Wp/<Wp	VSt	x	COLLUVIAL
							1.5						x	
							2.0						x	
							2.5							
							3.0			Test pit CTP11 terminated at 2.65m				End on steady progress

Sketch

method	support	notes, samples, tests	classification symbols and soil description	consistency/density index
N natural exposure X existing excavation BH backhoe bucket B bulldozer blade R ripper E excavator	S shoring N nil penetration 1 2 3 4 no resistance ranging to refusal water water level on date shown water inflow water outflow	U ₅₀ undisturbed sample 50mm diameter U ₆₃ undisturbed sample 63mm diameter D disturbed sample V vane shear (kPa) Bs bulk sample E environmental sample R refusal	based on unified classification system moisture D dry M moist W wet Wp plastic limit W _L liquid limit	VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense

Excavation No. **CTP12**

Engineering Log - Excavation

Sheet 1 of 1

Project No: **GEOTWOLL03229AB**

Client: **TCG PLANNING**

Date started: **25.9.2012**

Principal:

Date completed: **25.9.2012**

Project: **PRELIMINARY GEOTECH ASSESSMENT**

Logged by: **CA**

Test pit location: **WARWICK ST, BERKELEY NSW**

Checked by: **SM**

equipment type and model: 5T EXCAVATOR Pit Orientation: Easting: m R.L. Surface:
excavation dimensions: 3m long 0.45m wide Northing: m datum:

excavation information						material substance								
method	penetration			support	water	notes samples, tests, etc	depth metres	graphic log	classification symbol	material soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro- meter kPa	structure and additional observations
E	1	2	3											

Sketch

method	support	notes, samples, tests	classification symbols and soil description	consistency/density index
N natural exposure X existing excavation BH backhoe bucket B bulldozer blade R ripper E excavator	S shoring N nil penetration 1 2 3 4 no resistance ranging to refusal water water level on date shown water inflow water outflow	U ₅₀ undisturbed sample 50mm diameter U ₆₃ undisturbed sample 63mm diameter D disturbed sample V vane shear (kPa) Bs bulk sample E environmental sample R refusal	based on unified classification system moisture D dry M moist W wet Wp plastic limit WL liquid limit	VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense