



Hunter Water Corporation

TILLEGRA DAM DESIGN - CONSULTANCY 361802

Storage Rim Stability and Seepage Potential
Engineering Geotechnical Report

VOLUME II

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Appendix A

Definitions of Terms



DEFINITIONS OF ENGINEERING GEOLOGICAL TERMS

This classification system provides a standard terminology for the engineering description of rock.

DEGREE OF WEATHERING ¹

TERM	SYMBOL	DEFINITION
Residual Soil	RS	Rock is converted to soil. The mass structure and material fabric are destroyed. There is a large change in volume, but the soil has not been significantly transported.
Extremely Weathered	EW	Rock substance affected by weathering to the extent that the rock exhibits soil properties - i.e. it can be remoulded and can be classified according to the Unified Classification System, but the texture of the original rock is still evident.
Highly Weathered	HW	Rock substance affected by weathering to the extent that limonite staining or bleaching affects the whole of the rock substance, and other signs of chemical or physical decomposition are evident. Porosity and strength may be increased or decreased compared to the fresh rock, usually as a result of iron bleaching or deposition. The colour and strength of the original substance is no longer recognisable.
Moderately Weathered	MW	Rock substance affected by weathering to the extent that staining extends throughout the whole of the rock substance, and the original colour of the fresh rock is no longer recognisable.
Slightly Weathered	SW	Rock substance affected by weathering to the extent that partial staining or discolouration of the rock substance, usually by limonite has taken place. The colour and texture of the fresh rock is recognisable.
Fresh (stained)	F _s	Rock substance unaffected by weathering. Weathering is limited to the surface of major discontinuities, for example an iron-stained joint.
Fresh	F	Rock substance unaffected by weathering.

ROCK STRENGTH ²

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.

TERM	Is (50)	FIELD GUIDE	APPROX. qu MPa *
Extremely Weak (EW)	0.03	Easily remoulded by hand to a material with soil properties.	0.7
Very weak (VW)	0.1	May be crumbled in the hand. Sandstone is "sugary" and friable.	2.4
Weak (W)	0.3	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.	7
Medium Strong (MS)	1	A piece of core 150mm long x 50mm dia. may be broken by hand with considerable difficulty. Readily scored with a knife.	24
Strong (S)	3	A piece of core 150mm long x 50mm dia. cannot be broken by unaided hands, may be slightly scratched or scored with knife.	70
Very Strong (VS)	10	A piece of core 150mm long x 50mm dia. may be broken readily with hand held hammer. Cannot be scratched with pen knife.	240
Extremely Strong (ES)		A piece of core 150mm long x 50mm dia. is difficult to break with hand held hammer. Rings when struck with hammer.	

* The approximate unconfined compressive strength (qu) shown in the table is based on an assumed ratio to the point load index of 24:1. This ratio may vary widely and should be calibrated on site.

STRATIFICATION SPACING ²

TERM	SEPARATION OF STRATIFICATION PLANES
Thinly laminated	< 6mm
Laminated	6mm - 20mm
Very thinly bedded	20mm - 60mm
Thinly bedded	60mm - 200mm
Medium bedded	200mm - 600mm
Thickly bedded	600mm - 2m
Very thickly bedded	> 2m

DISCONTINUITY SPACING ³

TERM	SPACING
Very widely spaced	> 2m
Widely spaced	600mm - 2m
Moderately widely spaced	200mm - 600mm
Closely spaced	60mm - 200mm
Very closely spaced	20mm - 60mm
Extremely closely spaced	< 20mm

APERTURE OF DISCONTINUITY SURFACES ⁴

The degree to which a discontinuity is open, or to which the faces of the discontinuity have been separated and the space subsequently infilled (such as in a vein, fault or joint).

TERM	APERTURE THICKNESS (Discontinuities, veins, faults, joints)
Wide	> 200mm
Moderately wide	60mm - 200mm
Moderately narrow	20mm - 60mm
Narrow	6mm - 20mm
Very narrow	2mm - 6mm
Extremely narrow	> 0 - 2 mm
Tight	Zero

BLOCK SHAPE AND SIZE ⁴

The following descriptive terms define shape:

- Blocky - approximately equidimensional.
- Tabular - one dimension considerably shorter than the other two.
- Columnar - one dimension considerably larger than the other two.

Block sizes are defined by the following descriptive terms:

TERM	BLOCK SIZE	EQUIVALENT DISCONTINUITY SPACINGS IN BLOCKY ROCK
Very large	$> 8\text{m}^3$	Extremely wide
Large	$> 0.2\text{m}^3 - 8\text{m}^3$	Very wide
Medium	$> 0.008\text{m}^3 - 0.2\text{m}^3$	Wide
Small	$> 0.0002\text{m}^3 - 0.008\text{m}^3$	Moderately wide
Very small	$\leq 0.0002\text{m}^3$	Less than moderately wide

REFERENCES

1. Modifications of:
 - (a) McMahon, B.K., Douglas, D.J., & Burgess, P.J., 1975. Engineering classification of sedimentary rocks in the Sydney area. Australian Geomechanics Journal, G5 (1), 51-53.
 - (b) Geological Society Engineering Group Working Party, 1977. The description of rock masses for engineering purposes. Quarterly Jour. Engg. Geology, 10 (4), 355-388.
2. McMahon, B.K., Douglas, D.J., & Burgess, P. J., 1975. Engineering classification of sedimentary rocks in the Sydney area. Australian Geomechanics Journal, G5 (1), 51 -53.
3. ISRM Commission on Standardisation of Laboratory and Field Tests, 1978. Suggested methods for the quantitative description of discontinuities in rock masses. Jl. Rock Mechanics Min. Sci. and Geomech. Abstra., 15, 319-368.
4. Geological Society Engineering Group Working Party, 1977. The description of rock masses for engineering purposes. Quarterly Journ. Engg Geology, 10 (4), 355-388.

Appendix B

Investigation Locations/Geological Field Maps



Department of Commerce Test Pit Locations

Test Pit	Location	Easting (m)	Northing (m)	RL (m)
TP1	Western slope of Chichester Range/Williams River valley floor	376039.4	6424891.7	116.6
TP2		376130.8	6424942.3	129.6
TP3		376241.4	6425023.1	146.8
TP4		376148.1	6424795.2	122.7
TP5		376076.1	6424664.6	114.4
TP6		375924.1	6424780.2	110.4
TP7		375942.7	6425073.0	118.7
TP8		376168.8	6425122.8	134.0
TP9		376353.5	6425145.0	160.4
TP10		376295.2	6425169.2	148.9
TP11		375768.7	6425092.0	123.7
TP12		375818.9	6425269.3	135.5
TP13		375914.6	6425412.9	148.9
TP14		376101.5	6425460.5	161.6
TP15		376087.1	6425292.0	145.1
TP16		376056.7	6425122.9	125.3
TP17		376193.2	6425204.9	134.4
TP18		376563.5	6425539.6	235.2
TP19		376634.0	6425388.6	237.4
TP20		376667.6	6425186.6	236.5
TP21		376691.9	6425131.5	242.1
TP22		376710.1	6425059.2	255.9
TP23		376703.2	6424945.1	268.8
TP24		376730.2	6424816.8	272.2
TP25		376538.1	6425201.1	206.3
TP26		376506.0	6425439.4	218.1
TP27		376264.3	6425425.9	176.0
TP28		375789.7	6425574.3	132.0
TP29		375729.1	6425638.2	126.6
TP30		375893.0	6425743.2	130.8
TP31		375984.9	6425887.7	134.8
TP32		376129.0	6425755.1	160.0
TP33		376231.2	6425757.7	171.4
TP34		376251.2	6425947.0	161.6
TP35		376566.0	6425899.4	245.1
TP36		376545.9	6426099.1	240.3
TP37	Farley property (downstream of dam site)	376914.4	6423409.7	92.1
TP38		377079.7	6423385.6	90.6
TP39		377330.5	6423466.5	89.0
TP40		377241.9	6423639.0	94.4
TP41		377140.4	6423587.1	95.4
TP42		377004.1	6423535.5	97.1
TP43		377042.1	6423551.8	96.8
TP44		376947.5	6423518.6	95.6
TP45		376952.8	6423636.0	106.8
TP46		376984.8	6423676.9	109.1

TP47	Farley property continued	377024.0	6423701.6	108.3
TP48		377051.9	6423722.7	108.6
TP49		377066.7	6423779.5	112.6
TP50		377123.9	6423777.5	107.0
TP51		377062.6	6423813.0	116.2
TP52		377036.5	6423780.8	117.3
TP53	Left spillway alignment	376878.3	642630.8	108.7
TP54		376828.1	6423692.7	114.8
TP55		376764.3	6423753.2	112.4
TP56	Lowrey property	376927.6	6424072.0	145.8
TP57		377030.0	6424088.2	125.1
TP58		377116.0	6423948.7	118.3
TP59	Left spillway crest	376704.5	6423884.2	165.7
TP60	Left abutment	376498.8	6423649.7	127.8
TP61		376508.1	6423598.3	118.4
TP62		376491.7	6423531.8	112.1
TP63		376447.1	6423683.8	140.9
TP64		376436.9	6423631.7	129.8
TP65		376419.7	6423596.6	119.6
TP66		376398.8	6423544.5	104.8
TP67		376369.0	6423451.2	96.2
TP68		376369.4	6423422.3	93.3
TP69		376366.9	6423375.0	93.1
TP70	Upstream coffer dam	376265.4	6423420.6	101.8
TP71		376266.0	6423386.2	98.4
TP72		376271.7	6423341.3	95.0
TP73	Diversion outlet/right spillway alignment	376630.7	6423273.2	103.4
TP74		376692.5	6423206.5	103.2
TP75		376780.2	6423132.1	99.7
TP76		376727.1	6423097.5	103.8
TP77		376672.4	6423069.6	108.5
TP78		376825.9	6423161.0	97.1
TP79		376905.1	6423194.1	94.3
TP80	Right spillway crest	376517.7	6422913.3	176.9
TP81		376489.1	6423006.7	169.3
TP82	Right abutment	376468.3	6423052.9	160.9
TP83		376477.8	6423106.3	148.5
TP84		376486.2	6423162.3	137.3
TP85		376471.0	6423199.1	127.4
TP86		376460.4	6423245.4	116.4
TP87		376445.6	6423094.7	150.9
TP88		376433.2	6423132.9	139.3
TP89		376415.3	6423175.9	128.6
TP90		376402.9	6423203.3	122.3
TP91	Elwari Mtn. eastern slope	375951.4	6423175.5	104.3
TP92		375959.3	6423346.1	103.0
TP93		375958.0	6423466.0	103.1
TP94	See over	376609.8	6423133.7	116.6

TP95	Revised right spillway alignment	376656.2	6423155.5	109.4
TP96		376699.8	6423175.4	103.7
TP97		376751.1	6423204.8	98.2
TP98		376788.4	6423224.0	96.9
TP99		376835.1	6423237.0	95.2
TP100		376897.1	6423258.1	93.6
TP101		376794.7	6423291.5	95.1
TP102		376726.4	6423308.3	96.4
TP103		376607.9	6423347.4	96.3
TP104		376596.4	6423191.4	115.1
TP105	Lowrey/Turin properties (eastern slope of Tillegra Range)	376708.1	6422995.9	112.1
TP106		376788.8	6422982.9	104.9
TP107		376873.7	6423009.3	101.4
TP108		376887.3	6423109.4	99.2
TP109		376813.0	6423070.0	99.8
TP110		377184.8	6424889.9	134.6
TP111		377131.1	6424880.0	141.9
TP112		377144.3	6424881.9	140.1
TP113		377096.1	6424874.0	147.5
TP114		377070.9	6424870.2	151.2
TP115		377019.6	6424859.0	164.6
TP116		376996.2	6424850.4	172.9
TP117		377097.4	6424513.8	139.3
TP118		377008.6	6424524.9	150.5
TP119		376938.4	6424524.4	165.9
TP120		376972.0	6424538.6	157.9
TP121		376894.6	6424552.6	176.3
TP122		377123.3	6424629.6	136.0
TP123		377057.2	6424642.1	148.1
TP124		377021.4	6424651.1	157.3
TP125		376972.6	6424663.0	172.4
TP126		377035.4	6424572.0	144.3
TP127		377006.3	6424571.2	146.2
TP128		377096.6	6425342.7	132.6
TP129		377037.0	6425331.3	143.4
TP130		376998.2	6425321.2	152.9
TP131		376959.5	6425310.5	163.5
TP132		376866.9	6425268.7	200.5
TP133		376980.8	6425315.2	157.6
TP134		376935.8	6425299.8	171.8
TP135		376927.6	6425583.2	157.4
TP136		376977.0	6425581.7	146.1
TP137		376953.5	6425581.9	151.0
TP138	Landslip 2A	376324.4	6425440.1	182.2
TP139		376338.4	6425497.0	198.7
TP140		376310.7	6425452.1	186.4
TP141		376455.9	6425466.7	212.2
TP142		376413.5	6425438.3	198.8

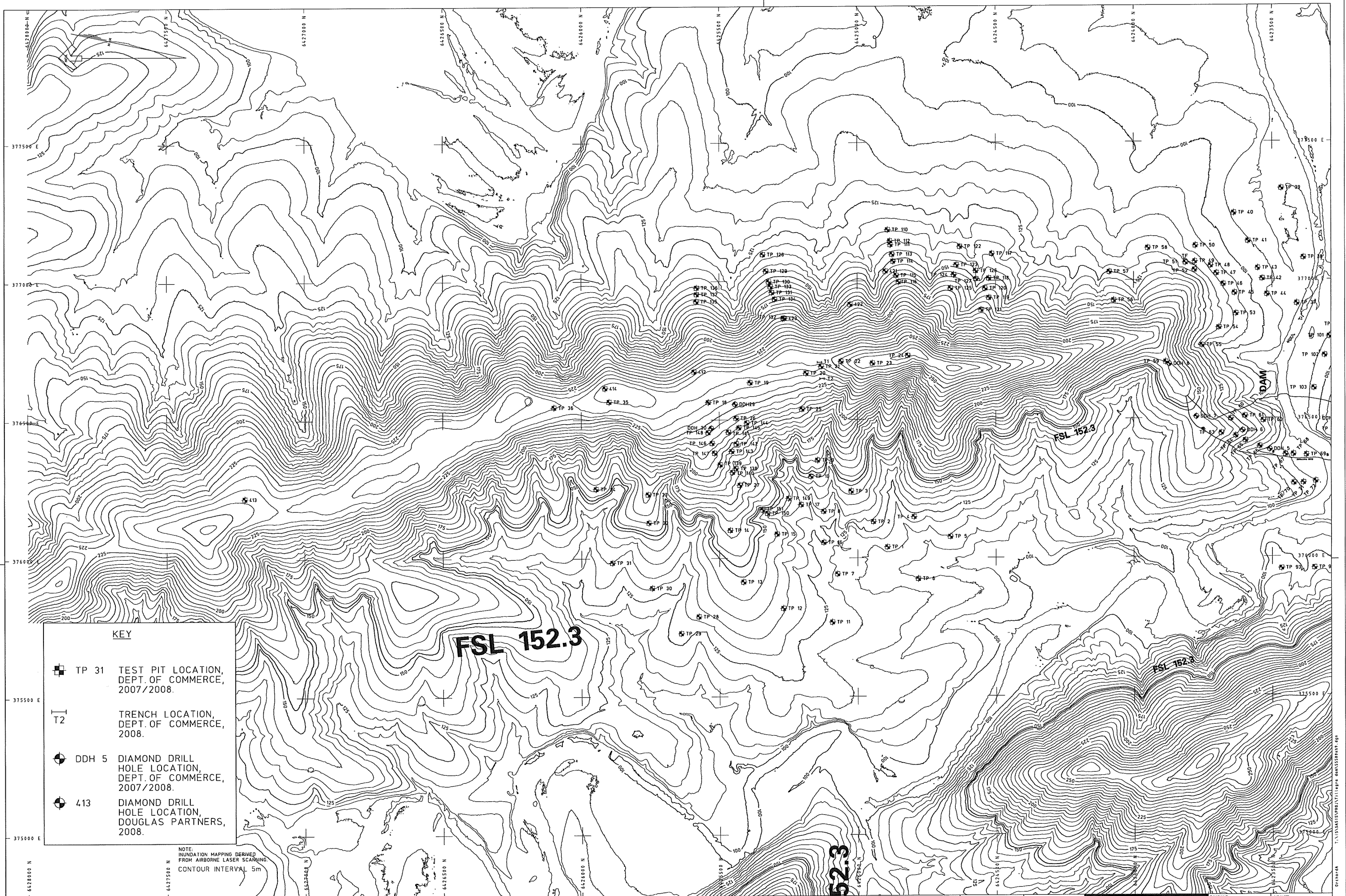
TP143	Landslip 2A continued	376386.4	6425455.3	193.4
TP144		376488.7	6425400.7	210.9
TP145		376471.4	6425429.5	209.8
TP146		376416.0	6425525.7	213.7
TP147		376380.2	6425516.9	206.8
TP148		376454.6	6425540.4	221.0
TP149		376216.0	6425250.1	143.5
TP150		376162.6	6425326.3	142.9
TP151		376174.4	6425344.0	148.1

Department of Commerce Diamond Drilling

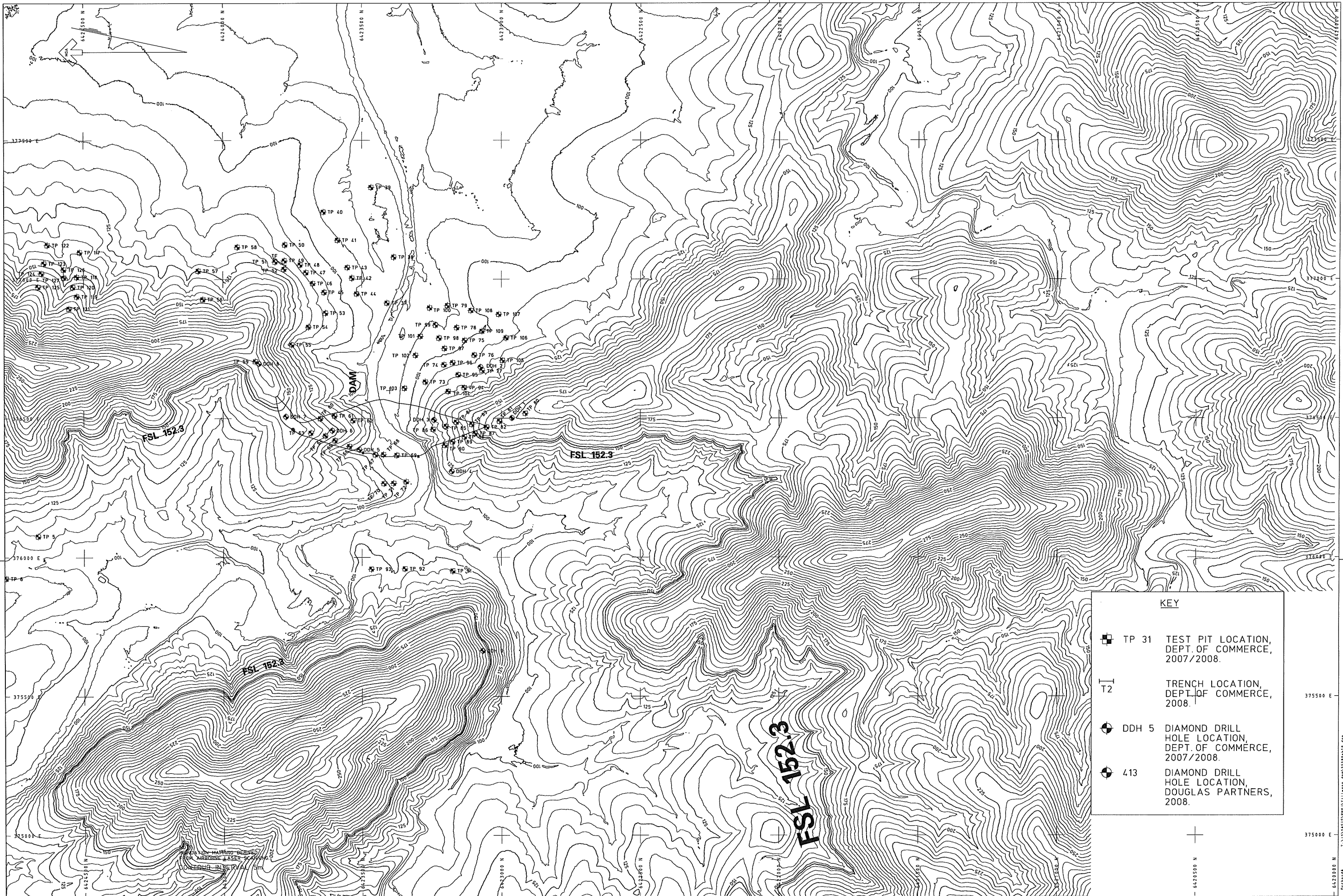
Borehole	Location	Easting (m)	Northing (m)	RL (m)
DDH1	Spillway alignment	376501.0	6422961.5	173.8
DDH2		376684.2	6423075.2	107.2
DDH3	Right abutment	376494.2	6423242.4	118.7
DDH4		376309.3	6423178.8	122.4
DDH5	Left abutment	376387.2	6423508.8	97.7
DDH6		376455.7	6423606.5	127.6
DDH7		376506.0	6423774.1	147.5
DDH8		376696.6	6423871.6	165.6
DDH9	Quarry Area B	375664.0	6423067.3	163.4
DDH29	Landslip 2A	376556.3	6425443.1	227.4
DDH30		376469.8	6425528.9	221.6

Douglas Partners Diamond Drilling (Salisbury Road Realignment)

Borehole	Location	Easting (m)	Northing (m)	RL (m)
412	Salisbury Road realignment	376674	6425591	231.7
413		376219	6427216	244.0
414		376615	6425914	247.2
421		377035	6424898	231.7
422		376916	6425026	182.0
423		376866	6425265	202.0



