Plate 249: Test Pit TP-50

Plate 250: Test Pit TP-50

Plate 251: Test Pit TP-50

Plate 252: Test Pit TP-50

APPENDIX C

Laboratory Testing Reports

Knight Piésold CONSULTING

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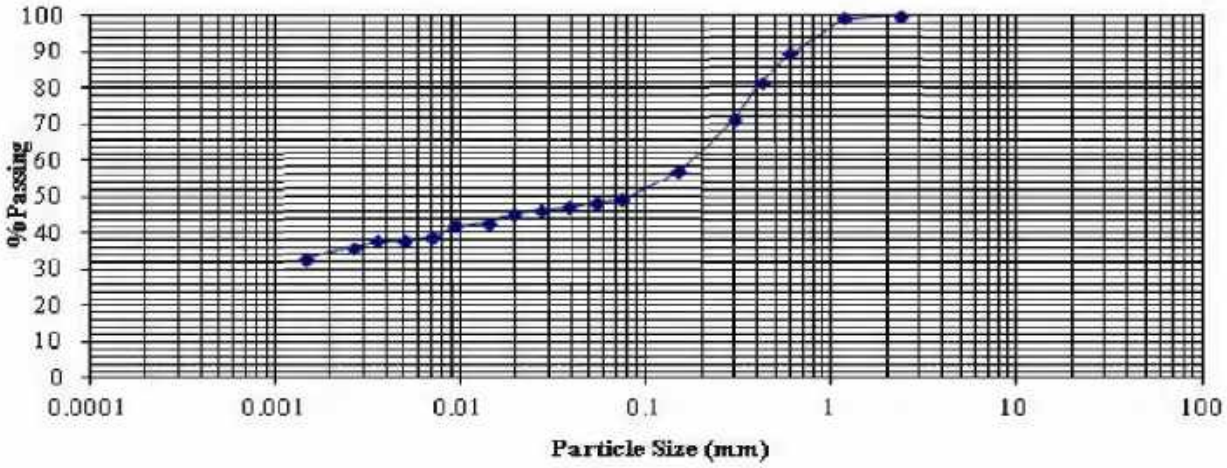
TEST CERTIFICATE

SGS Australia Pty Ltd
Perth Laboratory
112 Mulgul Road
Malaga WA 6090

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell 3 SI	Order No:	
Location:	Mungari	Tested Date:	27/04/2017
SGS Job Number:	17-01-680	Sample No:	17-MT-2613
Lab:	Perth Laboratory	Sample ID:	TP05 2.5 to 2.9 17-KG-654

PARTICLE SIZE DISTRIBUTION - SIEVING AND HYDROMETER ANALYSIS

AS1289.3.6.1 & AS1289.3.6.3



SIEVING	(AS1289.3.6.1)	HYDROMETER	(AS1289.3.6.3)
Sieve Size	Passing	Particle Diameter	Finer
(mm)	%	(mm)	%
53.0		0.0548	48
37.5		0.0388	47
19.0		0.0275	46
9.5		0.0194	45
4.75		0.0143	43
2.36	100	0.0095	42
1.18	99	0.0072	39
0.600	90	0.0051	38
0.425	82	0.0036	38
0.300	71	0.0027	36
0.150	57	0.0015	33
0.075	49		

Method of Dispersion : Mechanical ; Hydrometer Used : Glass, -5 to 60g/l soil Colloids

Loss after Pretreatment: No Pretreatment

Note: Sample supplied by client.

[redacted]

Date: 4/05/2017

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TEST CERTIFICATE

SGS Australia Pty Ltd
Perth Laboratory
112 Mulgul Road
Malaga WA 6090

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell 3 SI	Order No:	
Location:	Mungari	Tested Date:	24/04/2017
SGS Job Number:	17-01-680	Sample No:	17-MT-2613
Lab:	Perth Laboratory	Sample ID:	TP05 2.5 to 2.9 17-KG-654

Determination of Emerson Class Number

AS1289.3.8.1

Soil Description	Red Sandy Clay
Type of water used:	De Ionised
Temperature of water (C):	22
Emerson Class Number:	**5**

Note: Sample supplied by client.

[redacted]

Date: 24/04/2017

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TEST CERTIFICATE

SGS Australia Pty Ltd
Perth Laboratory
112 Mulgul Road
Malaga WA 6090

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell 3 SI	Order No:	
Location:	Mungari	Tested Date:	28/04/2017
SGS Job Number:	17-01-680	Sample No:	17-MT-2613
Lab:	Perth Laboratory	Sample ID:	TP05 2.5 to 2.9 17-KG-654

FINE PARTICLE DENSITY

AS1289.3.5.1

FINE FRACTION

SOIL APPARENT
PARTICLE DENSITY (g/cc) **2.50**

at temperature 25 ° C

Note: Sample supplied by client.

[redacted]

Date: 1/05/2017

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TEST CERTIFICATE

SGS Australia Pty Ltd
Perth Laboratory
112 Mulgul Road
Malaga WA 6090

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell 3 SI	Order No:	
Location:	Mungari	Tested Date:	27/04/2017
SGS Job Number:	17-01-680	Sample No:	17-MT-2613
Lab:	Perth Laboratory	Sample ID:	TP05 2.5 to 2.9 17-KG-654

PERMEABILITY: FALLING HEAD

AS1289.6.7.2 Remoulded sample

MDD:	Max Dry Density (t/m³):
Max. Dry Density :	1.70 t/m³
Optimum Moisture Content	19.0 %
Dry Density	1.62 t/m³
Dry Density Ratio :	95.3 %
Moisture Content:	19.1 %
Moisture Ratio:	100.5 %
Surcharge (kPa):	0.0
Hydraulic Head:	1,622 mm
Hydraulic Gradient:	16
Sieve Size (mm):	4.75
Percentage Retained:	0

COEFFICIENT OF PERMEABILITY

m/sec at 20 ° C **1.E-10**

Note: Sample supplied by client.

[redacted]

Date: 9/05/2017

Client Address: Level 1, 184 Adelaide Terrace East Perth WA 6004

Site No.: 2411
Cert No.: 17-MT-2613-S800
Form No.

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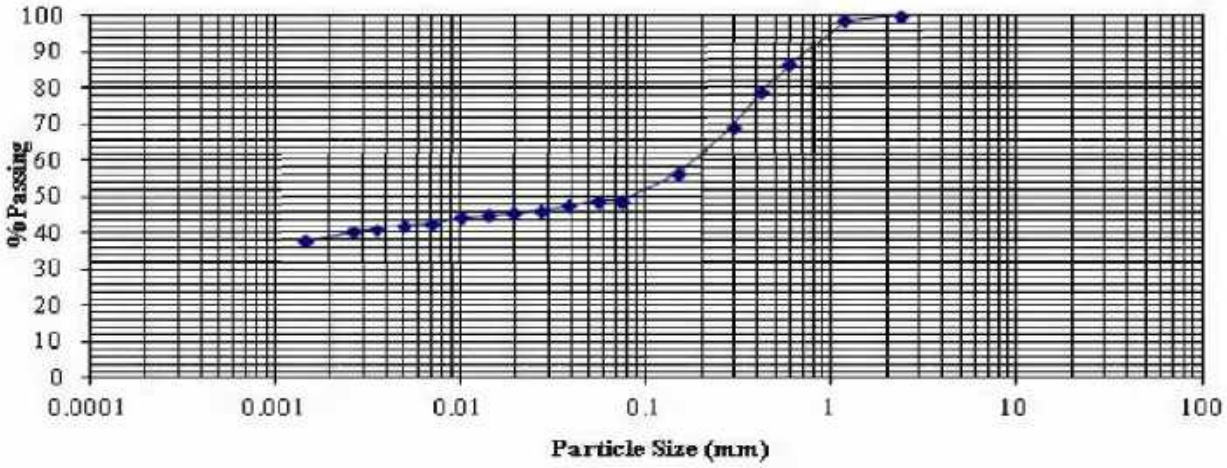
TEST CERTIFICATE

SGS Australia Pty Ltd
Perth Laboratory
112 Mulgul Road
Malaga WA 6090

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell 3 SI	Order No:	
Location:	Mungari	Tested Date:	27/04/2017
SGS Job Number:	17-01-680	Sample No:	17-MT-2614
Lab:	Perth Laboratory	Sample ID:	TP11 2.0 to 2.7 17-KG-656

PARTICLE SIZE DISTRIBUTION - SIEVING AND HYDROMETER ANALYSIS

AS1289.3.6.1 & AS1289.3.6.3



SIEVING	(AS1289.3.6.1)	HYDROMETER	(AS1289.3.6.3)
Sieve Size	Passing	Particle Diameter	Finer
(mm)	%	(mm)	%
53.0		0.0549	49
37.5		0.0389	48
19.0		0.0275	46
9.5		0.0195	45
4.75		0.0143	45
2.36	100	0.0101	44
1.18	99	0.0071	43
0.600	87	0.0050	42
0.425	79	0.0036	41
0.300	69	0.0027	40
0.150	56	0.0015	38
0.075	49		

Method of Dispersion : Mechanical ; Hydrometer Used : Glass, -5 to 60g/l soil Colloids

Loss after Pretreatment: No Pretreatment

Note: Sample supplied by client.

[redacted]

Date: 4/05/2017

au.ind.admin@sgs.com
ABN: 44 000 964 278
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TEST CERTIFICATE

SGS Australia Pty Ltd
Perth Laboratory
112 Mulgul Road
Malaga WA 6090

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell 3 SI	Order No:	
Location:	Mungari	Tested Date:	24/04/2017
SGS Job Number:	17-01-680	Sample No:	17-MT-2614
Lab:	Perth Laboratory	Sample ID:	TP11 2.0 to 2.7 17-KG-656

Determination of Emerson Class Number

AS1289.3.8.1

Soil Description	Red Sandy Clay
Type of water used:	De Ionised
Temperature of water (C):	22
Emerson Class Number:	**5**

Note: Sample supplied by client.

[redacted]

Date: 24/04/2017

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TEST CERTIFICATE

SGS Australia Pty Ltd
Perth Laboratory
112 Mulgul Road
Malaga WA 6090

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell 3 SI	Order No:	
Location:	Mungari	Tested Date:	28/04/2017
SGS Job Number:	17-01-680	Sample No:	17-MT-2614
Lab:	Perth Laboratory	Sample ID:	TP11 2.0 to 2.7 17-KG-656

FINE PARTICLE DENSITY

AS1289.3.5.1

FINE FRACTION

SOIL APPARENT PARTICLE DENSITY (g/cc)	**2.49**
at temperature	25 ° C

Note: Sample supplied by client.

[redacted]

Date: 1/05/2017

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TEST CERTIFICATE

SGS Australia Pty Ltd
Perth Laboratory
112 Mulgul Road
Malaga WA 6090

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell 3 SI	Order No:	
Location:	Mungari	Tested Date:	28/04/2017
SGS Job Number:	17-01-680	Sample No:	17-MT-2614
Lab:	Perth Laboratory	Sample ID:	TP11 2.0 to 2.7 17-KG-656

PERMEABILITY: FALLING HEAD

AS1289.6.7.2 Remoulded sample

MDD:	Max Dry Density (t/m³):
Max. Dry Density :	1.77 t/m³
Optimum Moisture Content	19.0 %
Dry Density	1.67 t/m³
Dry Density Ratio :	94.2 %
Moisture Content:	19.9 %
Moisture Ratio:	104.5 %
Surcharge (kPa):	0.0
Hydraulic Head:	1,612 mm
Hydraulic Gradient:	16
Sieve Size (mm):	4.75
Percentage Retained:	0

COEFFICIENT OF PERMEABILITY

m/sec at 20 ° C **4.E-11**

Note: Sample supplied by client.

[redacted]

Client Address: Level 1, 184 Adelaide Terrace East Perth WA 6004

Date: 9/05/2017
Site No.: 2411
Cert No.: 17-MT-2614-S800
Form No.

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TEST CERTIFICATE

SGS Australia Pty Ltd
Perth Laboratory
112 Mulgul Road
Malaga WA 6090

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell 3 SI	Order No:	
Location:	Mungari	Tested Date:	27/04/2017
SGS Job Number:	17-01-680	Sample No:	17-MT-2615
Lab:	Perth Laboratory	Sample ID:	TP12 0.5 to 1.0 17-KG-657

PERMEABILITY: FALLING HEAD

AS1289.6.7.2 Remoulded sample

MDD:	Max Dry Density (t/m³):
Max. Dry Density :	1.72 t/m³
Optimum Moisture Content	18.5 %
Dry Density	1.64 t/m³
Dry Density Ratio :	95.6 %
Moisture Content:	19.6 %
Moisture Ratio:	106.0 %
Surcharge (kPa):	0.0
Hydraulic Head:	1,538 mm
Hydraulic Gradient:	15
Sieve Size (mm):	4.75
Percentage Retained:	3

COEFFICIENT OF PERMEABILITY

m/sec at 20 ° C **5.E-08**

Note: Sample supplied by client.

[redacted]

Date: 2/05/2017

Client Address: Level 1, 184 Adelaide Terrace East Perth WA 6004

Site No.: 2411
Cert No.: 17-MT-2615-S800
Form No.

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TEST CERTIFICATE

SGS Australia Pty Ltd
Perth Laboratory
112 Mulgul Road
Malaga WA 6090

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell 3 SI	Order No:	
Location:	Mungari	Tested Date:	28/04/2017
SGS Job Number:	17-01-680	Sample No:	17-MT-2616
Lab:	Perth Laboratory	Sample ID:	TP16 0.5 to 1.0 17-KG-659

PERMEABILITY: FALLING HEAD

AS1289.6.7.2 Remoulded sample

MDD:	Max Mod. Dry Density (t/m³):
Max. Dry Density :	1.74 t/m³
Optimum Moisture Content	16.5 %
Dry Density	1.65 t/m³
Dry Density Ratio :	94.8 %
Moisture Content:	16.5 %
Moisture Ratio:	100.5 %
Surcharge (kPa):	0.0
Hydraulic Head:	1,580 mm
Hydraulic Gradient:	16
Sieve Size (mm):	4.75
Percentage Retained:	6

COEFFICIENT OF PERMEABILITY

m/sec at 20 ° C **4.E-08**

Note: Sample supplied by client.

[redacted]

Date: 2/05/2017

Client Address: Level 1, 184 Adelaide Terrace East Perth WA 6004

Site No.: 2411
Cert No.: 17-MT-2616-S800
Form No.

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TEST CERTIFICATE

SGS Australia Pty Ltd
Perth Laboratory
112 Mulgul Road
Malaga WA 6090

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell 3 SI	Order No:	
Location:	Mungari	Tested Date:	28/04/2017
SGS Job Number:	17-01-680	Sample No:	17-MT-2617
Lab:	Perth Laboratory	Sample ID:	TP27 0.5 to 1.0 17-KG-881

PERMEABILITY: FALLING HEAD

AS1289.6.7.2 Remoulded sample

MDD:	Max Mod. Dry Density (t/m³):
Max. Dry Density :	1.78 t/m³
Optimum Moisture Content	15.0 %
Dry Density	1.69 t/m³
Dry Density Ratio :	94.9 %
Moisture Content:	15.0 %
Moisture Ratio:	99.5 %
Surcharge (kPa):	0.0
Hydraulic Head:	1,597 mm
Hydraulic Gradient:	16
Sieve Size (mm):	4.75
Percentage Retained:	2

COEFFICIENT OF PERMEABILITY

m/sec at 20 ° C **3.E-09**

Note: Sample supplied by client.

[redacted]

Date: 2/05/2017

Client Address: Level 1, 184 Adelaide Terrace East Perth WA 6004

Site No.: 2411
Cert No.: 17-MT-2617-S800
Form No.

au.ind.admin@sgs.com
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TEST CERTIFICATE

SGS Australia Pty Ltd
Perth Laboratory
112 Mulgul Road
Malaga WA 6090

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell 3 SI	Order No:	
Location:	Mungari	Tested Date:	28/04/2017
SGS Job Number:	17-01-680	Sample No:	17-MT-2618
Lab:	Perth Laboratory	Sample ID:	TP35 0.5 to 1.0 17-KG-883

PERMEABILITY: FALLING HEAD

AS1289.6.7.2 Remoulded sample

MDD:	Max Mod. Dry Density (t/m³):
Max. Dry Density :	1.91 t/m³
Optimum Moisture Content	11.0 %
Dry Density	1.81 t/m³
Dry Density Ratio :	94.7 %
Moisture Content:	10.9 %
Moisture Ratio:	99.0 %
Surcharge (kPa):	0.0
Hydraulic Head:	1,599 mm
Hydraulic Gradient:	16
Sieve Size (mm):	4.75
Percentage Retained:	1

COEFFICIENT OF PERMEABILITY

m/sec at 20 ° C **2.E-07**

Note: Sample supplied by client.

[redacted]

Client Address: Level 1, 184 Adelaide Terrace East Perth WA 6004

Date: 2/05/2017
Site No.: 2411
Cert No.: 17-MT-2618-S800
Form No.

AU.IND.Admin@sgs.com
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TEST CERTIFICATE

SGS Australia Pty Ltd
Kalgoorlie Soils Laboratory
Rear of 17 Stockyard Way
West Kalgoorlie WA 6430

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell3 SI	Order No:	
Location:	Mungari	Tested Date:	19/04/2017
SGS Job Number:	17-03-221	Sample No:	17-KG-654
Lab:	Kalgoorlie Soils Laboratory	Sample ID:	TP05 2.5 to 2.9

Atterberg Limits (1 Point Casagrande) with Linear Shrinkage

AS 1289.3.1.2(Liquid Limit), 3.2.1(Liquid Limit), 3.3.1(Plasicity Index), 3.4.1(Linear Shrinkage)

Liquid Limit (%):	**27**
Plastic Limit (%):	**16**
Plastic Index (%):	**11**
Linear Shrinkage (%):	**5.5**
Nature of shrinkage:	Flat
Length of Mould (mm):	250
History of Sample:	Air Dried
Method of Preparation:	Dry Sieved

Note: Sample supplied by client.

