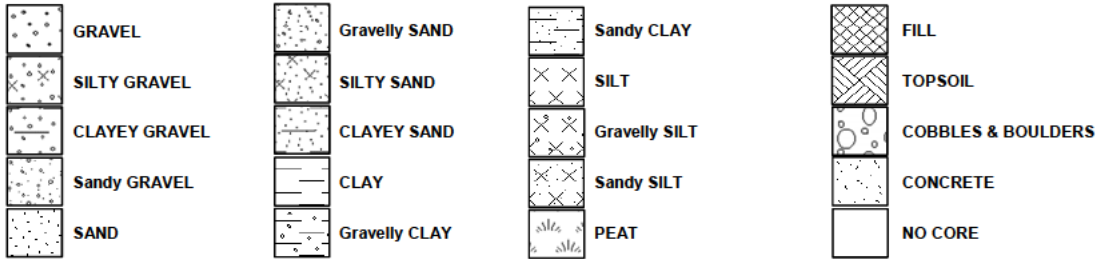


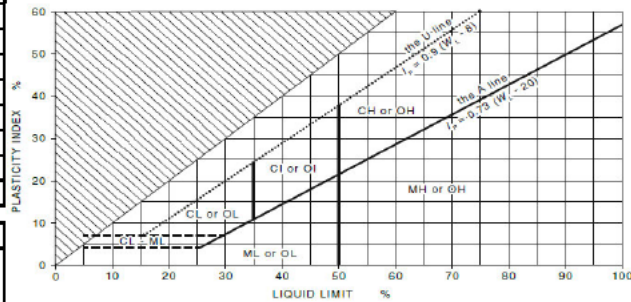
Appendix A

Explanatory Notes

Explanatory Notes – Soil Description



GP	Poorly Graded Gravel	ML	Low Plasticity Silt
GW	Well Graded Gravel	MH	High Plasticity Silt
GM	Silty Gravel	CL	Low Plasticity Clay
GC	Clayey Gravel	CI	Medium Plasticity Clay
SP	Poorly Graded Sand	CH	High Plasticity Clay
SW	Well Graded Sand	OL	Organic Soils (LP)
SM	Silty Sand	OH	Organic Soils (HP)
SC	Clayey Sand	PT	Peat
	Fill		Cobbles & Boulders



WATER	
	Groundwater (Strike)
	Groundwater (rise)

CLASSIFICATION AND INFERRED STRATIGRAPHY

Particle Size		
Major Division	Sub Division	Particle Size
Boulders		> 200 mm
Cobbles		63 to 200 mm
Gravel	Coarse	19 to 63 mm
	Medium	6.7 to 19 mm
	Fine	2.36 to 6.7 mm
Sand	Coarse	0.6 to 2.36 mm
	Medium	0.21 to 0.6 mm
	Fine	0.075 to 0.21 mm
Silt		0.002 to 0.075 mm
Clay		< 0.002 mm

SECONDARY/MINOR COMPONENTS	
TERMS FOR SANDS/GRAVELS (Less than 35% Particles < 0.075mm)	TERMS FOR CLAYS/SILTS (More than 35% Particles < 0.075mm)
trace sand/gravel = <15% clay/silt = <5%	trace sand/gravel = <15%
with sand/gravel = >15%, <30% clay/silt = >5%, <12%	with sand/gravel = >15%, <30%
Sandy... / Gravelly >30% Clayey... / Silty >12%	Sandy... / Gravelly >30%

MOISTURE CONDITION (Cohesionless Soils)

Symbol	Term	Description
D	Dry	Looks and feels dry. Cohesionless and free-running.
M	Moist	No free water on remoulding. Soil feels cool, darkened in colour. Soil tends to cohere.
W	Wet	Free water on remoulding. Soil feels cool, darkened in colour. Soil tends to cohere.

MOISTURE CONDITION (Cohesive Soils)

Symbol	Term	Description
<PL	Dry	Looks and feels dry. Hard and friable or powdery, well dry of the plastic limit
=PL	Moist	Soil feels cool, darkened in colour. Soil can be moulded. Near plastic limit.
>PL	Wet	Soils feels cool, darkened in colour. Usually weakened and free water forms when remoulding. Wet of plastic limit.

DENSITY (Cohesionless Soils)

Sym.	Term	Density Index (%)	SPT 'N'
VL	Very Loose	Less than 15	0 to 4
L	Loose	15 to 35	4 to 10
MD	Medium Dense	35 to 65	10 to 30
D	Dense	65 to 85	30 to 50
VD	Very Dense	Above 85	Above 50

STIFFNESS (Cohesive Soils)

Sym.	Term	Undrained Shear Strength
VS	Very Soft	0 to 12 kPa
S	Soft	12 to 25 kPa
F	Firm	25 to 50 kPa
St	Stiff	50 to 100 kPa
VSt	Very Stiff	100 to 200 kPa

SAMPLING AND LABORATORY / INSITU TESTING RESULTS

B	Bulk Disturbed Sample	U	Undisturbed Push-in Sample	CBR	California Bearing Ratio
BLK	Block Sample	W	Water Sample	UCS	Unconfined Compressive Strength
C	Core Sample	LL	Liquid Limit	PLI	Point Load Index
ES	Environmental Soil Sample	PI	Plasticity Index	N	SPT-N Value
P	Piston Sample	LS	Linear Shrinkage		