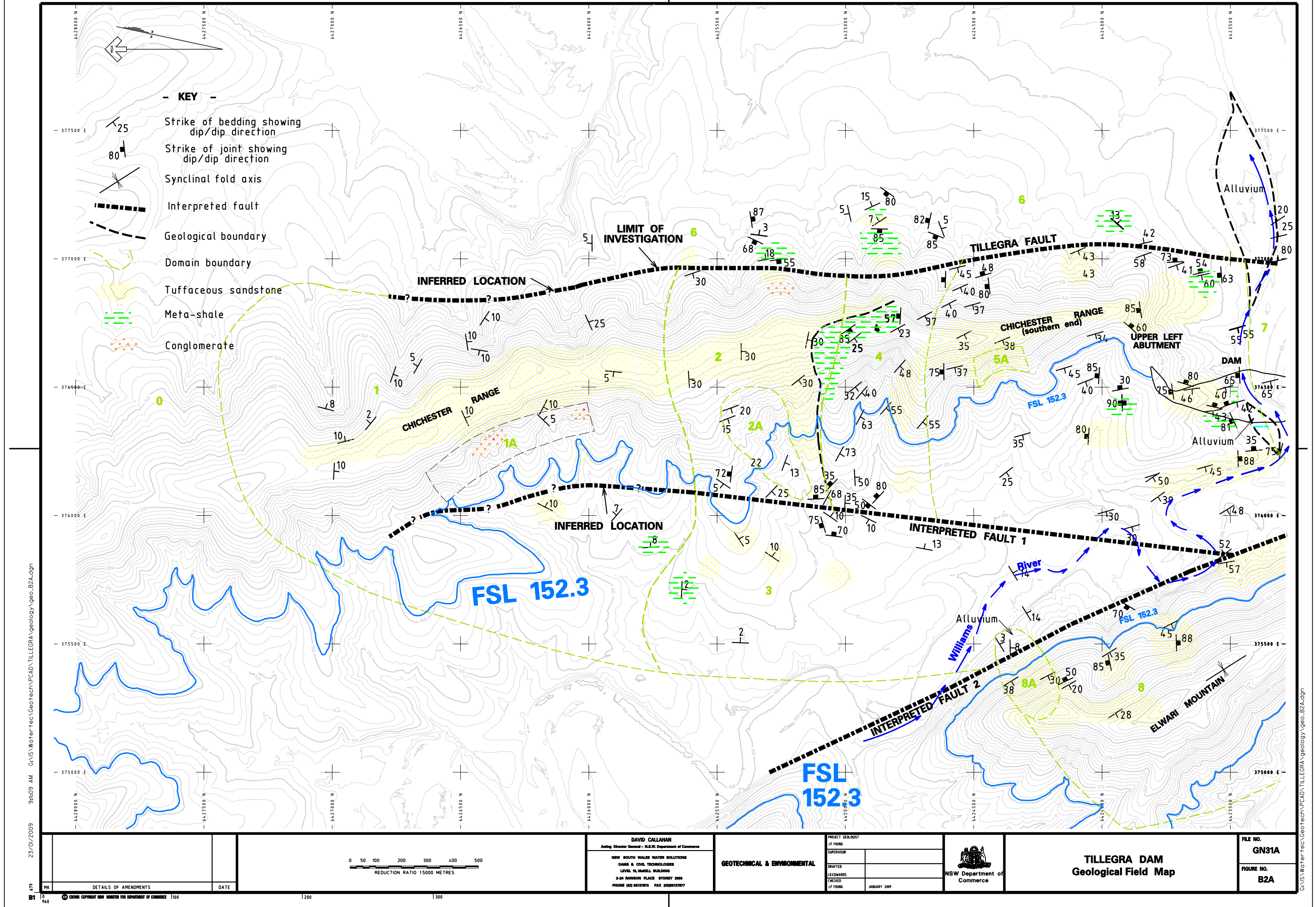
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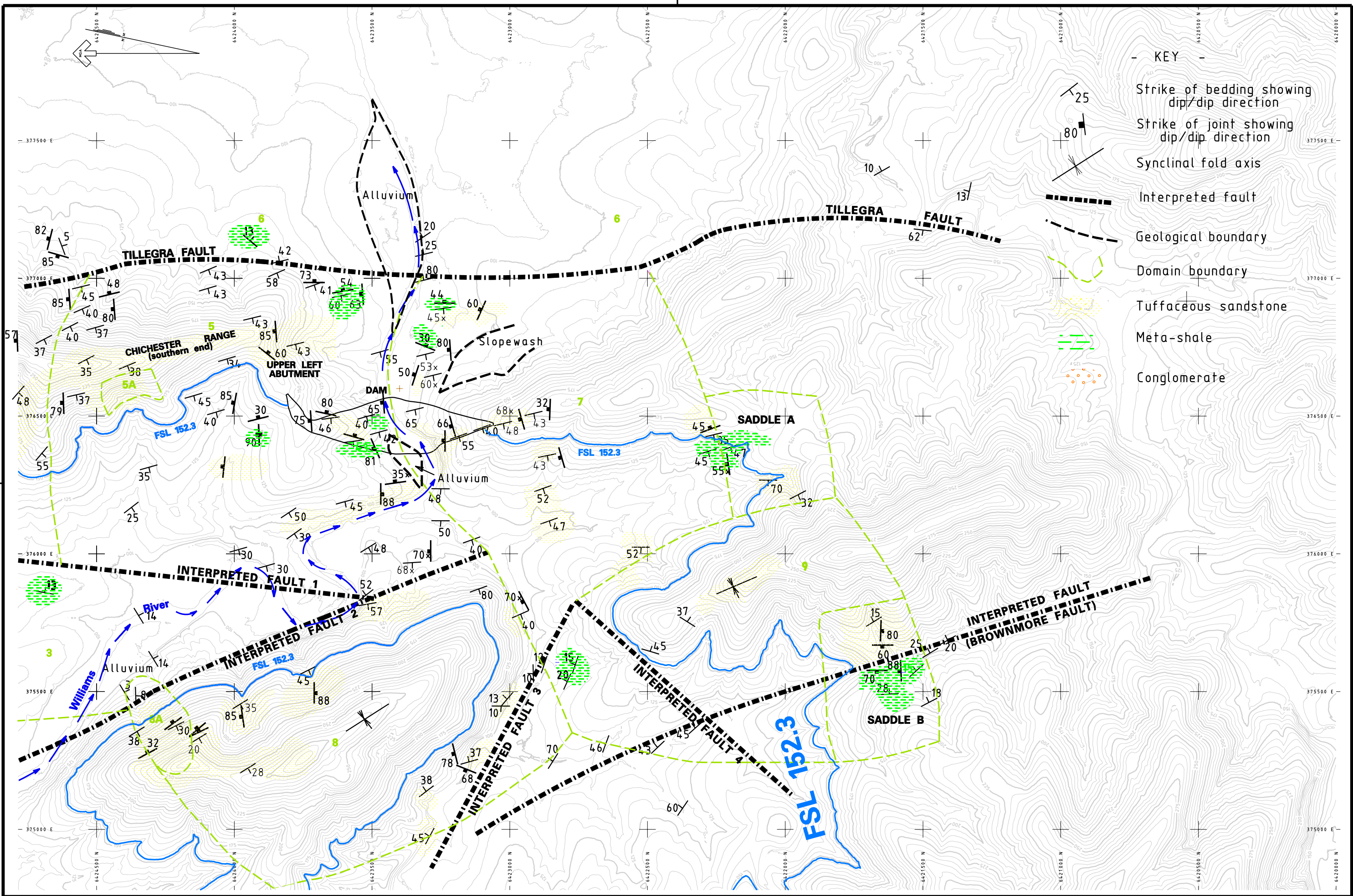
- TP 31 TEST PIT LOCATION, DEPT. OF COMMERCE, 2007/2008.
- T2 TRENCH LOCATION, DEPT. OF COMMERCE, 2008.
- DDH 5 DIAMOND DRILL HOLE LOCATION, DEPT. OF COMMERCE, 2007/2008.
- 413 DIAMOND DRILL HOLE LOCATION, DOUGLAS PARTNERS, 2008.

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679
B1



- KEY -
- Strike of bedding showing dip/dip direction
 - Strike of joint showing dip/dip direction
 - Synclinal fold axis
 - Interpreted fault
 - Geological boundary
 - Domain boundary
 - Tuffaceous sandstone
 - Meta-shale
 - Conglomerate

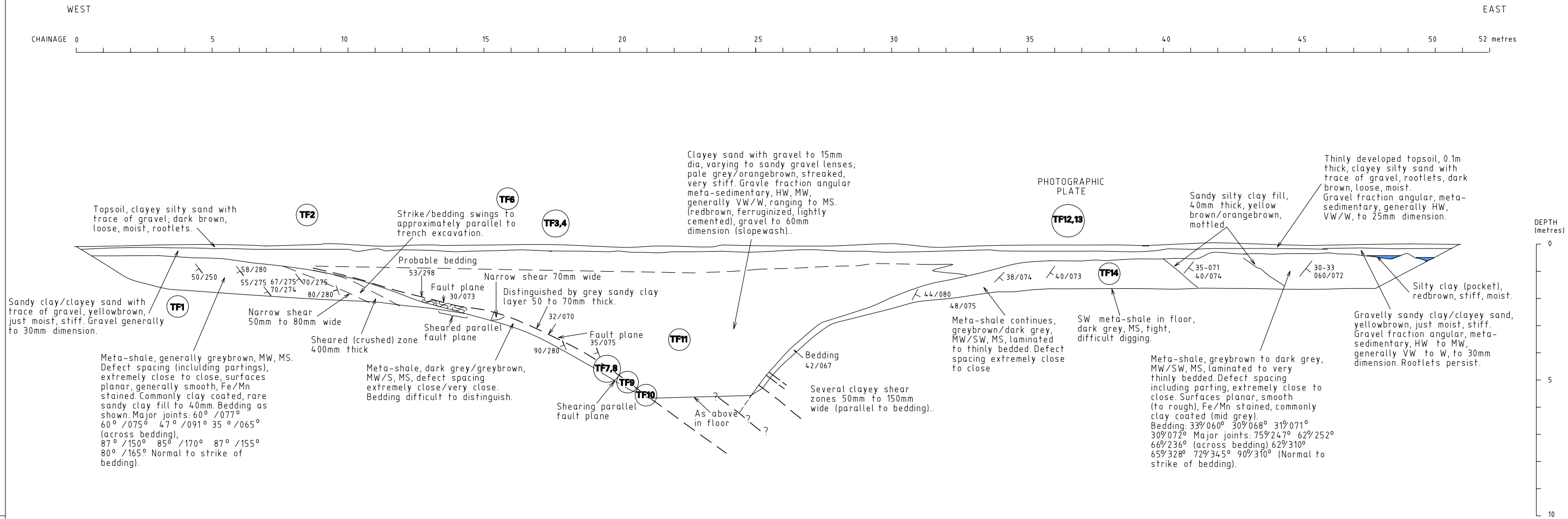
DETAILS OF AMENDMENTS		DATE		REDUCTION RATIO 15000 METRES		DAVID CALLAHAN Acting Director General - N.S.W. Department of Commerce		NEW SOUTH WALES WATER SOLUTIONS DAMS & CIVIL TECHNOLOGIES LEVEL 18 MARILL BUILDING 2-24 RAVENHILL PLACE SYDNEY 2000 PHONE (02) 95727678 FAX (02) 95727677		PROJECT GEOLOGIST J.F. YOUNG SUPERVISOR DRAFTED J.D. EDWARDS CHECKED J.F. YOUNG		JANUARY 2009		NSW Department of Commerce		TILLEGRA DAM Geological Field Map		FILE NO. GN31A		FIGURE NO. B2B	
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Appendix C

Tillegra Fault (trench log/photographic log)





TF2 – Meta-shale, bedding dipping upstream at 65° to 70°



TF7 – Fault plane dipping downstream



TF9 – Shearing parallel to fault plane



TF13 – Meta-shale, bedding dipping downstream at 40°

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27/01/2009 10:26:21 AM

DETAILS OF AMENDMENTS

A301390

150

JOHN LEE
Director General - N.S.W. Department of Commerce

NEW SOUTH WALES WATER SOLUTIONS
WATER TECHNOLOGIES
LEVEL 13, McKELL BUILDING
2-24 RAWSON PLACE SYDNEY 2000
PHONE (02) 95727873 FAX (02) 93727877

GEOTECHNICAL
AND
ENVIRONMENTAL

PROJECT GEOLOGIST
J.F. YOUNG
SUPERVISOR
J.F. YOUNG
DRAFTED
J.D. EDWARDS
CHECKED
J.F. YOUNG
MAY 2008



**TILLEGRA DAM
TILLEGRA FAULT
Investigation Trench – Farley's Property**

FILE No.
GN31A

FIGURE No.
TF



Plate TF1. Chn.4.3m. Meta-shale, bedding dipping upstream at 50° in direction 250°M.



Plate TF2. Chn.8.3m. Meta-shale, dipping upstream at 65° to 70° in direction 275°M.



Plate TF3. Chn.17m to 22m. General view of the fault plane dipping downstream (to the right of the photograph).



Plate TF4. Chn.17m to 22m. Fault plane dipping (downstream) into the floor of the trench.



Plate TF5. Chn.11.4m. Fault plane dipping downstream (to the right of the photograph). Brecciated zone overlying meta-shale.



Plate TF6. Chn.14.3m. Fault plane dipping downstream, with shearing parallel to the fault plane.



Plate TF7. Chn.19.5m. Fault plane dipping downstream.



Plate TF8. Chn.19.5m. Narrow clayey zone (pale grey), immediately above the fault plane.

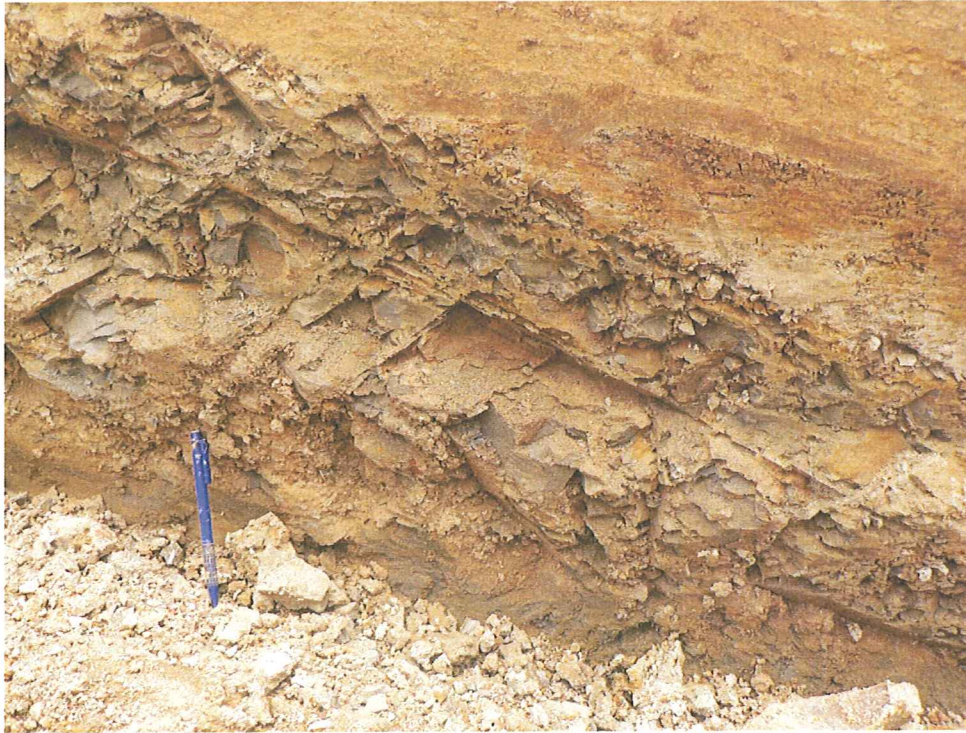


Plate TF9. Chn.20.5m. Fault plane dipping downstream with shearing parallel to the fault plane.



Plate TF10. Fault plane dipping into the floor of the trench.

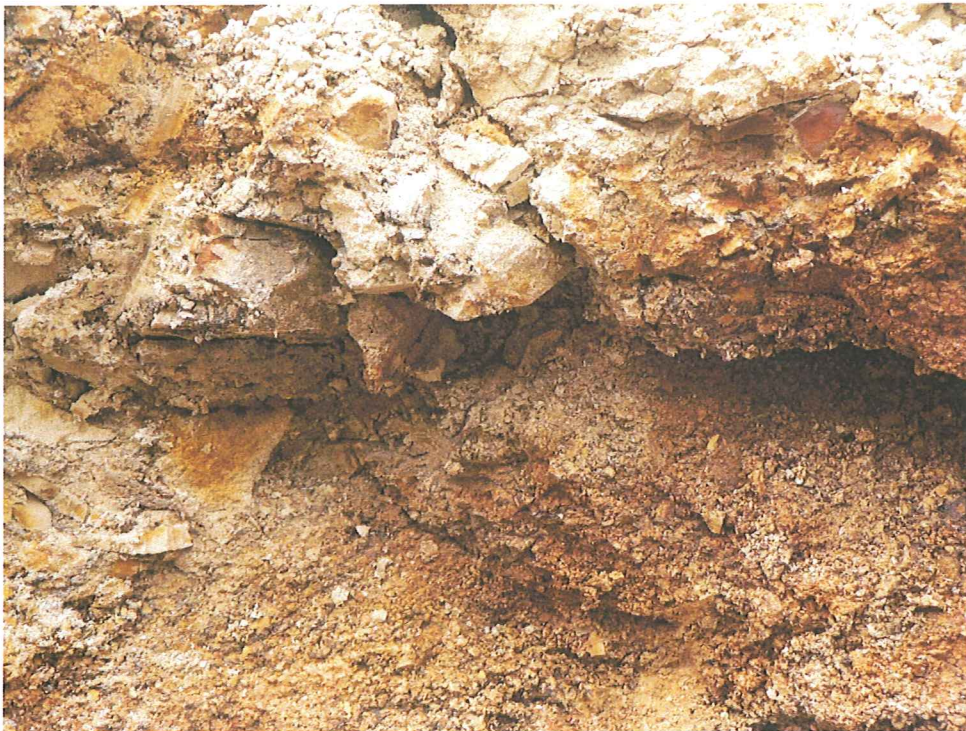


Plate TF11. Infilling slopewash deposit above fault plane.



Plate TF12. Chn.37m to 52m. General view of the meta-shale downstream of the fault zone (dipping downstream at 40° to 30° in direction 060°M to 072°M).



Plate TF13. Chn.37m. Well defined bedding dipping downstream at 40° in direction 073°M .

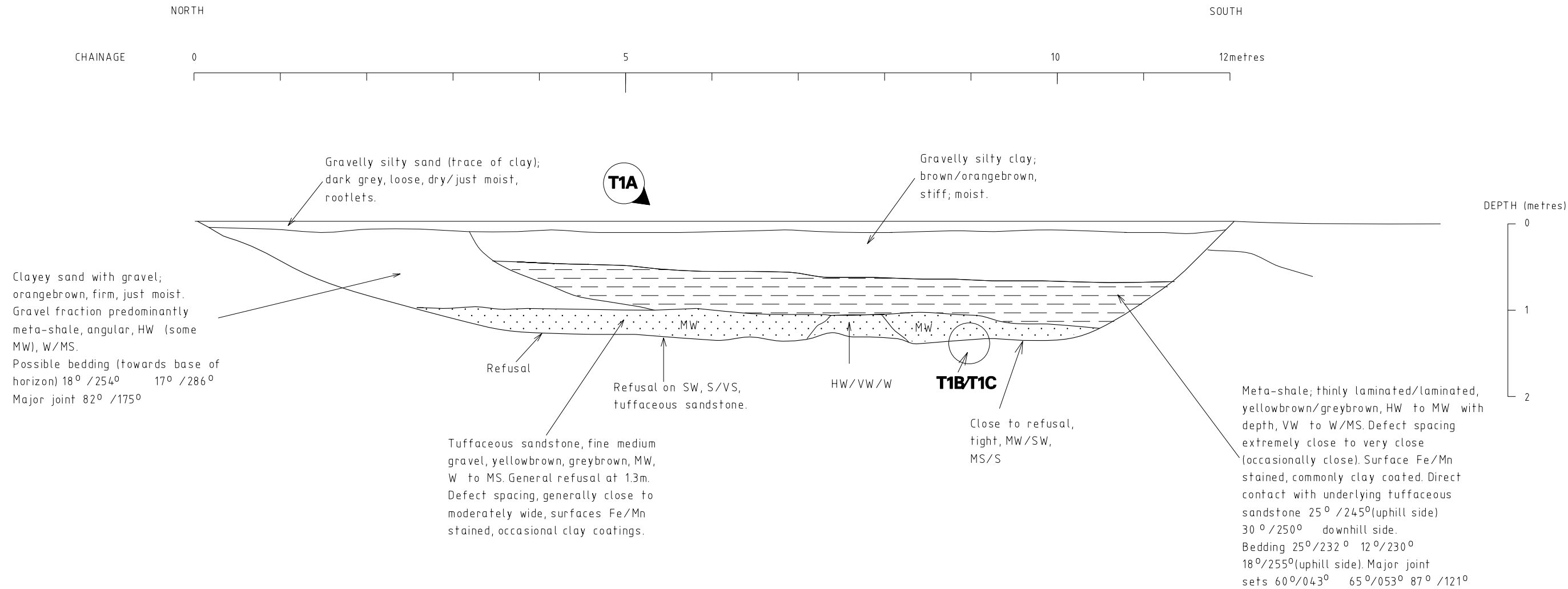


Plate TF14. Chn.39m. As above (refer to **Plate 13**).

Appendix D

Investigation Trenches T1 and T2 (trench logs/photographic record)





T1A – Refusa/difficult digging on moderately weathered/slightly weathered tuffaceous sandstone



T1B Contact between meta-shale and underlying tuffaceous sandstone



T1C

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DETAILS OF AMENDMENTS

150

JOHN LEE
Director General - N.S.W. Department of Commerce

NEW SOUTH WALES WATER SOLUTIONS
WATER TECHNOLOGIES
LEVEL 18, McKELL BUILDING
2-24 RAWSON PLACE SYDNEY 2000
PHONE (02) 93727873 FAX (02) 93727877

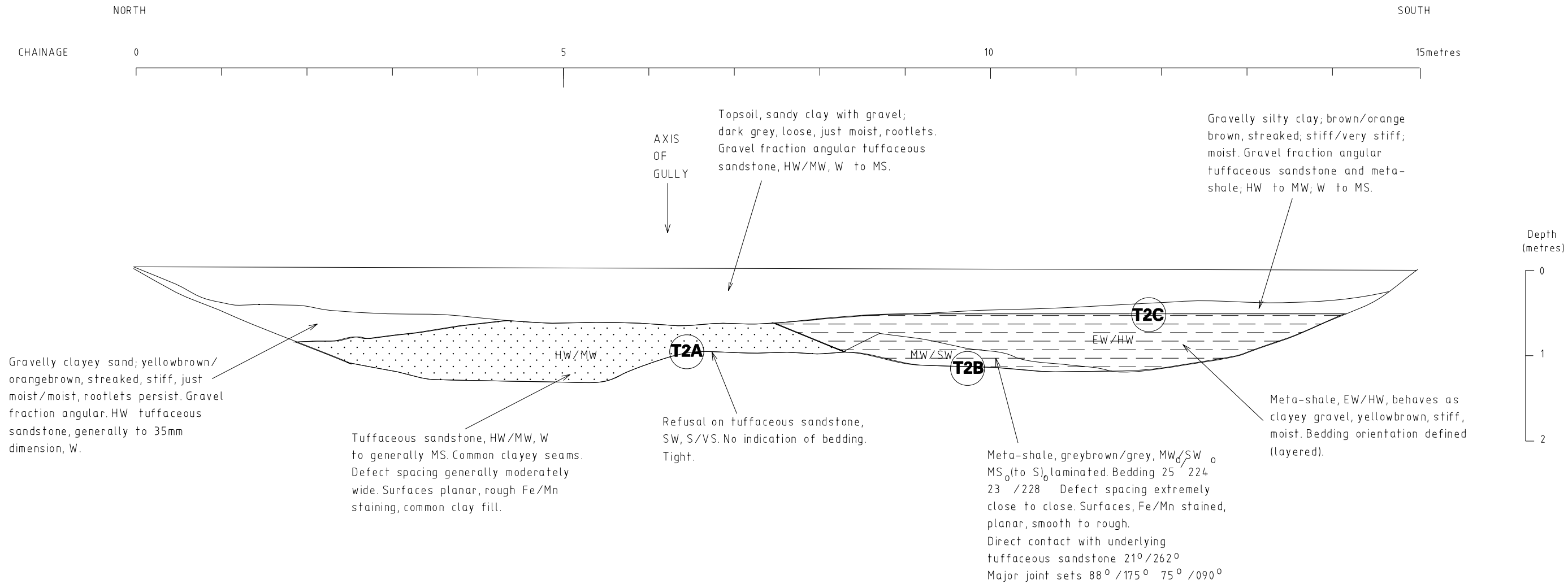
GEOTECHNICAL
AND
ENVIRONMENTAL

PROJECT GEOLOGIST
J.F. YOUNG
SUPERVISOR
J.F. YOUNG
DRAFTED
J.D. EDWARDS
CHECKED
J.F. YOUNG
MAY 2008



**TILLEGRA DAM
TRENCH 1
Storage Perimeter – Chichester Range**

**FILE No.
GN31A
FIGURE No.
T1**



T2A – Refusal on slightly weathered tuffaceous sandstone



T2B – Contact between meta-shale and underlying tuffaceous sandstone



T2C – Gravelly silty clay overlying meta-shale

G:\S\water\tec\Geotech\PCAD\TILLEGRA\TRENCHES\trench.2.dgn

27/01/2009 10:55:21 AM

		JOHN LEE Director General – N.S.W. Department of Commerce	GEOTECHNICAL AND ENVIRONMENTAL	PROJECT GEOLOGIST J.F. YOUNG	 NSW Department of Commerce	TILLEGRA DAM TRENCH 2 Storage Perimeter – Chichester Range
		SUPERVISOR J.F. YOUNG		DRAFTED J.D. EDWARDS		
DETAILS OF AMENDMENTS		NEW SOUTH WALES WATER SOLUTIONS WATER TECHNOLOGIES LEVEL 13, McKELL BUILDING 2-24 RAWSON PLACE SYDNEY 2000 PHONE (02) 93727873 FAX (02) 93727877				



Plate T1A. Chn.4.5m to 10m. Refusal/difficult digging on moderately weathered/slightly weathered tuffaceous sandstone.



Plate T1B. Chn.9m. Contact between meta-shale and underlying tuffaceous sandstone.



Plate T1C. Chn.9m. Contact between meta-shale and underlying tuffaceous sandstone.



Plate T2A. Chn.6.5m. Refusal on slightly weathered tuffaceous sandstone.



Plate T2B. Chn.9.5m. Contact between meta-shale and underlying tuffaceous sandstone.



Plate T2C. Chn.10.7m. Gravelly silty clay overlying meta-shale.