[redacted]

Date: 20/04/2017

AU.IND.Admin@sgs.com
ABN: 44 000 964 278
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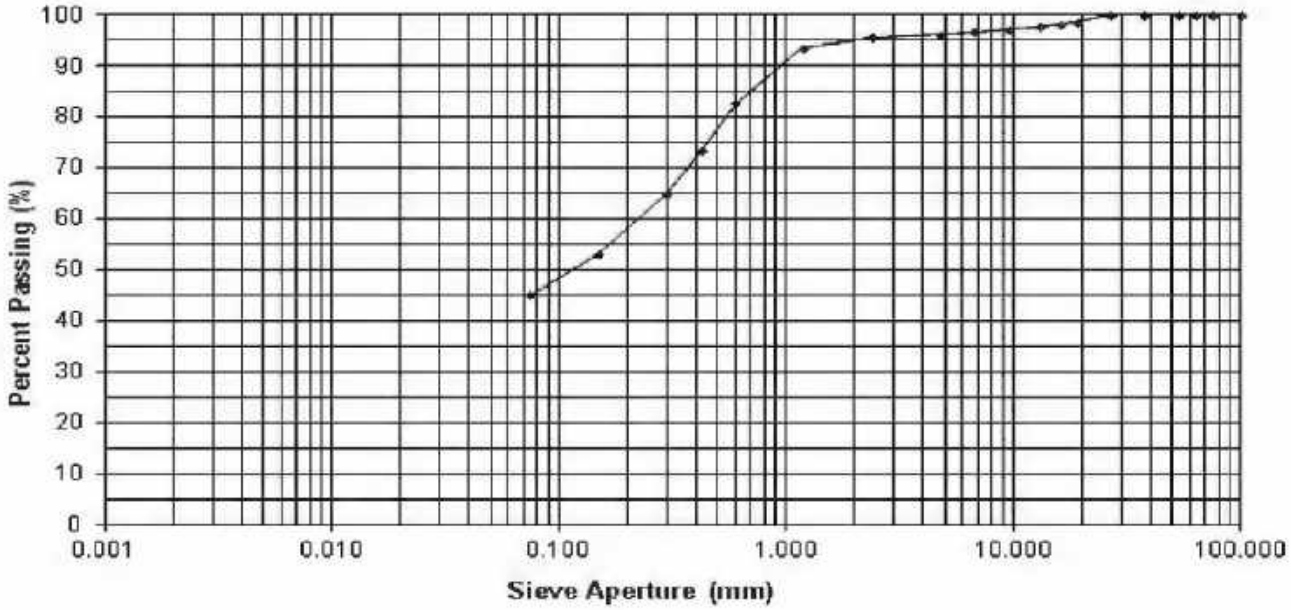
TEST CERTIFICATE

SGS Australia Pty Ltd
Kalgoorlie Soils Laboratory
Rear of 17 Stockyard Way
West Kalgoorlie WA 6430

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell3 SI	Order No:	
Location:	Mungari	Tested Date:	14/04/2017
SGS Job Number:	17-03-221	Sample No:	17-KG-655
Lab:	Kalgoorlie Soils Laboratory	Sample ID:	TP07 2.0 to 2.3

Particle Size Distibution of a Soil

AS1289.3.6.1



Sieve Size (mm)	% Passing	Sieve Size (mm)	% Passing
100	100	9.5	97
75	100	6.7	97
63	100	4.75	96
53	100	2.36	96
37.5	100	1.18	94
26.5	100	0.6	83
19.0	99	0.425	73
16.0	98	0.300	65
13.2	98	0.150	53
		0.075	45

Note: Sample supplied by client.

[redacted]

Date: 20/04/2017

AU.IND.Admin@sgs.com
ABN: 44 000 964 278
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TEST CERTIFICATE

SGS Australia Pty Ltd
Kalgoorlie Soils Laboratory
Rear of 17 Stockyard Way
West Kalgoorlie WA 6430

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell3 SI	Order No:	
Location:	Mungari	Tested Date:	18/04/2017
SGS Job Number:	17-03-221	Sample No:	17-KG-655
Lab:	Kalgoorlie Soils Laboratory	Sample ID:	TP07 2.0 to 2.3

Atterberg Limits (1 Point Casagrande) with Linear Shrinkage

AS 1289.3.1.2(Liquid Limit), 3.2.1(Liquid Limit), 3.3.1(Plasicity Index), 3.4.1(Linear Shrinkage)

Liquid Limit (%):	**73**
Plastic Limit (%):	**26**
Plastic Index (%):	**47**
Linear Shrinkage (%):	**17.0**
Nature of shrinkage:	Cracked
Length of Mould (mm):	250
History of Sample:	Air Dried
Method of Preparation:	Dry Sieved

Note: Sample supplied by client.

[redacted]

Date: 20/04/2017

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TEST CERTIFICATE

SGS Australia Pty Ltd
Kalgoorlie Soils Laboratory
Rear of 17 Stockyard Way
West Kalgoorlie WA 6430

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell3 SI	Order No:	
Location:	Mungari	Tested Date:	18/04/2017
SGS Job Number:	17-03-221	Sample No:	17-KG-656
Lab:	Kalgoorlie Soils Laboratory	Sample ID:	TP11 2.0 to 2.7

Atterberg Limits (1 Point Casagrande) with Linear Shrinkage

AS 1289.3.1.2(Liquid Limit), 3.2.1(Liquid Limit), 3.3.1(Plasicity Index), 3.4.1(Linear Shrinkage)

Liquid Limit (%):	**59**
Plastic Limit (%):	**21**
Plastic Index (%):	**38**
Linear Shrinkage (%):	**13.5**
Nature of shrinkage:	Curled
Length of Mould (mm):	254
History of Sample:	Air Dried
Method of Preparation:	Dry Sieved

Note: Sample supplied by client.

[redacted]

Date: 20/04/2017

AU.IND.Admin@sgs.com
ABN: 44 000 964 278
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fax: +61 (0)8 9378 0199

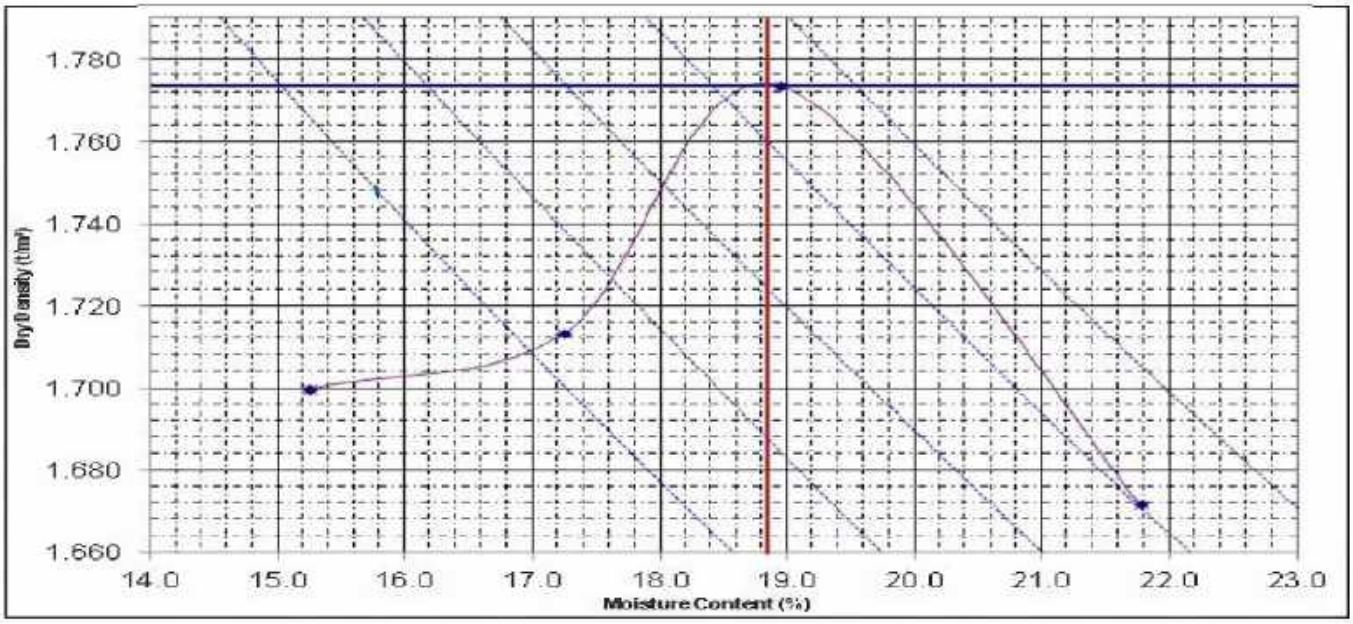
TEST CERTIFICATE

SGS Australia Pty Ltd
Kalgoorlie Soils Laboratory
Rear of 17 Stockyard Way
West Kalgoorlie WA 6430

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell3 SI	Order No:	
Location:	Mungari	Tested Date:	6/04/2017
SGS Job Number:	17-03-221	Sample No:	17-KG-656
Lab:	Kalgoorlie Soils Laboratory	Sample ID:	TP11 2.0 to 2.7

DRY DENSITY / MOISTURE RELATIONSHIP OF A SOIL

AS1289.5.2.1 (Modified Compactive Effort)



Sample Description:	Clay
Modified MDD (t/m3)	**1.77**
Modified OMC (%)	**19.0**
Oversize Sieve (mm)	19.0
Percent Wet Oversize (%)	0
Moisture Content Method	AS1289.2.1.1

[redacted]

Date: 20/04/2017

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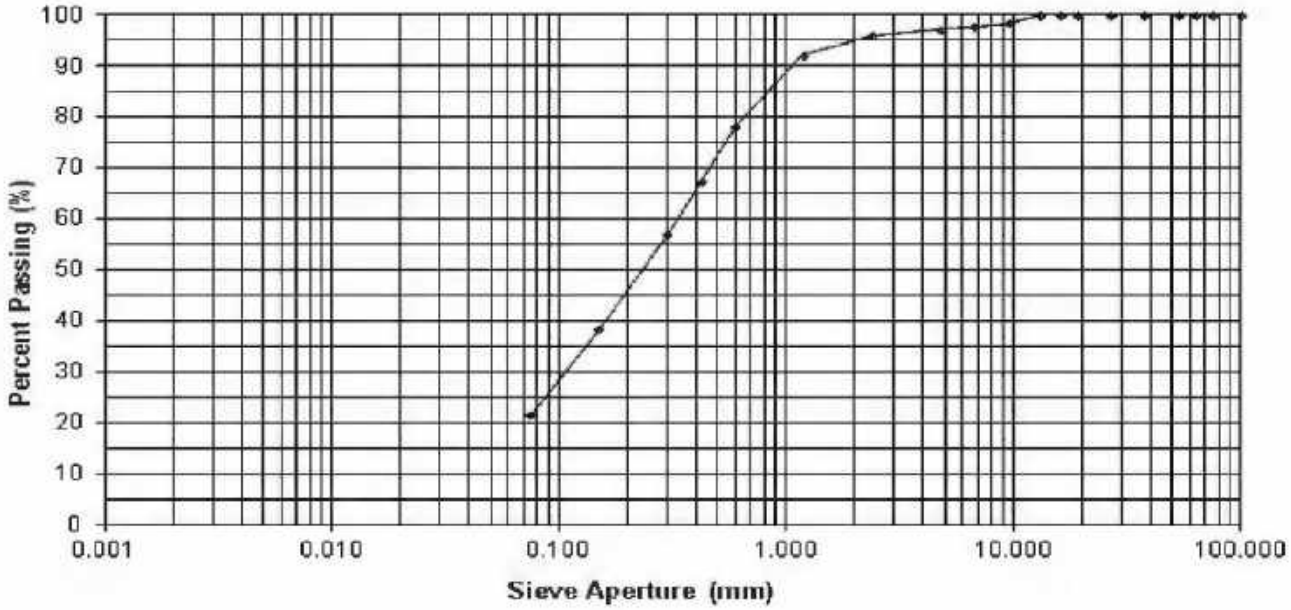
TEST CERTIFICATE

SGS Australia Pty Ltd
Kalgoorlie Soils Laboratory
Rear of 17 Stockyard Way
West Kalgoorlie WA 6430

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell3 SI	Order No:	
Location:	Mungari	Tested Date:	14/04/2017
SGS Job Number:	17-03-221	Sample No:	17-KG-657
Lab:	Kalgoorlie Soils Laboratory	Sample ID:	TP12 0.5 to 1.0

Particle Size Distibution of a Soil

AS1289.3.6.1



Sieve Size (mm)	% Passing	Sieve Size (mm)	% Passing
100	100	9.5	98
75	100	6.7	98
63	100	4.75	97
53	100	2.36	96
37.5	100	1.18	92
26.5	100	0.6	78
19.0	100	0.425	67
16.0	100	0.300	57
13.2	100	0.150	38
		0.075	21

Note: Sample supplied by client.
Moisture mass less than 300 grams

[redacted]

Date: 20/04/2017

AU.IND.Admin@sgs.com
ABN: 44 000 964 278
ph: +61 (0)8 9091 4716
fax: +61 (0)8 9378 0199

TEST CERTIFICATE

SGS Australia Pty Ltd
Kalgoorlie Soils Laboratory
Rear of 17 Stockyard Way
West Kalgoorlie WA 6430

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell3 SI	Order No:	
Location:	Mungari	Tested Date:	18/04/2017
SGS Job Number:	17-03-221	Sample No:	17-KG-657
Lab:	Kalgoorlie Soils Laboratory	Sample ID:	TP12 0.5 to 1.0

Atterberg Limits (1 Point Casagrande) with Linear Shrinkage

AS 1289.3.1.2(Liquid Limit), 3.2.1(Liquid Limit), 3.3.1(Plasicity Index), 3.4.1(Linear Shrinkage)

Liquid Limit (%):	**42**
Plastic Limit (%):	**25**
Plastic Index (%):	**17**
Linear Shrinkage (%):	**9.0**
Nature of shrinkage:	Cracked
Length of Mould (mm):	250
History of Sample:	Air Dried
Method of Preparation:	Dry Sieved

Note: Sample supplied by client.

[redacted]

Date: 20/04/2017

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fx: +61 (0)8 9378 0199

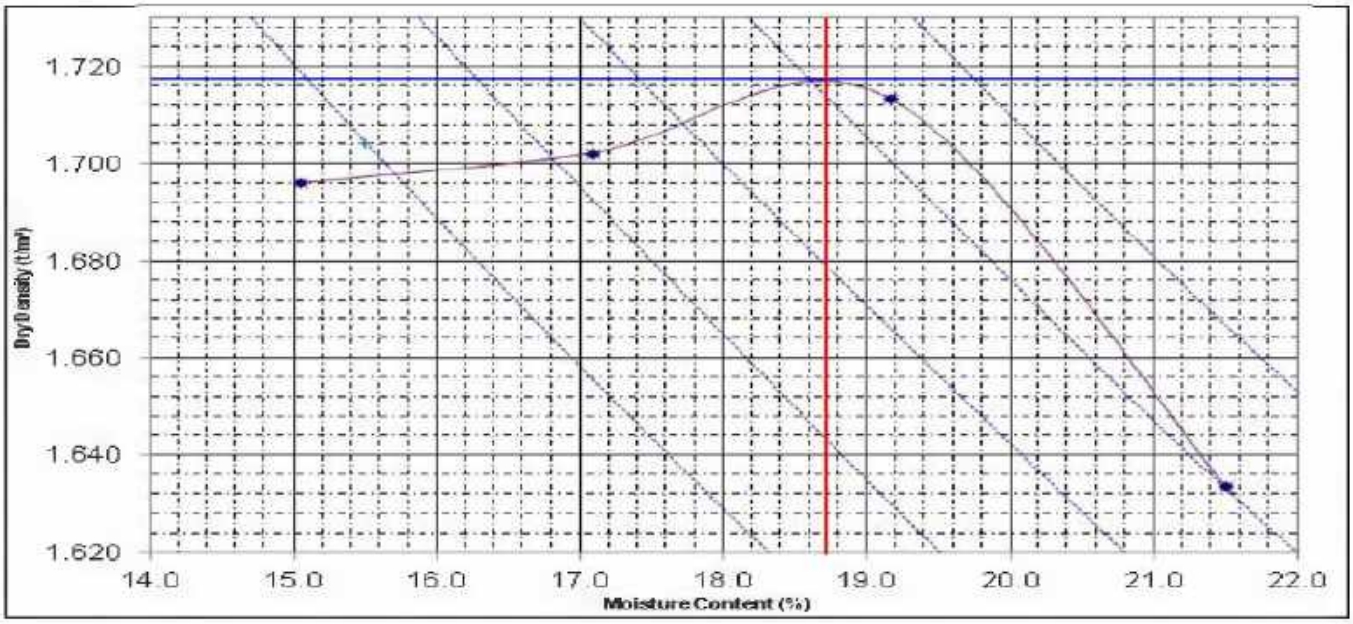
TEST CERTIFICATE

SGS Australia Pty Ltd
Kalgoorlie Soils Laboratory
Rear of 17 Stockyard Way
West Kalgoorlie WA 6430

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell3 SI	Order No:	
Location:	Mungari	Tested Date:	6/04/2017
SGS Job Number:	17-03-221	Sample No:	17-KG-657
Lab:	Kalgoorlie Soils Laboratory	Sample ID:	TP12 0.5 to 1.0

DRY DENSITY / MOISTURE RELATIONSHIP OF A SOIL

AS1289.5.2.1 (Modified Compactive Effort)



Sample Description:	Clay
Modified MDD (t/m3)	**1.72**
Modified OMC (%)	**18.5**
Oversize Sieve (mm)	19.0
Percent Wet Oversize (%)	0
Moisture Content Method	AS1289.2.1.1

[redacted]

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TEST CERTIFICATE

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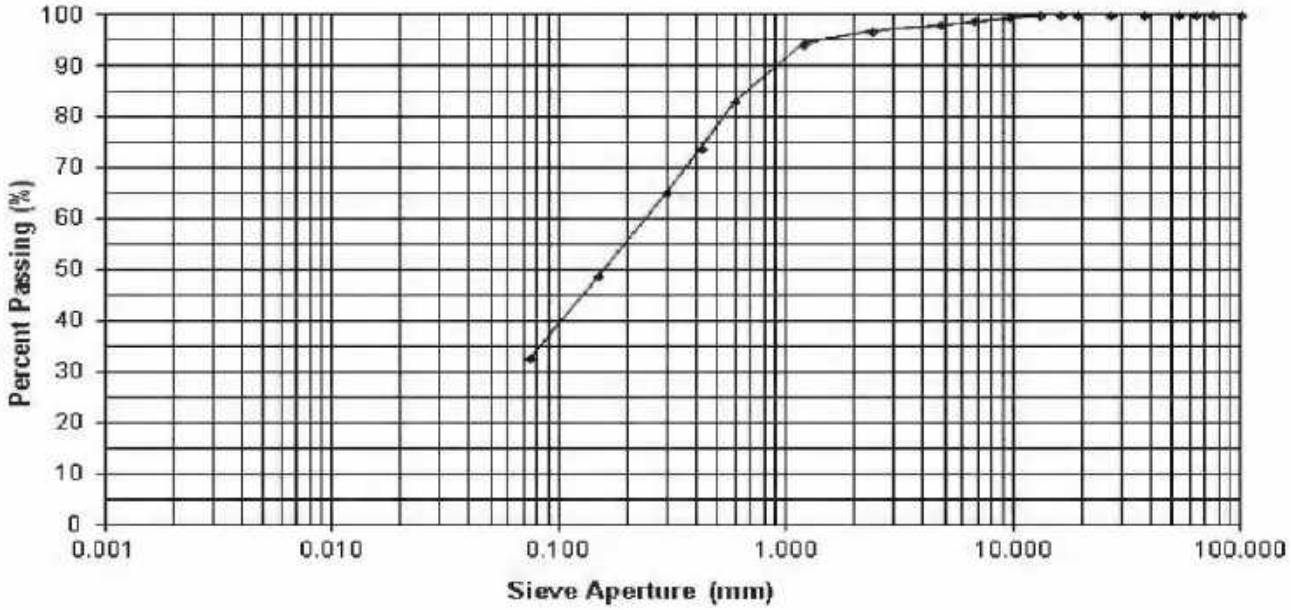
Kalgoorlie Soils Laboratory
Rear of 17 Stockyard Way
West Kalgoorlie WA 6430

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell3 SI	Order No:	
Location:	Mungari	Tested Date:	14/04/2017
SGS Job Number:	17-03-221	Sample No:	17-KG-658
Lab:	Kalgoorlie Soils Laboratory	Sample ID:	TP120.5 to 1.0 Reconstituted Material From MMDD

Particle Size Distibution of a Soil

AS1289.3.6.1



Sieve Size (mm)	% Passing	Sieve Size (mm)	% Passing
100	100	9.5	99
75	100	6.7	99
63	100	4.75	98
53	100	2.36	97
37.5	100	1.18	94
26.5	100	0.6	83
19.0	100	0.425	74
16.0	100	0.300	65
13.2	100	0.150	49
		0.075	33

Note: Sample supplied by client.