DRILLING/EXCAVATION METHOD

AC	Air Core	HA	Hand Auger	RC	Rotary Cored
ADH	Hollow Auger Drilling	HQ	Rotary Core 63.5mm	RO	Rotary Open Hole
AD/V	Auger with V-Bit	HQ3	Rotary Core 61.1mm	SPT	Standard Penetration Test
AD/T	Auger with TC-Bit	PQ3	Rotary Drill 83mm	TP	Test Pit
DPP	Direct Push Probe	PT	Push Tube	W	Wash Bore

Explanatory Notes – Rock Description



	MUDSTONE		LIMESTONE		CONGLOMERATE		GYPSUM
	SILTSTONE		CHALK		IGNEOUS		SHALE
	SANDSTONE		BRECCIA		METAMORPHIC		PYROCLASTIC

ROCK MATERIAL STRENGTH				
Symbol	Term	Uniaxial Compressive Strength - UCS (MPa)	Point Load Index - $I_{p(50)}$ (MPa) - GUIDE ONLY	Field Guide
EL	Extremely Low	Less than 0.6	Less than 0.03	Easily remoulded by hand to a material with soil properties (logged as soil).
VL	Very Low	0.6 to 2	0.03 to 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 3 cm thick can be broken by finger pressure.
L	Low	2 to 6	0.1 to 0.3	Easily scored with a knife; indentations 1 mm to 3 mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150 mm long 50 mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
M	Medium	6 to 20	0.3 to 1	Readily scored with a knife; a piece of core 150 mm long by 50 mm diameter can be broken by hand with difficulty.
H	High	20 to 60	1 to 3	A piece of core 150 mm long by 50 mm diameter cannot be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
VH	Very High	60 to 200	3 to 10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
EH	Extremely High	More than 200	More than 10	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

WEATHERING CLASSIFICATION		
Symbol	Term	Definition
RS	Residual Soil	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported.
XW	Extremely weathered rock	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible.
HW (or DW)	Highly Weathered	Rock strength usually changed by weathering. The rock may be highly discoloured. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products.
MW (or DW)	Moderately Weathered	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognizable, but shows little or no change of strength from fresh rock.
SW	Slightly weathered rock	Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.
FR	Fresh rock	Rock shows no sign of decomposition or staining.

CEMENTATION CLASSIFICATION		
Symbol	Term	Definition
Uc	Uncemented	Clean grains, exhibiting soil properties.
VWc	Very weakly cemented	Marginal soil-rock strengths, collapsing feel under light finger pressure, cement seen on some washed grains.
Wc	Weakly Cemented	Collapsing feel under light soil pressure, breaks down to individual grains or with some grains cemented together, cement seen on many washed grains.
MWc	Moderately Weakly Cemented	Cement on nearly all grains, breaks down to lumps and some individual grains under finger pressure, can crush to individual grains under knife blade.
Mo	Moderately Cemented	Cement on most grains, can break fragments off by hand and crush to small lumps under knife blade.
We	Well Cemented	Practically all grains cemented together, cannot break fragments off by hand, dull sound under hammer.
VWe	Very Well Cemented	Most Primary Pores filled with cement, requires firm blow with hammer to break off fragments, rings when struck

ROCK CORE RECOVERY		
Symbol	Term	Definition
TCR	Total Core Recovery (%)	The ratio of total length of core recovered to length of core run drilled, expressed as a percentage.
SCR	Solid Core Recovery (%)	The ratio of the total length of solid cylindrical pieces of core recovered to length of core run drilled, expressed as a percentage.
RQD	Rock Quality Designation (%)	The ratio of the total length of solid cylindrical pieces of core over 100mm in length recovered to length of core run drilled, expressed as a percentage.

Explanatory Notes – Defect Description



Defect Type			
ABBREVIATION	TERM	DEFINITION	DIAGRAM
PT	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.	
JT	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.	
SS	Sheared Surface	A near planar, curved or undulating surface which is usually smooth, polished or slickensided and which shows evidence of shear displacement.	
SZ	Sheared Zone	Zone of rock material 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.	
CS	Crushed Zone / Seam	Seam of soil material with roughly parallel almost planar boundaries, composed of disoriented, usually angular fragments of the host rock material which may be more weathered than the host rock. The seam has soil properties.	
SM	Seam	Seam of soil material usually with distinct roughly parallel boundaries formed by the migration of soil into an open cavity or joint, infilled seams less than 1 mm thick may be described as a veneer or coating on a joint surface.	

Surface Roughness		
ABBREVIATION	TERM	Description
VR	Very Rough	Many large irregularities generally > 1 mm
RO	Rough	Many small irregularities generally > 1 mm
SM	Smooth	Few or no surface irregularities
PO	Polished	Shiny smooth surface
SI	Slickensided/Striated	Grooved/striated surface, usually polished

Surface Shape		
ABBREVIATION	TERM	Description
PL	Planar	Does not vary in orientation
CU	Curved	gradual change in orientation
UN	Undulating	wavy surface
ST	Stepped	one or more well defined steps
IR	Irregular	many sharp changes in orientation

Coatings		
ABBREVIATION	TERM	Description
CN	Clean	No visible coating
SN	Stained	No coating but surface discoloured
VN	Veneer	visible coating too thin to measure
CT	Coating	visible coating up to 1mm thick
IF	Infilled	Over 1mm thick of soil present

Orientation	
ABBREVIATION	TERM
SH	Sub Vertical
SV	Sub Horizontal
10°	Angle from horizontal

Aperture	
ABBREVIATION	TERM
DIS	Discontinuous
CL	Closed
5mm	Measured width between joint surfaces

Block Shape	
Term	Description
Blocky	Roughly equidimensional blocks.
Tabular	thickness of blocks much less than length or width.
Columnar	lengths much greater than other dimensions
Irregular	Irregular discontinuities without arrangement into distinct sets,