Appendix E

Test Pit Logs – TP1 to TP151



PROJECT: TILLEGRA DAM

DATE: 24.10.07

LOCATION: STORAGE/STORAGE RIM

SURFACE RL: 116.6m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	N.G.E.			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; firm; just moist. 0.10
				CL/CI (v)		SILTY CLAY with sand; brown; stiff; dry. 0.55
				ROCK		TUFFACEOUS SANDSTONE; moderately weathered; weak/medium strong; fine grained; pale brown. Appears flatly bedded 10°/290°; massive; slow digging. END at 0.75
1						
2						
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed
D.....Disturbed
SPT.....Standard Penetration Test
CPT.....Cone Penetration Test

v : visual
l : laboratory

WATER

Water Table
Water Inflow

FIELD SUPERVISOR:

J.F.YOUNG

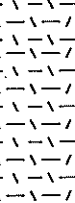
PROJECT COORDINATOR:

J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 24.10.07
LOCATION: STORAGE/STORAGE RIM
SURFACE RL: 129.6m
CONTRACTOR: R. & I. CONTRACTING
OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE of TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0				SM (v)		TOPSOIL - sandy silt, rootlets; brown; firm; dry.
				ROCK		META-SHALE; laminated; moderately weathered; generally medium strong; defect spacing very close/close; bedding 50°/165.°
1						END at 1.00
1						Ends as above.
2						
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM

DATE: 24.10.07

LOCATION: STORAGE/STORAGE RIM

SURFACE RL: 146.8m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; firm; dry. 0.15
SM/SC (v)				Slightly CLAYEY SANDY SILT; orangebrown; firm; dry to just moist. 0.65		
ROCK				META-SHALE; laminated; moderately weathered; generally weak; bedding 73°/195°. END at 1.30		
1						Ends as above.
2						
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 **SHEETS**

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 24.10.07
LOCATION: STORAGE/STORAGE RIM
SURFACE RL: 122.7m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	N.G.E			SM (v)		TOPSOIL - SANDY SILT , rootlets; pale brown; loose; dry. 0.20
SC (v)					CLAYEY SAND/SANDY CLAY with gravel; yellowbrown/brown, mottled; stiff; dry. 0.70	
ROCK					TUFFACEOUS SANDSTONE ; extremely weathered; extremely weak; behaves as slightly clayey sand. END at 1.00	
1						Refusal on tuffaceous sandstone; moderately weathered/slightly weathered; medium strong/strong. Massive, no indication of bedding.
2						
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

y : visual

l : laboratory

WATER

 Water Table

 Water Inflow

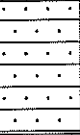
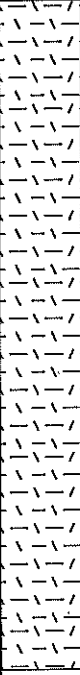
FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 **SHEETS**

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 24.10.07
LOCATION: STORAGE/STORAGE RIM
SURFACE RL: 114.4m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered		D	SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.30
CL/CI (v)					SANDY CLAY; pale brown with orangebrown streaks; stiff/very stiff; just moist. 0.75	
ROCK					CONGLOMERATIC TUFFACEOUS SANDSTONE; extremely weathered; extremely weak; behaves as clayey sand with well rounded gravel/cobbles; yellowbrown/orangebrown, mottled. END at 3.00	
3						Ends as above, highly weathered/moderately weathered. No indication of bedding.
4						
5						

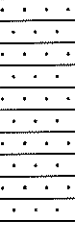
SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 1 OF 1 SHEETS
SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 24.10.07
LOCATION: STORAGE/STORAGE RIM
SURFACE RL: 110.4m
CONTRACTOR: R. & I. CONTRACTING
OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks	
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry.	0.20
CL/CI (v)					SANDY CLAY with gravel; pale brown/orangebrown; streaked; stiff; just moist.	1.00	
ROCK					META-SHALE; highly weathered/moderately weathered; generally medium strong; laminated to very thinly bedded; bedding 13°/100°.	END at 1.60	
2						Ends as above.	
3							
4							
5							

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

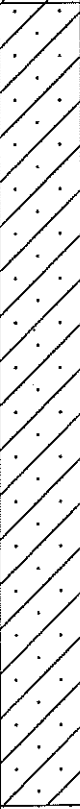
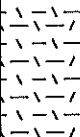
FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 **SHEETS**

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 24.10.07
LOCATION: STORAGE/STORAGE RIM
SURFACE RL: 118.7m
CONTRACTOR: R. & I. CONTRACTING
OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered		D	SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.30
SC (v)					CLAYEY SAND with gravel; brown/orangebrown, mottled; stiff to firm with depth; just moist to wet with depth	
ROCK					CONGLOMERATIC TUFFACEOUS SANDSTONE; highly weathered; generally weak. Includes well rounded gravel. No indication of bedding. END at 3.50	
4						Ends as above. Slight seepage into pit.
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

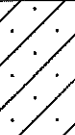
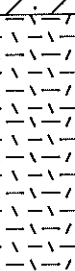
FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 **SHEETS**

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 24.10.07
LOCATION: STORAGE/STORAGE RIM
SURFACE RL: 134.0m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt with trace of clay, rootlets; pale brown; loose; dry. 0.30
SC (v)					CLAYEY SAND; orangebrown; stiff; just moist. 0.80	
ROCK					TUFFACEOUS SANDSTONE; highly weathered; very weak/weak; medium grained; possible bedding 35°/147°. END at 1.70	
2						Ends as above.
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 24.10.07
LOCATION: STORAGE/STORAGE RIM
SURFACE RL: 160.4m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OR TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks	
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.25	
GM (v)					GRAVELLY SILTY SAND; yellowbrown; loose; dry. 0.50		
ROCK					TUFFACEOUS SANDSTONE; highly weaheered; generally weak; fine grained; possible bedding 44°/200°. END at 1.70		
1	No Groundwater Encountered			ROCK		TUFFACEOUS SANDSTONE; highly weaheered; generally weak; fine grained; possible bedding 44°/200°. END at 1.70	
2							Ends as above.
3							
4	No Groundwater Encountered					Ends as above.	
5							

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

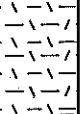
FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 **SHEETS**

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 24.10.07
LOCATION: STORAGE/STORAGE RIM
SURFACE RL: 148.9m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	N.G.E			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.20
CL/CI (v)					CLAYEY SILT with gravel; dark brown with orangebrown streaks; stiff; just moist. 0.60	
ROCK					TUFFACEOUS SANDSTONE; highly weathered/moderately weathered; weak/medium strong; fine grained; possible bedding 10°/176°. END at 1.00	
1						Ends as above.
2						
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 25



GEOTECHNICAL & ENVIRONMENTAL

TEST PIT

TP11

PROJECT: TILLEGRA DAM

DATE: 24.10.07

LOCATION: STORAGE/STORAGE RIM

SURFACE RL: 123.7m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	NGE			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.25
				ROCK		TUFFACEOUS SANDSTONE; highly weathered/moderately weathered; generally medium strong; medium grained; possibly flat lying. END at 0.30
1						Ends as above.
2						
3						
4						
5						

SAMPLE OR TEST
U.....Undisturbed
D.....Disturbed
SPT.....Standard Penetration Test
CPT.....Cone Penetration Test

v : visual
l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 1 OF 1 SHEETS
SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 24.10.07
LOCATION: STORAGE/STORAGE RIM
SURFACE RL: 135.5m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks	
0	N.G.E			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry.	0.15
SC (v)					Slightly CLAYEY SAND; orangebrown/yellowbrown, streaked; firm; just moist.	0.65	
ROCK					TUFFACEOUS SANDSTONE; highly weathered/moderately weathered; medium strong; fine grained. Thinly bedded at 10°/120°.	END at 0.95	
1						Refusal on medium grained massive tuffaceous sandstone; moderately weathered; medium strong.	
2							
3							
4							
5							

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 **SHEETS**

SCALE 1 : 25

PROJECT: TILLEGRA DAM

DATE: 24.10.07

LOCATION: STORAGE/STORAGE RIM

SURFACE RL: 148.9m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	N.G.E			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.15
CL/CI (v)					SANDY CLAY; yellowbrown; very stiff; dry. 0.60	
ROCK					TUFFACEOUS SANDSTONE; moderately weathered; medium strong; medium grained; bedding appears flat lying. Possible bedding 5°/125°. END at 0.80	
1						Ends as above.
2						
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

➤ Water Table

➤ Water Inflow

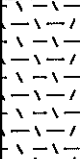
FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 **SHEETS**

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 25.10.07
LOCATION: STORAGE/STORAGE RIM
SURFACE RL: 161.6m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt with trace of clay, rootlets; pale brown; loose; dry.
CL/CI (v)					SILTY CLAY with sand; yellowbrown/orangebrown, streaked; stiff; moist.	
ROCK					TUFFACEOUS SANDSTONE; moderately weathered; medium strong/strong; fine grained; bedding 5°/295°. Major joint set 72°/007°. Defect spacing very close/close.	
1						END at 1.25
2						Ends as above.
3						
4						
5						

SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
 SHEET 1 OF 1 SHEETS 0
 SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 25.10.07
LOCATION: STORAGE/STORAGE RIM
SURFACE RL: 145.1m
CONTRACTOR: R. & I. CONTRACTING
OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt with clay, rootlets; pale brown; loose; dry. 0.20
GM (v)					GRAVELLY SILTY SAND; orangebrown; loose to medium dense; just moist. 1.00	
ROCK					TUFFACEOUS SANDSTONE, includes rare well rounded gravel; generally moderately weathered with slightly weathered lenses; medium strong/strong; fine to medium grained; bedding indistinct, possibly 25°/215°. END at 1.50	
1						Ends as above.
2						
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

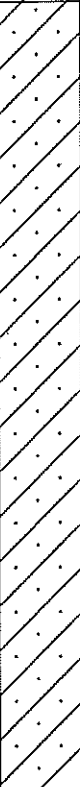
FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 25.10.07
LOCATION: STORAGE/STORAGE RIM
SURFACE RL: 125.3m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.30
1				SC (v)		SANDY CLAY/CLAYEY SAND; orangebrown; stiff; just moist.
2				CH (v)		SILTY CLAY with trace of sand; grey with orangebrown mottle; stiff; moist. 3.00
3	END at 4.70					
4						- gravelly, very moist from 4.5m.
5						Ends on tuffaceous sandstone; moderately weathered; medium strong; fine grained.

SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
 SHEET 1 OF 1 SHEETS
 SCALE 1 : 25



GEOTECHNICAL & ENVIRONMENTAL

TEST PIT

TP17

PROJECT: TILLEGRA DAM

DATE: 25.10.07

LOCATION: STORAGE/STORAGE RIM

SURFACE RL: 134.4m

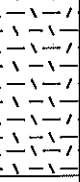
CONTRACTOR: R. & I. CONTRACTING

OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0				SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.30
1				CH (v)		SILTY CLAY with sand; grey/orangebrown, mottled; stiff; moist. 2.80
2						
3				ROCK		TUFFACEOUS SANDSTONE; extremely weathered/highly weaheared; extremely weak; fine grained; behaves as silty clay with gravel; moist. No indication of bedding. END at 4.30
4						
5						Ends at 4.3m on highly weathered tuffaceous sandstone; weak.

SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test		v : visual l : laboratory	WATER Water Table Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 25
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PROJECT: TILLEGRA DAM
DATE: 25.10.07
LOCATION: STORAGE/STORAGE RIM
SURFACE RL: 235.2m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0				SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.20
				SM/SC (v)		SILTY SAND with trace of clay; orangebrown; firm; dry. 0.60
1				ROCK		META-SHALE; generally moderately weathered with clayey seams; medium strong; laminated; bedding 30°/176°. END at 1.20
						Ends as above.
2						
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 **SHEETS**

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 25.10.07
LOCATION: STORAGE/STORAGE RIM
SURFACE RL: 237.4m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OR TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks	
0	N.G.E			SM (v)		TOPSOIL - sandy silt with clay, rootlets; pale brown; loose; dry.	
0.25							META-SHALE; extremely weathered/highly weathered; clayey to very weak; laminated; bedding 30°/170°.
0.80							TUFFACEOUS SANDSTONE; highly weathered/moderately weathered; weak/medium strong; fine grained.
1				ROCK		END at 1.00 Ends as above.	
2							
3							
4							
5							

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

➤ Water Table

➤ Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM

DATE: 25.10.07

LOCATION: STORAGE/STORAGE RIM

SURFACE RL: 236.5m

CONTRACTOR: R.& I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	N.G.E			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.25
CL/CI (v)					SILTY CLAY with sand; brown/orangebrown, streaked; stiff; just moist. 0.60	
ROCK					TUFFACEOUS SANDSTONE; moderately weathered/slightly weathered; strong; No distinct bedding. END at 0.80	
1						Ends as above, refusal.
2						
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

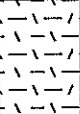
FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 **SHEETS**

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 25.10.07
LOCATION: STORAGE/STORAGE RIM
SURFACE RL: 242.1m
CONTRACTOR: R. & I. CONTRACTING
OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0				SM (v)		TOPSOIL - sandy silt with trace of clay, rootlets; pale brown; loose; dry. 0.30
				SC (v)		CLAYEY SAND; yellowbrown/orangebrown, mottled; stiff; just moist. 0.75
1				ROCK		META-SHALE; moderately weathered; medium strong; laminated; bedding 30°/185°. END at 1.20
						Ends as above.
2						
3						
4						
5						

SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 1 OF 1 **SHEETS**
SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 25.10.07
LOCATION: STORAGE/STORAGE RIM
SURFACE RL: 256.9m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt with clay, rootlets; brown; firm; dry. 0.20
				SM (v)		SILTY SAND with clay; orangebrown; stiff; just moist. 0.60
1				ROCK		META-SHALE; highly weathered to slightly weathered with depth; generally medium strong; laminated to very thinly bedded; bedding 15°/230°. END at 1.50
2						Ends on moderately weathered/slightly weathered meta-shale.
3						
4						
5						
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory	WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 25

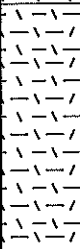
PROJECT: TILLEGRA DAM

DATE: 25.10.07

LOCATION: STORAGE/STORAGE RIM

SURFACE RL: 268.8m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			GM (v)		TOPSOIL - sandy silt with gravel, rootlets; pale brown; loose; dry. Gravel increases with depth. 0.30
ROCK					META-SHALE, rootlets continue; highly weathered with clayey lenses; generally weak; laminated. 0.60	
ROCK					META-SHALE continues; moderately weathered; weak/medium strong; bedding 25°/220°. Major joint set 85°/220°. Defect spacing generally very close. END at 1.45	
1						Ends as above.
2						
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

y : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 **SHEETS**

SCALE 1 : 25

PROJECT: TILLEGRA DAM

DATE: 25.10.07

LOCATION: STORAGE/STORAGE RIM

SURFACE RL: 272.2m

CONTRACTOR: R. & I. CONTRACTING

OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0				GM (v)		TOPSOIL - sandy silt with gravel, rootlets; pale brown; loose; dry. Gravel increases with depth. 0.10
				ROCK		META-SHALE; highly weathered with clayey lenses; weak/medium strong; laminated to thinly bedded. 0.70
1				ROCK		META-SHALE continues; moderately weathered; medium strong; bedding 23°/230°. Major joint set 55°/340° (across bedding). Defect spacing very close/close. END at 1.10
						Ends as above.
2						
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed
D.....Disturbed
SPT.....Standard Penetration Test
CPT.....Cone Penetration Test

v : visual
l : laboratory

WATER

Water Table
Water Inflow

FIELD SUPERVISOR:

J.F.YOUNG

PROJECT COORDINATOR:

J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 25.10.07
LOCATION: STORAGE/STORAGE RIM
SURFACE RL: 206.3m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	N.G.E			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry.
SC (v)					CLAYEY SAND; orangebrown; stiff; moist.	
ROCK					TUFFACEOUS SANDSTONE; moderately weathered/slightly weathered; strong; fine grained; possible bedding 30°/220°.	
1						END at 1.20 Ends as above, refusal.
2						
3						
4						
5						

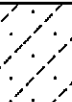
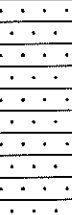
SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 1 OF 1 SHEETS
SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 25.10.07
LOCATION: STORAGE/STORAGE RIM
SURFACE RL: 218.1m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	N.G.E			SM (v)		TOPSOIL - sandy silt with trace of clay, rootlets; pale brown; loose; dry.
0.35				CL/CI (v)		SANDY CLAY; orangebrown/yellowbrown, streaked; stiff; moist.
1						END at 1.10
2						Refusal on tuffaceous sandstone; moderately weathered/slightly weathered; medium strong/strong; fine grained. No indication of bedding.
3						
4						
5						

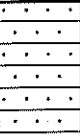
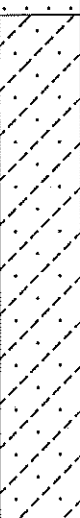
SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 1 OF 1 SHEETS
SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 25.10.07
LOCATION: STORAGE/STORAGE RIM
SURFACE RL: 176.0m
CONTRACTOR: R. & I. CONTRACTING
OPERATOR: PHIL GARLAND
EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			CL/CI (v)		TOPSOIL - silty clay/clayey silt with sand, rootlets; dark grey; firm; just moist.
0.50						
1				SM/SC (v)		SILTY SAND with clay; yellowbrown/orangebrown; firm to stiff; moist.
2						2.20
3				ROCK		TUFFACEOUS SANDSTONE; extremely weathered; extremely weak; fine grained; behaves as clayey sand; grey/orangebrown, streaked. No indication of bedding.
4						END at 3.90
5						Ends as above, extremely weathered/highly weathered.

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 **SHEETS**

SCALE 1 : 25

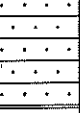
PROJECT: TILLEGRA DAM

DATE: 26.10.07

LOCATION: STORAGE/STORAGE RIM

SURFACE RL: 132.0m

CONTRACTOR: R.& I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	N.G.E			SM (v)		TOPSOIL - silty sand with clay, rootlets; pale brown; loose; dry. 0.20
				CL/CI (v)		SILTY CLAY with sand; brown/orangebrown, mottled; very stiff; dry. END at 0.60
1						Refusal on tuffaceous sandstone; moderately weathered/slightly weathered; medium strong/strong; fine grained. Appears flat lying. Possible bedding 15°/310°.
2						
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed
D.....Disturbed
SPT.....Standard Penetration Test
CPT.....Cone Penetration Test

v : visual
l : laboratory

WATER

Water Table
Water Inflow

FIELD SUPERVISOR:

J.F.YOUNG

PROJECT COORDINATOR:

J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM

DATE: 26.10.07

LOCATION: STORAGE/STORAGE RIM

SURFACE RL: 126.6m

CONTRACTOR: R. & I. CONTRACTING

OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	N.G.E			SC (v)		TOPSOIL - clayey sand, rootlets; pale brown/brown; loose; dry. 0.20
				SM (v)		SILTY SAND with clay; brown/orangebrown; very stiff; dry. 0.55
				ROCK		META-SHALE; moderately weathered with clayey seams; medium strong; laminated. END at 0.90
1						Refusal on meta-shale (tight); moderately weathered/ slightly weathered; medium strong; bedding 2°/170° (horizontal).
2						
3						
4						
5						
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory	WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 26.10.07
LOCATION: STORAGE/STORAGE RIM
SURFACE RL: 130.8m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand with trace of clay, rootlets; pale brown; dry. 0.29
SC (v)					CLAYEY SAND/SANDY CLAY ; yellowbrown/brown; very stiff; dry. 0.80	
ROCK					META-SHALE ; highly weathered/moderately weathered with clayey lenses; weak/medium strong; thinly bedded. END at 1.30	
1						Ends on meta-shale; moderately weathered/slightly weathered; bedding 8°/070°.
2						
3						
4						
5						

SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
 SHEET 1 OF 1 SHEETS
 SCALE 1 : 25



GEOTECHNICAL & ENVIRONMENTAL

TEST PIT

TP31

PROJECT: TILLEGRA DAM

DATE: 26.10.07

LOCATION: STORAGE/STORAGE RIM

SURFACE RL: 134.8m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0				SM (w)		TOPSOIL - sandy silt with trace of clay, rootlets; pale brown; loose; dry. 0.10
				SC (v)		CLAYEY SAND/SANDY CLAY; brown/yellowbrown, mottled; stiff; just moist. 0.60
				ROCK		TUFFACEOUS SANDSTONE; highly weathered/moderately weathered with clayey seams; weak/medium strong; fine to medium grained. END at 1.00
1						Ends on tuffaceous sandstone; moderately weathered; medium strong; possible bedding 7°/025°.
2						
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

Water Table

Water Inflow

FIELD SUPERVISOR: J.F. YOUNG

PROJECT COORDINATOR: J.F. YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 26.10.07
LOCATION: STORAGE/STORAGE RIM
SURFACE RL: 160.0m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OR TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks	
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry.	
0.35							
1				SC/CI (v)		CLAYEY SAND with gravel; orangebrown/brown, mottled; stiff; moist.	
1.40							
2				ROCK		TUFFACEOUS SANDSTONE; extremely weathered/highly weathered (altered); extremely weak/very weak; defect spacing extremely close/very close - excavates as gravel. May represent shear zone. Highly weathered with depth.	
3							
3.30						END at 3.30	
4						Ends as above.	
5							

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

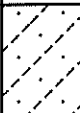
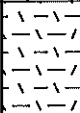
FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 26.10.07
LOCATION: STORAGE/STORAGE RIM
SURFACE RL: 171.4m
CONTRACTOR: R. & I. CONTRACTING
OPERATOR: PHIL GARLAND
EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.40
GC (v)					CLAYEY SANDY GRAVEL, includes well rounded gravel fraction-slopewash; brown/yellowbrown, streaked; stiff; dry. 0.90	
ROCK					TUFFACEOUS SANDSTONE; highly weathered/moderately weathered; weak/medium strong. Appears flat lying. END at 1.30	
1						Ends as above, moderately weathered, weak/medium strong.
2						
3						
4						
5						

SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
 SHEET 1 OF 1 SHEETS
 SCALE 1 : 25



GEOTECHNICAL & ENVIRONMENTAL

TEST PIT

TP34

PROJECT: TILLEGRA DAM

DATE: 26.10.07

LOCATION: STORAGE/STORAGE RIM

SURFACE RL: 161.6m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; greybrown; loose; dry. 0.40
1				SC (v)		Slightly CLAYEY SAND; yellowbrown/orangebrown, mottled; stiff; just moist. 1.40
2				ROCK		Conglomeratic TUFFACEOUS SANDSTONE; highly weathered; very weak/weak (easy digging). No indication of bedding.
3	END at 3.60					
4						Ends as above, highly weathered/moderately weathered, weak/medium strong.
5						

SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test	v : visual l : laboratory	WATER Water Table Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 25
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PROJECT: TILLEGRA DAM
DATE: 26.10.07
LOCATION: STORAGE/STORAGE RIM
SURFACE RL: 245.1m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks			
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.20			
GC (v)					CLAYEY SANDY GRAVEL, rootlets; brown; loose; dry. 0.65				
ROCK					META-SHALE; highly weathered/moderately weathered with clayey seams; weak/medium strong; laminated; bedding 5°/270°. END at 1.70				
2						Refusal on tuffaceous sandstone; moderately weathered; medium strong; fine grained.			
3									
4									
5									

SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
 SHEET 1 OF 1 SHEETS
 SCALE 1 : 25

PROJECT: TILLEGRA DAM

DATE: 26.10.07

LOCATION: STORAGE/STORAGE RIM

SURFACE RL: 240.3m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.25
				ROCK		META-SHALE; highly weathered/moderately weathered with clay seams; weak/medium strong; laminated; bedding 2°/250°. END at 1.35
1						
2						Refusal on tuffaceous sandstone; moderately weathered; medium strong; fine grained.
3						
4						
5						

SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

y : visual
l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 1 OF 1 **SHEETS**
SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 29.10.07
LOCATION: FARLEYS PROPERTY - ALLUVIAL FLAT
SURFACE RL: 92.1m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
5						--- (continued from previous sheet) --- CLAYEY SAND; grey/orangebrown, mottled; firm to soft; moist to very moist with depth.
6			D	SC (v)		
7						Ends as above. No water encountered.
8						
9						
10						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

Water Table

Water Inflow

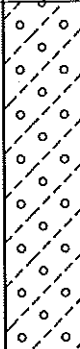
FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 2 OF 2 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 29.10.07
LOCATION: FARLEYS PROPERTY - ALLUVIAL FLAT
SURFACE RL: 90.6m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt with clay, rootlets; dark grey; loose; just moist. 0.40
				SC (v)		Slightly CLAYEY SILTY SAND; brown; firm (pit sides collapsing); just moist. 2.50
				GM (v)		SANDY GRAVEL; well rounded; brown; loose; just moist. Gravel ranges to cobble size. END at 3.70
						Ends in gravel. Pit collapsing.
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

➤ Water Table

➤ Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 29.10.07
LOCATION: FARLEYS PROPERTY - ALLUVIAL FLAT
SURFACE RL: 89.0m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0				CL/CI (v)		CLAYEY SILT with trace of sand, rootlets; dark grey; loose; just moist. 0.35
1						
2			D	SM (v)		SILTY SAND; brown; loose; moist. 3.60
3						
4				GM (v)		SANDY GRAVEL; well rounded; brown; loose; very moist/wet. Gravel ranges to cobble size. Pit making water.
5	4.75m					Ends in gravel. Pit collapsing. END at 5.00

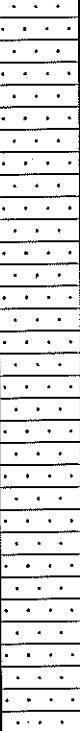
SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
 SHEET 1 OF 1 SHEETS
 SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 29.10.07
LOCATION: FARLEYS PROPERTY
SURFACE RL: 94.4m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks	
0				SM (v)		TOPSOIL - sandy silt with trace of clay, rootlets; pale brown; loose; dry.	0.20
				CL/CI (v)		SANDY CLAY; yellowbrown/brown, streaked; stiff/very stiff; just moist.	0.90
1							
				CL/CI (v)		SILTY CLAY/CLAYEY SILT; redbrown/grey, mottled; very stiff; just moist.	
2							
3							
				SC (v)		GRAVELLY CLAYEY SAND/CLAYEY SAND with gravel; pale grey/orangebrown, mottled; very stiff; just moist. Gravel well rounded to 75mm dia.	3.40
4							
							END at 4.70
5						Ends as above.	