[redacted]

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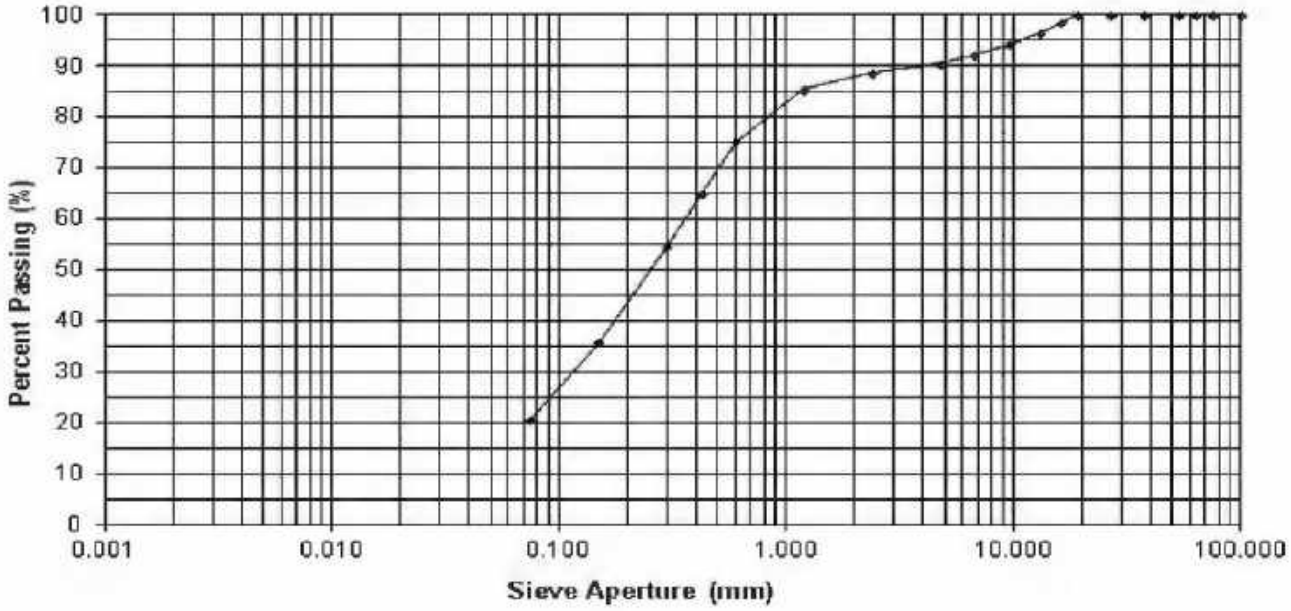
Rear of 17 Stockyard Way
West Kalgoorlie WA 6430

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell3 SI	Order No:	
Location:	Mungari	Tested Date:	14/04/2017
SGS Job Number:	17-03-221	Sample No:	17-KG-659
Lab:	Kalgoorlie Soils Laboratory	Sample ID:	TP16 0.5 to 1.0

Particle Size Distibution of a Soil

AS1289.3.6.1



Sieve Size (mm)	% Passing	Sieve Size (mm)	% Passing
100	100	9.5	94
75	100	6.7	92
63	100	4.75	90
53	100	2.36	89
37.5	100	1.18	85
26.5	100	0.6	75
19.0	100	0.425	65
16.0	98	0.300	54
13.2	97	0.150	36
		0.075	21

Note: Sample supplied by client.

[redacted]

Date: 20/04/2017

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TEST CERTIFICATE

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Kalgoorlie Soils Laboratory
Rear of 17 Stockyard Way
West Kalgoorlie WA 6430

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell3 SI	Order No:	
Location:	Mungari	Tested Date:	18/04/2017
SGS Job Number:	17-03-221	Sample No:	17-KG-659
Lab:	Kalgoorlie Soils Laboratory	Sample ID:	TP16 0.5 to 1.0

Atterberg Limits (1 Point Casagrande) with Linear Shrinkage

AS 1289.3.1.2(Liquid Limit), 3.2.1(Liquid Limit), 3.3.1(Plasicity Index), 3.4.1(Linear Shrinkage)

Liquid Limit (%):	**44**
Plastic Limit (%):	**23**
Plastic Index (%):	**21**
Linear Shrinkage (%):	**8.5**
Nature of shrinkage:	Cracked
Length of Mould (mm):	250
History of Sample:	Air Dried
Method of Preparation:	Dry Sieved

Note: Sample supplied by client.

[redacted]

Date: 20/04/2017

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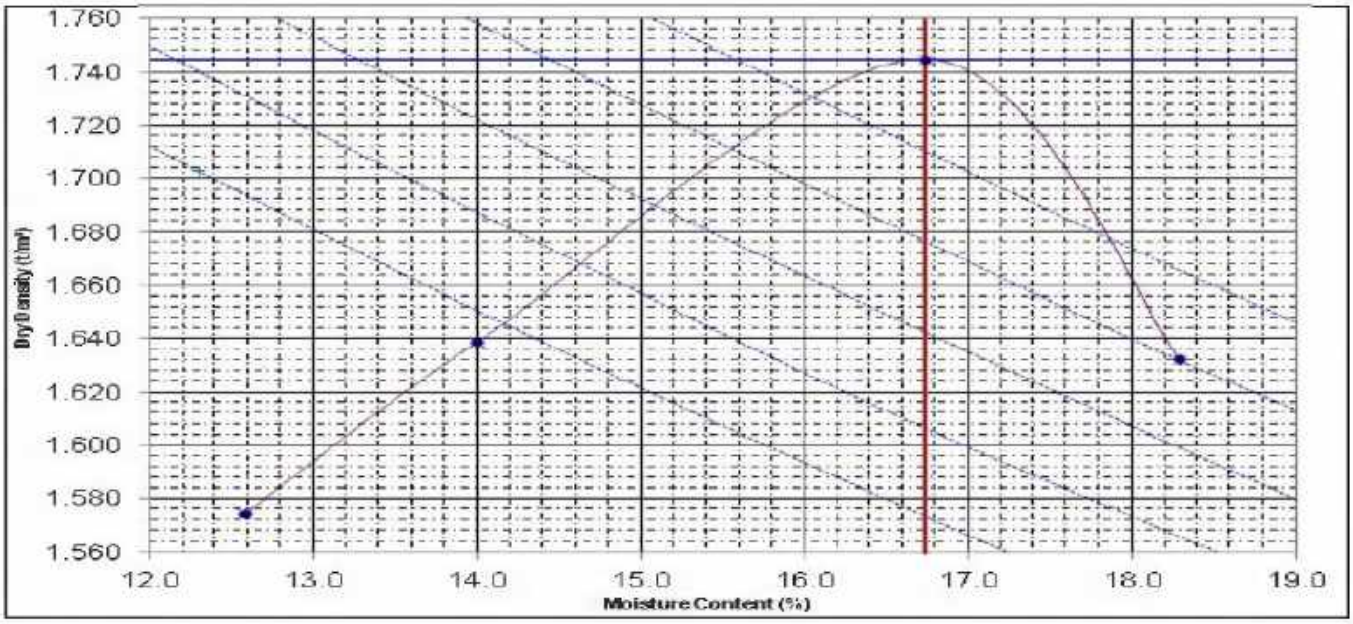
Kalgoorlie Soils Laboratory
Rear of 17 Stockyard Way
West Kalgoorlie WA 6430

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell3 SI	Order No:	
Location:	Mungari	Tested Date:	6/04/2017
SGS Job Number:	17-03-221	Sample No:	17-KG-659
Lab:	Kalgoorlie Soils Laboratory	Sample ID:	TP16 0.5 to 1.0

DRY DENSITY / MOISTURE RELATIONSHIP OF A SOIL

AS1289.5.2.1 (Modified Compactive Effort)



Sample Description:	Fine Clay
Modified MDD (t/m3)	**1.74**
Modified OMC (%)	**16.5**
Oversize Sieve (mm)	19.0
Percent Wet Oversize (%)	0
Moisture Content Method	AS1289.2.1.1

[redacted]

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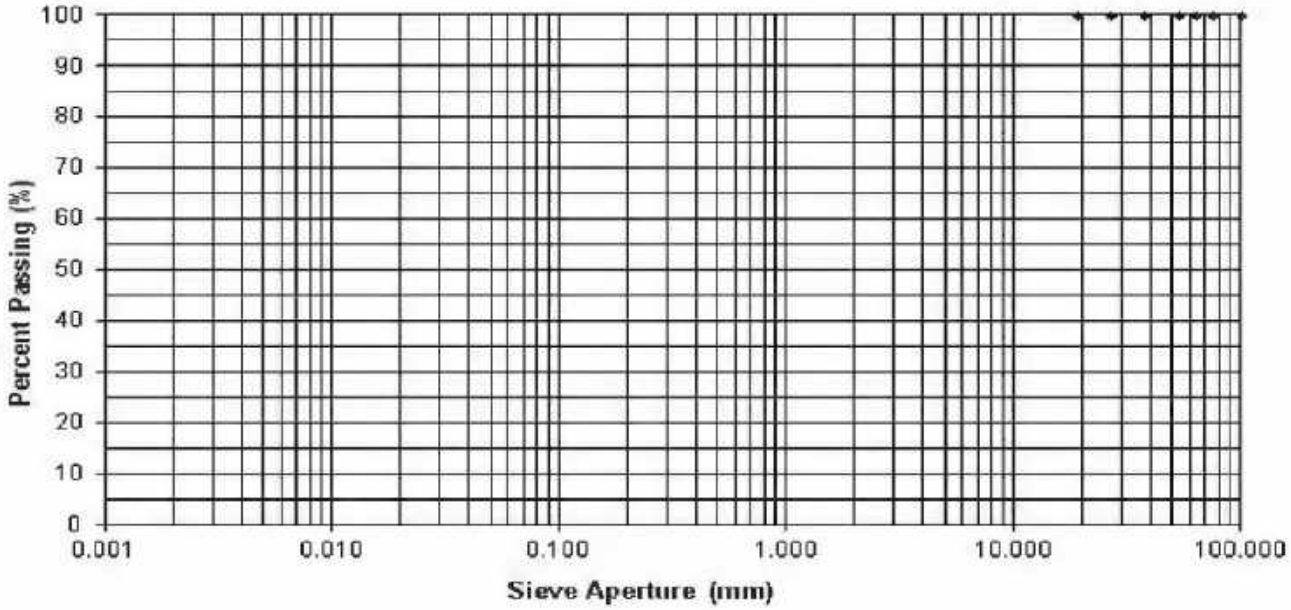
Rear of 17 Stockyard Way
West Kalgoorlie WA 6430

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell3 SI	Order No:	
Location:	Mungari	Tested Date:	14/04/2017
SGS Job Number:	17-03-221	Sample No:	17-KG-660
Lab:	Kalgoorlie Soils Laboratory	Sample ID:	TP16 0.5 to 1.0 Reconstituted Material From MMDD

Particle Size Distibution of a Soil

AS1289.3.6.1



Sieve Size (mm)	% Passing	Sieve Size (mm)	% Passing
100	100	9.5	
75	100	6.7	
63	100	4.75	
53	100	2.36	
37.5	100	1.18	
26.5	100	0.6	
19.0	100	0.425	
16.0		0.300	
13.2		0.150	
		0.075	

Note: Sample supplied by client.

[redacted]

Date: 20/04/2017

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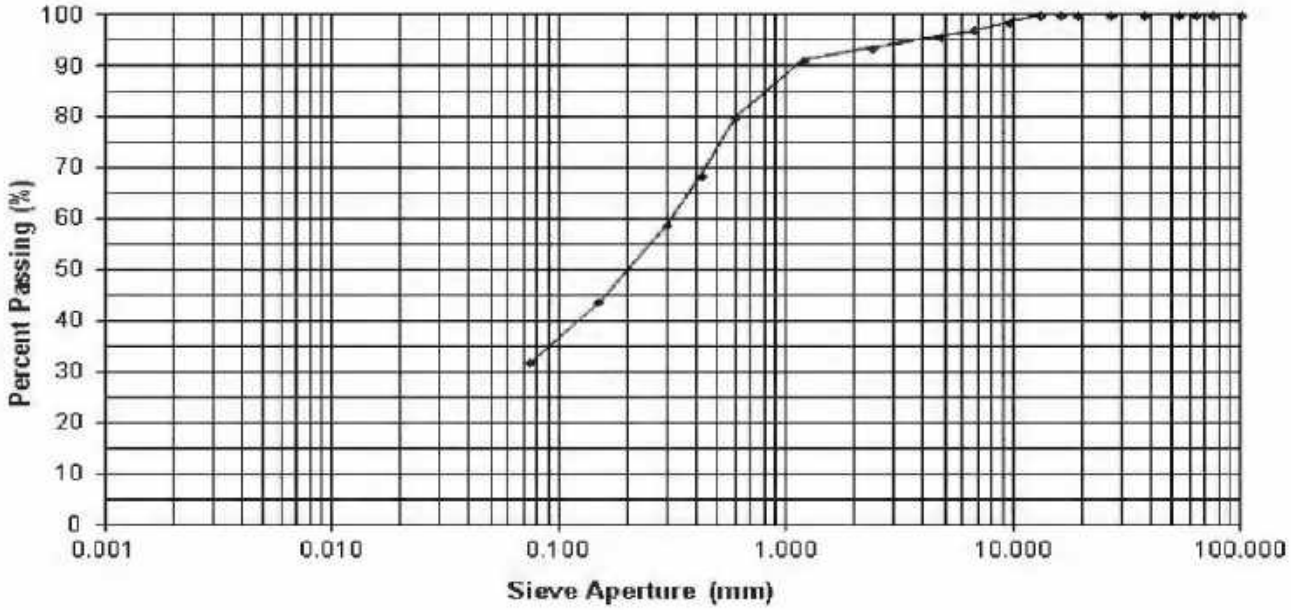
Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell3 SI	Order No:	
Location:	Mungari	Tested Date:	14/04/2017
SGS Job Number:	17-03-221	Sample No:	17-KG-661
Lab:	Kalgoorlie Soils Laboratory	Sample ID:	TP27 0.5 to 1.0

Particle Size Distibution of a Soil

AS1289.3.6.1



Sieve Size (mm)	% Passing	Sieve Size (mm)	% Passing
100	100	9.5	99
75	100	6.7	97
63	100	4.75	96
53	100	2.36	94
37.5	100	1.18	91
26.5	100	0.6	80
19.0	100	0.425	69
16.0	100	0.300	59
13.2	100	0.150	44
		0.075	32

Note: Sample supplied by client.

[redacted]

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West Kalgoorlie WA 6430

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell3 SI	Order No:	
Location:	Mungari	Tested Date:	18/04/2017
SGS Job Number:	17-03-221	Sample No:	17-KG-661
Lab:	Kalgoorlie Soils Laboratory	Sample ID:	TP27 0.5 to 1.0

Atterberg Limits (1 Point Casagrande) with Linear Shrinkage

AS 1289.3.1.2(Liquid Limit), 3.2.1(Liquid Limit), 3.3.1(Plasicity Index), 3.4.1(Linear Shrinkage)

Liquid Limit (%):	**37**
Plastic Limit (%):	**18**
Plastic Index (%):	**19**
Linear Shrinkage (%):	**8.0**
Nature of shrinkage:	Cracked
Length of Mould (mm):	250
History of Sample:	Air Dried
Method of Preparation:	Dry Sieved

Note: Sample supplied by client.

[redacted]

Date: 20/04/2017

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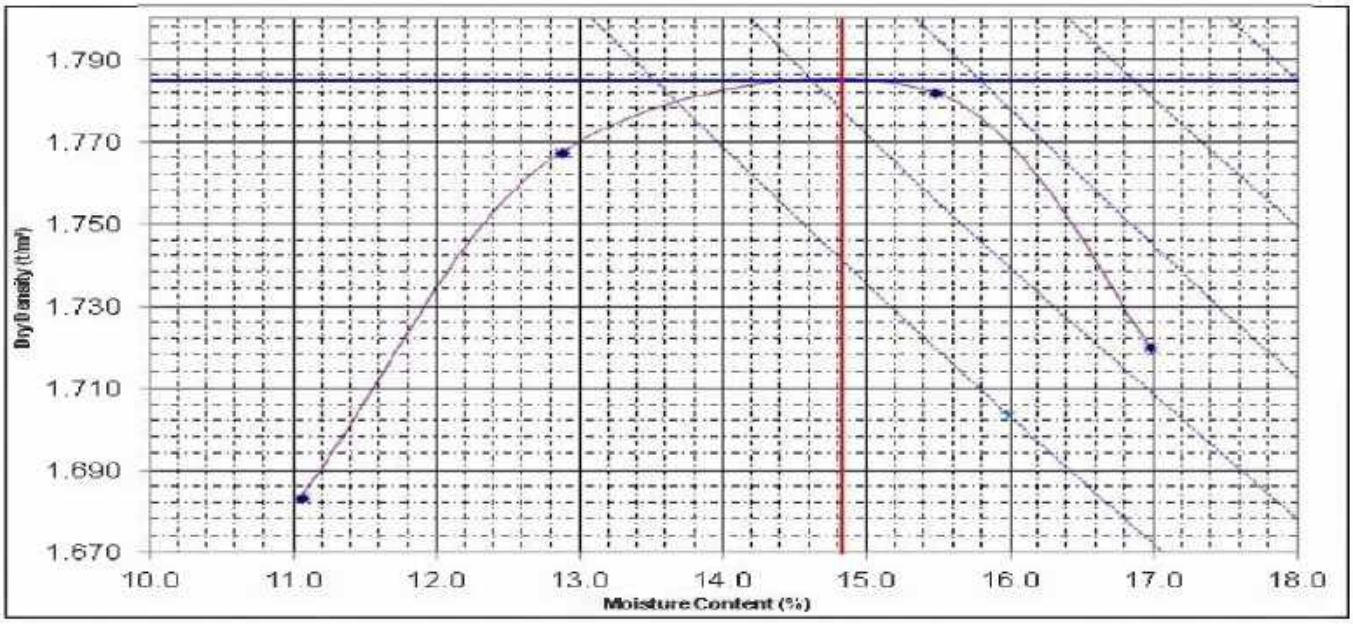
Kalgoorlie Soils Laboratory
Rear of 17 Stockyard Way
West Kalgoorlie WA 6430

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell3 SI	Order No:	
Location:	Mungari	Tested Date:	6/04/2017
SGS Job Number:	17-03-221	Sample No:	17-KG-661
Lab:	Kalgoorlie Soils Laboratory	Sample ID:	TP27 0.5 to 1.0

DRY DENSITY / MOISTURE RELATIONSHIP OF A SOIL

AS1289.5.2.1 (Modified Compactive Effort)



Sample Description:	Fine Clay
Modified MDD (t/m3)	**1.78**
Modified OMC (%)	**15.0**
Oversize Sieve (mm)	19.0
Percent Wet Oversize (%)	0
Moisture Content Method	AS1289.2.1.1

[redacted]

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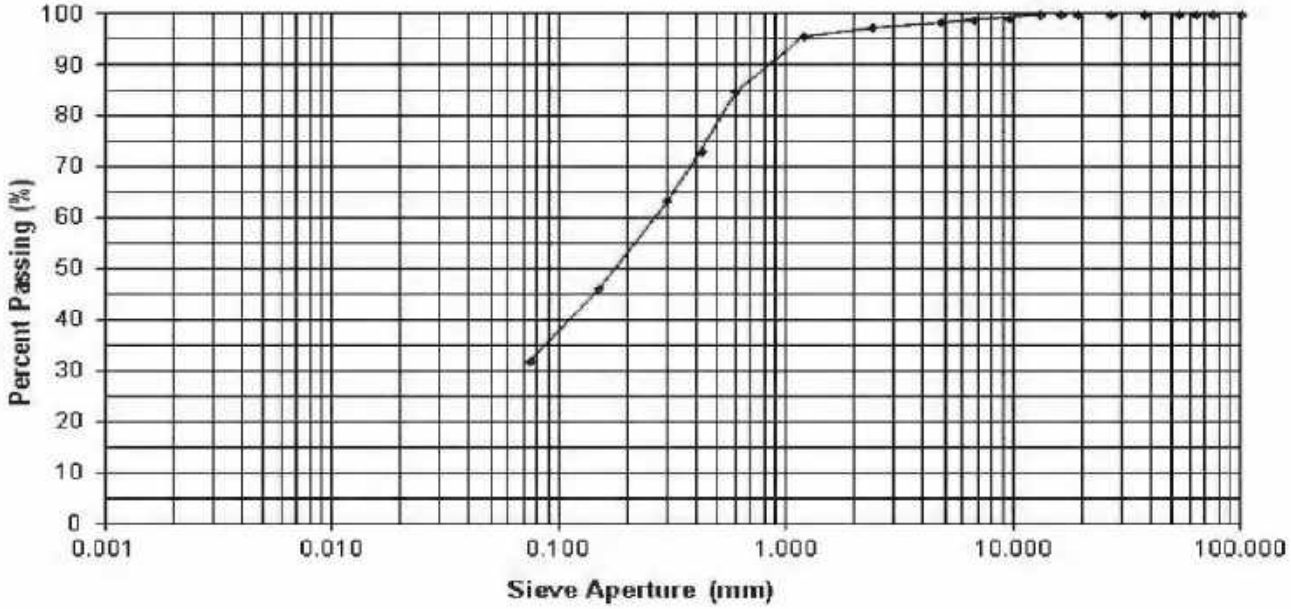
Rear of 17 Stockyard Way
West Kalgoorlie WA 6430

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell3 SI	Order No:	
Location:	Mungari	Tested Date:	14/04/2017
SGS Job Number:	17-03-221	Sample No:	17-KG-662
Lab:	Kalgoorlie Soils Laboratory	Sample ID:	TP27 0.5 to 1.0 Reconstituted Material From MMDD

Particle Size Distibution of a Soil

AS1289.3.6.1



Sieve Size (mm)	% Passing	Sieve Size (mm)	% Passing
100	100	9.5	99
75	100	6.7	99
63	100	4.75	98
53	100	2.36	97
37.5	100	1.18	96
26.5	100	0.6	85
19.0	100	0.425	73
16.0	100	0.300	63
13.2	100	0.150	46
		0.075	32

Note: Sample supplied by client.

[redacted]

Date: 20/04/2017

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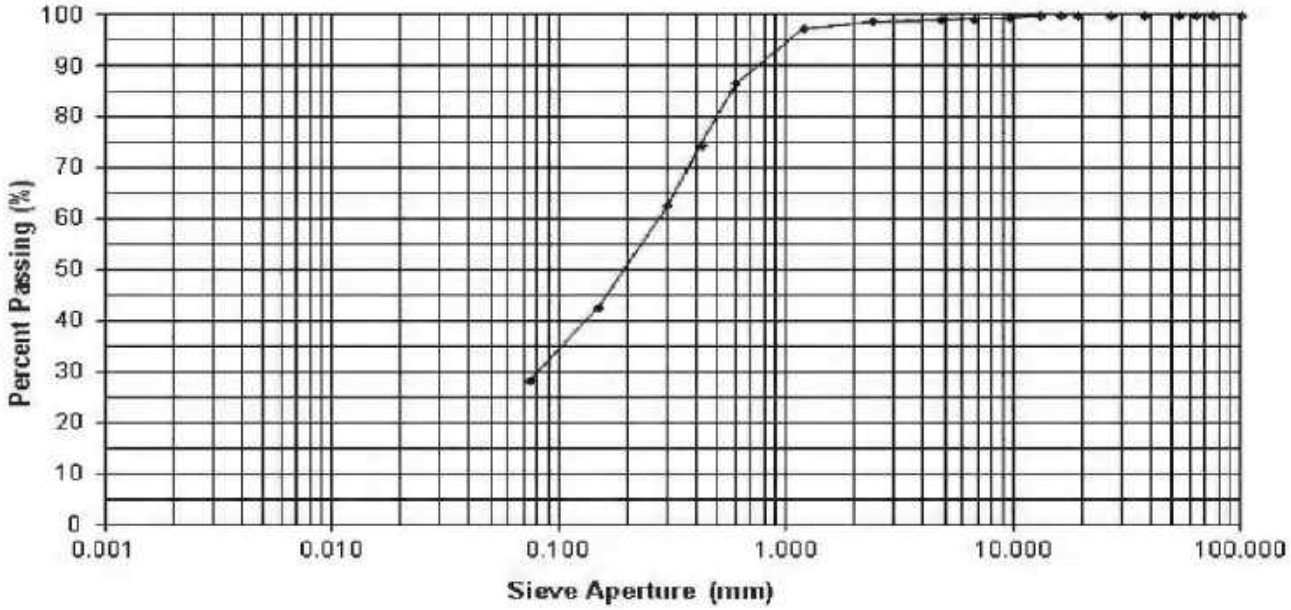
Kalgoorlie Soils Laboratory
Rear of 17 Stockyard Way
West Kalgoorlie WA 6430

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell3 SI	Order No:	
Location:	Mungari	Tested Date:	14/04/2017
SGS Job Number:	17-03-221	Sample No:	17-KG-663
Lab:	Kalgoorlie Soils Laboratory	Sample ID:	TP35 0.5 to 1.0

Particle Size Distibution of a Soil

AS1289.3.6.1



Sieve Size (mm)	% Passing	Sieve Size (mm)	% Passing
100	100	9.5	100
75	100	6.7	99
63	100	4.75	99
53	100	2.36	99
37.5	100	1.18	97
26.5	100	0.6	87
19.0	100	0.425	75
16.0	100	0.300	63
13.2	100	0.150	43
		0.075	28

Note: Sample supplied by client.

[redacted]

Date: 20/04/2017

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Kalgoorlie Soils Laboratory
Rear of 17 Stockyard Way
West Kalgoorlie WA 6430

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell3 SI	Order No:	
Location:	Mungari	Tested Date:	18/04/2017
SGS Job Number:	17-03-221	Sample No:	17-KG-663
Lab:	Kalgoorlie Soils Laboratory	Sample ID:	TP35 0.5 to 1.0

Atterberg Limits (1 Point Casagrande) with Linear Shrinkage

AS 1289.3.1.2(Liquid Limit), 3.2.1(Liquid Limit), 3.3.1(Plasicity Index), 3.4.1(Linear Shrinkage)

Liquid Limit (%):	**29**
Plastic Limit (%):	**15**
Plastic Index (%):	**14**
Linear Shrinkage (%):	**6.0**
Nature of shrinkage:	Cracked
Length of Mould (mm):	254
History of Sample:	Air Dried
Method of Preparation:	Dry Sieved

Note: Sample supplied by client.

[redacted]

Date: 20/04/2017

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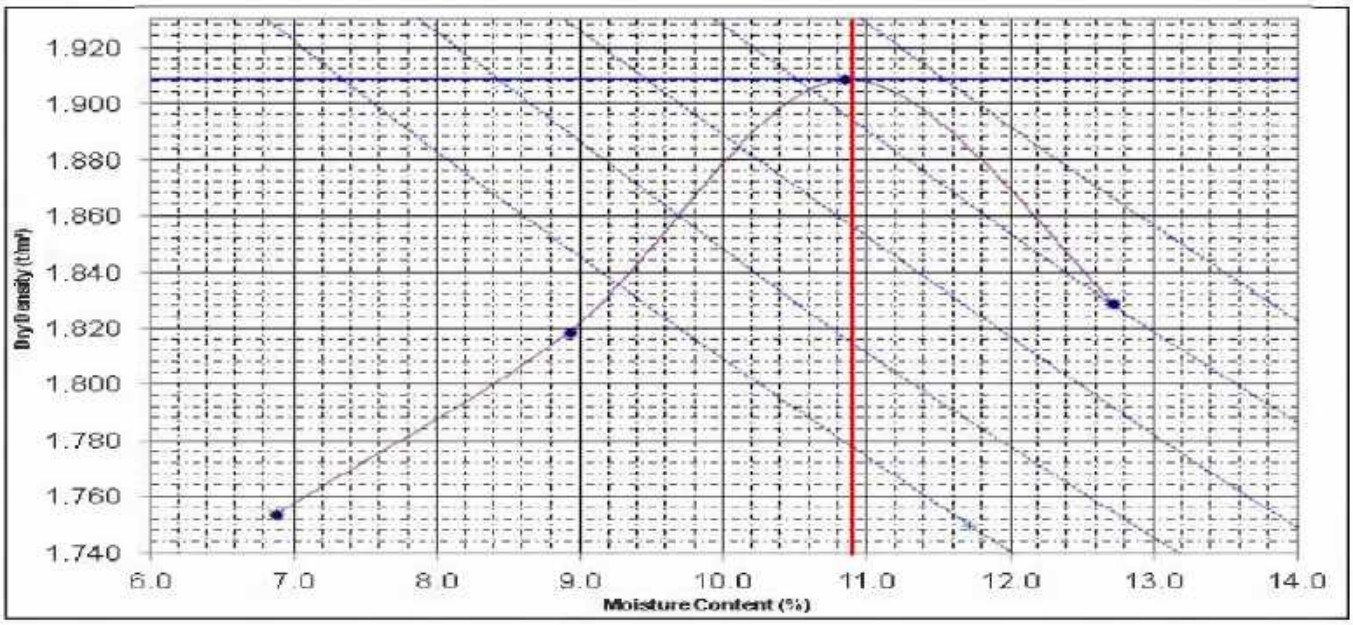
Kalgoorlie Soils Laboratory
Rear of 17 Stockyard Way
West Kalgoorlie WA 6430

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell3 SI	Order No:	
Location:	Mungari	Tested Date:	6/04/2017
SGS Job Number:	17-03-221	Sample No:	17-KG-663
Lab:	Kalgoorlie Soils Laboratory	Sample ID:	TP35 0.5 to 1.0

DRY DENSITY / MOISTURE RELATIONSHIP OF A SOIL

AS1289.5.2.1 (Modified Compactive Effort)



Sample Description:	Fine Clay
Modified MDD (t/m3)	**1.91**
Modified OMC (%)	**11.0**
Oversize Sieve (mm)	19.0
Percent Wet Oversize (%)	0
Moisture Content Method	AS1289.2.1.1

[redacted]

Date: 20/04/2017

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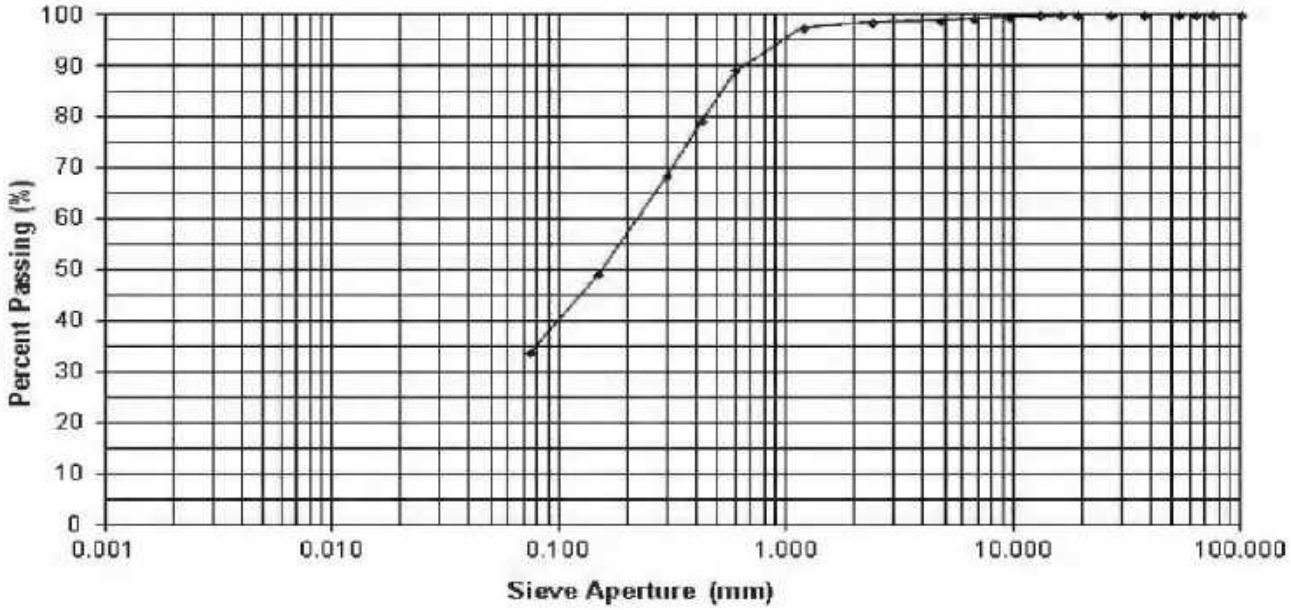
Kalgoorlie Soils Laboratory
Rear of 17 Stockyard Way
West Kalgoorlie WA 6430

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell3 SI	Order No:	
Location:	Mungari	Tested Date:	14/04/2017
SGS Job Number:	17-03-221	Sample No:	17-KG-664
Lab:	Kalgoorlie Soils Laboratory	Sample ID:	TP35 0.5 to 1.0 Reconstituted Material From MMDD

Particle Size Distibution of a Soil

AS1289.3.6.1



Sieve Size (mm)	% Passing	Sieve Size (mm)	% Passing
100	100	9.5	100
75	100	6.7	99
63	100	4.75	99
53	100	2.36	99
37.5	100	1.18	98
26.5	100	0.6	89
19.0	100	0.425	79
16.0	100	0.300	69
13.2	100	0.150	49
		0.075	34

Note: Sample supplied by client.