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

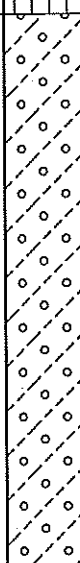
FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 **SHEETS**

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 29.10.07
LOCATION: FARLEYS PROPERTY
SURFACE RL: 95.4m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks	
0				CL/CI (v)		TOPSOIL - clayey silt with sand, rootlets; pale brown; loose; dry.	
0.35							
1				CH (v)		SILTY CLAY; grey; very stiff; just moist.	
2	No Groundwater Encountered						
3							3.10
4						SANDY GRAVEL; brown; medium dense/dense; just moist/moist. Gravel well rounded to cobble size.	
5						5.00	

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 2 SHEETS

SCALE 1 : 25

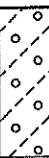
PROJECT: TILLEGRA DAM

DATE: 29.10.07

LOCATION: FARLEYS PROPERTY

SURFACE RL: 95.4m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
5				GM (v)		SANDY GRAVEL; brown; medium dense to dense (towards 5.5m); lightly cemented; just moist/moist. Gravel well rounded to cobble size. END at 5.50
6						Ends as above.
7						
8						
9						
10						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

➤ Water Table

➤ Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 2 OF 2 **SHEETS**

SCALE 1 : 25

PROJECT: TILLEGRA DAM

DATE: 29.10.07

LOCATION: FARLEYS PROPERTY

SURFACE RL: 97.1m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	N.G.E			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.20
SC (v)					CLAYEY SANDY SILT/SILTY SAND; pale brown; firm; dry. 0.50	
CL/CI (v)					SANDY CLAY; brown; stiff/very stiff; dry. 0.70	
ROCK					TUFFACEOUS SANDSTONE; highly weathered/moderately weathered; weak; fine grained; massive, difficult digging. No indication of bedding, possibly flat lying. END at 1.00	
1						Ends as above.
2						
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 **SHEETS**

SCALE 1 : 25

PROJECT: TILLEGRA DAM

DATE: 29.10.07

LOCATION: FARLEYS PROPERTY

SURFACE RL: 96.8m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.30
CH (v)					SILTY CLAY; greybrown with orangebrown streaks; stiff just moist/moist. 1.40	
ROCK					TUFFACEOUS SANDSTONE; extremely weathered; extremely weak; medium grained; behaves as clayey sand; brown; just moist. END at 1.90	
2						Ends as above.
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 **SHEETS**

SCALE 1 : 25



GEOTECHNICAL & ENVIRONMENTAL

TEST PIT

TP44

PROJECT: TILLEGRA DAM
LOCATION: FARLEYS PROPERTY
CONTRACTOR: R. & I. CONTRACTING

DATE: 29.10.07
SURFACE RL: 95.6m
OPERATOR: PHIL GARLAND
EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0				SM (v)		TOPSOIL - sandy silt with clay, rootlets; dark grey; loose; dry. 0.25
1				SC (v)		CLAYEY SAND; pale grey/orangebrown, mottled; firm to stiff; moist to very moist with depth. Seepage into pit at 2.5m. 2.60
2						
3				SM (v)		SANDY GRAVEL; brown; medium dense; just moist/moist. Gravel well rounded to cobble size. 4.09
4						Dense towards 4.0m, lightly cemented.
5						Ends as above.

SAMPLE OR TEST
U.....Undisturbed
D.....Disturbed
SPT.....Standard Penetration Test
CPT.....Cone Penetration Test

v : visual
l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 1 OF 1 SHEETS
SCALE 1 : 25



GEOTECHNICAL & ENVIRONMENTAL

TEST PIT

TP45

PROJECT: TILLEGRA DAM

DATE: 29.10.07

LOCATION: FARLEYS PROPERTY - ALLUVIAL FLAT

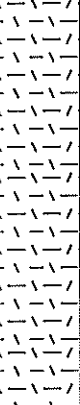
SURFACE RL: 106.8m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OR TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - gravelly sandy silt, rootlets; pale brown; loose; dry. 0.15
1				ROCK		META-SHALE; highly weathered; weak/medium strong; laminated. Bedding 33°/245°. Major joint sets: 68°/343° (into LA), 54°/072° (across bedding). Defect spacing very close/close. Highly weathered/moderately weathered towards 1.5m; medium strong. END at 1.50
2						Ends as above.
3						
4						
5						

SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test	v : visual l : laboratory	WATER ➤ Water Table ➤ Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 25
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PROJECT: TILLEGRA DAM
DATE: 30.10.07
LOCATION: FARLEYS PROPERTY
SURFACE RL: 109.1m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OR TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt with trace of clay, rootlets; pale brown; loose; dry. 0.15
				ROCK		META-SHALE with fine grained tuffaceous sandstone interbeds; highly weathered/moderately weathered; weak/medium strong; laminated to thinly bedded. Bedding 41°/248°; major joint set 73°/068° (across bedding). Defect spacing very close/close. Surfaces ironstained, minor clay coating.
1						END at 1.60
2						Ends as above.
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM

DATE: 30.10.07

LOCATION: FARLEYS PROPERTY

SURFACE RL: 108.3m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	N.G.E			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.15
				CL/CI (v)		SANDY SILTY CLAY; brown with orangebrown streaks; stiff; just moist. 0.75
1				ROCK		Pebbly TUFFACEOUS SANDSTONE, includes well rounded gravel to 5mm dia; highly weathered; generally weak (difficult digging); fine grained. No indication of bedding. (may represent GRAVELLY CLAYEY SAND, lightly cemented). END at 1.10
						Ends as above.
2						
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed
D.....Disturbed
SPT.....Standard Penetration Test
CPT.....Cone Penetration Test

v : visual
l : laboratory

WATER

Water Table
Water Inflow

FIELD SUPERVISOR:

J.F.YOUNG

PROJECT COORDINATOR:

J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 30.10.07
LOCATION: FARLEYS PROPERTY
SURFACE RL: 108.6m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks	
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry.	0.15
				CL/CI (v)		SANDY SILTY CLAY; brown with orangebrown streaks; stiff; just moist.	0.70
1				SC (v)		GRAVELLY CLAYEY SAND; brown/yellowbrown; stiff/very stiff; just moist. Includes well rounded gravel to 5mm dia.	
2						Extremely weathered/highly weathered towards 2.0m; extremely weak/very weak.	2.50
3	No Groundwater Encountered			GC (v)		GRAVELLY SANDY CLAY/CLAYEY SAND; greybrown; stiff/very stiff; just moist. Includes highly weathered angular tuffaceous sandstone/meta-shale fragments to 15mm dimension. Rare well rounded gravel to 5mm dia still persists.	
4							
5							5.00
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory		WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 2 SHEETS SCALE 1 : 25



GEOTECHNICAL & ENVIRONMENTAL

TEST PIT

TP48

PROJECT: TILLEGRA DAM

DATE: 30.10.07

LOCATION: FARLEYS PROPERTY

SURFACE RL: 108.6m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
5				GC (v)		GRAVELLY SANDY CLAY/CLAYEY SAND; greybrown; stiff/very stiff; just moist. Includes highly weathered angular tuffaceous sandstone/meta-shale fragments to 15mm dimension. Rare well rounded gravel to 5mm dia still persists. END at 6.00
6						Ends as above.
7						
8						
9						
10						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual
l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 2 OF 2 SHEETS
SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 30.10.07
LOCATION: FARLEYS PROPERTY - ALLUVIAL FLAT
SURFACE RL: 112.6m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	N.G.E			SM (v)		TOPSOIL - slightly clayey sandy silt, rootlets; pale brown; loose; dry. 0.15
SC (v)					GRAVELLY CLAYEY SAND; brown/yellowbrown, mottled; stiff; dry. 0.55	
GC (v)					CLAYEY SANDY GRAVEL; pale greybrown; very stiff/hard; just moist. Has the appearance of concrete. Gravel fraction comprises angular, weathered meta-sedimentary fragments to 25mm. END at 0.75	
1						Ends as above (very difficult digging).
2						
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 25



GEOTECHNICAL & ENVIRONMENTAL

TEST PIT

TP50

PROJECT: TILLEGRA DAM

DATE: 30.10.07

LOCATION: FARLEYS PROPERTY - ALLUVIAL FLAT

SURFACE RL: 107.0m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - slightly clayey sandy silt, rootlets; pale brown; loose; dry. 0.25
CH (v)					SILTY CLAY/CLAYEY SILT; yellowbrown/brown; stiff; moist. 1.60	
GC (v)					CLAYEY SANDY GRAVEL; angular meta-sedimentary fragments to 25mm in greybrown/orangebrown clayey sand/sandy clay matrix; cemented; very weak/weak - probable slopewash. END at 1.90	
2						Ends as above. Massive, slow digging.
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

Water Table

Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 30.10.07
LOCATION: FARLEYS PROPERTY - ALLUVIAL FLAT
SURFACE RL: 116.2m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0				SC (v)		TOPSOIL - gravelly clayey sand, rootlets; greybrown; loose; dry. 0.15
1				ROCK		META-SHALE; moderately weathered; medium strong; thinly bedded. Common clay fill to 0.7m depth. Bedding 42°/073°. END at 1.20
2						Ends as above, moderately weathered/slightly weathered; medium strong/strong.
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

y : visual
l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 25

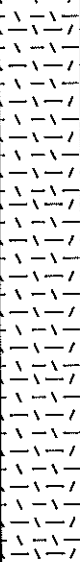
PROJECT: TILLEGRA DAM

DATE: 30.10.07

LOCATION: FARLEYS PROPERTY - ALLUVIAL FLAT

SURFACE RL: 117.3m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OR TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SC (v)		TOPSOIL - gravelly sandy silt, rootlets; pale brown; loose; dry. 0.20
				ROCK		TUFFACEOUS SANDSTONE; moderately weathered/slightly weathered; medium strong/strong; very fine grained. Defect spacing very close to moderately wide. Bedding indistinct. Possibly 58°/265° ? Major joint sets 20°/073° across bedding ?
1						
2						END at 2.10
3						Ends as above.
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

➤ Water Table

➤ Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 30.10.07
LOCATION: LA - SPILLWAY CHANNEL
SURFACE RL: 108.7m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - clayey silty sand, rootlets; pale brown; loose; dry. 0.20
SC (v)					GRAVELLY CLAYEY SAND; brown with orangebrown mottle; stiff; dry. 0.70	
ROCK					META-SHALE; moderately weathered; medium strong; laminated to thinly bedded. Bedding 36°/265°. Major joint set 55°/005° (into LA). Defect spacing (including partings) very close/close. Surfaces iron stained, commonly clay coated. END at 1.60	
1						Ends as above; moderately weathered; tight. Close to refusal.
2						
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 **SHEETS**

SCALE 1 : 25



GEOTECHNICAL & ENVIRONMENTAL

TEST PIT

TP54

PROJECT: TILLEGRA DAM

DATE: 30.10.07

LOCATION: LA - SPILLWAY CHANNEL

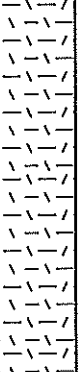
SURFACE RL: 114.8m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OR TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; pale greybrown; loose; dry. 0.25
CL/CI (v)					SANDY SILTY CLAY; brown/yellowbrown, mottled; very stiff; just moist. 0.75	
ROCK					TUFFACEOUS SANDSTONE; highly weathered/moderately weathered; generally weak. No distinct bedding. Defect spacing generally moderately wide, iron stained surfaces clay coated. END at 1.50	
1						
2						Ends as above, moderately weathered, tight. Refusal.
3						
4						
5						

SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test		v : visual l : laboratory	WATER ➤ Water Table ➤ Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 25
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PROJECT: TILLEGRA DAM
DATE: 30.10.07
LOCATION: LA - SPILLWAY CHANNEL
SURFACE RL: 112.4m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - clayey sandy silt, rootlets; pale brown; loose; dry. 0.25
				ROCK		TUFFACEOUS SANDSTONE; highly weathered; very weak/weak. Bedding: 40°/245°. Defect spacing close to generally moderately wide. Surfaces Fe/Mn stained, commonly clay coated to 1.3m.
1						END at 1.55
2						Ends as above, moderately weathered, tight. Refusal.
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual
l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 31.10.07
LOCATION: LOWREYS PROPERTY
SURFACE RL: 145.8m
CONTRACTOR: R. & I. CONTRACTING
OPERATOR: PHIL GARLAND
EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks	
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; pale yellowbrown; loose; dry.	
0.25							
1				SC (v)		GRAVELLY CLAYEY SAND; orangebrown/pale yellowbrown, mottled; firm; just moist.	
1.40							
2				ROCK		TUFFACEOUS SANDSTONE; highly weathered; very weak; fine grained; medium to thickly bedded. Bedding 43°/240°.	
2.30						END at 2.30	
3						Ends as above, highly weathered/moderately weathered, tight. Refusal.	
4							
5							

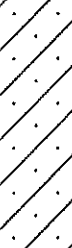
SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
 SHEET 1 OF 1 SHEETS
 SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 31.10.07
LOCATION: LOWREYS PROPERTY
SURFACE RL: 125.1m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks	
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry.	
							CLAYEY SAND/SANDY CLAY with trace of gravel; orangebrown/yellowbrown mottled; firm; moist.
1				SC (v)			
2				ROCK		META-SHALE; highly weathered/moderately weathered; weak/medium strong; laminated to thinly bedded. Bedding: 40 °/225 °.	
3						Ends as above.	
4							
5							

SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 1 OF 1 SHEETS
SCALE 1 : 25

GEOTECHNICAL & ENVIRONMENTAL						TEST PIT		TP58		
PROJECT: TILLEGRA DAM				DATE: 31.10.07						
LOCATION: LOWREYS PROPERTY				SURFACE RL: 118.1m						
CONTRACTOR: R. & I. CONTRACTING				OPERATOR: PHIL GARLAND				EQUIPMENT: KOMATSU PC220		
DEPTH (m)	WATER	BIT	SAMPLE OR TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks				
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt with clay, rootlets; pale brown; loose; dry.				0.15
				SC (v)		CLAYEY SAND with gravel; orangebrown/yellowbrown, streaked; firm; just moist.				0.65
				ROCK		META-SHALE; highly weathered/moderately weathered; generally medium strong; laminated to very thinly bedded. Includes thin clay seams to approx 1.3m depth. Bedding: 13 °/125 °.				END at 1.70
1						Ends as above.				
2										
3										
4										
5										
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory		WATER Water Table Water Inflow		FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 25		

PROJECT: TILLEGRA DAM

DATE: 31.10.07

LOCATION: LA - SPILLWAY CREST

SURFACE RL: 165.7m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	N.G.E			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.20
SC (v)					CLAYEY SAND; brown/yellowbrown, mottled; stiff; dry. 0.65	
ROCK					TUFFACEOUS SANDSTONE; highly weathered; very weak/weak. No indication of bedding. Joint sets: 60°/120° and 85°/340°. END at 1.00 Spacing varies from close (in narrow zones) to wide. Surfaces planar, rough, Fe/Mn stained.	
1						Ends as above, tight. Close to refusal.
2						
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual
l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 **SHEETS**

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 31.10.07
LOCATION: LA - D/S OUTER ZONE
SURFACE RL: 127.8m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OR TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt with trace of clay, rootlets; pale brown; dry. 0.25
				SC (v)		CLAYEY SAND; pale brown/orangebrown, mottled; firm; moist. 0.90
1				ROCK		TUFFACEOUS SANDSTONE; highly weathered; generally weak; fine grained; clay fill up to 10mm, ranging to clay coatings with depth. Bedding: 46°/252°. Major joint sets: 75°/333° (into LA), 80°/104° (across bedding). Bedding thickness varies from thinly bedded to thick. Defect spacing close/moderately wide. Surfaces planar, rough, iron stained, commonly clay coated.
2	No Groundwater Encountered			ROCK		END at 2.30
3						Ends as above, highly weathered/moderately weathered, tight. Refusal.
4						
5						

SAMPLE OR TEST

U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER

 Water Table
 Water Inflow

FIELD SUPERVISOR:
J.F. YOUNG
PROJECT COORDINATOR:
J.F. YOUNG

SHEET 1 OF 1 SHEETS
 SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 31.10.07
LOCATION: LA - D/S OUTER ZONE
SURFACE RL: 118.4m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.20
				SC (v)		SANDY CLAY/CLAYEY SAND; pale brown/orangebrown, mottled; stiff; dry to just moist. 0.95
1				ROCK		TUFFACEOUS SANDSTONE; highly weathered; generally weak; fine grained. Includes meta-shale interbed (200mm thick); laminated. Bedding: 46°/260°. No joint pattern visible. END at 1.40
2						Ends as above, highly weathered/moderately weathered; tight. Refusal.
3						
4						
5						
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory	WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 31.10.07
LOCATION: LA - D/S OUTER ZONE
SURFACE RL: 112.1m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.25
				SC (v)		SANDY CLAY with gravel; brown/yellowbrown, mottled; stiff; dry. 0.45
1				ROCK		META-SHALE; highly weathered with clayey seams; generally weak; laminated to very thinly bedded. Clayey seams persist to 1.1m depth. Moderately weathered; medium strong from 1.1m. Bedding: 40°/258°. Major joint set: 65°/345° (into LA), 42°/055° (across bedding). Defect spacing (including partings) extremely close to very close. Surfaces planar, generally rough, Fe/Mn stained, clay coated Tightening towards 2.5m. END at 2.50
2	No Groundwater Encountered					
3						Ends as above. Very slow digging. NOTE: Pit across strike. Highly weathered/moderately weathered tuffaceous sandstone at eastern end. Meta- shale band approximately 1.6m thick.
4						
5						
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory	WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F. YOUNG PROJECT COORDINATOR: J.F. YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 25

GEOTECHNICAL & ENVIRONMENTAL						TEST PIT		TP63		
PROJECT: TILLEGRA DAM				DATE: 31.10.07						
LOCATION: LA - TOE SLAB ALIGNMENT				SURFACE RL: 140.9m						
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220										
DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks				
0	No Groundwater Encountered			SM (v)	/ / / /	TOPSOIL - sandy silt, rootlets; pale brown; loose; dry.				0.15
				CL/CI (v)		SANDY CLAY; grey/orangebrown, mottled; stiff; dry. Includes boulder scree to 600mm dia.				1.00
1				ROCK	- - - - -	TUFFACEOUS SANDSTONE; highly weathered; weak/medium strong; fine grained; No indications of bedding. Massive.				END at 1.40
2						Ends as above, highly weathered/moderately weathered, tight. Refusal.				
3										
4										
5										
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory		WATER Water Table Water Inflow		FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 25		

PROJECT: TILLEGRA DAM
DATE: 31.10.07
LOCATION: LA - TOE SLAB ALIGNMENT
SURFACE RL: 129.8m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0				SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry.
				SC (v)		CLAYEY SAND; pale brown/orangebrown, mottled; stiff; just moist. Includes boulder scree to 300mm dia.
1						Ends on tuffaceous sandstone; highly weathered/ moderately weathered; medium strong; massive. Refusal.
2						
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

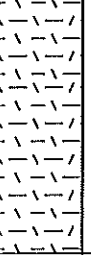
FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 31.10.07
LOCATION: LA - TOE SLAB ALIGNMENT
SURFACE RL: 119.6m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.20
				SC (v)		CLAYEY SAND with gravel; pale grey/yellowbrown, streaked; stiff; dry. 0.50
1				ROCK		META-SHALE (overlying fine grained tuffaceous sandstone at the eastern end of the pit); moderately weathered; medium strong; laminated to very thinly bedded. Bedding: 43°/255°. Major joint set: 30°/100° (across bedding). Defect spacing very close/close. Surfaces iron stained, planar, rough. Clay infill to 5mm persists to 1.2m depth, otherwise clay coated. Tightens towards 1.4m. END at 1.40
2						Ends as above, tight. Difficult digging. NOTE: Refusal on highly weathered/moderately weathered tuffaceous sandstone (eastern end) at 1m.
3						
4						
5						
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory	WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 25

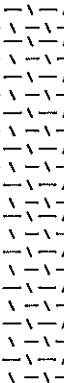
PROJECT: TILLEGRA DAM

DATE: 31.10.07

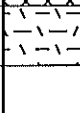
LOCATION: LA - TOE SLAB ALIGNMENT

SURFACE RL: 104.8m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; greybrown; loose; dry. 0.20
				SC (v)		GRAVELLY CLAYEY SAND; brown/orangebrown, mottled; stiff; dry. 0.50
1				ROCK		META-SHALE; highly weathered/moderately weathered; medium strong; laminated to thinly bedded. Includes altered clayey seams parallel to bedding, 150mm thick - possible shear zones. Clay fill to 8mm persists to 1.6m depth. Bedding: 45°/260°. Major joint set 44°/105° (across bedding). 81°/320° (into LA). Defect spacing (including partings) very close/close. Surfaces planar, generally smooth, minor iron staining, common clay coatings. Grading to moderately weathered/slightly weathered towards 1.85m. END at 1.85
2						Ends as above, tight. Difficult digging.
3						
4						
5						
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory	WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 01.11.07
LOCATION: LA - TOE SLAB ALIGNMENT
SURFACE RL: 96.2m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			FILL		TOPSOIL - gravelly sandy silt with trace of clay, rootlets; pale brown; loose; dry.
0.20						
FILL				SILTY CLAY/CLAYEY SILT ; dark brown; stiff; dry/just moist.		
0.75						
1				FILL		CLAYEY SANDY GRAVEL ; mid brown; medium dense; just moist.
2						
3						
3.10				ROCK		TUFFACEOUS SANDSTONE ; moderately weathered; medium strong/strong; fine grained.
3.30						END at 3.30
4						Ends as above, tight. Close to refusal.
5						

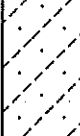
SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

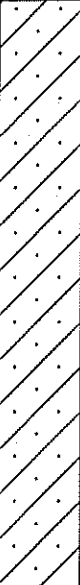
WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 1 OF 1 SHEETS
SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 01.11.07
LOCATION: LA - TOE SLAB ALIGNMENT
SURFACE RL: 93.3m
CONTRACTOR: R.& I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks	
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; brown; loose; dry. 0.50	
1				SC (v)		SANDY CLAYEY SILT; brown/orangebrown, mottled; firm; moist. 1.50	
2				SC (v)		SANDY CLAY/CLAYEY SAND; pale grey/orangebrown, streaked; firm to stiff; moist. 2.10	
3				ROCK		TUFFACEOUS SANDSTONE; highly weathered/moderately weathered; weak/medium strong; fine grained; spoil dlmension indicates close to moderately wide defect spacing. Fe/Mn stained, commonly clay coated Moderately weathered/slightly weathered towards 3.3m. END at 3.30	
4						Ends as above, tight. Very difficult digging.	
5							
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory		WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 01.11.07
LOCATION: LA - TOE SLAB ALIGNMENT
SURFACE RL: 93.1m
CONTRACTOR: R.& I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OR TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0				SM (v)		TOPSOIL - slightly clayey sandy silt, rootlets; dark brown; loose; dry.
1						0.90
2						
3				SC (v)		CLAYEY SAND/SANDY CLAY; mid brown; firm; moist.
4						
5				GM/GC (v)		CLAYEY SANDY GRAVEL; --- (continued next sheet) ---
						4.70

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 2 **SHEETS**

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 01.11.07
LOCATION: LA - TOE SLAB ALIGNMENT
SURFACE RL: 93.1m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OR TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
5			D			--- (continued from previous sheet) --- CLAYEY SANDY GRAVEL; brown; loose; moist. Gravel well rounded, rarely to 100mm dia.
6				GM/GC (v)		
7						END at 7.00 Ends as above. Pit collapsed.
8						
9						
10						

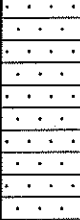
SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 2 OF 2 SHEETS
SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 01.11.07
LOCATION: UPSTREAM COFFER DAM
SURFACE RL: 101.8m
CONTRACTOR: R.& I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks	
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry.	0.20
				CL/CI (v)		SANDY CLAY with gravel; grey/orangebrown, streaked; stiff; dry.	1.00
1				ROCK		TUFFACEOUS SANDSTONE; highly weathered/moderately weathered; generally medium strong; fine grained. Bedding: 33°/225°. Major joint sets: 88°/165° (into RA), 35°/070° (across bedding). Defect spacing (including partings) very close to moderately wide. Surfaces planar, rough, Fe/Mn stained, occasionally clay filled to 8mm, commonly clay coated to approx 1.8m depth Moderately weathered, medium strong/strong towards 2.1m.	END at 2.80
2	No Groundwater Encountered						
3						Ends as above, tight. Very difficult digging.	
4							
5							
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory		WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 01.11.07
LOCATION: UPSTREAM COFFER DAM
SURFACE RL: 98.4m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt with clay, rootlets; pale brown; loose; dry. 0.30
1				SC (v)		SANDY CLAY/CLAYEY SAND; grey/orangebrown, streaked; stiff; just moist. 1.90
2				GC (v)		CLAYEY SANDY GRAVEL; pale greengrey with orangebrown streaks; stiff; just moist. Gravel fraction well rounded to 100mm dia. END at 4.90
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed
D.....Disturbed
SPT.....Standard Penetration Test
CPT.....Cone Penetration Test

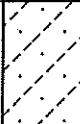
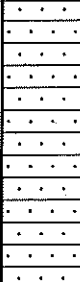
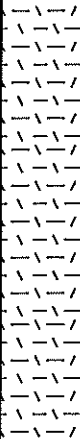
v : visual
l : laboratory

WATER

Water Table
Water Inflow

FIELD SUPERVISOR:
J.F.YOUNG
PROJECT COORDINATOR:
J.F.YOUNG
SHEET 1 OF 1
SHEETS
SCALE 1: 25

PROJECT: TILLEGRA DAM
DATE: 01.11.07
LOCATION: UPSTREAM COFFER DAM
SURFACE RL: 95.0m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; dark brown; loose; dry. 0.45
1				CL/CI (v)		GRAVELLY SILTY CLAY; dark grey with orangebrown/redbrown speckles; stiff; moist. Gravel is well rounded, rarely to 100mm, towards the base of the horizon. 1.40
2				ROCK		TUFFACEOUS SANDSTONE; extremely weathered/highly weathered; extremely weak/very weak. Behaves as clayey sand; grey/ orangebrown, streaked. Highly weathered/moderately weathered from 1.8m, generally medium strong. Probable bedding: 50°/230°. Major joint sets: 75°/003° (into LA), 30°/080° (across bedding). Defect spacing very close to moderately wide, surfaces planar, rough, Fe/Mn stained, occasional clay fill to 6mm, common clay coatings END at 2.90
3						Ends as above, moderately weathered, medium strong. Blocky excavation, very slow digging.
4						
5						

SAMPLE OR TEST

U.....Undisturbed
D.....Disturbed
SPT.....Standard Penetration Test
CPT.....Cone Penetration Test

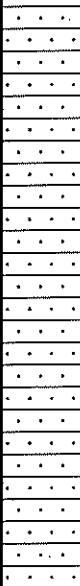
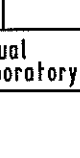
v : visual
l : laboratory

WATER

➤ Water Table
➤ Water Inflow

FIELD SUPERVISOR:
J.F. YOUNG
PROJECT COORDINATOR:
J.F. YOUNG
SHEET 1 OF 1 SHEETS
SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 01.11.07
LOCATION: RA - DIVERSION TUNNEL OUTLET PORTAL
SURFACE RL: 103.4m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0				SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.25
				CL/CI (v)		SANDY CLAY with gravel; pale grey/orangebrown, streaked; firm to stiff; just moist. 0.50
1						META-SHALE with thin tuffaceous sandstone interbeds; highly weathered/moderately weathered; very weak (tuffaceous sandstone) to weak/medium strong (meta-shale). Meta-shale is laminated to very thinly bedded. Bedding: 60°/235° Major joint set: 50°/008° (across bedding). Defect spacing (including partings) extremely close to close. Surfaces planar, smooth to rough, iron stained, commonly clay coated. Occasional clay infill persists to 1.8m depth.
2				CL/CI (v)		Grades to generally moderately weathered around 2.5m.
3						
4						END at 3.90 Ends as above. Slow digging (still excavatable).