[redacted]

Date: 20/04/2017

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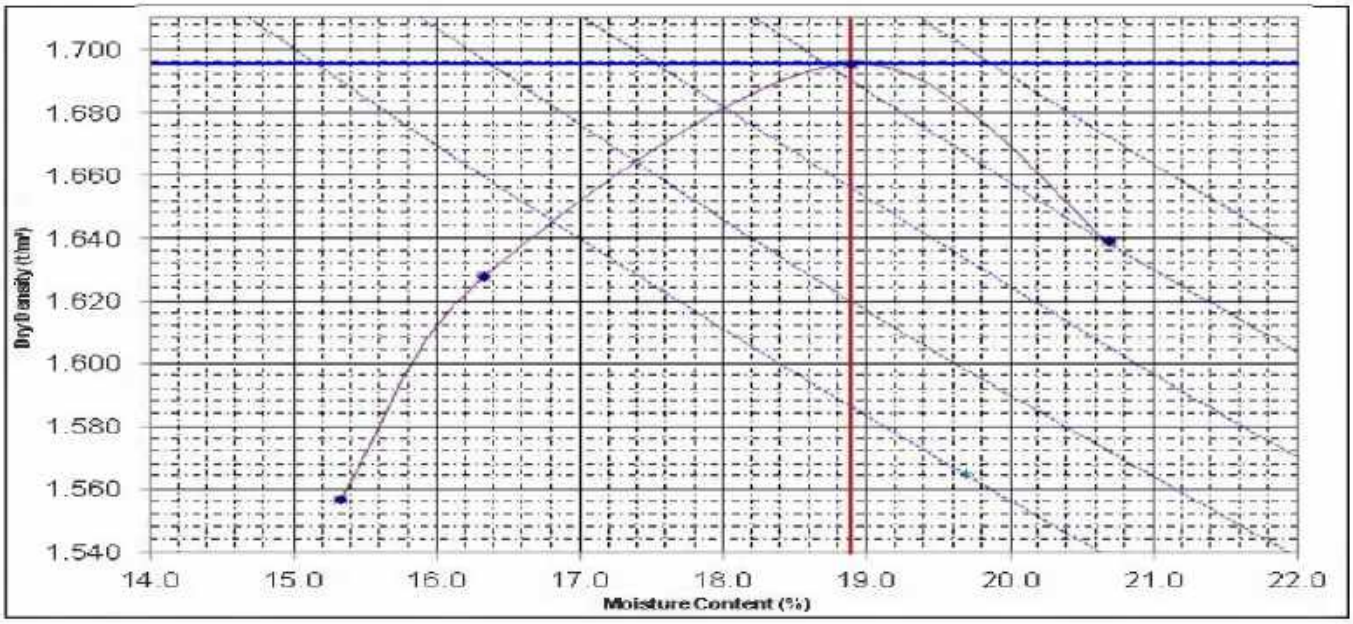
Rear of 17 Stockyard Way
West Kalgoorlie WA 6430

Client:	Knight Piesold Pty Ltd	Client Job No:	
Project:	Mungari TSF Cell3 SI	Order No:	
Location:	Mungari	Tested Date:	18/04/2017
SGS Job Number:	17-03-221	Sample No:	17-KG-870
Lab:	Kalgoorlie Soils Laboratory	Sample ID:	TP4 2.5-2.8

DRY DENSITY / MOISTURE RELATIONSHIP OF A SOIL

AS1289.5.2.1 (Modified Compactive Effort)



Sample Description:	Sandy Clay
Modified MDD (t/m3)	**1.7**
Modified OMC (%)	**19.0**
Oversize Sieve (mm)	19.0
Percent Wet Oversize (%)	0
Moisture Content Method	AS1289.2.1.1

[redacted]

Date: 20/04/2017

Perth
Unit 3, 34 Sphinx Way
Bibra Lake
[redacted]

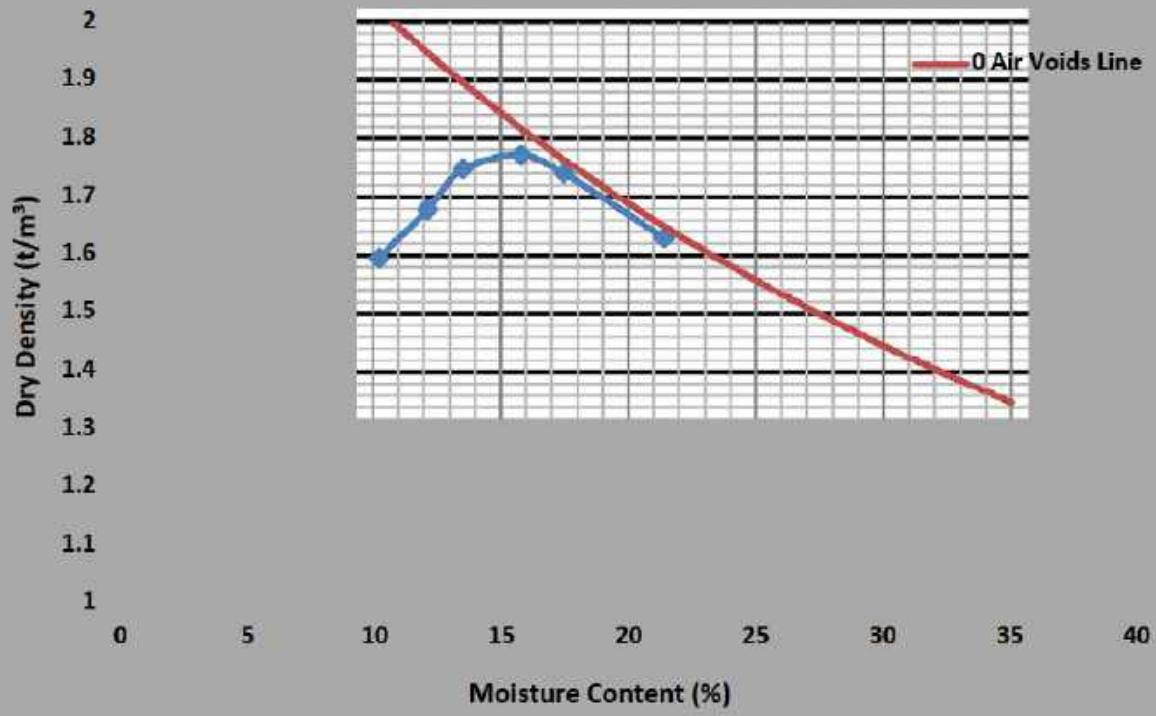
MOISTURE DENSITY RELATIONSHIP REPORT

Test Method: AS1289.5.1.1

Client:	Knight Piesold	Date Tested:	09/05/2020
Project:	Mungari TSF Cell 4	Lab:	EPLAB
Sample No:	TP36	Job Number:	KP
Lab ID:	TP36_1.00_1.50_MMDD		
Depth(m):	1.00 - 1.50	Room Temperature at Test:	20°C
Checked by:	Phil	Sample Description:	Tested in Mould A
Moisture Content (%):	-	Wet Density (t/m³):	-
		Dry Density (t/m³):	-

Results

Maximum Size (mm):	19.00	**Maximum Dry Density (t/m³):**	**1.780**
Oversize dry (%):	0.00	**Optimum Moisture Content (%):**	**16.00**



Notes: * *Particle density* *2.55 t/m³*

Stored and Tested the Sample as received

Samples supplied by the Client

Authorised Signatur [redacted]

Integrity Precision Innovation

Perth
Unit 3, 34 Sphinx Way
Bibra Lake
WA 6163

[redacted]

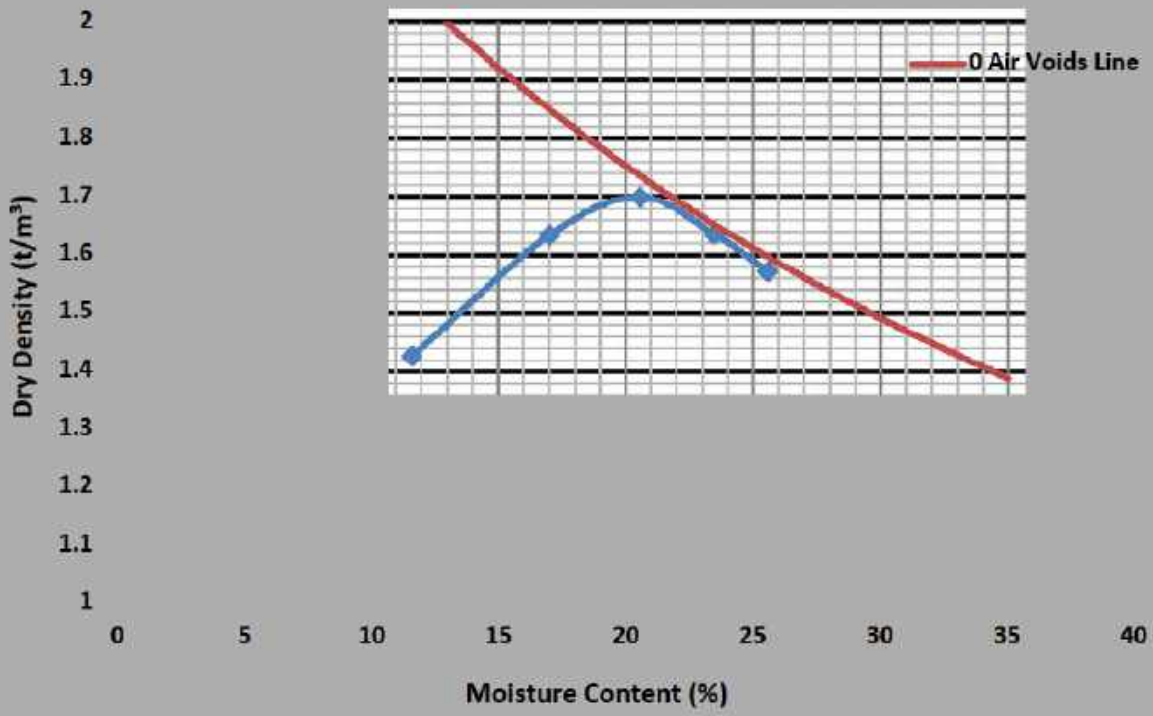
MOISTURE DENSITY RELATIONSHIP REPORT

Test Method: AS1289.5.1.1

Client:	Knight Piesold	Date Tested:	09/05/2020
Project:	Mungari TSF Cell 4	Lab:	EPLAB
Sample No:	TP36	Job Number:	KP
Lab ID:	TP36_3.80_4.00_MMDD		
Depth(m):	3.80 - 4.00	Room Temperature at Test:	20°C
Checked by:	Phil	Sample Description:	Tested in Mould A
Moisture Content (%):	-	Wet Density (t/m³):	-
		Dry Density (t/m³):	-

Results

Maximum Size (mm):	19.00	**Maximum Dry Density (t/m³):**	**1.700**
Oversize dry (%):	0.00	**Optimum Moisture Content (%):**	**20.50**



Notes: * *Particle density* *2.7 t/m³*

Stored and Tested the Sample as received

Samples supplied by the Client

Authorised Signature [redacted]

Integrity Precision Innovation

Perth
Unit 3, 34 Sphinx Way
Bibra Lake
WA 6163

[redacted]

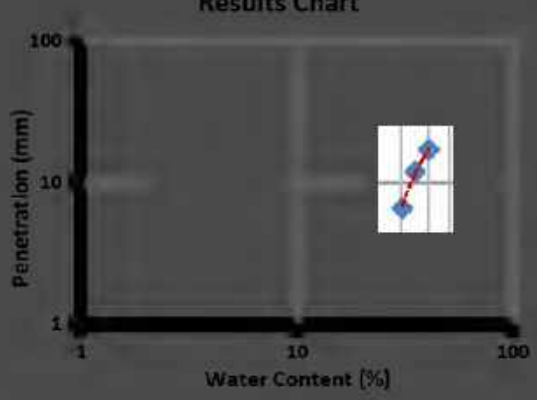
ATTERBERG LIMITS TEST REPORT

Test Method: BS1377 AS1289.2.1.1 7.1.1 3.1.1 3.2.1 3.4.1

Client:	Knight Piesold	Date Tested:	13/05/2020
Project:	Mungari TSF Cell 4	Lab:	EPLab
Sample No:	TP36	Job Number:	KP
Lab ID:	TP36_3.80_4.00_ATT		
Depth(m):	3.80 - 4.00	Room Temperature at Test:	19°C
Tested by:	Phil	Sample Description:	-
Moisture Content (%):	-	Wet Density (t/m³):	-
		Dry Density (t/m³):	-

Liquid Limit (%):	40.07
Plastic Limit (%):	25.73
Plasticity Index (%):	14.34
Liquidity Index (%):	-
Shrinkage Limit (%):	20.37
Linear Shrinkage(%):	11.20

Results Chart



Notes: The sample/s were tested oven dried, dry sieved and in a 125-250mm mould.

Stored and Tested the Sample as received

Samples supplied by the Client

Authorised Signature [redacted]

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Bibra Lake

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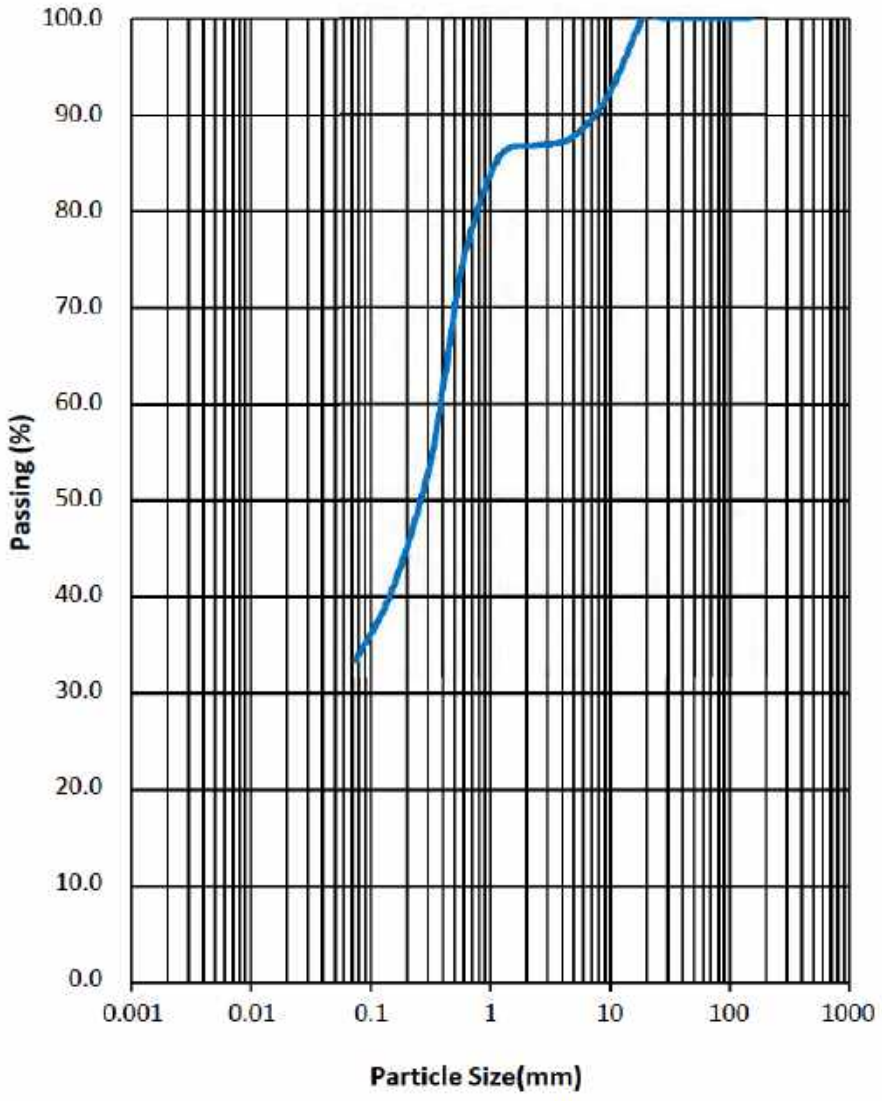
PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1

Client:	Knight Piesold	Date Tested:	12/05/2020
Project:	Mungari TSF Cell 4	EP Lab Job Number:	KP
Sample No:	TP36	Depth(m):	3.80 - 4.00
Lab_ID:	TP36_3.80_4.00_PSD	Room Temperature at Test:	19°C
Tested by:	Kohei	2.36mm Particle Density (t/m³):	-
Checked by:	Phil		

Sieve Size (mm)	Passing %
150	100.0
75	100.0
53	100.0
37.5	100.0
26.5	100.0
19	100.0
9.5	91.8
4.75	87.5
2.36	86.8
1.18	85.5
0.6	75.0
0.425	63.5
0.3	52.7
0.15	40.6
0.075	33.5

PSD Graph



Notes:
Stored and Tested the Sample as received
Samples supplied by the Client

Authorized Signature: [redacted]

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[redacted]

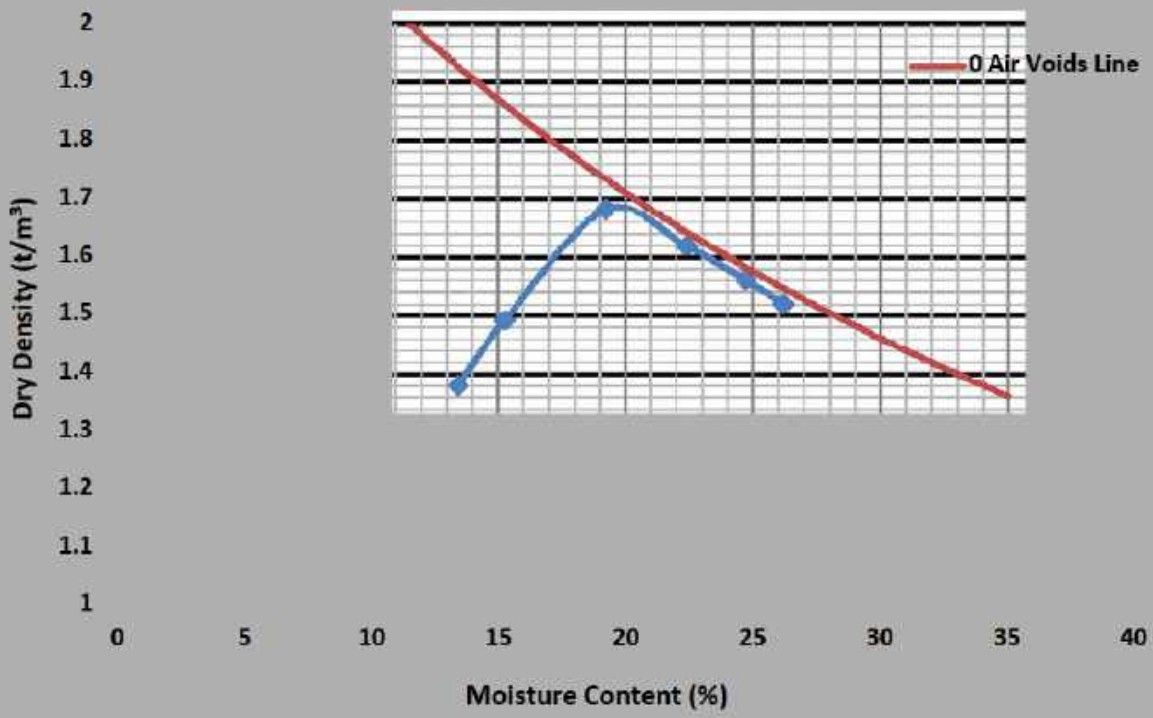
MOISTURE DENSITY RELATIONSHIP REPORT

Test Method: AS1289.5.1.1

Client:	Knight Piesold	Date Tested:	09/05/2020
Project:	Mungari TSF Cell 4	Lab:	EPLAB
Sample No:	TP39	Job Number:	KP
Lab ID:	TP39_3.50_3.80_MMDD		
Depth(m):	3.50 - 3.80	Room Temperature at Test:	20°C
Checked by:	Phil	Sample Description:	Tested in Mould A
Moisture Content (%):	-	Wet Density (t/m³):	-
		Dry Density (t/m³):	-

Results

Maximum Size (mm):	19.00	**Maximum Dry Density (t/m³):**	**1.690**
Oversize dry (%):	0.00	**Optimum Moisture Content (%):**	**20.00**



Notes: * *Particle density* 2.6 t/m³

Stored and Tested the Sample as received

Samples supplied by the Client

Authorised Signatur [redacted]

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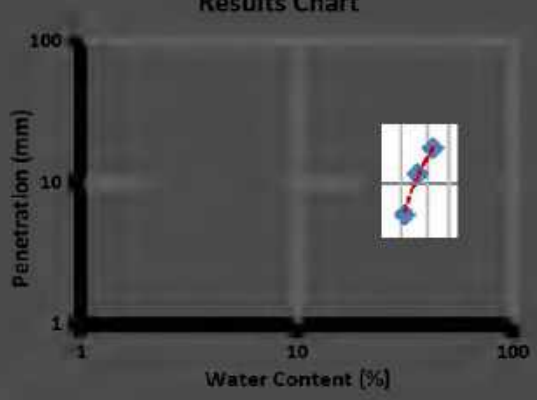
ATTERBERG LIMITS TEST REPORT

Test Method: BS1377 AS1289.2.1.1 7.1.1 3.1.1 3.2.1 3.4.1

Client:	Knight Piesold	Date Tested:	13/05/2020
Project:	Mungari TSF Cell 4	Lab:	EPLab
Sample No:	TP39	Job Number:	KP
Lab ID:	TP39_3.50_3.80_ATT		
Depth(m):	3.50 - 3.80	Room Temperature at Test:	19°C
Tested by:	Phil	Sample Description:	-
Moisture Content (%):	-	Wet Density (t/m³):	-
		Dry Density (t/m³):	-

Liquid Limit (%):	41.40
Plastic Limit (%):	27.08
Plasticity Index (%):	14.33
Liquidity Index (%):	-
Shrinkage Limit (%):	21.41
Linear Shrinkage(%):	11.75

Results Chart



Notes: The sample/s were tested oven dried, dry sieved and in a 125-250mm mould.

Stored and Tested the Sample as received

Samples supplied by the Client

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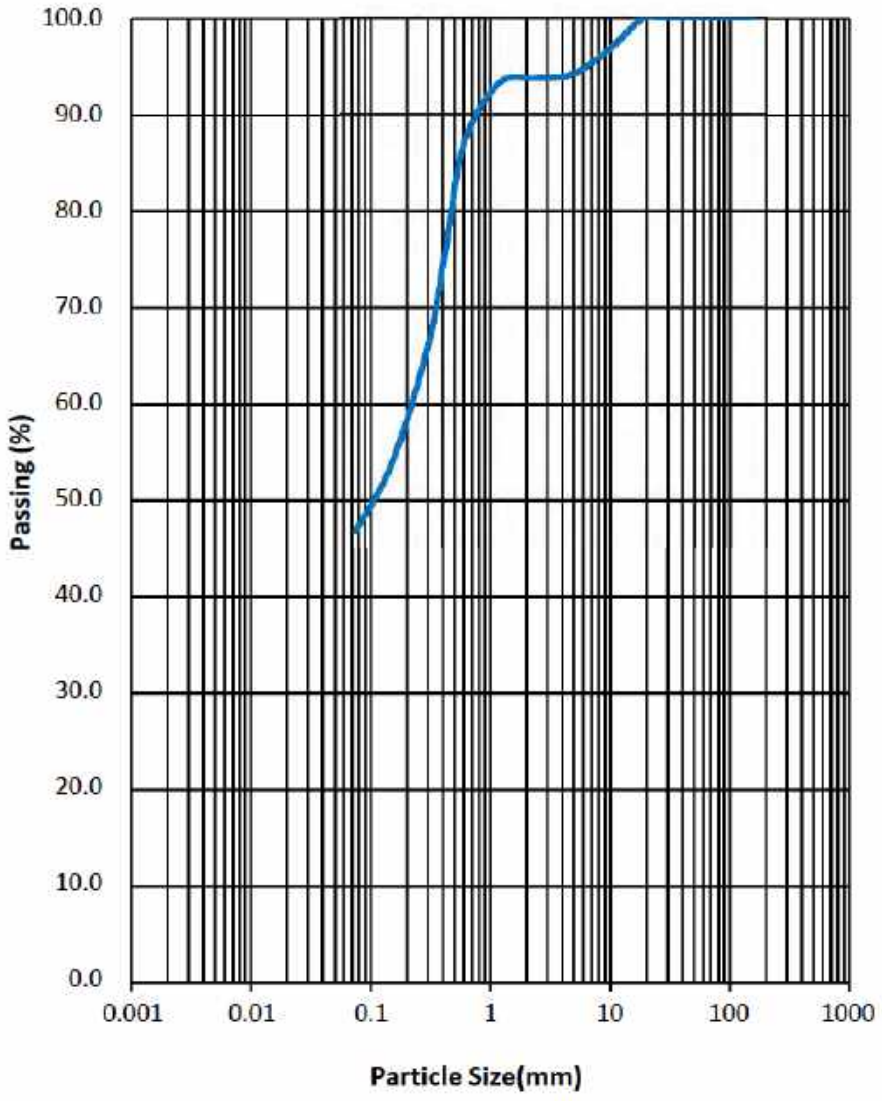
PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1

Client:	Knight Piesold	Date Tested:	12/05/2020
Project:	Mungari TSF Cell 4	EP Lab Job Number:	KP
Sample No:	TP39	Depth(m):	0.80 - 1.30
Lab_ID:	TP39_0.80_1.30_PSD	Room Temperature at Test:	19°C
Tested by:	Kohei	2.36mm Particle Density (t/m³):	-
Checked by:	Phil		

Sieve Size (mm)	Passing %
150	100.0
75	100.0
53	100.0
37.5	100.0
26.5	100.0
19	100.0
9.5	96.6
4.75	94.1
2.36	93.8
1.18	93.2
0.6	86.9
0.425	76.1
0.3	65.9
0.15	53.8
0.075	46.9

PSD Graph



Notes:
Stored and Tested the Sample as received
Samples supplied by the Client

Authorized Signature: [redacted]

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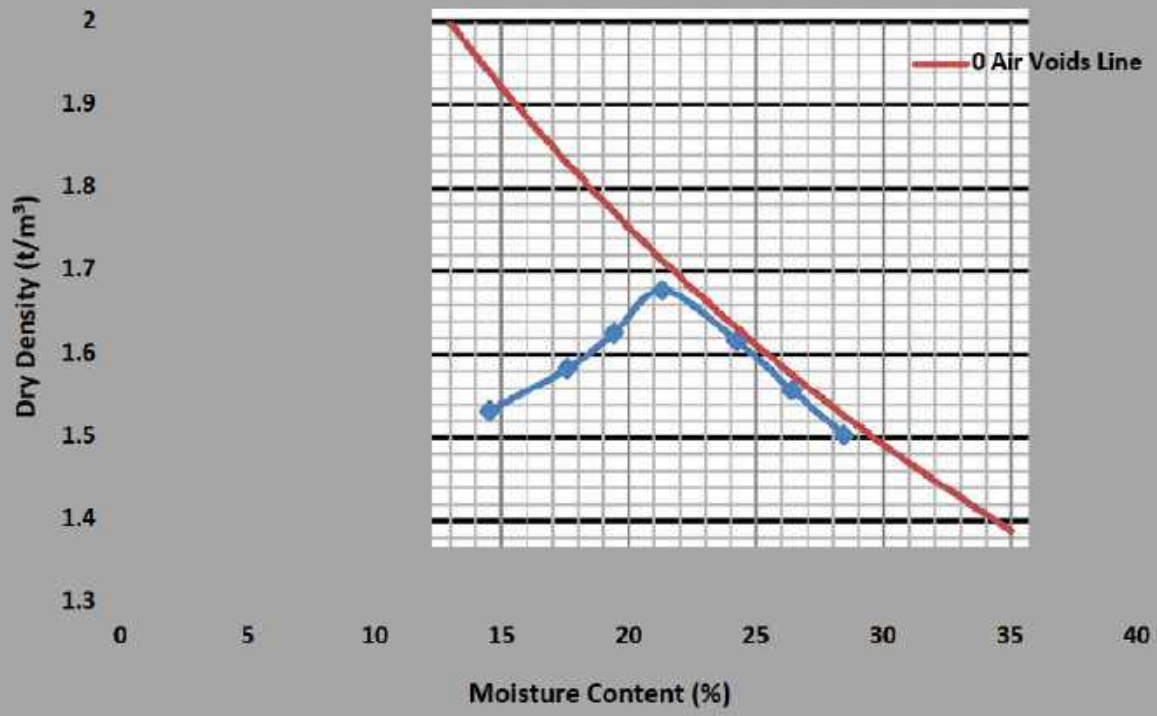
MOISTURE DENSITY RELATIONSHIP REPORT

Test Method: AS1289.5.1.1

Client:	Knight Piesold	Date Tested:	09/05/2020
Project:	Mungari TSF Cell 4	Lab:	EPLAB
Sample No:	TP40	Job Number:	KP
Lab ID:	TP40_3.30_3.90_MMDD		
Depth(m):	3.30 - 3.90	Room Temperature at Test:	20°C
Checked by:	Phil	Sample Description:	Tested in Mould A
Moisture Content (%):	-	Wet Density (t/m³):	-
		Dry Density (t/m³):	-

Results

Maximum Size (mm):	19.00	**Maximum Dry Density (t/m³):**	**1.680**
Oversize dry (%):	0.00	**Optimum Moisture Content (%):**	**21.50**



Notes: * *Particle density* *2.7 t/m³*

Stored and Tested the Sample as received

Samples supplied by the Client

Authorised Signature [redacted]

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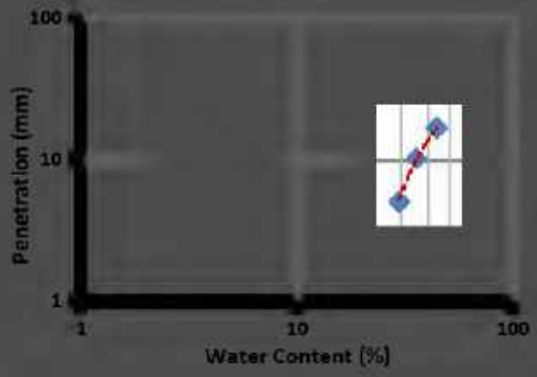
ATTERBERG LIMITS TEST REPORT

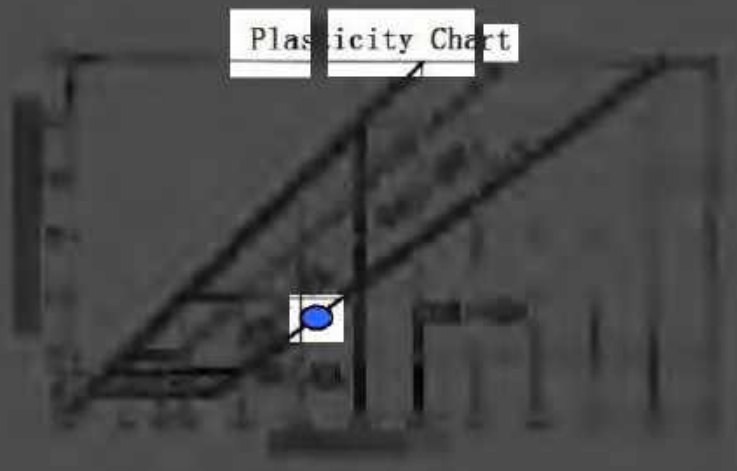
Test Method: BS1377 AS1289.2.1.1 7.1.1 3.1.1 3.2.1 3.4.1

Client:	Knight Piesold	Date Tested:	13/05/2020
Project:	Mungari TSF Cell 4	Lab:	EPLab
Sample No:	TP40	Job Number:	KP
Lab ID:	TP40_3.30_3.90_ATT		
Depth(m):	3.30 - 3.90	Room Temperature at Test:	19°C
Tested by:	Phil	Sample Description:	-
Moisture Content (%):	-	Wet Density (t/m³):	-
		Dry Density (t/m³):	-

Liquid Limit (%):	43.54
Plastic Limit (%):	25.24
Plasticity Index (%):	18.29
Liquidity Index (%):	-
Shrinkage Limit (%):	18.96
Linear Shrinkage(%):	11.05

Results Chart





Notes: The sample/s were tested oven dried, dry sieved and in a 125-250mm mould.

Stored and Tested the Sample as received

Samples supplied by the Client

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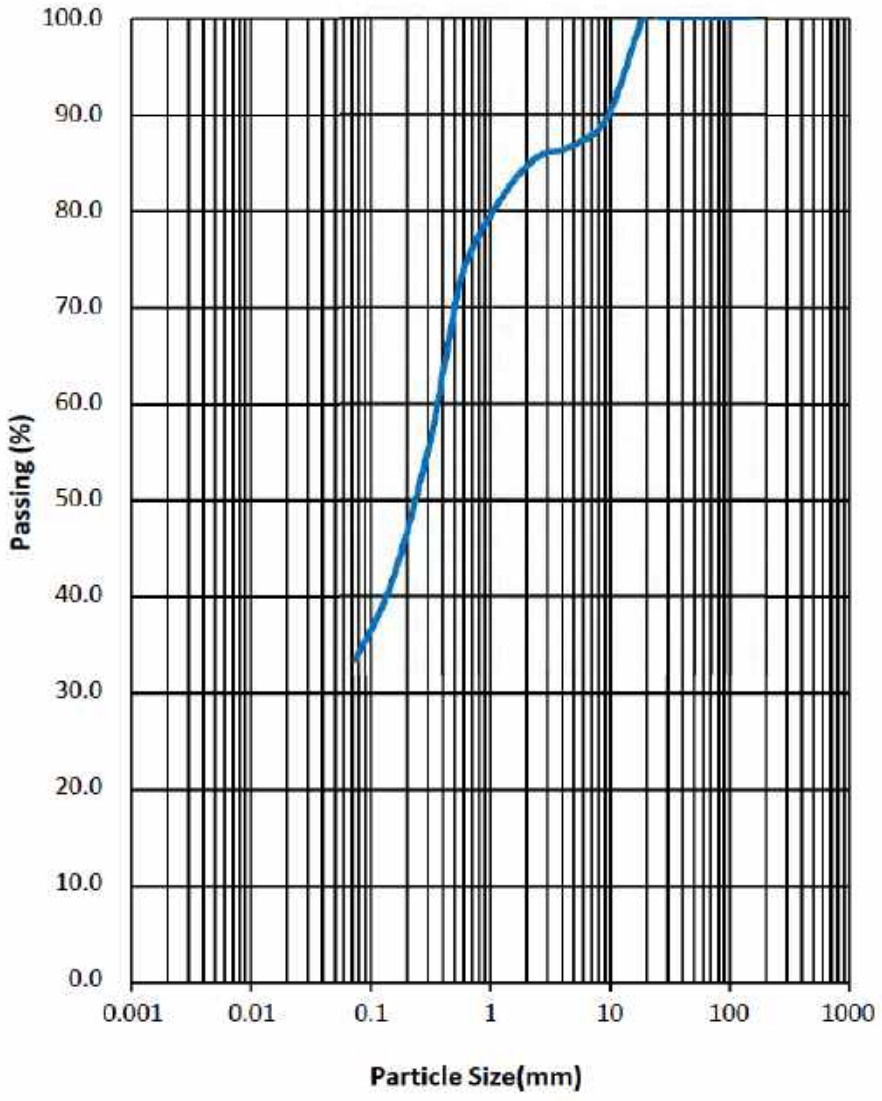
PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1

Client:	Knight Piesold	Date Tested:	12/05/2020
Project:	Mungari TSF Cell 4	EP Lab Job Number:	KP
Sample No:	TP40	Depth(m):	3.30 - 3.90
Lab_ID:	TP40_3.30_3.90_PSD	Room Temperature at Test:	19°C
Tested by:	Kohei	2.36mm Particle Density (t/m³):	-
Checked by:	Phil		

Sieve Size (mm)	Passing %
150	100.0
75	100.0
53	100.0
37.5	100.0
26.5	100.0
19	100.0
9.5	89.7
4.75	86.7
2.36	85.3
1.18	80.9
0.6	73.9
0.425	64.7
0.3	55.0
0.15	41.5
0.075	33.5

PSD Graph



Notes:

Stored and Tested the Sample as received

Samples supplied by the Client

Authorized Signature [redacted]

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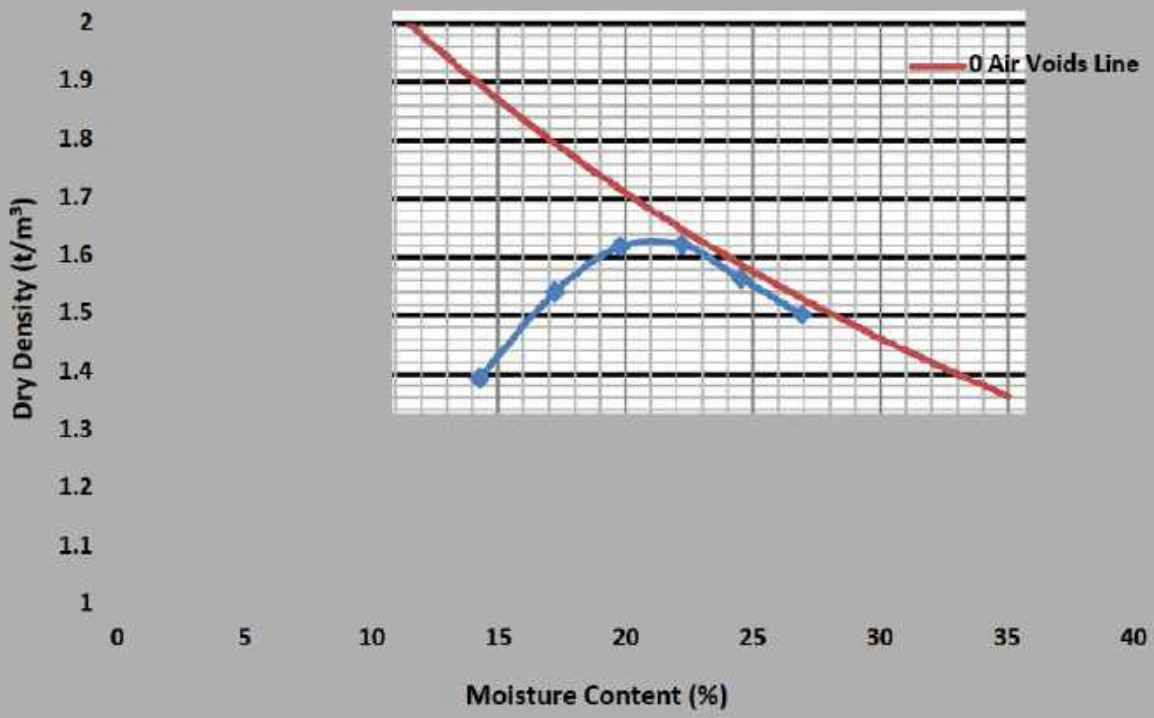
MOISTURE DENSITY RELATIONSHIP REPORT

Test Method: AS1289.5.1.1

Client:	Knight Piesold	Date Tested:	09/05/2020
Project:	Mungari TSF Cell 4	Lab:	EPLAB
Sample No:	TP42	Job Number:	KP
Lab ID:	TP42_3.50_3.90_MMDD		
Depth(m):	3.50 - 3.90	Room Temperature at Test:	20°C
Checked by:	Phil	Sample Description:	Tested in Mould A
Moisture Content (%):	-	Wet Density (t/m³):	-
		Dry Density (t/m³):	-

Results

Maximum Size (mm):	19.00	**Maximum Dry Density (t/m³):**	**1.630**
Oversize dry (%):	0.00	**Optimum Moisture Content (%):**	**21.00**



Notes: ** Particle density* *2.6 t/m³*

Stored and Tested the Sample as received

Samples supplied by the Client

Authorised Signatur [redacted]

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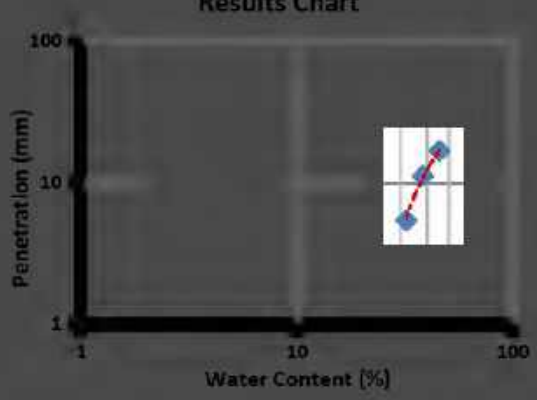
ATTERBERG LIMITS TEST REPORT

Test Method: BS1377 AS1289.2.1.1 7.1.1 3.1.1 3.2.1 3.4.1

Client:	Knight Piesold	Date Tested:	13/05/2020
Project:	Mungari TSF Cell 4	Lab:	EPLab
Sample No:	TP42	Job Number:	KP
Lab ID:	TP42_3.50_3.90_ATT		
Depth(m):	3.50 - 3.90	Room Temperature at Test:	19°C
Tested by:	Phil	Sample Description:	-
Moisture Content (%):	-	Wet Density (t/m³):	-
		Dry Density (t/m³):	-

Liquid Limit (%):	45.12
Plastic Limit (%):	27.58
Plasticity Index (%):	17.54
Liquidity Index (%):	-
Shrinkage Limit (%):	20.85
Linear Shrinkage(%):	14.38

Results Chart



Notes: The sample/s were tested oven dried, dry sieved and in a 125-250mm mould.