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F. YOUNG

PROJECT COORDINATOR: J.F. YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 01.11.07
LOCATION: RA - DIVERSION TUNNEL OUTLET PORTAL SURFACE RL: 103.2m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks	
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.25	
							SANDY CLAY/CLAYEY SAND; pale brown; stiff; just moist/moist. 1.50
1							CLAYEY SAND; pale grey with orangebrown streaks; stiff; moist. 3.30
2							TUFFACEOUS SANDSTONE; extremely weathered; extremely weak; fine grained. Behaves as clayey sand; greybrown/orangebrown/ redbrown, mottled. May represent lightly cemented slopewash material.
3							
4							

SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test	v : visual l : laboratory	WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 2 SHEETS SCALE 1 : 20
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PROJECT: TILLEGRA DAM
DATE: 01.11.07
LOCATION: RA - DIVERSION TUNNEL OUTLET PORTAL
SURFACE RL: 103.2m
CONTRACTOR: R. & I. CONTRACTING
OPERATOR: PHIL GARLAND
EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
4						--- (continued from previous sheet) --- TUFFACEOUS SANDSTONE; extremely weathered; extremely weak; fine grained. Behaves as clayey sand; greybrown/orangebrown/ redbrown, mottled. May represent lightly cemented slopewash material.
5				ROCK		- Highly weathered from approx 5.0m, very weak. Behaves as clayey sand, includes minor well rounded pebbles to 3mm dia.
6						END at 6.00
7						Ends as above. Still easy digging.
8						

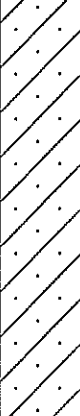
SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

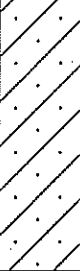
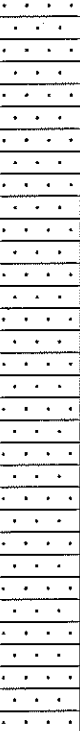
WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 2 OF 2 **SHEETS**
SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 02.11.07
LOCATION: RA - SPILLWAY CHANNEL
SURFACE RL: 99.7m
CONTRACTOR: R.& I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.20
1				SC (v)		CLAYEY SAND/SANDY CLAY with gravel; grey/yellowbrown/orangebrown, mottled; stiff; just moist. Gravel fraction comprises angular, highly weathered/moderately weathered, meta-sedimentary fragments mostly to 50mm max dimension - probable slopewash.
2				ROCK		Interbedded META-SHALE and medium grained TUFFACEOUS SANDSTONE; Meta-shale is highly weathered/moderately weathered, weak/ medium strong, laminated to very thinly bedded. Sandstone is extremely weathered to highly weathered with depth, extremely weak to weak. 2.40
3						
4						Ends as above. Slow digging. END at 4.00
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory	WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 02.11.07
LOCATION: RA - SPILLWAY CHANNEL
SURFACE RL: 103.8m
CONTRACTOR: R. & I. CONTRACTING
OPERATOR: PHIL GARLAND
EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0				SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry. 0.25
				SC (v)		CLAYEY SAND/SANDY CLAY ; brown/yellowbrown, streaked; firm to stiff; moist. 1.00
1						
			D	CL/CI (v)		GRAVELLY SANDY CLAY ; redbrown/orangebrown/grey mottled; stiff; moist. Gravel fraction comprises angular highly weathered/ moderately weathered meta-sedimentary fragments mostly to 50mm max dimension-probable slopewash. 3.00
2						
				SC (v)		CLAYEY SAND with trace of gravel; greybrown/orangebrown/reddishbrown, mottled; stiff; just moist/moist. Gravel fraction rounded, rarely to 10mm dia.
3						
			D			
4						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 2 **SHEETS**

SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 02.11.07
LOCATION: RA - SPILLWAY CHANNEL
SURFACE RL: 103.8m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
4				SC (v)		--- (continued from previous sheet) --- 4.10 CLAYEY SAND with trace of gravel; greybrown/orangebrown/redbrown, mottled; stiff; just moist/molst. Gravel fraction rounded, rarely to 10mm dia.
5			D	CH (v)		SILTY CLAY; fissured; mid grey with occasional orangebrown streaks; stiff/very stiff; just moist.
6						END at 6.50
7						Ends as above.
8						

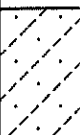
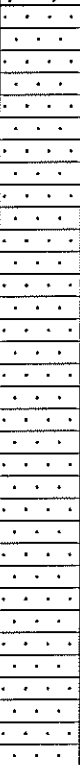
SAMPLE OR TEST
U.....Undisturbed
D.....Disturbed
SPT.....Standard Penetration Test
CPT.....Cone Penetration Test

v : visual
l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 2 OF 2 SHEETS
SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 02.11.07
LOCATION: SPILLWAY CHANNEL
SURFACE RL: 108.5m
CONTRACTOR: R. & I. CONTRACTING
OPERATOR: PHIL GARLAND
EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry.
0.35				CL/CI (v)		GRAVELLY SANDY CLAY; orangebrown/yellowbrown, mottled; stiff/very stiff; dry to just moist. Gravel fraction comprises angular, highly weathered meta-sedimentary fragments generally to 25mm max dimension - probable slopewash.
2.40						
3						
3.30				SC (v)		CLAYEY SAND with gravel; brown/orangebrown, mottled; hard; dry. Gravel fraction as above, generally to 5mm dimension. Includes charcoal fragments.
4				SC (v)		GRAVELLY CLAYEY SAND; pale grey with orangebrown streaks; very stiff to hard (lightly cemented, slow digging); dry. Gravel fraction angular meta-sedimentary; highly weathered; very weak; generally to 10mm dimension. Slopewash.
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory		WATER  Water Table  Water Inflow
				FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 2 SHEETS SCALE 1 : 20		

PROJECT: **TILLEGRA DAM**
 LOCATION: **SPILLWAY CHANNEL**
 CONTRACTOR: **R. & I. CONTRACTING**

DATE: **02.11.07**
 SURFACE RL: **108.5m**
 OPERATOR: **PHIL GARLAND** EQUIPMENT: **KOMATSU PC220**

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
4						--- (continued from previous sheet) --- GRAVELLY CLAYEY SAND; pale grey with orangebrown streaks; very stiff to hard (lightly cemented, slow digging); dry. Gravel fraction angular meta-sedimentary; highly weathered; very weak; generally to 10mm dimension. Slopewash.
5				SC (iv)		
6						END at 6.20
7						Ends as above. Still reasonable digging.
8						

SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

y : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 2 OF 2 **SHEETS**
SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 02.11.07
LOCATION: RA - SPILLWAY CHANNEL
SURFACE RL: 97.1m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0				SM (v)		TOPSOIL - sandy silt, rootlets; pale brown; loose; dry.
0.25						
1						
2				SC (v)		GRAVELLY CLAYEY SAND/SANDY CLAY; brown/yellowbrown/orangebrown, mottled; stiff/very stiff; dry to just moist with depth. Gravel fraction generally comprises angular highly weathered/moderately weathered meta-sedimentary fragments generally to 25mm max dimension. Also includes minor well rounded pebbles to 5mm dia. - probable slopewash.
3						
3.30						
4				GM/GC (v)		Well rounded gravel/boulders to 150mm dia in clayey sand matrix; pale greengrey; medium dense; just moist. Matrix includes extremely weathered/ highly weathered angular meta-sedimentary fragments. (probably alluvial)

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 2 SHEETS

SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 02.11.07
LOCATION: RA-SPILLWAY CHANNEL
SURFACE RL: 97.1m
CONTRACTOR: R.& I.CONTRACTING
OPERATOR: PHIL GARLAND
EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
4				GM/GC (v)		--- (continued from previous sheet) --- Well rounded gravel/boulders to 150mm dia in clayey sand matrix; pale greengrey; medium dense; just moist. Matrix includes extremely weathered/ highly weathered angular meta-sedimentary fragments. (probably alluvial)
5						END at 5.30
6						Ends on tuffaceous sandstone; highly weathered; generally weak; massive, very slow digging.
7						
8						

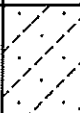
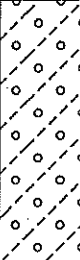
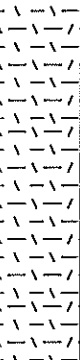
SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 2 OF 2 **SHEETS**
SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 02.11.07
LOCATION: RA - SPILLWAY CHANNEL
SURFACE RL: 94.3m
CONTRACTOR: R.& I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt with trace of clay, rootlets; pale brown; loose; dry. 0.30
1				SC (v)		GRAVELLY CLAYEY SAND/SANDY CLAY; brown/yellowbrown, mottled; stiff/very stiff; just moist. Gravel fraction comprises well rounded gravel to 25mm dia, with highly weathered/moderately angular meta- sedimentary fragments to 30mm dimension. 1.40
2				GM (v)		Well rounded gravel/cobbles to 150mm dia in clayey sand matrix; pale greengrey with orangebrown iron stained bands; medium dense; just moist. Matrix includes extremely weathered/ highly weathered, angular meta-sedimentary fragments to 20mm dimension. (probably alluvial) 2.10
3				ROCK		TUFFACEOUS SANDSTONE; highly weathered; generally weak; fine grained. END at 3.10
4						Ends as above, massive, slow digging.

SAMPLE OR TEST

U.....Undisturbed
D.....Disturbed
SPT.....Standard Penetration Test
CPT.....Cone Penetration Test

v : visual
l : laboratory

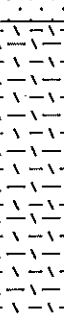
WATER

Water Table
Water Inflow

FIELD SUPERVISOR:
J.F.YOUNG
PROJECT COORDINATOR:
J.F.YOUNG

SHEET 1 OF 1 SHEETS
SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 05.11.07
LOCATION: LA-SPILLWAY CREST
SURFACE RL: 176.9m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand, rootlets; yellowbrown; loose; moist. 0.15
SP (v)					Slightly CLAYEY GRAVELLY SAND, rootlets persist; pale yellowbrown; firm; moist. 0.50	
ROCK					Interbedded META-SHALE and TUFFACEOUS SANDSTONE. Meta-shale; highly weathered to moderately weathered with depth; weak to medium strong; laminated. Bedding: 43°/243° Major joint set: 62°/353° (into RA). Defect spacing (including partings) very close to close. Surfaces planar, generally rough, Fe/Mn stained, clay coated. Tuffaceous sandstone: highly weathered to highly weathered/moderately weathered with depth; weak to medium strong. END at 1.50	
1	No Groundwater Encountered					Ends as above, slow digging in meta-siltstone. Refusal on tuffaceous sandstone at 1.1m.
2						
3						
4	No Groundwater Encountered					
5						

SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 1 OF 1 **SHEETS**
SCALE 1: 25

PROJECT: TILLEGRA DAM
DATE: 05.11.07
LOCATION: LA - SPILLWAY CREST
SURFACE RL: 169.3m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks	
0	No Groundwater Encountered			SC (v)		TOPSOIL - clayey silty sand, rootlets; brown; loose; just moist.	0.20
CL/CI (v)					SANDY CLAY, rootlets still persist; orangebrown/yellowbrown, mottled; firm to stiff; just moist.	0.90	
ROCK					TUFFACEOUS SANDSTONE; highly weathered; generally weak; fine grained; thinly to medium bedded. Bedding: 46°/248° Major joint sets: 68°/330° (into RA) 64°/060° (across bedding). Defect spacing (including partings) very close to moderately wide. Surfaces planar, rough, iron stained, clay coated, rare fill.	2.29	
					Ends as above, highly weathered/moderately weathered, very slow digging. Close to refusal on zones with wider defect spacing.		
1							
2							
3							
4							
5							

SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test	v : visual l : laboratory	WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 25
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PROJECT: TILLEGRA DAM
DATE: 05.11.07
LOCATION: RA-INTERSECTION OF C & TOE SLAB ALIGNMENT SURFACE RL: 160.9m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand, rootlets; brown; loose; just moist. 0.10
SC (v)					CLAYEY GRAVELLY SAND , rootlets persist; yellowbrown; loose; just moist. 0.50	
ROCK					TUFFACEOUS SANDSTONE with meta-shale interbed. Tuffaceous sandstone; moderately weathered; medium strong/strong; fine grained. Defect spacing generally moderately wide, surfaces planar, rough, iron stained, minor clay coatings. Meta-shale; highly weathered; generally weak; laminated. Bedding: 48°/250° Major joint set: 75°/320° (into LA). Defect spacing (including partings) extremely close/very close. Surfaces planar, generally rough, iron stained, clay coated. END at 1.40	
1						
2						Ends as above in meta-shale, slow digging. Refusal on tuffaceous sandstone at 1.0m.
3						
4						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

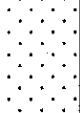
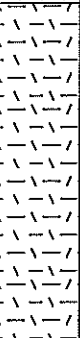
FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 **SHEETS**

SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 05.11.07
LOCATION: RA - INTERSECTION OF C (UPPER ABUTMENT)
SURFACE RL: 148.5m
CONTRACTOR: R.& I. CONTRACTING
OPERATOR: PHIL GARLAND
EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand, rootlets; brown; loose; just moist. 0.10
SP (v)					Slightly CLAYEY GRAVELLY SAND, rootlets persist; yellowbrown/orangebrown, mottled; loose; moist. 0.50	
ROCK					META-SHALE; highly weathered to moderately weathered with depth (0.9m); weak to generally medium strong; laminated to very thinly bedded. Bedding: 60°/245°. Major joint sets: 80°/345° (into LA) 52°/068° (across bedding). Defect spacing (including partings) extremely close to close, surfaces palmar, rough, iron stained. Clay fill/clayey seams persist to 0.9m, rare clay coatings below 0.9m. END at 1.40	
1						
2						
3						
4						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 **SHEETS**

SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 05.11.07
LOCATION: RA - CENTRELINE (UPPER ABUTMENT)
SURFACE RL: 137.3m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	N.G.E.			SM (v)		TOPSOIL - silty sand, rootlets; brown; loose; moist. 0.10
SM/SC (v)				SILTY SAND with trace of clay, rootlets persist; yellowbrown; loose; moist. 0.50		
ROCK				TUFFACEOUS SANDSTONE; highly weathered; generally weak; fine grained. END at 0.80		
1						Ends on moderately weathered/slightly weathered tuffaceous sandstone, strong, tight. Refusal.
2						
3						
4						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual
l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 20

PROJECT: TILLEGRA DAM

DATE: 05.11.07

LOCATION: RA - CENTRELINE (MIDDLE ABUTMENT)

SURFACE RL: 127.4m

CONTRACTOR: R. & I. CONTRACTING

OPERATOR: PHIL GARLAND

EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OR TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks	
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand, rootlets; brown; loose; just moist.	0.10
SP (v)					Slightly CLAYEY GRAVELLY SAND, rootlets persist; pale yellowbrown; loose; dry.	0.55	
ROCK					TUFFACEOUS SANDSTONE; highly weathered/moderately weathered; medium strong; thinly to medium bedded (where visible). Bedding: 47°/245° Major joint sets: 66°/340° (into LA) 55°/105° (across bedding). Defect spacing (including partings) very close (rarely) to moderately wide. Surfaces planar, rough, iron stained. Rare clay coatings.	1.14	
					Ends as above, tight. Refusal.		
1							
2							
3							
4							

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 **SHEETS**

SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 05.11.07
LOCATION: RA - CENTRELINE (MIDDLE ABUTMENT)
SURFACE RL: 116.4m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	N.G.E			SM (v)		TOPSOIL - silty sand with trace of clay, rootlets; pale brown; loose; dry. 0.10
SC (v)					GRAVELLY CLAYEY SAND, rootlets persist; yellowbrown; loose; dry. 0.45	
ROCK					TUFFACEOUS SANDSTONE; highly weathered/moderately weathered; medium strong, blocky, tight digging. Defect spacing, generally moderately wide. END at 0.90	
1						Ends as above, tight. Refusal.
2						
3						
4						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 **SHEETS**

SCALE 1 : 20

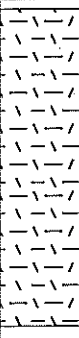
 GEOTECHNICAL & ENVIRONMENTAL						TEST PIT		TP87	
PROJECT: TILLEGRA DAM						DATE: 05.11.07			
LOCATION: RA-TOE SLAB ALIGNMENT (UPPER ABUTMENT)						SURFACE RL: 150.9m			
CONTRACTOR: R. & I. CONTRACTING						OPERATOR: PHIL GARLAND			
						EQUIPMENT: KOMATSU PC220			
DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION			
						Soil type, colour, consistency, grain size, moisture, remarks			
0	N.G.E			SM (v)	/ / / /	TOPSOIL - silty sand with trace of clay, rootlets; brown; loose; just moist.			0.10
				CL/CI (v)					SANDY CLAY; yellowbrown/orangebrown, mottled; firm to stiff; moist.
				ROCK	- - - - -	TUFFACEOUS SANDSTONE; highly weathered/moderately weathered; medium strong; fine grained. Bedding: 40 °/245 ° Blocky excavation, defect spacing moderately wide/wide.			
1									Ends as above, tight. Refusal.
2									
3									
4									
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory		WATER  Water Table  Water Inflow		FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 20	

PROJECT: TILLEGRA DAM

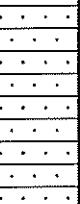
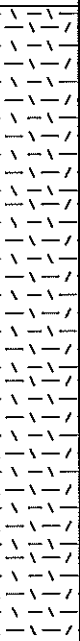
DATE: 05.11.07

LOCATION: RA-TOE SLAB ALIGNMENT (UPPER ABUTMENT) SURFACE RL: 139.3m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks	
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand, rootlets; brown; loose; just moist. 0.15	
CL/CI (v)					SANDY CLAY, rootlets persist; yellowbrown/orangebrown, mottled; firm; moist. 0.50		
ROCK					TUFFACEOUS SANDSTONE with minor meta-shale interbeds. Tuffaceous sandstone; highly weathered/ moderately weathered; medium strong; fine grained. Defect spacing moderately wide. Surfaces planar, rough, iron stained. Commonly clay coated. Meta-shale: highly weathered/moderately weathered; weak to medium strong; laminated. Bedding: 43°/243° Major joint sets: 75°/345° (into LA) 45°/018° (across bedding). Defect spacing(including partings)very close to close. Surfaces, smooth to rough, iron stained, planar, commonly clay coated. END at 1.35		
1						Ends as above, moderately weathered, strong. Refusal.	
2							
3							
4							
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory		WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 05.11.07
LOCATION: RA-TOE SLAB ALIGNMENT (MIDDLE ABUTMENT) SURFACE RL: 128.6m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand with gravel, rootlets; brown; loose; dry.
CL/CI (v)					SANDY CLAY; yellowbrown/orangebrown/grey, mottled; stiff; just moist.	
ROCK					META-SHALE; highly weathered, grading to moderately weathered with depth (1.1m); weak to generally medium strong; laminated to very thinly bedded. Bedding: 55°/247° Major joint sets: 70°/ 340° (into LA) 44°/065° to 33°/120° (across bedding). Defect spacing (including partings); extremely close to close. Surfaces planar, generally rough, iron stained. Common clay coating to 1.5m depth.	
1						
2						Tightening towards 2.1m. Slow digging.
3						END at 2.50
4						Ends as above. Very slow digging in meta-shale. Refusal in part on underlying tuffaceous sandstone bed, moderately weathered; medium strong/strong.

SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

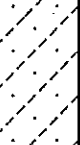
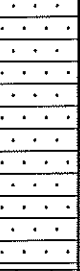
WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 1 OF 1 SHEETS
SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 05.11.07
LOCATION: RA-TOE SLAB ALIGNMENT (MIDDLE ABUTMENT) SURFACE RL: 122.3m
CONTRACTOR: R.& I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - clayey silty sand, rootlets; brown; loose; dry. 0.20
				SM (v)		GRAVELLY SANDY CLAY ; yellowbrown/orangebrown/grey, mottled; stiff; just moist. 0.60
1				ROCK		META-SHALE ; moderately weathered, ranging to moderately weathered/slightly weathered, quickly with depth (1.0m); medium strong/strong; laminated to very thinly bedded. Bedding: 44°/247° Major joint sets: 35°/070° across bedding) 78°/160° (into RA). Defect spacing (including partings) extremely close to occasionally close. Surfaces planar, generally rough, Iron stained, common clay coatings to 1.0m depth. END at 1.50
2						Ends on underlying tuffaceous sandstone, moderately weathered, medium strong, fine grained, tight. Refusal.
3						
4						
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory	WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 06.11.07
LOCATION: BORROW AREA
SURFACE RL: 104.3m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand, rootlets; dark brown; loose; moist. 0.40
1			D	CL/CI (v)		SANDY SILTY CLAY; greybrown with orangebrown streaks; stiff; just moist/moist. 1.15
		D	ROCK		GRAVELLY CLAYEY SAND; yellowbrown/orangebrown, mottled; stiff/very stiff; just moist. No visible defects, very difficult digging - possibly cemented slopewash. END at 1.30	
2						Ends as above.
3						
4						

SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 1 OF 1 SHEETS
SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 06.11.07
LOCATION: BORROW AREA
SURFACE RL: 103.0m
CONTRACTOR: R. & I. CONTRACTING
OPERATOR: PHIL GARLAND
EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - slightly clayey silty sand, rootlets; dark brown; loose; moist. 0.25
CL/CI (v)					SANDY SILTY CLAY; greybrown/yellowbrown, streaked; stiff; moist. 0.80	
ROCK					META-SHALE; highly weathered to moderately weathered, quickly with depth (1.3m); weak to medium strong; laminated. Bedding: 68° / 253° Major joint sets: 70° / 350° 15° / 127° (across bedding). Defect spacing (including partings) very close to close. END at 1.70	
2						Ends as above, still reasonable digging.
3						
4						

SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 1 OF 1 **SHEETS**
SCALE 1 : 20

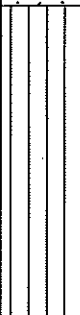
PROJECT: TILLEGRA DAM

DATE: 06.11.07

LOCATION: BORROW AREA

SURFACE RL: 103.0m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand, rootlets; dark brown; loose; just moist. 0.15
				CH (v)		SILTY CLAY; brown; firm to stiff; moist. 1.00
1				GC (v)		CLAYEY SANDY GRAVEL; comprises well rounded gravel to 120mm dia. Sandy matrix with clayey pockets, includes angular, weathered meta-sedimentary rock fragments to 30mm dimension. END at 1.90
2						Ends as above.
3						
4						
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				y : visual l : laboratory	WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 25.03.08
LOCATION: RA, ALTERNATIVE SPILLWAY ALIGNMENT
SURFACE RL: 116.6m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0				SM (v)		TOPSOIL - silty sand, rootlets; pale brown; loose; dry. 0.20
1						Slightly CLAYEY SANDY GRAVEL; pale brown/brown; stiff; just moist. Gravel fraction angular meta-sedimentary, highly weathered/moderately weathered, ranges to boulder size, 350mm dia. Predominantly tuffaceous sandstone. Slopewash.
2						At 1.1m - clayey sand grades to pale yellowbrown.
3				GC (v)		At 2.1m - Continues as above, matrix pale brown; very stiff; slow digging.
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 2 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM

DATE: 25.03.08

LOCATION: RA, ALTERNATIVE SPILLWAY ALIGNMENT

SURFACE RL: 116.6m

CONTRACTOR: R. & I. CONTRACTING

OPERATOR: PHIL GARLAND

EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0				SM (v)		TOPSOIL - silty sand, rootlets; pale brown; loose; dry. 0.20
1						Slightly CLAYEY SANDY GRAVEL; pale brown/brown; stiff; just moist. Gravel fraction angular meta-sedimentary, highly weathered/moderately weathered, ranges to boulder size, 350mm dia. Predominantly tuffaceous sandstone. Slopewash.
2						At 1.1m - clayey sand grades to pale yellowbrown.
3				GC (v)		At 2.1m - Continues as above, matrix pale brown; very stiff; slow digging.
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 2 **SHEETS**