Stored and Tested the Sample as received

Samples supplied by the Client

Authorised Signature [redacted]

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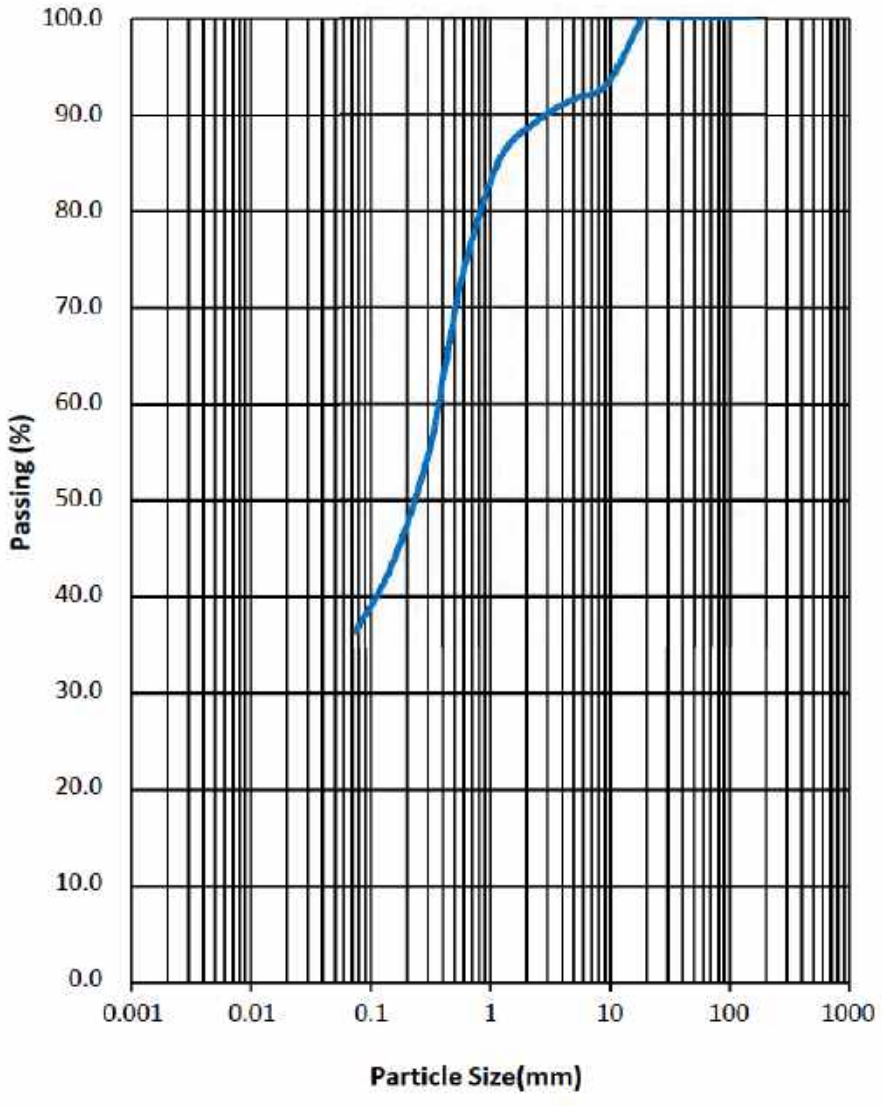
PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1

Client:	Knight Piesold	Date Tested:	12/05/2020
Project:	Mungari TSF Cell 4	EP Lab Job Number:	KP
Sample No:	TP42	Depth(m):	3.50 - 3.90
Lab_ID:	TP42_3.50_3.90_PSD	Room Temperature at Test:	19°C
Tested by:	Kohei	2.36mm Particle Density (t/m³):	-
Checked by:	Phil		

Sieve Size (mm)	Passing %
150	100.0
75	100.0
53	100.0
37.5	100.0
26.5	100.0
19	100.0
9.5	93.1
4.75	91.4
2.36	89.1
1.18	85.2
0.6	73.8
0.425	64.2
0.3	54.5
0.15	43.2
0.075	36.5

PSD Graph



Notes:

Stored and Tested the Sample as received

Samples supplied by the Client

Authorized Signature: [redacted]

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E-Precision Laboratory

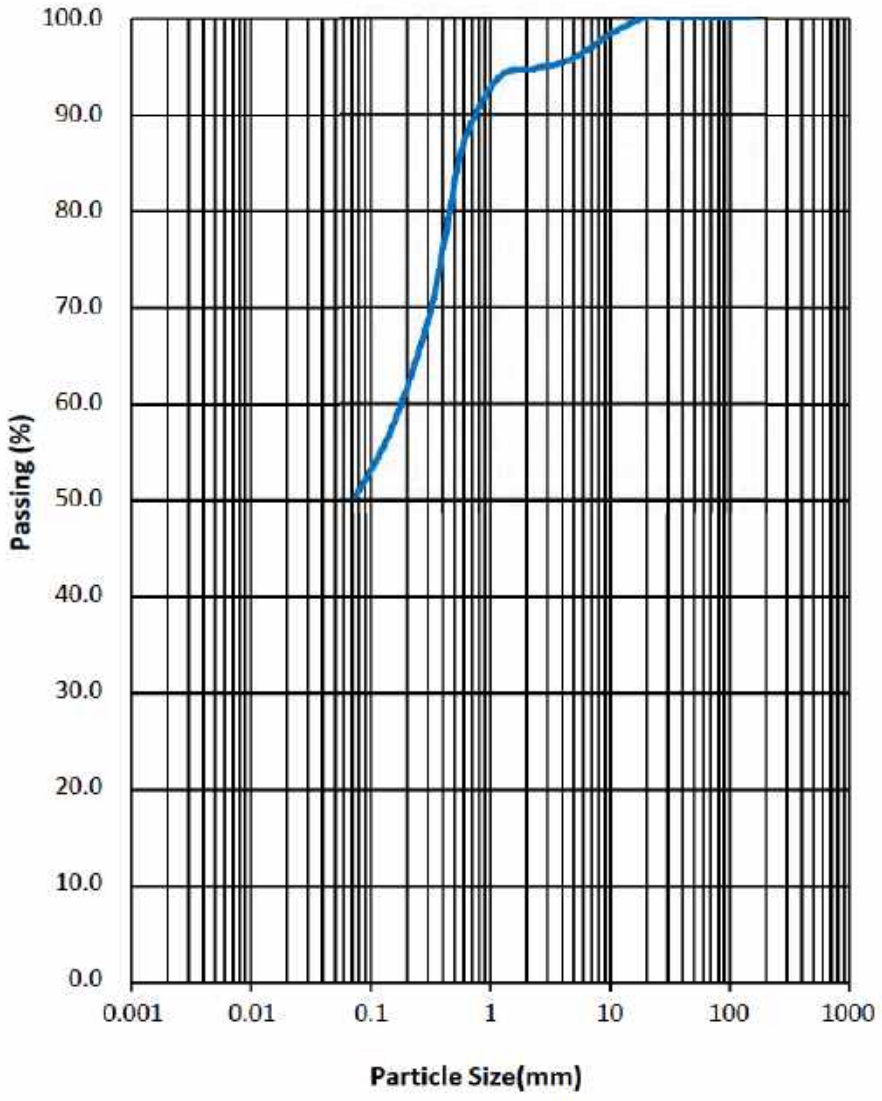
PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1

Client:	Knight Piesold	Date Tested:	12/05/2020
Project:	Mungari TSF Cell 4	EP Lab Job Number:	KP
Sample No:	TP44	Depth(m):	0.50 - 1.00
Lab_ID:	TP44_0.50_1.00_PSD	Room Temperature at Test:	19°C
Tested by:	Kohei	2.36mm Particle Density (t/m³):	-
Checked by:	Phil		

Sieve Size (mm)	Passing %
150	100.0
75	100.0
53	100.0
37.5	100.0
26.5	100.0
19	100.0
9.5	98.1
4.75	95.7
2.36	94.7
1.18	93.8
0.6	87.0
0.425	77.6
0.3	68.5
0.15	57.4
0.075	50.4

PSD Graph



Notes:

Stored and Tested the Sample as received

Samples supplied by the Client

Authorized Signature [redacted]

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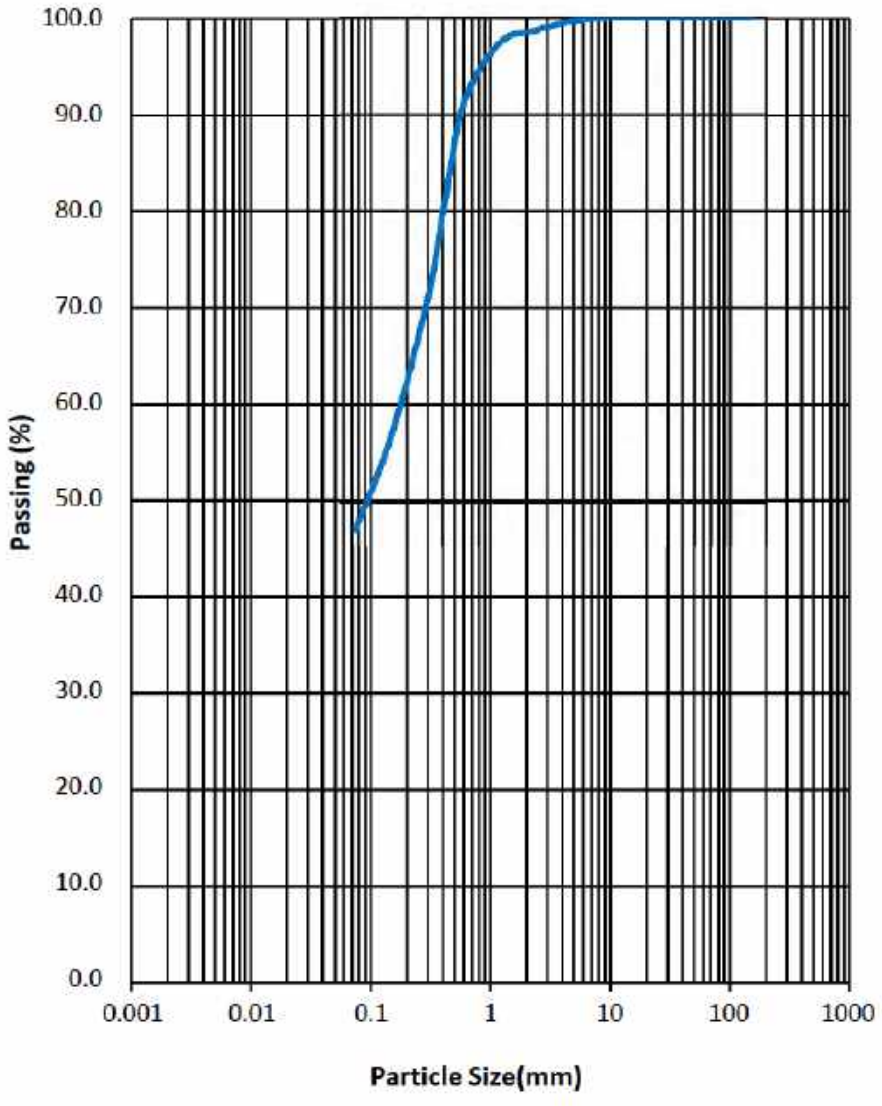
PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1

Client:	Knight Piesold	Date Tested:	12/05/2020
Project:	Mungari TSF Cell 4	EP Lab Job Number:	KP
Sample No:	TP45	Depth(m):	0.50 - 1.00
Lab_ID:	TP45_0.50_1.00_PSD	Room Temperature at Test:	19°C
Tested by:	Kohei	2.36mm Particle Density (t/m³):	-
Checked by:	Phil		

Sieve Size (mm)	Passing %
150	100.0
75	100.0
53	100.0
37.5	100.0
26.5	100.0
19	100.0
9.5	100.0
4.75	99.6
2.36	98.7
1.18	97.3
0.6	91.1
0.425	81.4
0.3	70.9
0.15	56.9
0.075	47.1

PSD Graph



Notes:

Stored and Tested the Sample as received

Samples supplied by the Client

Authorized Signature: [redacted]

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[redacted]

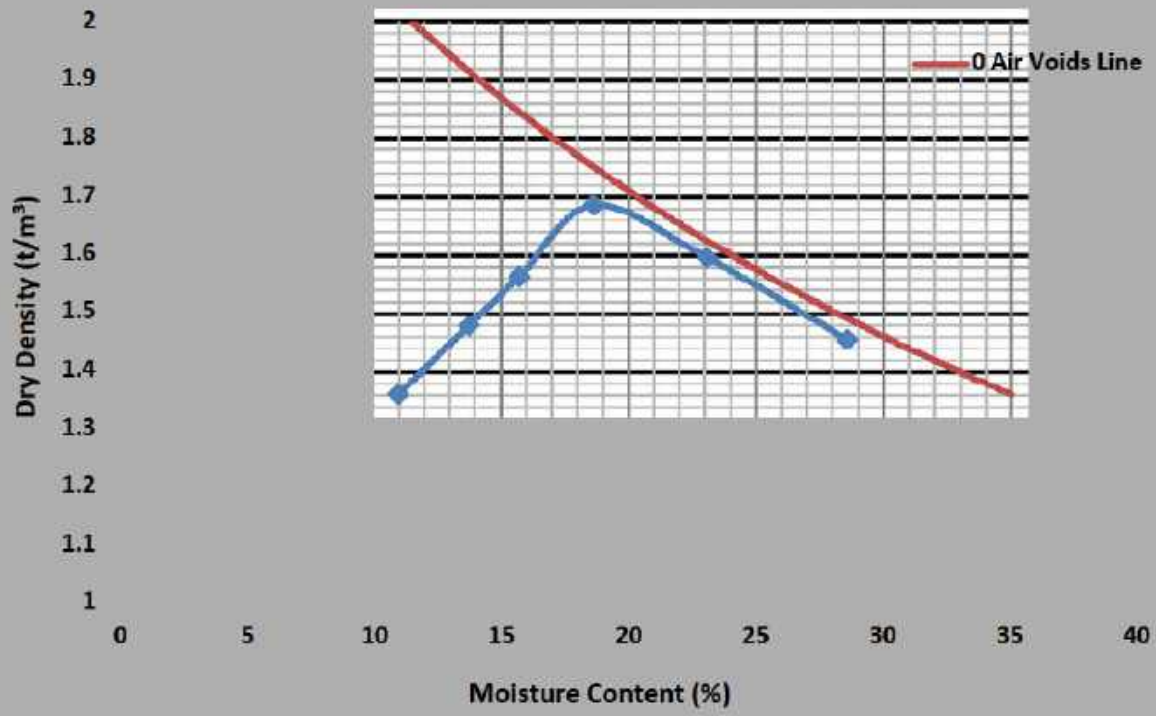
MOISTURE DENSITY RELATIONSHIP REPORT

Test Method: AS1289.5.1.1

Client:	Knight Piesold	Date Tested:	09/05/2020
Project:	Mungari TSF Cell 4	Lab:	EPLAB
Sample No:	TP47	Job Number:	KP
Lab ID:	TP47_0.80_1.30_MMDD		
Depth(m):	0.80 - 1.30	Room Temperature at Test:	20°C
Checked by:	Phil	Sample Description:	Tested in Mould A
Moisture Content (%):	-	Wet Density (t/m³):	-
		Dry Density (t/m³):	-

Results

Maximum Size (mm):	19.00	**Maximum Dry Density (t/m³):**	1.680
Oversize dry (%):	0.00	**Optimum Moisture Content (%):**	18.50



Notes: ** Particle density* *2.6 t/m³*

Stored and Tested the Sample as received

Samples supplied by the Client

Authorised Signatu [redacted]

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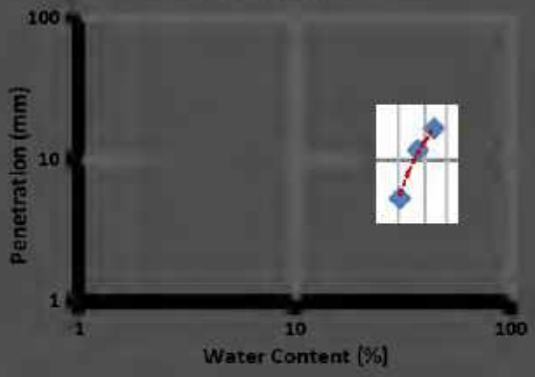
ATTERBERG LIMITS TEST REPORT

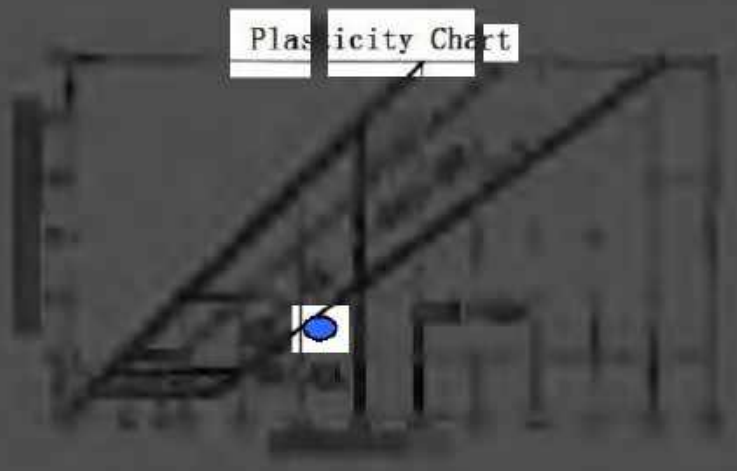
Test Method: BS1377 AS1289.2.1.1 7.1.1 3.1.1 3.2.1 3.4.1

Client:	Knight Piesold	Date Tested:	13/05/2020
Project:	Mungari TSF Cell 4	Lab:	EPLab
Sample No:	TP47	Job Number:	KP
Lab ID:	TP47_0.80_1.30_ATT		
Depth(m):	0.80 - 1.30	Room Temperature at Test:	19°C
Tested by:	Phil	Sample Description:	-
Moisture Content (%):	-	Wet Density (t/m³):	-
		Dry Density (t/m³):	-

Liquid Limit (%):	43.72
Plastic Limit (%):	26.32
Plasticity Index (%):	17.40
Liquidity Index (%):	-
Shrinkage Limit (%):	19.97
Linear Shrinkage(%):	10.12

Results Chart





Notes: The sample/s were tested oven dried, dry sieved and in a 125-250mm mould.