SCALE 1 : 25

PROJECT: TILLEGRA DAM

DATE: 25.03.08

LOCATION: RA, ALTERNATIVE SPILLWAY ALIGNMENT

SURFACE RL: 116.6m

CONTRACTOR: R. & I. CONTRACTING

OPERATOR: PHIL GARLAND

EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
5				GC (v)		--- (continued from previous sheet) --- Slightly CLAYEY SANDY GRAVEL; pale brown/brown; stiff; just moist. Gravel fraction angular meta-sedimentary, highly weathered/moderately weathered, ranges to boulder size, 350mm dia. Predominantly tuffaceous sandstone. Slopewash.
6				ROCK		TUFFACEOUS SANDSTONE; highly weathered; very weak to weak; very fine/fine grained. No indication of bedding. Defect spacing appears very close/close.
7						Ends as above, very slow digging.
8						
9						
10						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

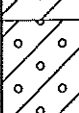
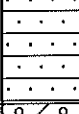
FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 2 OF 2 **SHEETS**

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 25.03.08
LOCATION: RA - ALTERNATIVE SPILLWAY ALIGNMENT
SURFACE RL: 109.4m
CONTRACTOR: R. & I. CONTRACTING
OPERATOR: PHIL GARLAND
EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks	
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand with trace of clay, rootlets; dark greybrown; loose; dry.	0.40
1				SC (v)		SANDY CLAY/CLAYEY SAND; yellowbrown/pale brown/orangebrown, mottled; stiff; moist.	1.30
2				GC (v)		Slightly CLAYEY SANDY GRAVEL; grey/greybrown; hard (slightly cemented); dry. Gravel fraction angular, meta-sedimentary; highly weathered; generally weak (to medium strong). Predominantly tuffaceous sandstone. Slopewash. Very slow digging.	1.95
3				CL/CI (v)		Slightly SANDY CLAY; pale greybrown; very stiff; just moist.	2.40
4				GC (v)		Slightly CLAYEY SANDY GRAVEL; pale greybrown/brown, streaked; hard (partly cemented); dry. Gravel fraction angular, meta- sedimentary; highly weathered/moderately weathered; weak to medium strong. Predominantly tuffaceous sandstone. Slopewash.	3.65
5				CL/CI (v)		SILTY CLAY with trace of gravel; pale greybrown; very stiff; just moist/moist. Gravel fraction extremely weathered; extremely weak; appears as a cream fleck.	4.80
				GC (v)		CLAYEY SANDY GRAVEL;	--- (continued next sheet) ---
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory		WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 2 SHEETS SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 25.03.08
LOCATION: RA - ALTERNATIVE SPILLWAY ALIGNMENT
SURFACE RL: 109.4m
CONTRACTOR: R. & I.CONTRACTING
OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
5				GC (v)		--- (continued from previous sheet) --- CLAYEY SANDY GRAVEL; pale greybrown/yellowbrown/orangebrown, mottled; very stiff/hard; just moist. Gravel fraction angular; generally highly weathered; weak. Predominantly tuffaceous sandstone to 15mm dimension. Appears very lightly cemented. Slopewash.
6						Ends as above. Very slow digging.
7						
8						
9						
10						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

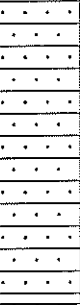
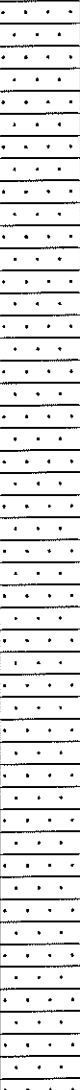
FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 2 OF 2 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 25.03.08
LOCATION: RA, ALTERNATIVE SPILLWAY ALIGNMENT
SURFACE RL: 103.7m
CONTRACTOR: R. & I.CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - slightly clayey silty sand, rootlets; dark grey to grey with depth; loose; just moist. 0.25
CL/CI (v)					SILTY CLAY with gravel; pale greybrown/orangebrown/redbrown, mottled; stiff; moist. Gravel fraction angular, meta-sedimentary; highly weathered/moderately weathered; weak to medium strong. Predominantly tuffaceous sandstone to 10mm dimension. 1.30	
CL/CI (v)					SANDY CLAY with gravel; pale greybrown with occasional orangebrown mottle; very stiff; just moist. Includes clayey sand lenses; very stiff/hard. (appears slightly cemented). Gravel fraction increases slightly with depth; angular; meta-sedimentary; extremely weathered/highly weathered; extremely weak to very weak, to 30mm dimension. Slopewash.	
1						
2						
3						
4						
5						

SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test	v : visual l : laboratory	WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 2 SHEETS SCALE 1 : 25
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PROJECT: TILLEGRA DAM
DATE: 25.03.08
LOCATION: RA, ALTERNATIVE SPILLWAY ALIGNMENT
SURFACE RL: 103.7m
CONTRACTOR: R. & I.CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
5				CL/CI (v)	--- (continued from previous sheet) --- SANDY CLAY with gravel; pale greybrown with occasional orangebrown mottle; very stiff; just moist. Includes clayey sand lenses; very stiff/hard. (appears slightly cemented). Gravel fraction increases slightly with depth; angular; meta-sedimentary; extremely weathered/ highly weathered; extremely weak to very weak, to 30mm dimension. Slopewash.	
6						END at 6.00 Ends as above.
7						
8						
9						
10						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

y : visual

l : laboratory

WATER

➤ Water Table

➤ Water Inflow

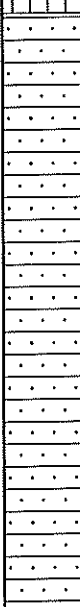
FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 2 OF 2 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 25.03.08
LOCATION: RA - ALTERNATIVE SPILLWAY ALIGNMENT
SURFACE RL: 98.2m
CONTRACTOR: R. & I.CONTRACTING
OPERATOR: PHIL GARLAND
EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			ML (v)		TOPSOIL - sandy clayey silt, rootlets; dark grey; loose; just moist. 0.30
CH (v)					SILTY CLAY; mid grey; stiff; moist. 2.60	
CL/CI (v)					SANDY CLAY; pale grey with orangebrown streaks; very stiff; just moist. 4.60	
GC (v)					CLAYEY SANDY GRAVEL; --- (continued next sheet) ---	

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 2 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 25.03.08
LOCATION: RA - ALTERNATIVE SPILLWAY ALIGNMENT
SURFACE RL: 98.2m
CONTRACTOR: R. & I.CONTRACTING
OPERATOR: PHIL GARLAND
EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
5				GC (v)		--- (continued from previous sheet) --- CLAYEY SANDY GRAVEL; pale brown/orangebrown, streaked; medium dense/ dense with depth; just moist to dry. Gravel is well rounded; gravel to cobble size, ranging to boulders (maximum 150mm diameter) Orangebrown with depth. Matrix includes rare sub-angular gravel.
6						END at 6.40
7						
8						
9						
10						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

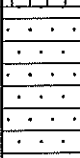
FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 2 OF 2 **SHEETS**

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 25.03.08
LOCATION: RA, ALTERNATIVE SPILLWAY ALIGNMENT
SURFACE RL: 96.9m
CONTRACTOR: R. & I. CONTRACTING
OPERATOR: PHIL GARLAND
EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OR TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks	
0				ML (v)		TOPSOIL - sandy clayey silt, rootlets; dark grey; loose; just moist.	0.30
				CH (v)		SILTY CLAY; pale greybrown; soft to stiff; moist.	1.00
1				CL/CI (v)		SANDY CLAY; pale brown with occasional orangebrown streaks; stiff; just moist.	1.55
2				GC (v)		Slightly CLAYEY SANDY GRAVEL; mid grey/orangebrown/redbrown, streaked; dense/very dense; just moist to dry with depth. Gravel is well rounded; gravel to cobble size, ranging to rare boulders 200mm diameter.	
3						Orangebrown with depth.	
4							
5						Continues as above; redbrown; ferruginized. Gravel is well rounded to occasionally subrounded, generally to 30mm dimension.	5.00

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual
l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 2 **SHEETS**

SCALE 1 : 25

PROJECT: TILLEGRA DAM

DATE: 25.03.08

LOCATION: RA, ALTERNATIVE SPILLWAY ALIGNMENT

SURFACE RL: 96.9m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
5				GC (v)		Slightly CLAYEY SANDY GRAVEL; redbrown; ferruginized. Gravel is well rounded to occasionally subrounded, generally to 30mm dimension. 5.30
				ROCK		TUFFACEOUS SANDSTONE; highly weathered; very weak/weak; fine to medium grained; yellowbrown. END at 5.55
6						Ends as above, difficult digging.
7						
8						
9						
10						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 2 OF 2 **SHEETS**

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 26.03.08
LOCATION: RA, ALTERNATIVE SPILLWAY ALIGNMENT
SURFACE RL: 95.2m
CONTRACTOR: R. & I. CONTRACTING
OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - slightly clayey sandy silt, rootlets; dark brown; loose; just moist. 0.35
				CH (v)		SILTY CLAY; grey; stiff; moist. 1.15
1				GC (v)		CLAYEY SANDY GRAVEL; pale brown with orangebrown streaks; medium dense; just moist. Gravel subrounded to well rounded, generally gravel to cobble size, ranging to rare boulders 200mm dimension. Yellowbrown/orangebrown, streaked from 2.1m. 3.20
2						ROCK
3						
4						Ends as above, very difficult digging in moderately weathered rock.
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

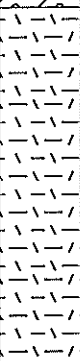
FIELD SUPERVISOR: J.F. YOUNG

PROJECT COORDINATOR: J.F. YOUNG

SHEET 1 OF 1 **SHEETS**

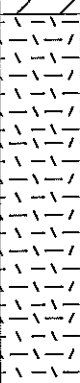
SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 26.03.08
LOCATION: RA, ALTERNATIVE SPILLWAY ALIGNMENT
SURFACE RL: 93.6m
CONTRACTOR: R. & I.CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - slightly clayey sandy silt, rootlets; dark brown; loose; just moist. 0.20
1				GC (v)		CLAYEY SANDY GRAVEL; pale yellowbrown; medium dense/dense; just moist. Gravel subrounded to well rounded; gravel to cobble size, ranging to boulders up to 250mm dimension. 1.60
2				ROCK		META-SHALE; moderately weathered to slightly weathered with depth; medium strong; laminated to very thinly bedded; greybrown to mid grey. Bedding 45° / 247° Includes shear zone parallel to bedding 150mm wide, crushed, clayey. Major joint sets: 44° / 082° (across bedding), 74° / 297° (towards LA). Defect spacing generally very close to close, surface Fe/Mn stained, tight. END at 2.80
3						Ends as above, very difficult digging. Fine grained tuffaceous sandstone overlies meta-shale in western end of pit, highly weathered to moderately weathered with depth.
4						
5						
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory	WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 25

GEOTECHNICAL & ENVIRONMENTAL						TEST PIT	TP101
PROJECT: TILLEGRA DAM			DATE: 26.03.08				
LOCATION: ADJACENT TO SALISBURY ROAD			SURFACE RL: 95.1m				
CONTRACTOR: R. & I.CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220							
DEPTH (m)	WATER	BIT	SAMPLE OR TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks	
0	No Groundwater Encountered			SM (v)		TOPSOIL - clayey sandy silt, rootlets; dark grey; loose; just moist.	
				CL/CI (v)		Slightly SANDY SILTY CLAY; greybrown/brown; stiff; moist.	
1				SC (v)		CLAYEY SAND; pale grey with orangebrown streaks; stiff/very stiff; just moist.	
2				GC (v)		CLAYEY SANDY GRAVEL; pale grey/orangebrown, streaked; medium dense/dense; just moist. Gravel subrounded to generally well rounded ranging to boulder size up to 200mm dimension.	
3				ROCK		META-SHALE; moderately weathered/slightly weathered; medium strong; laminated to very thinly bedded; greybrown/grey.	
4						Ends as above, slow digging, tight.	
5							
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory		WATER Water Table Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 26.03.08
LOCATION: ADJACENT TO SALISBURY ROAD
SURFACE RL: 96.4m
CONTRACTOR: R. & I.CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - slightly clayey sandy silt, rootlets; dark brown; loose; just moist. 0.20
SC (v)					CLAYEY SAND; pale brown with orangebrown mottle; stiff; just moist. 0.55	
ROCK					META-SHALE; moderately weathered; medium strong; laminated to very thinly bedded; greybrown. Bedding: 58 ° /245 ° Major joint sets: 80 ° /337 ° (towards LA), 30 ° /110 ° (across bedding). Defect spacing extremely close to close, surfaces Fe/Mn stained, commonly clay coated. END at 1.80	
1						
2						Ends as above, moderately weathered/slightly weathered, tight, slow digging.
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

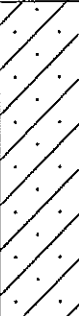
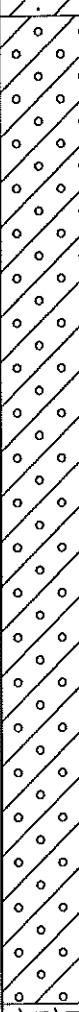
FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

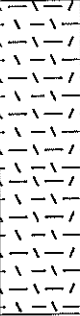
SHEET 1 OF 1 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 26.03.08
LOCATION: ADJACENT TO SALISBURY ROAD
SURFACE RL: 96.3m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks	
0	No Groundwater Encountered			SM (v)		TOPSOIL - slightly clayey sandy silt, rootlets; dark brown; loose; just moist.	0.30
1				SC (v)		GRAVELLY CLAYEY SAND; pale brown to greybrown with depth; stiff/very stiff; just moist. Gravel fraction angular meta-sedimentary; highly weathered; very weak; includes occasional well rounded gravel to 30mm dimension. Probable slope wash.	1.40
2				GC (v)		Slightly CLAYEY SANDY GRAVEL; yellowbrown/mid brown; medium dense/dense; dry. Gravel rounded to well rounded, gravel to boulder size (increasing with depth) to 450mm dimension (rarely).	
3							
4				ROCK		TUFFACEOUS SANDSTONE; moderately weathered; weak/medium strong; medium to coarse grained; yellowbrown. Very difficult digging.	4.70
5							END at 5.00
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory		WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 26.03.08
LOCATION: DIVERSION OUTLET PORTAL
SURFACE RL: 115.1m
CONTRACTOR: R. & I.CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - gravelly sandy silt, rootlets; pale brown; loose; just moist/dry. 0.15
SC (v)					GRAVELLY CLAYEY SAND, rootlets persist; orangebrown/brown, mottled; stiff; just moist. 0.60	
ROCK					TUFFACEOUS SANDSTONE; moderately weathered; medium strong; fine grained; brown/greybrown. Bedding: 60 ° /245 ° Major joint sets: 43 ° /355 ° (across bedding) 88 ° /135 ° Defect spacing very close to close (ranging to moderately wide), surfaces Fe/Mn stained. END at 1.65	
2						Ends as above, very difficult digging, tight.
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

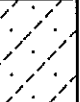
FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 26.03.08
LOCATION: RA, SOUTH OF SPILLWAY ALIGNMENT
SURFACE RL: 112.1m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; brown; loose; just moist. 0.35
GC (v)					CLAYEY SANDY GRAVEL; pale brown with orangebrown streaks; stiff; just moist/moist. Gravel fraction angular meta-sedimentary; highly weathered/moderately weathered; generally to 50mm dimension. Slopewash. 1.20	
SC (v)					GRAVELLY CLAYEY SAND; mid greybrown with orangebrown streaks; stiff/very stiff; just moist. Gravel fraction as above, generally highly weathered to 15mm dimension. Slopewash. Gravel component increasing with depth, including moderately weathered rock to 100mm dimension; hard; dry. Slow digging.	
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 2 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM

DATE: 26.03.08

LOCATION: RA, SOUTH OF SPILLWAY ALIGNMENT

SURFACE RL: 112.1m

CONTRACTOR: R. & I.CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
5				SC (v)		--- (continued from previous sheet) --- GRAVELLY CLAYEY SAND; mid greybrown with orangebrown streaks; stiff/very stiff; just moist. Gravel fraction as above, generally highly weathered to 15mm dimension. Slopewash. Ends as above (dry, hard). END at 5.30
6						
7						
8						
9						
10						

SAMPLE OR TEST

U.....Undisturbed
D.....Disturbed
SPT.....Standard Penetration Test
CPT.....Cone Penetration Test

v : visual
l : laboratory

WATER

 Water Table
 Water Inflow

FIELD SUPERVISOR:

J.F.YOUNG

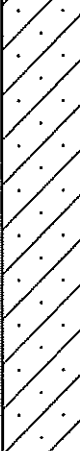
PROJECT COORDINATOR:

J.F.YOUNG

SHEET 2 OF 2 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 26.03.08
LOCATION: RA, SOUTH OF SPILLWAY ALIGNMENT
SURFACE RL: 104.9m
CONTRACTOR: R. & I.CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; greybrown; loose; moist.
					0.35	
1				SC (v)		GRAVELLY CLAYEY SAND/SANDY CLAY; pale brown with orangebrown streaks; stiff; moist to just moist with depth. Gravel fraction angular, meta- sedimentary; highly weathered/moderately weathered; generally to 15mm dimension. Slopewash.
2					2.30	
3				CL/CI (v)		Slightly SANDY SILTY CLAY; grey/greybrown with orangebrown mottle; very stiff; just moist/moist.
						3.40
4				SC (v)		GRAVELLY CLAYEY SAND; pale brown/orangebrown, streaked; very stiff; just moist. Gravel fraction angular, meta-sedimentary; highly weathered; generally to 25mm dimension. Slopewash.
5						

SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test	v : visual l : laboratory	WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 2 SHEETS SCALE 1 : 25
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PROJECT: TILLEGRA DAM
DATE: 26.03.08
LOCATION: RA, SOUTH OF SPILLWAY ALIGNMENT
SURFACE RL: 104.9m
CONTRACTOR: R. & I.CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
5				SC (v)		--- (continued from previous sheet) --- GRAVELLY CLAYEY SAND; pale brown/orangebrown, streaked; very stiff; just moist. Gravel fraction angular, meta-sedimentary; highly weathered; generally to 25mm dimension. Slopewash.
6						Ends as above, slow digging (very stiff).
7						
8						
9						
10						

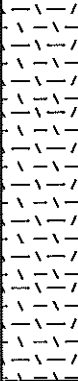
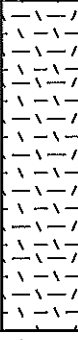
SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

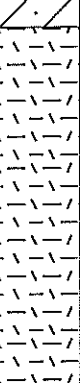
WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
 SHEET 2 OF 2 SHEETS
 SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 27.03.08
LOCATION: RA, SOUTH OF SPILLWAY ALIGNMENT
SURFACE RL: 101.4m
CONTRACTOR: R. & I.CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks	
0	No Groundwater Encountered			SM (v)		TOPSOIL - slightly clayey sandy silt, rootlets; dark greybrown; loose; just moist.	0.20
				SC (v)		SANDY CLAY/CLAYEY SAND with trace of gravel; mid greybrown with occasional orangebrown streaks; stiff; moist.	1.20
1				GC (v)		Slightly CLAYEY SANDY GRAVEL; greybrown with orangebrown streaks; hard (cemented); dry. Gravel fraction includes highly meta-sedimentary fragments and occasional subrounded to well rounded gravel generally to 10mm dimension. Slopewash.	2.60
2				ROCK		TUFFACEOUS SANDSTONE; extremely weathered; extremely weak to very weak; fine/medium grained; dark greybrown/brown.	3.90
3				ROCK		TUFFACEOUS SANDSTONE; highly weathered; very weak to weak; fine grained; pale brown/orangebrown, layered; Bedding exposed on western end of trench 43 ° /210 ° Ends as above, highly weathered/moderately weathered, difficult digging.	END at 5.00
4							
5							
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory		WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 27.03.08
LOCATION: RA, SOUTH OF SPILLWAY ALIGNMENT
SURFACE RL: 99.2m
CONTRACTOR: R. & I. CONTRACTING
OPERATOR: PHIL GARLAND
EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; dark grey to pale grey with depth; loose; moist.
SC (v)					GRAVELLY CLAYEY SAND; yellowbrown/orangebrown streaked; stiff; moist.	
ROCK					TUFFACEOUS SANDSTONE; highly weathered; very weak/weak; fine grained; pale yellowbrown with orangebrown streaks. No indication of bedding. Major joint set 60° / 010° (towards LA).	
1						END at 1.80
2						Ends as above, highly weathered/moderately weathered, very difficult digging.
3						
4						
5						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

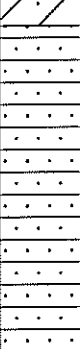
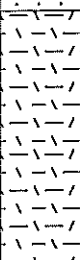
FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 25

PROJECT: TILLEGRA DAM
DATE: 27.03.08
LOCATION: RA, SOUTH OF SPILLWAY ALIGNMENT
SURFACE RL: 99.8m
CONTRACTOR: R. & I. CONTRACTING
OPERATOR: PHIL GARLAND
EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; dark grey; loose; moist. 0.30
1				SC (v)		Slightly CLAYEY/CLAYEY SAND; pale brown with orangebrown streaks; stiff; moist to just moist with depth. Includes trace of meta-sedimentary gravel, generally highly weathered, to 10mm dimension. 1.60
2				CL/CI (v)		GRAVELLY SANDY CLAY; dark grey; very stiff; just moist. Gravel fraction angular; meta-sedimentary; highly weathered to moderately weathered; generally to 30mm dimension. Slopewash. 2.75
3				ROCK		TUFFACEOUS SANDSTONE; highly weathered; very weak to weak; fine grained; yellowbrown/orangebrown. END at 3.60
4						Ends as above, slow digging.
5						

SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test	v : visual l : laboratory	WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 25
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PROJECT: TILLEGRA DAM
DATE: 30.06.08
LOCATION: TURIN PROPERTY
SURFACE RL: 134.6m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OR TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			CL (v)		TOPSOIL - clayey silt, rootlets; dark brown; loose; moist. 0.10
CL (v)					SILTY CLAY, rootlets persist; grey/orangebrown, mottled; firm to stiff; moist. 0.30	
ROCK					CLAYEY GRAVEL; grey; firm to stiff; moist. Gravel fraction is angular, meta-shale, moderately weathered/slightly weathered; generally medium strong, to 50mm dimension. 0.60	
ROCK					META-SHALE; slightly weathered; medium strong; grey/greybrown. Bedding: 15 ° / 048 ° Major joint sets: 80 ° / 292 ° Defect spacing extremely close to occasionally close; surfaces clay coated. END at 1.25	
1						Ends as above.
2						
3						
4						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

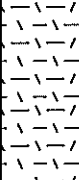
FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

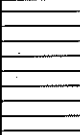
SHEET 1 OF 1 **SHEETS**

SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 30.06.08
LOCATION: TURIN PROPERTY
SURFACE RL: 141.9m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks	
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; brown; loose; just moist.	0.15
				CL (v)		SILTY CLAY/CLAYEY SILT; brown/orangebrown, mottled; stiff; moist.	0.40
1				ROCK		META-SHALE; moderately weathered/slightly weathered; medium strong; grey/greybrown. Bedding: 5 °/060 ° Major joint sets: 73 °/233 ° 85 °/345 ° . Defect spacing very close to close; clay film on surfaces.	1.80
				ROCK		CLAYEY SAND LAYER (extremely weathered tuffaceous sandstone); pale grey; stiff; just moist.	1.87
2				ROCK		META-SHALE continues; moderately weathered/slightly weathered; medium strong.	2.50
				ROCK		TUFFACEOUS SANDSTONE; highly weathered; very weak; fine grained; pale grey.	END at 2.70
3						Ends on meta-shale; slightly weathered; medium strong/stong; tight.	
4							
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory		WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 30.06.08
LOCATION: TURIN PROPERTY
SURFACE RL: 140.1m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks	
0	No Groundwater Encountered			SM (v)		TOPSOIL - slightly clayey sandy silt, rootlets; brown; loose; moist.	0.10
CI (v)					CLAYEY SILT, rootlets persist; brown/yellowbrown; firm; moist.	0.50	
GC (v)					CLAYEY GRAVEL; grey; firm to stiff; moist. Gravel fraction is angular, meta-shale; moderately weathered; generally medium strong.	1.10	
ROCK					META-SHALE; moderately weathered/slightly weathered; medium strong; grey/greybrown. Bedding: 7 °/050° Major joint set: 87 °/196° .	1.80	
ROCK					TUFFACEOUS SANDSTONE BED; highly weathered; very weak; pale yellowbrown. END at 2.00		
2						Ends on meta-shale, slightly weathered, medium strong.	
3							
4							

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

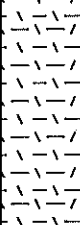
FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 **SHEETS**

SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 30.06.08
LOCATION: TURIN PROPERTY
SURFACE RL: 147.5m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; brown; loose; moist. 0.10
SC (v)					CLAYEY SAND; yellowbrown/orangebrown, mottled; firm to stiff; moist. 0.50	
ROCK					TUFFACEOUS SANDSTONE; moderately weathered; medium strong; fine grained. 0.90	
ROCK					META-SHALE; moderately weathered/slightly weathered; medium strong; generally grey. Bedding: 7 ° / 102 ° Major joint set: 85 ° / 265 ° Defect spacing extremely close to close, commonly clay coated. END at 1.60	
1						
2						Ends as above, slightly weathered, medium strong/strong, tight.
3						
4						

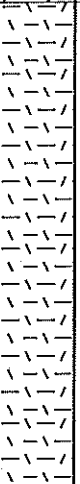
SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
 SHEET 1 OF 1 SHEETS
 SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 30.06.08
LOCATION: TURIN PROPERTY
SURFACE RL: 151.2m
CONTRACTOR: R & I CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; dark brown; loose; moist. 0.15
				SC (v)		GRAVELLY CLAYEY SAND; pale brown; firm to stiff; moist. Gravel fraction angular, meta-sedimentary, generally highly weathered; weak; to 30mm dimension. 0.70
1				ROCK		META-SHALE; moderately weathered; generally medium strong; highly fractured. Defect spacing extremely close, sandy clay fill common; Bedding: 70 ° / 085 °.
2						END at 2.00
3						Ends as above, moderately weathered/slightly weathered, defect spacing generally close.
4						
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory	WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 20



GEOTECHNICAL & ENVIRONMENTAL

TEST PIT TP 115

PROJECT: TILLEGRA DAM

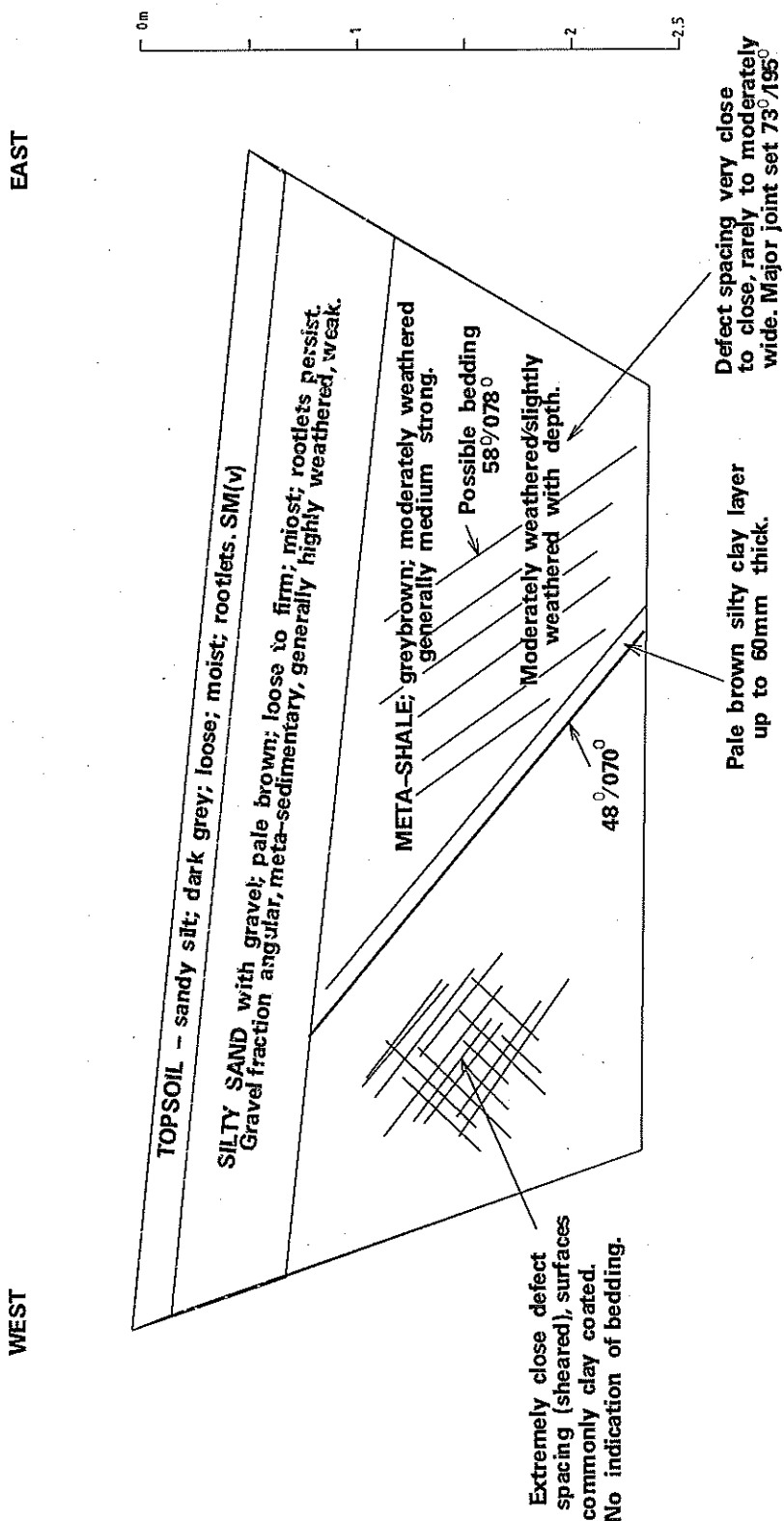
DATE: 30.06.08

LOCATION: TURIN PROPERTY

SURFACE RL: 164.6m

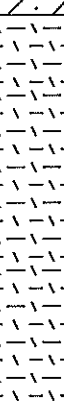
CONTRACTOR: R & I CONTRACTING OPERATOR:

EQUIPMENT: KOMATSU PC220

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG

AUGUST 2008

PROJECT: TILLEGRA DAM
DATE: 30.06.08
LOCATION: TURIN PROPERTY
SURFACE RL: 172.9m
CONTRACTOR: R & I CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand, rootlets; dark grey; loose; moist. 0.10
SC (v)					CLAYEY GRAVELLY SAND; orangebrown/brown; loose; moist. 1.00	
ROCK					TUFFACEOUS SANDSTONE; highly weathered/moderately weathered; generally medium strong; fine grained; redbrown. Defect spacing very close/close. No indication of bedding. END at 2.10	
2						Ends as above, still reasonable digging.
3						
4						

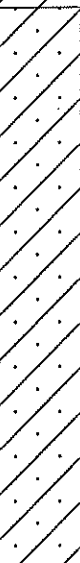
SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
 SHEET 1 OF 1 SHEETS
 SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 01.07.08
LOCATION: LOWREY'S PROPERTY
SURFACE RL: 139.3m
CONTRACTOR: R & I CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; dark grey; loose; moist. 0.20
				SC (v)		GRAVELLY CLAYEY SAND; greybrown with orangebrown streaks; firm; moist to wet. 0.50
1				SC (v)		GRAVELLY CLAYEY SAND; grey/orangebrown, streaked (horizontal); very stiff (cemented in part); just moist. Gravel fraction is angular to subrounded, varies from highly weathered to slightly weathered, meda-sedimentary to 100mm dimension. Slopewash. END at 2.00
2						Ends as above.
3						
4						
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory	WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 01.07.08
LOCATION: LOWREY'S PROPERTY
SURFACE RL: 150.5m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand with trace of gravel, rootlets; dark greybrown; loose; moist. 0.30
				SC (v)		CLAYEY SAND; pale brown; firm; moist. 0.90
1				SC/GC (v)		CLAYEY GRAVELLY SAND; grey/yellowbrown/orangebrown, streaked; very stiff (partly cemented); just moist. Gravel fraction generally angular, meta-sedimentary to 120mm dimension; highly weathered to moderately weathered. Slopewash. END at 2.30
2						Ends as above.
3						
4						

SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
 SHEET 1 OF 1 SHEETS
 SCALE 1 : 20

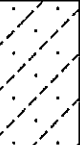
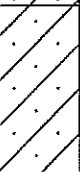
PROJECT: TILLEGRA DAM

DATE: 01.07.08

LOCATION: LOWREY'S PROPERTY

SURFACE RL: 165.9m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0				SM (v)		TOPSOIL - silty sand, rootlets; dark brown; loose; moist. 0.40
				SC (v)		Slightly CLAYEY SAND; yellowbrown; firm; moist. Angular tuffaceous sandstone gravel with depth to 150mm dimension. END at 0.85
1						Ends on tuffaceous sandstone; slightly weathered/fresh. Refusal. No indication of bedding.
2						
3						
4						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual
l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 01.07.08
LOCATION: LOWREY'S PROPERTY
SURFACE RL: 157.9m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand, rootlets; dark grey; loose; moist. 0.35
1				SC (v)		CLAYEY SAND with gravel; orangebrown/yellowbrown, streaked; firm; moist. Gravel fraction, angular, meta-sedimentary to 50mm dimension. 1.10
2				ROCK		TUFFACEOUS SANDSTONE; slightly weathered/fresh; strong to very strong. Defect spacing generally close to moderately wide. No indication of bedding. END at 2.00
3						Ends as above, very difficult digging.
4						

SAMPLE OR TEST

U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER

 Water Table
 Water Inflow

FIELD SUPERVISOR:
J.F.YOUNG
PROJECT COORDINATOR:
J.F.YOUNG

SHEET 1 OF 1 SHEETS
 SCALE 1 : 20

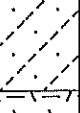
PROJECT: TILLEGRA DAM

DATE: 01.07.08

LOCATION: LOWREY'S PROPERTY

SURFACE RL: 176.3m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand, rootlets; dark grey; loose; moist. 0.30
SM (v)					SILTY SAND with gravel; mid brown; firm; moist. Gravel fraction angular, meta-sedimentary to 30mm dimension; highly weathered/moderately weathered. 0.60	
ROCK					Interbedded TUFFACEOUS SANDSTONE/META-SHALE; highly weathered to moderately weathered; generally medium strong to strong. Bedding: 40° / 248° Major joint sets: 80° / 340°, 48° / 060° (across bedding). END at 1.60	
2						Ends as above, moderately weathered, tight, slow digging.
3						
4						

SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test	v : visual l : laboratory	WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 20
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PROJECT: TILLEGRA DAM

DATE: 01.07.08

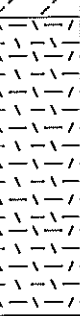
LOCATION: LOWREY'S PROPERTY

SURFACE RL: 136.0m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks	
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand with trace of clay, rootlets; dark brown; loose; moist.	0.15
				SC (v)		GRAVELLY CLAYEY SAND; orangebrown/grey, mottled; firm; moist. Gravel fraction angular, highly weathered/moderately weathered, meta-shale to 50mm dimension. Defect spacing very close to close.	0.60
1				ROCK		META-SHALE; highly weathered to slightly weathered with depth; weak to medium strong. Bedding: 5 ° / 147 ° Major joint sets: 82 ° / 004 °, 85 ° / 278 ° (across bedding).	END at 1.50
2						Ends as above (moderately weathered meta-shale).	
3							
4							
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory		WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 01.07.08
LOCATION: LOWREY'S PROPERTY
SURFACE RL: 148.1m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; dark grey; loose; moist. 0.20
SM (v)					GRAVELLY SANDY SILT , rootlets persist; brown; firm; moist. 0.50	
ROCK					META-SHALE ; highly weathered to moderately weathered with depth; weak to medium strong; brown/greybrown. Defect spacing very close to close. Bedding: 26 °/063 ° Major joint sets: 80 °/168 °, 50 °/255 ° (across bedding) . END at 1.30	
1						Ends as above (moderately weathered meta-shale).
2						
3						
4						

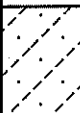
SAMPLE OR TEST
U.....Undisturbed
D.....Disturbed
SPT.....Standard Penetration Test
CPT.....Cone Penetration Test

v : visual
l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 1 OF 1 **SHEETS**
SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 01.07.08
LOCATION: LOWREY'S PROPERTY
SURFACE RL: 157.3m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

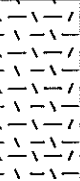
DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0				SM (v)		TOPSOIL - sandy silt, rootlets; dark grey; loose; moist.
0.30						
1				ROCK		META-SHALE; highly weathered to moderately weathered with depth; weak to medium strong; brown/greybrown. Defect spacing extremely close/very close, ranging to close (sheared). No indication of bedding.
2						END at 2.00
2						Ends as above (moderately weathered meta-shale).
3						
4						

SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 1 OF 1 SHEETS
SCALE 1 : 20

 GEOTECHNICAL & ENVIRONMENTAL						TEST PIT		TP125	
PROJECT: TILLEGRA DAM				DATE: 01.07.08					
LOCATION: LOWREY'S PROPERTY				SURFACE RL: 172.4m					
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220									
DEPTH (m)	WATER	BIT	SAMPLE OR TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks			
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; dark grey; loose; moist.			0.20
1				GM (v)		SANDY GRAVEL with trace of clay; yellowbrown; firm to stiff; moist. Gravel fraction angular, highly weathered/moderately weathered; weak to medium strong meta-sedimentary. Slopewash.			1.30
2				ROCK		TUFFACEOUS SANDSTONE; moderately weathered; medium strong; greybrown. Defect spacing very close/close. No indication of bedding.			END at 1.80
3						Ends as above.			
4									
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory		WATER  Water Table  Water Inflow		FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 20	

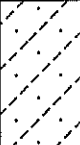
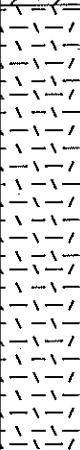
PROJECT: TILLEGRA DAM

DATE: 01.07.08

LOCATION: LOWREY'S PROPERTY

SURFACE RL: 144.3m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; dark grey; loose; moist. 0.40
1				ROCK		META-SHALE; moderately weathered to moderately weathered/ slightly weathered with depth; medium strong. Defect spacing extremely close to very close/close. Probable bedding: 30 ° / 058 °. END at 1.60
2						Ends as above (moderately weathered/slightly weathered meta-shale).
3						
4						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 20

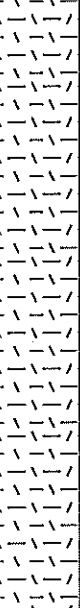
PROJECT: TILLEGRA DAM

DATE: 01.07.08

LOCATION: LOWREY'S PROPERTY

SURFACE RL: 146.3m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; dark grey; loose; moist.
					TUFFACEOUS SANDSTONE; moderately weathered; medium strong; brown/greybrown. Defect spacing very close/close, ranging top moderately wide. Probable bedding: 45°/245°. Major joint set: 85°/343°.	
1				ROCK		
2						Ends as above.
3						
4						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 **SHEETS**

SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 02.07.08
LOCATION: TURIN PROPERTY
SURFACE RL: 132.3m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; dark brown; loose; moist. 0.20
SM/SC (v)					SANDY SILT/SILTY SAND with trace of clay, rootlets persist; mid brown; firm; moist 0.55	
ROCK					META-SHALE; highly weathered to moderately weathered/slightly weathered with depth; medium strong; defect spacing very close to close. Bedding: 3 °/088 ° Major joint sets: 87 °/161 ° , 68 °/290 ° .	
1						END at 1.60
2						Ends as above (slightly weathered meta-shale).
3						
4						

SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
 SHEET 1 OF 1 SHEETS
 SCALE 1 : 20

PROJECT: TILLEGRA DAM

DATE: 02.07.08

LOCATION: TURIN PROPERTY

SURFACE RL: 143.4m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

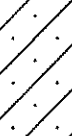
DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand, rootlets; dark grey; loose; moist. 0.25
SC (v)					GRAVELLY CLAYEY SAND; brown/orangebrown, mottled; firm; moist. Gravel fraction angular, meta-sedimentary, highly weathered /moderately weathered; to 30mm dimension. 0.50	
ROCK					META-SHALE; moderately weathered to moderately weathered/ slightly weathered with depth; medium strong. Defect spacing generally very close to close. Bedding: 5 ° / 085 ° . Major joint sets: 73 ° / 237 ° (very prominent) 50 ° / 154 ° .	
1						END at 1.50
2						Ends as above.
3						
4						

SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test	v : visual l : laboratory	WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 20
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PROJECT: TILLEGRA DAM
DATE: 02.07.08
LOCATION: TURIN PROPERTY
SURFACE RL: 152.9m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - sandy silt, rootlets; dark grey; loose; moist. 0.20
				SC (v)		GRAVELLY CLAYEY SAND ; grey/orangebrown,mottled; firm to stiff; moist. Gravel fraction angular, meta-sedimentary; highly weathered; to 30mm dimension. 0.60
1				SM (v)		META-SHALE ; moderately weathered to moderately weathered/ slightly weathered with depth; medium strong. Defect spacing generally very close to close. Bedding: 18 ° /070 ° . Major joint sets: 55 ° /254 ° (very prominent). END at 1.60
2						Ends as above.
3						
4						
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory	WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 02.07.08
LOCATION: TURIN PROPERTY
SURFACE RL: 163.5m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0				SM (v)		TOPSOIL - silty sand, rootlets; dark grey; loose; moist. 0.15
				SC (v)		CLAYEY SAND; pale greybrown; firm to stiff; moist. 0.90
1				GM (v)		SANDY GRAVEL with trace of clay; yellowbrown/orangebrown, streaked; medium dense; just moist. Gravel fraction angular, meta-sedimentary, generally highly weathered/moderately weathered, to 80mm dimension. Slopewash. 3.00
2				ROCK		TUFFACEOUS SANDSTONE; highly weathered; very weak; very fine/fine grained; yellowbrown. No indication of bedding (pit too deep to enter). END at 3.20
3						Ends as above (still easy digging).
4						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 SHEETS

SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 02.07.08
LOCATION: TURIN PROPERTY (Bore 432 drill pad)
SURFACE RL: 200.5m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0						CONGLOMERATE/CONGLOMERATIC SANDSTONE; rounded to well rounded gravel to boulders in fine grained tuffaceous sandstone matrix. Maximum diameter 200mm. Matrix generally highly weathered, very weak, ranging to moderately weathered (in pockets), generally weak to medium strong. No indication of bedding.
1	No Groundwater Encountered					
2						
3						
4						Ends as above.

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

v : visual

l : laboratory

WATER

➤ Water Table

➤ Water Inflow

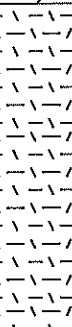
FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 1 OF 1 **SHEETS**

SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 02.07.08
LOCATION: TURIN PROPERTY
SURFACE RL: 157.6m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand, rootlets; dark grey; loose; moist. 0.25
				SC (v)		GRAVELLY CLAYEY SAND; yellowbrown/orangebrown, streaked; stiff; just moist to moist. Gravel fraction angular, meta- sedimentary, generally highly weathered/ moderately weathered, to 60mm dimension. Slopewash 1.40
				ROCK		META-SHALE; highly weathered to moderately weathered with depth; weak to medium strong; brown/greybrown. Defect spacing extremely close/very close, occasionally ranging to close. Possible bedding: 30 ° / 095 ° . END at 2.30
4						Ends as above (moderately weathered meta-shale).

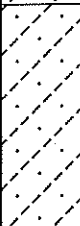
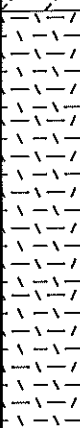
SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
 SHEET 1 OF 1 SHEETS
 SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 02.07.08
LOCATION: TURIN PROPERTY
SURFACE RL: 171.8m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand, rootlets; dark brown; loose; moist. 0.23
SM (v)					SANDY GRAVEL with trace of clay; yellowbrown/orangebrown streaked; medium dense; moist. Gravel fraction angular, meta- sedimentary, moderately weathered, medium strong. 0.85	
ROCK					META-SHALE; moderately weathered to slightly weathered with depth; pale brown/greybrown (to grey). Defect spacing extremely close to close (rarely moderately wide). Bedding: 70°/263°. Major joint sets: 72°/167°, 80°/062°. END at 2.00	
2						Ends as above (slightly weathered meta-shale).
3						
4						

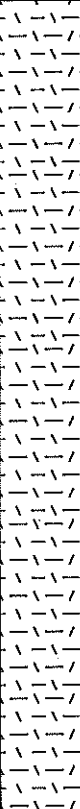
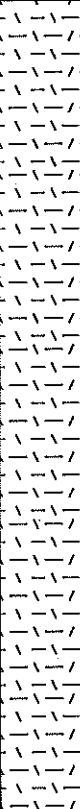
SAMPLE OR TEST
U.....Undisturbed
D.....Disturbed
SPT.....Standard Penetration Test
CPT.....Cone Penetration Test

v : visual
l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 1 OF 1 **SHEETS**
SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 02.07.08
LOCATION: TURIN PROPERTY
SURFACE RL: 157.4m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand, rootlets; dark brown; loose; moist. 0.20
				GP (v)		GRAVELLY SAND with trace of clay; yellowbrown with orangebrown streaks; medium dense; moist. Gravel fraction angular, highly weathered meta-sedimentary, to 30mm dimension. Slopewash. 1.00
1				ROCK		TUFFACEOUS SANDSTONE; highly weathered; weak; yellowbrown/greybrown. Defect spacing generally very close/close. No Indication of bedding. (possibly dipping into the hill at approximately 20 °).
2	No Groundwater Encountered			ROCK		END at 3.20
3						
4						Ends as above.

SAMPLE OR TEST

U.....Undisturbed
D.....Disturbed
SPT.....Standard Penetration Test
CPT.....Cone Penetration Test

v : visual
l : laboratory

WATER

 Water Table
 Water Inflow

FIELD SUPERVISOR:
J.F.YOUNG
PROJECT COORDINATOR:
J.F.YOUNG

SHEET 1 OF 1 SHEETS
SCALE 1 : 20

PROJECT: TILLEGRA DAM

DATE: 02.07.08

LOCATION: TURIN PROPERTY

SURFACE RL: 146.1m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL GARLAND EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks	
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand, rootlets; dark brown; loose; moist.	0.10
				GP (v)		SANDY GRAVEL with trace of clay; pale brown; loose; moist. Gravel is angular, highly weathered meta-sedimentary, to 20mm dimension.	0.30
				ROCK		TUFFACEOUS SANDSTONE; moderately weathered/slightly weathered; medium strong; very fine grained; greybrown. Probable bedding: 17°/165°. Defect spacing very close/close. Major joint set: 88°/255° (very prominent).	
1						END at 1.10	
						Ends as above.	
2							
3							
4							
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory		WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 20

PROJECT: TILLEGRA DAM

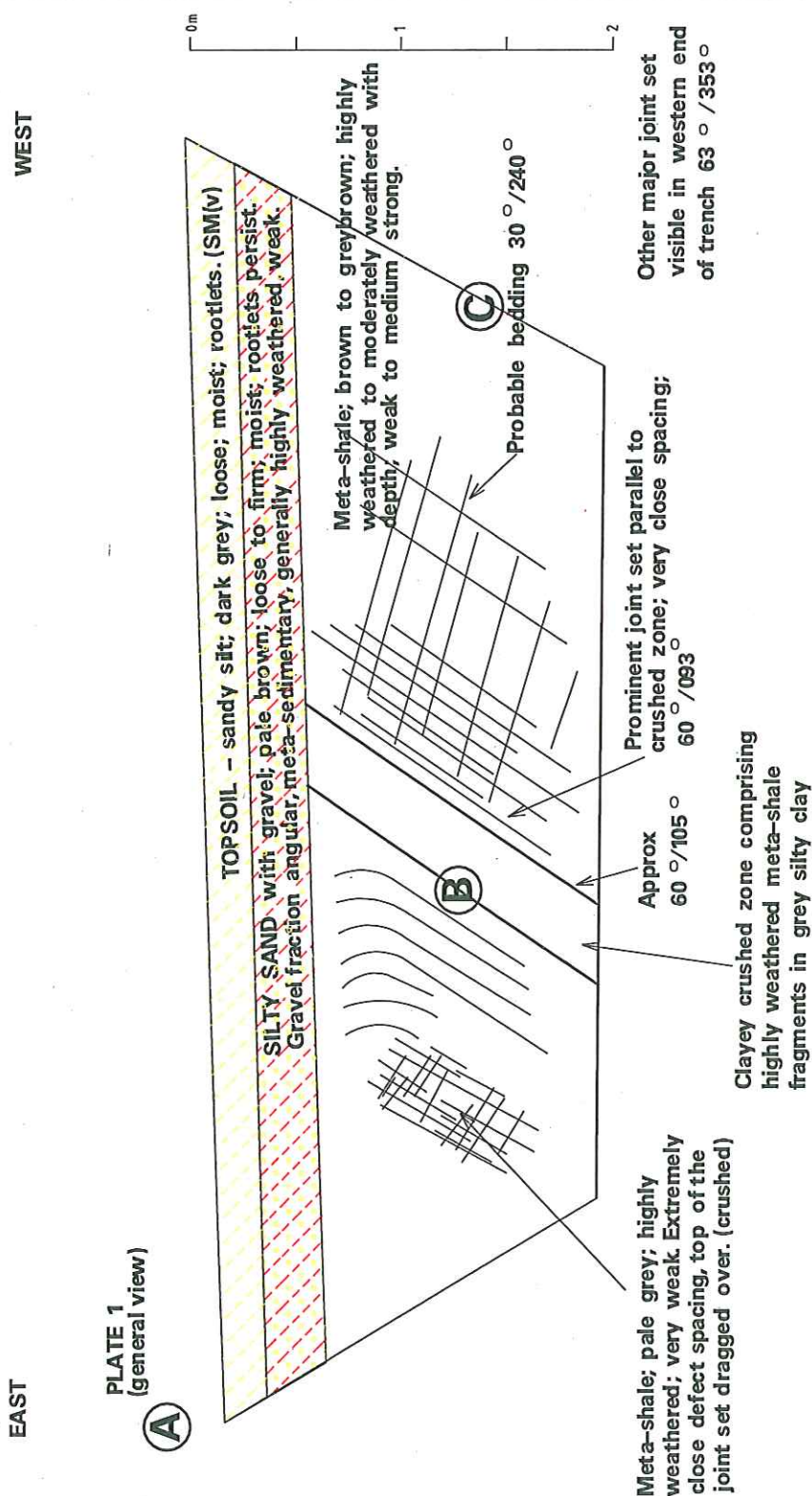
DATE: 30.06.08

LOCATION: TURIN PROPERTY

SURFACE RL: 151m

CONTRACTOR: R & I CONTRACTING OPERATOR:

EQUIPMENT: KOMATSU PC220



FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

AUGUST 2008



Plate TP137A. General view of the test pit looking from west to east (up the slope).



Plate TP137B. Highly weathered, crushed meta-shale in eastern half of test pit. Geological hammer marks clayey zone.



Plate TP137C. Probable bedding dipping into the western end of the test pit.

PROJECT: TILLEGRA DAM

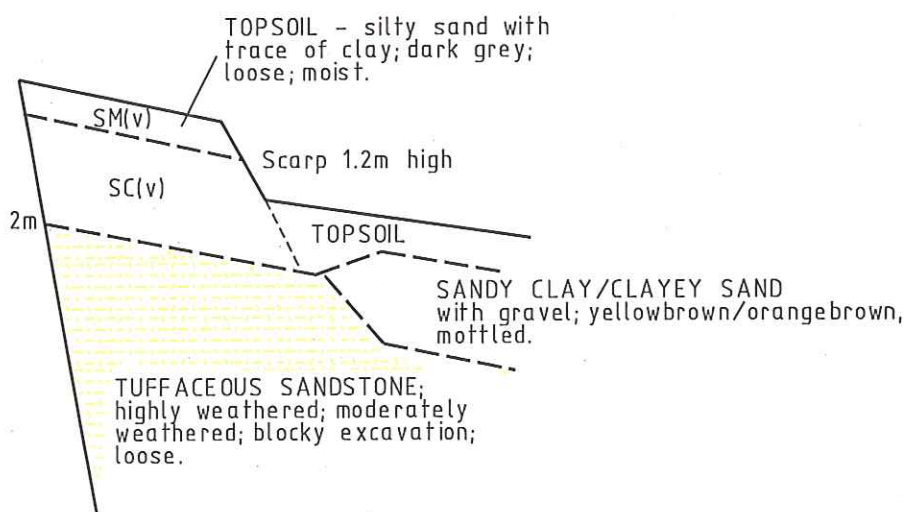
DATE: 18.08.08

LOCATION: SLIP 2A

SURFACE RL: 182.2m

CONTRACTOR: R & I CONTRACTING OPERATOR: PHIL

EQUIPMENT: KOMATSU PC220

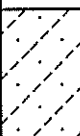


Excavated to approximately 5m
Tuffaceous sandstone tighter,
slower digging.

FIELD SUPERVISOR: J.F. YOUNG
PROJECT COORDINATOR: J.F. YOUNG

AUGUST 2008

PROJECT: TILLEGRA DAM
DATE: 18.08.08
LOCATION: SLIP 2A
SURFACE RL: 186.4m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL
EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand with trace of clay, rootlets; dark grey; loose to firm; moist. 0.35
				SC (v)		CLAYEY SAND; yellowbrown; firm; moist. 1.60
2				ROCK		TUFFACEOUS SANDSTONE; extremely weathered to highly weathered; extremely weak to very weak with depth; medium grained; yellowbrown/pale grey, streaked. END at 2.40
3						Ends in tuffaceous sandstone; highly weathered; weak; medium grained. No indication of bedding.
4						

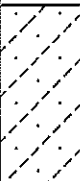
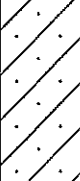
SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
 SHEET 1 OF 1 SHEETS
 SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 18.08.08
LOCATION: SLIP 2A
SURFACE RL: 212.2m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL
EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand with trace of clay, rootlets; dark grey; loose to firm; moist. 0.50
1				SC (v)		CLAYEY SAND; pale brown with orangebrown fleck; firm to stiff; moist. 1.10
2				ROCK		TUFFACEOUS SANDSTONE; variably weathered, slightly weathered boulders In extremely weathered/highly weathered matrix; matrix is extremely weak to weak with depth; medium grained; orangebrown with pale grey seams. END at 1.80
3						Ends in tuffaceous; highly weathered/moderately weathered; generally weak; coarse grained. Difficult digging.
4						

SAMPLE OR TEST
U.....Undisturbed
D.....Disturbed
SPT.....Standard Penetration Test
CPT.....Cone Penetration Test

v : visual
l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 1 OF 1 **SHEETS**
SCALE 1 : 20

PROJECT: TILLEGRA DAM

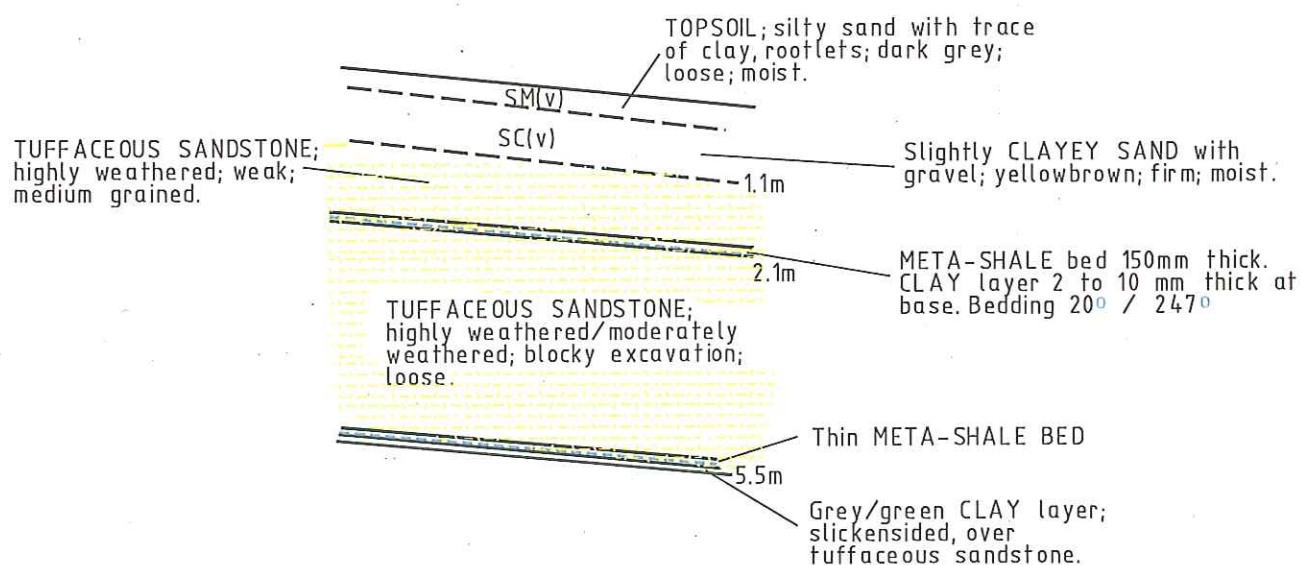
LOCATION: SLIP 2A

CONTRACTOR: R & I CONTRACTING OPERATOR: PHIL

DATE: 18.08.08

SURFACE RL: 198.8m

EQUIPMENT: KOMATSU PC220



FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG

AUGUST 2008

PROJECT: TILLEGRA DAM

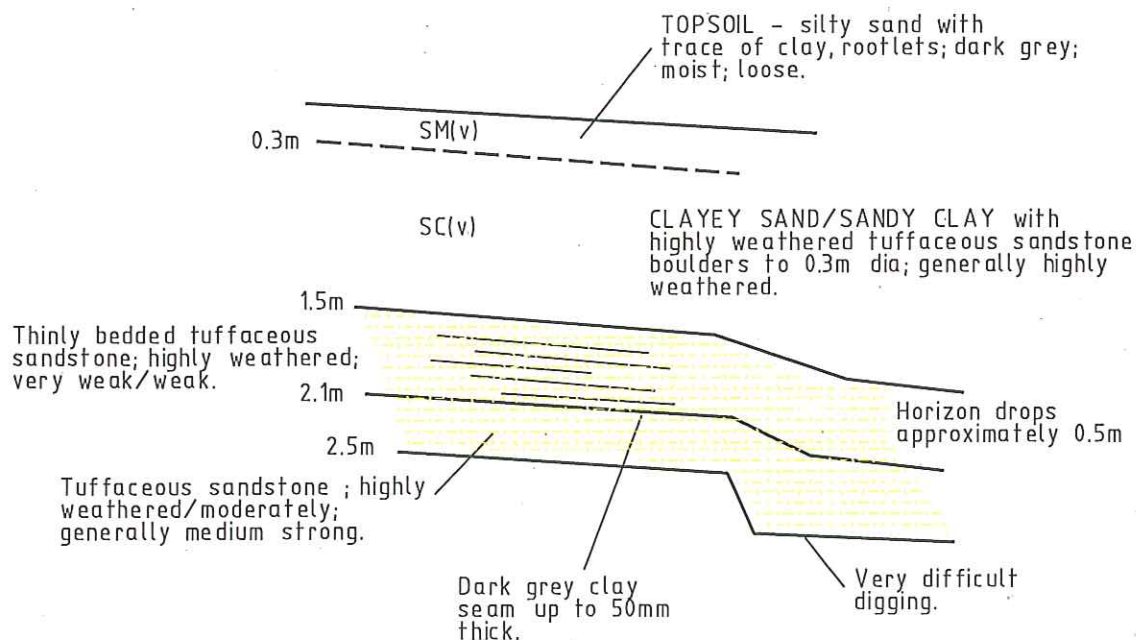
DATE: 18.08.08

LOCATION: SLIP 2A

SURFACE RL: 193.4m

CONTRACTOR: R & I CONTRACTING OPERATOR: PHIL

EQUIPMENT: KOMATSU PC220

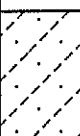
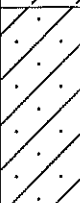
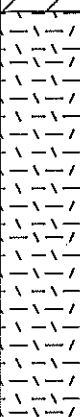


Bedding: 12° / 213° 15° / 225°
Major joint set: 78° / 153°
Secondary joints: 74° / 030° 68° / 352°

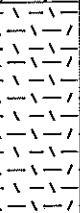
FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG

AUGUST 2008

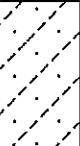
PROJECT: TILLEGRA DAM
DATE: 18.08.08
LOCATION: SLIP 2A
SURFACE RL: 210.9m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL
EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand, rootlets; dark grey; loose; moist. 0.35
				SC (v)		SANDY CLAY; orangebrown/yellowbrown/pale grey, streaked; stiff; moist. 0.90
1				ROCK		TUFFACEOUS SANDSTONE; highly weathered; very weak; medium grained; orangebrown with pale grey streaks. Probable bedding: 13 ° / 207 ° END at 2.00
2						Ends as above, highly weathered/moderately weathered, medium strong. Difficult digging.
3						
4						
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory	WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 19.08.08
LOCATION: SLIP 2A
SURFACE RL: 209.8m
CONTRACTOR: R & I CONTRACTING OPERATOR: PHIL
EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand, rootlets; dark grey; loose; moist. 0.35
1				SC (v)		SANDY CLAY/CLAYEY SAND; pale brown/orangebrown mottled; stiff; moist. 1.20
				ROCK		TUFFACEOUS SANDSTONE; extremely weathered; extremely weak/very weak. No indication of bedding. END at 1.80
2						Ends as above, highly weathered, very weak.
3						
4						
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory	WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 20

PROJECT: TILLEGRA DAM
DATE: 19.08.08
LOCATION: SLIP 2A
SURFACE RL: 213.7m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL
EQUIPMENT: KOMATSU PC220

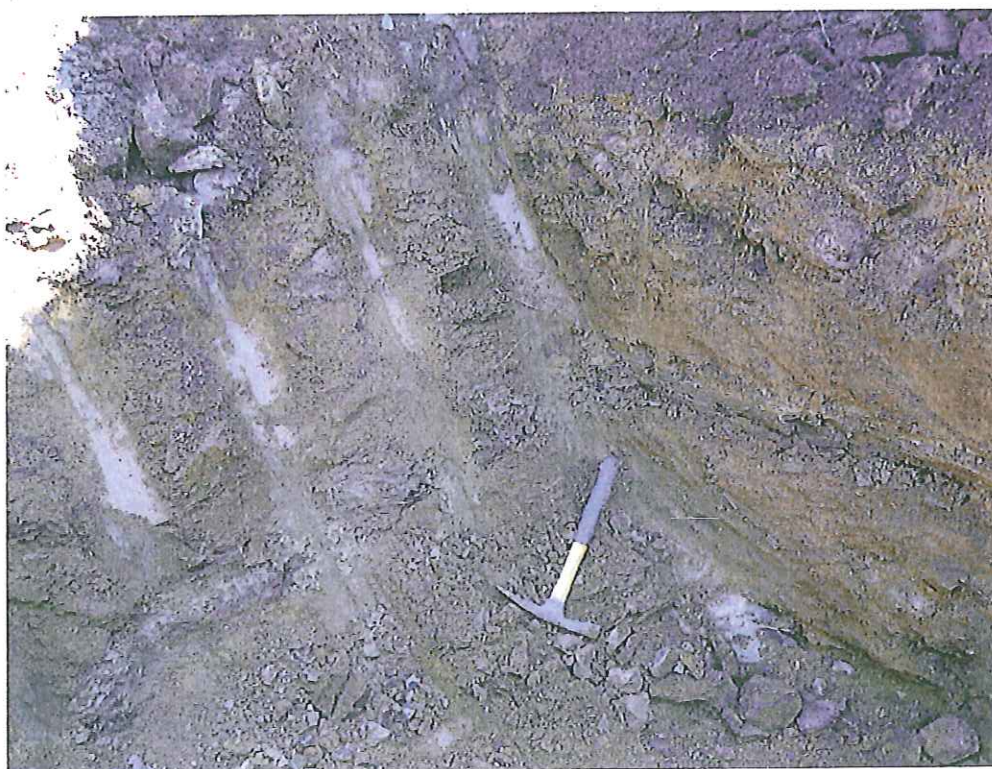
DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks	
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand, rootlets; includes tuffaceous sandstone boulders to 0.4m dia; dark grey; loose; moist. 0.40	
							TUFFACEOUS SANDSTONE; moderately weathered; weak. Topsoil infill to 5mm in defects, open. Bedding: 15 °/195 ° 1.55
							META-SHALE; moderately weathered; medium strong; brecciated. Thin pale grey clay layer at base of bed. 1.65
							TUFFACEOUS SANDSTONE; extremely weathered/highly weathered; extremely weak/very weak; medium grained; brown/orangebrown. END at 2.10
2						Ends as above.	
3							
4							

SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 1 OF 1 SHEETS
SCALE 1 : 20



Test Pit TP146. Brecciated meta-shale bed, 1.55m to 1.65m depth.

PROJECT: TILLEGRA DAM
DATE: 19.08.08
LOCATION: SLIP 2A
SURFACE RL: 206.8m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL
EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand, rootlets; dark grey; loose; moist. 0.50
				SC (v)		SANDY CLAY; brown/orangebrown; firm; moist. 0.90
1				ROCK		TUFFACEOUS SANDSTONE; extremely weathered; extremely weak; fine grained; yellowbrown/orangebrown 1.05
				ROCK		Crushed TUFFACEOUS SANDSTONE layer up to 350mm thick, thin dark grey clay layer at base (to 5mm), 15 o / 228 o 1.20
				ROCK		TUFFACEOUS SANDSTONE continues; extremely weathered; extremely weak. END at 1.80
2						Ends as above; highly weathered; weak; dark grey clay layer on floor, (second creep plane).
3						
4						

SAMPLE OR TEST
 U.....Undisturbed
 D.....Disturbed
 SPT.....Standard Penetration Test
 CPT.....Cone Penetration Test

v : visual
 l : laboratory

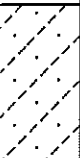
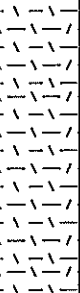
WATER
 Water Table
 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG
PROJECT COORDINATOR: J.F.YOUNG
SHEET 1 OF 1 SHEETS
SCALE 1 : 20



Test Pit TP147. Crushed sandstone layer, 1.05m to 1.20m depth.

PROJECT: TILLEGRA DAM
DATE: 19.08.08
LOCATION: SLIP 2A
SURFACE RL: 221.0m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL
EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE or TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand, rootlets; dark grey; loose; moist. 0.45
				SC (v)		CLAYEY SAND; brown/orangebrown; firm; moist. 0.70
1				ROCK		TUFFACEOUS SANDSTONE; moderately weathered; medium strong. Rock mass open, pale grey infill in defects to 10mm thick. - Pale grey clay layer at 1.6m (parallel to bedding). Truncated by joint on north pit wall. 1.60
2				ROCK		TUFFACEOUS SANDSTONE; extremely weathered; extremely weak; orangebrown/ yellowbrown. pale grey; fill persists in some defects (disturbed). - pale grey clay layer at 2.4m (parallel to bedding). 2.40
				ROCK		TUFFACEOUS SANDSTONE; extremely weathered/highly weathered; very weak. END at 2.70
3						
4						
SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test				v : visual l : laboratory	WATER  Water Table  Water Inflow	FIELD SUPERVISOR: J.F.YOUNG PROJECT COORDINATOR: J.F.YOUNG SHEET 1 OF 1 SHEETS SCALE 1 : 20



GEOTECHNICAL & ENVIRONMENTAL

TEST PIT

TP149

PROJECT: TILLEGRA DAM

DATE: 19.08.08

LOCATION: SLIP 2A

SURFACE RL: 143.5m

CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL

EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grain size, moisture, remarks
0	No Groundwater Encountered			SM (v)		TOPSOIL - silty sand, rootlets; dark grey; loose; moist. 0.35
1				SC (v)		GRAVELLY CLAYEY SAND/SANDY CLAY; brown/orangebrown; firm; moist. 1.44
2				CH (v)		Pale grey clayey shale plane. 1.65
3				ROCK		TUFFACEOUS SANDSTONE (crushed); moderately weathered; weak; loose. 3.30
4				CH (v)		CLAYEY ZONE; yellowbrown. 3.50
				ROCK		TUFFACEOUS SANDSTONE (crushed); moderately weathered; weak; loose.

SAMPLE OR TEST U.....Undisturbed D.....Disturbed SPT.....Standard Penetration Test CPT.....Cone Penetration Test		v : visual l : laboratory	WATER Water Table Water Inflow	FIELD SUPERVISOR: J.F. YOUNG PROJECT COORDINATOR: J.F. YOUNG SHEET 1 OF 2 SHEETS SCALE 1 : 20
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PROJECT: TILLEGRA DAM
DATE: 19.08.08
LOCATION: SLIP 2A
SURFACE RL: 143.5m
CONTRACTOR: R. & I. CONTRACTING OPERATOR: PHIL
EQUIPMENT: KOMATSU PC220

DEPTH (m)	WATER	BIT	SAMPLE OF TEST	SOIL GROUP	GRAPHIC LOG	SOIL DESCRIPTION Soil type, colour, consistency, grainsize, moisture, remarks
4				ROCK		--- (continued from previous sheet) --- TUFFACEOUS SANDSTONE (crushed); moderately weathered; weak; loose.
5				ROCK		TUFFACEOUS SANDSTONE; interpreted to be disturbed. END at 5.40
6						Ends as above.
7						
8						

SAMPLE OR TEST

U.....Undisturbed

D.....Disturbed

SPT.....Standard Penetration Test

CPT.....Cone Penetration Test

y : visual

l : laboratory

WATER

 Water Table

 Water Inflow

FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

SHEET 2 OF 2 SHEETS

SCALE 1 : 20

PROJECT: TILLEGRA DAM

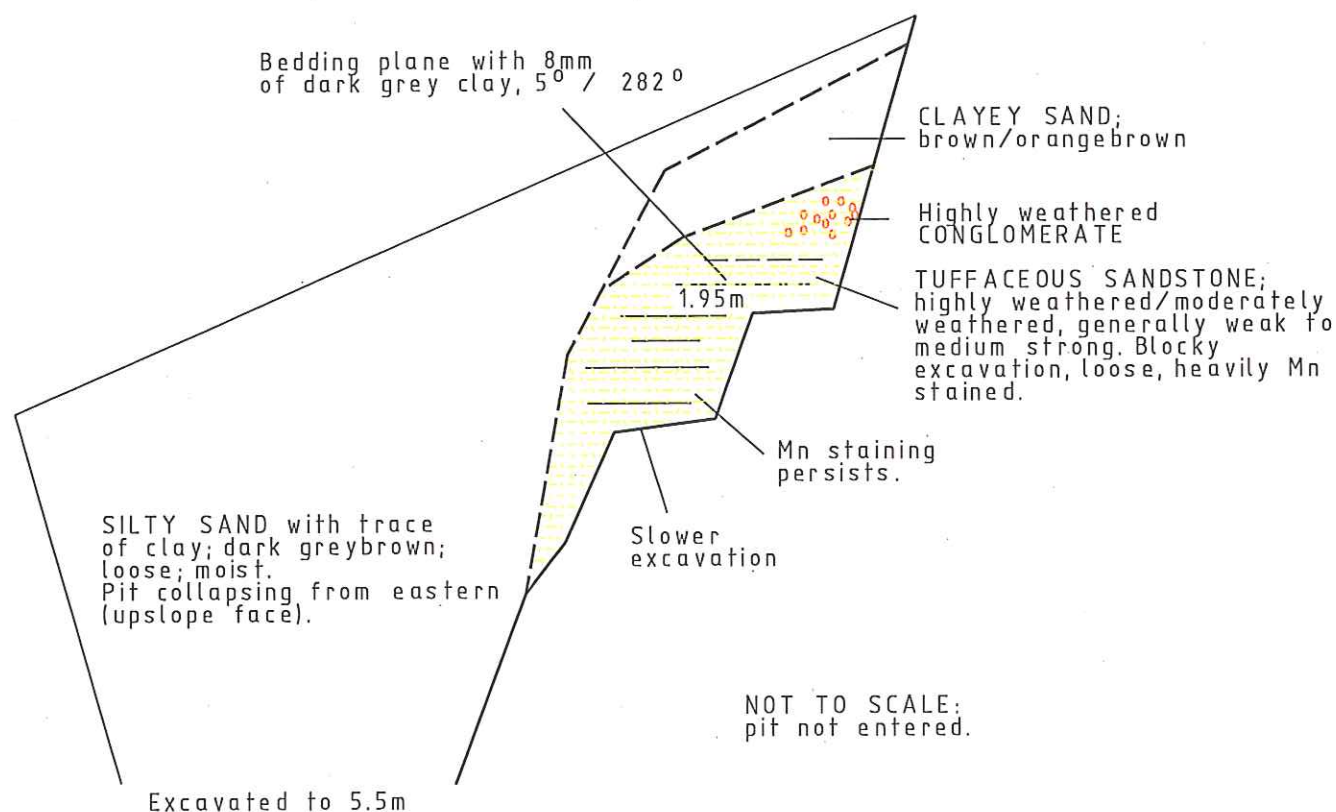
DATE: 18.08.08

LOCATION: SLIP 2A

SURFACE RL: 142.9m

CONTRACTOR: R & I CONTRACTING OPERATOR: PHIL

EQUIPMENT: KOMATSU PC220



FIELD SUPERVISOR: J.F.YOUNG

PROJECT COORDINATOR: J.F.YOUNG

AUGUST 2008

PROJECT: **TILLEGRA DAM**

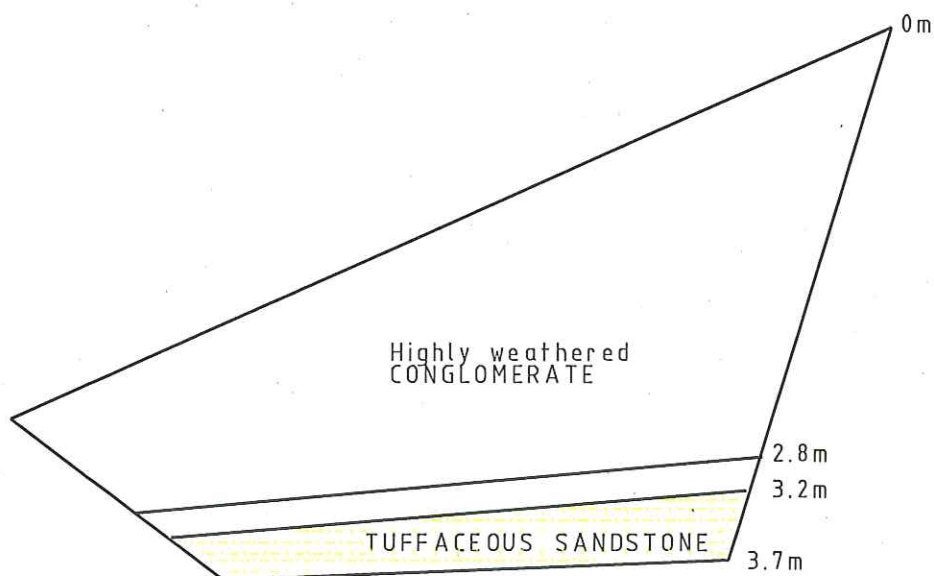
DATE: **18.08.08**

LOCATION: **SLIP 2A**

SURFACE RL: **148.1m**

CONTRACTOR: **R & I CONTRACTING** OPERATOR: **PHIL**

EQUIPMENT: **KOMATSU PC220**



NOT TO SCALE:
Pit not entered

Crushing in the base of
conglomeratic over
sandstone. Dipping
shallowly, say to 5°
to the south.

FIELD SUPERVISOR: **J.F.YOUNG**
PROJECT COORDINATOR: **J.F.YOUNG**

AUGUST 2008