Stored and Tested the Sample as received

Samples supplied by the Client

Authorised Signature: [redacted]

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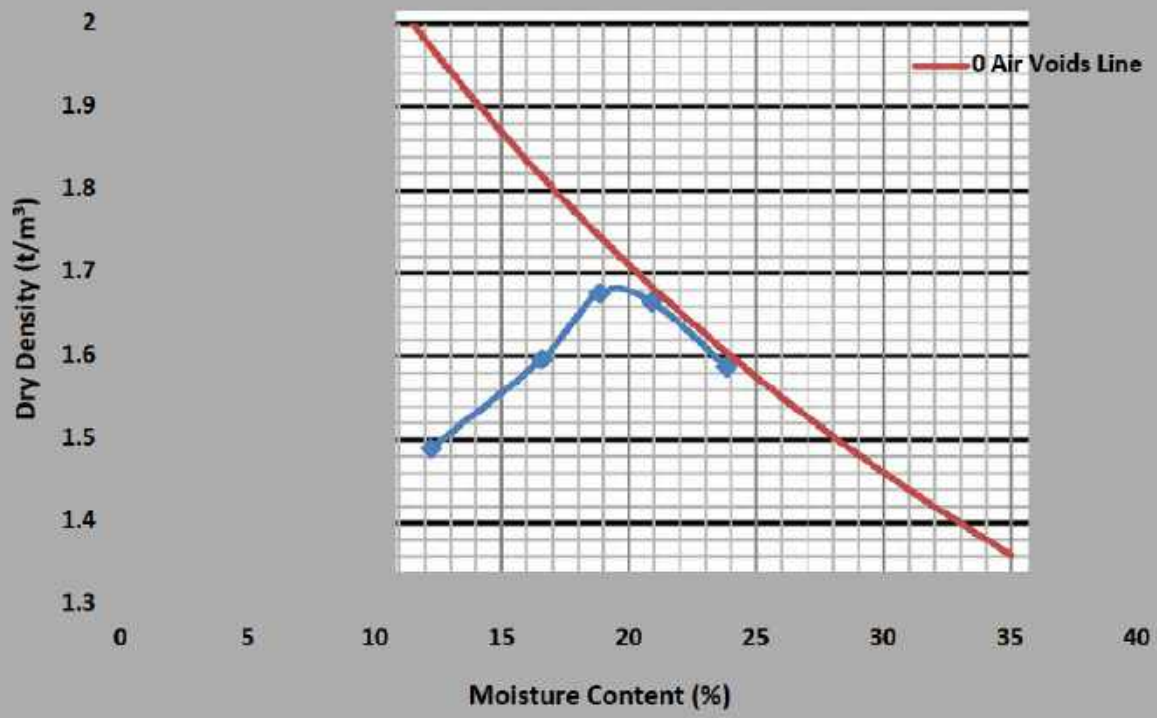
MOISTURE DENSITY RELATIONSHIP REPORT

Test Method: AS1289.5.1.1

Client:	Knight Piesold	Date Tested:	09/05/2020
Project:	Mungari TSF Cell 4	Lab:	EPLAB
Sample No:	TP47	Job Number:	KP
Lab ID:	TP47_3.50_4.00_MMDD		
Depth(m):	3.50 - 4.00	Room Temperature at Test:	20°C
Checked by:	Phil	Sample Description:	Tested in Mould A
Moisture Content (%):	-	Wet Density (t/m³):	-
		Dry Density (t/m³):	-

Results

Maximum Size (mm):	19.00	**Maximum Dry Density (t/m³):**	1.680
Oversize dry (%):	0.00	**Optimum Moisture Content (%):**	19.50



Notes: * *Particle density* 2.7 t/m³

Stored and Tested the Sample as received

Samples supplied by the Client

Authorised Signatur [redacted]

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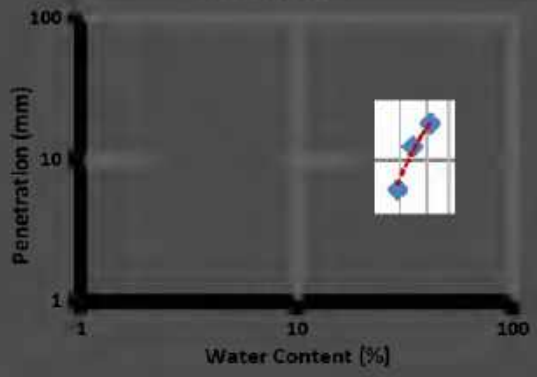
ATTERBERG LIMITS TEST REPORT

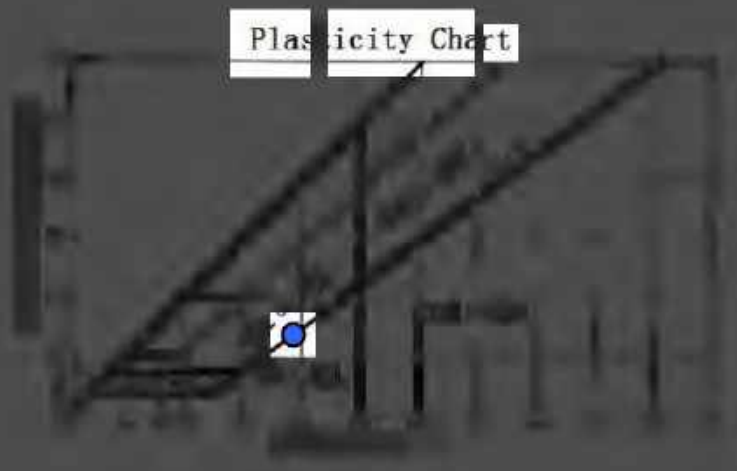
Test Method: BS1377 AS1289.2.1.1 7.1.1 3.1.1 3.2.1 3.4.1

Client:	Knight Piesold	Date Tested:	13/05/2020
Project:	Mungari TSF Cell 4	Lab:	EPLab
Sample No:	TP47	Job Number:	KP
Lab ID:	TP47_3.50_4.00_ATT		
Depth(m):	3.50 - 4.00	Room Temperature at Test:	19°C
Tested by:	Phil	Sample Description:	-
Moisture Content (%):	-	Wet Density (t/m³):	-
		Dry Density (t/m³):	-

Liquid Limit (%):	39.87
Plastic Limit (%):	24.40
Plasticity Index (%):	15.46
Liquidity Index (%):	-
Shrinkage Limit (%):	19.06
Linear Shrinkage(%):	7.34

Results Chart





Notes: The sample/s were tested oven dried, dry sieved and in a 125-250mm mould.

Stored and Tested the Sample as received

Samples supplied by the Client

Authorised Signature: [redacted]

Integrity Precision Innovation

Perth
Unit 3, 34 Sphinx Way
Bibra Lake

[redacted]

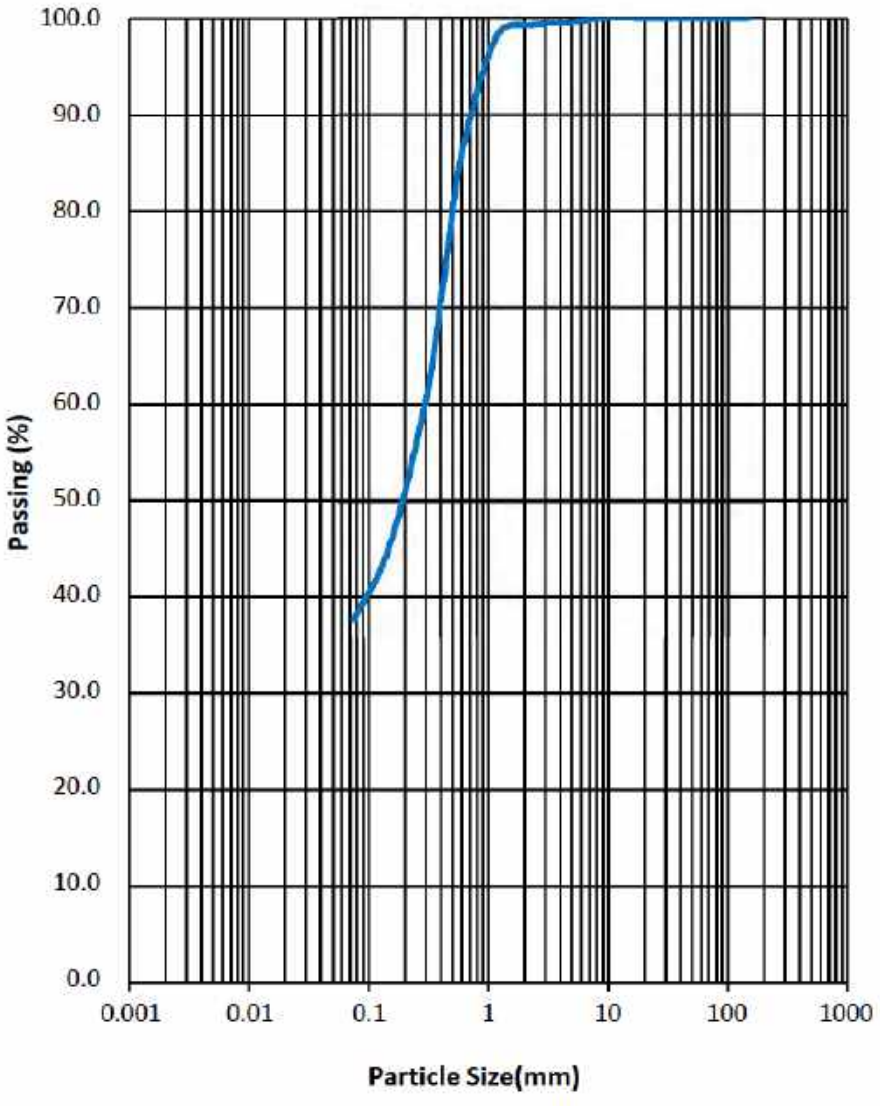
PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1

Client:	Knight Piesold	Date Tested:	15/05/2020
Project:	Mungari TSF Cell 4	EP Lab Job Number:	KP
Sample No:	TP47	Depth(m):	3.50 - 4.00
Lab_ID:	TP47_3.50_4.00_PSD	Room Temperature at Test:	19°C
Tested by:	Kohei	2.36mm Particle Density (t/m³):	-
Checked by:	Phil		

Sieve Size (mm)	Passing %
150	100.0
75	100.0
53	100.0
37.5	100.0
26.5	100.0
19	100.0
9.5	100.0
4.75	99.5
2.36	99.3
1.18	98.1
0.6	85.9
0.425	72.9
0.3	60.4
0.15	45.4
0.075	37.7

PSD Graph



Notes:

Stored and Tested the Sample as received

Samples supplied by the Client

Authorized Signature: [redacted]

Perth
Unit 3, 34 Sphinx Way
Bibra Lake
WA 6163

[redacted]

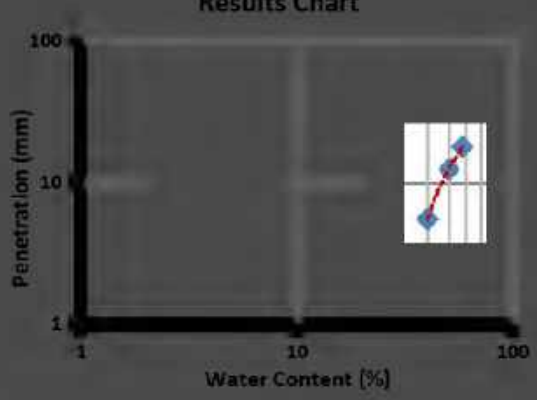
ATTERBERG LIMITS TEST REPORT

Test Method: BS1377 AS1289.2.1.1 7.1.1 3.1.1 3.2.1 3.4.1

Client:	Knight Piesold	Date Tested:	13/05/2020
Project:	Mungari TSF Cell 4	Lab:	EPLab
Sample No:	TP49	Job Number:	KP
Lab ID:	TP49_3.50_3.90_ATT		
Depth(m):	3.50 - 3.90	Room Temperature at Test:	19°C
Tested by:	Phil	Sample Description:	-
Moisture Content (%):	-	Wet Density (t/m³):	-
		Dry Density (t/m³):	-

Liquid Limit (%):	56.32
Plastic Limit (%):	34.58
Plasticity Index (%):	21.74
Liquidity Index (%):	-
Shrinkage Limit (%):	24.52
Linear Shrinkage(%):	14.33

Results Chart



Notes: The sample/s were tested oven dried, dry sieved and in a 125-250mm mould.

Stored and Tested the Sample as received

Samples supplied by the Client

Authorised Signature: [redacted]

Integrity Precision Innovation

Perth
Unit 3, 34 Sphinx Way
Bibra Lake
WA 6163
[redacted]

E-Precision Laboratory

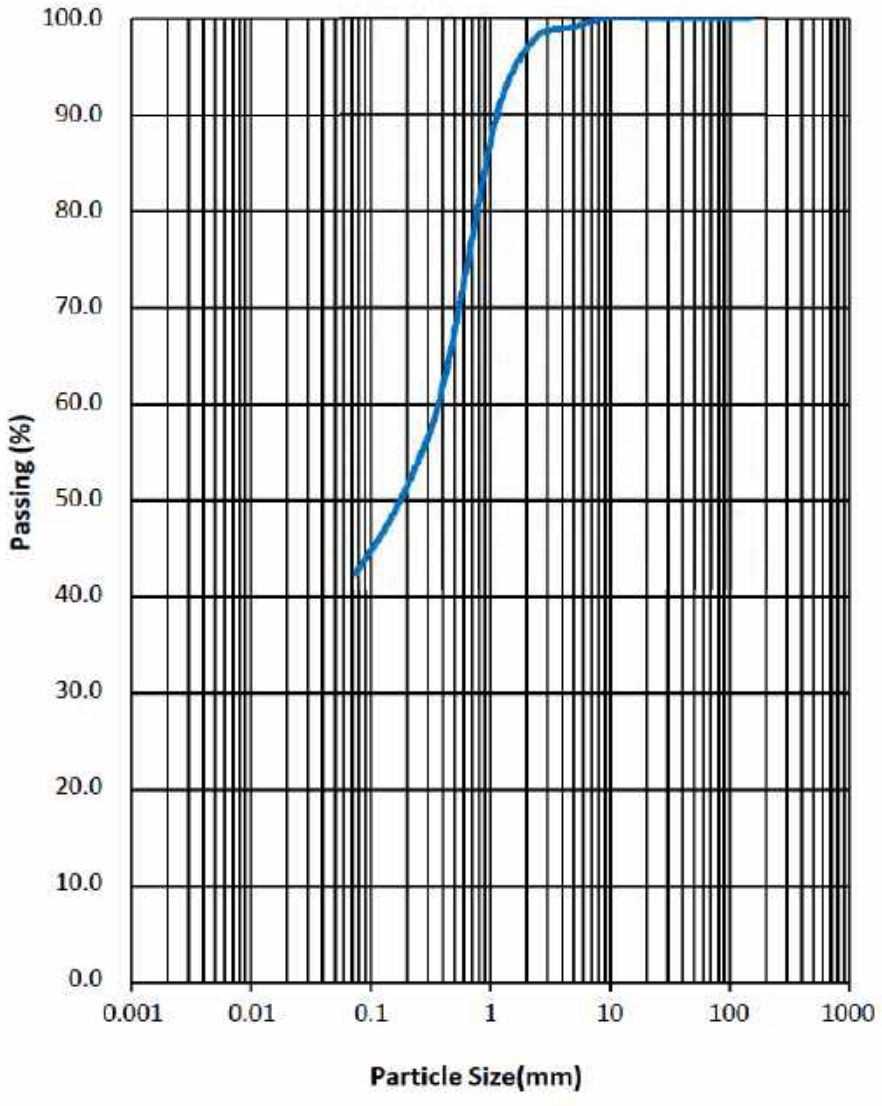
PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1

Client:	Knight Piesold	Date Tested:	15/05/2020
Project:	Mungari TSF Cell 4	EP Lab Job Number:	KP
Sample No:	TP50	Depth(m):	3.00 - 3.50
Lab_ID:	TP50_3.00_3.50_PSD	Room Temperature at Test:	19°C
Tested by:	Kohei	2.36mm Particle Density (t/m³):	-
Checked by:	Phil		

Sieve Size (mm)	Passing %
150	100.0
75	100.0
53	100.0
37.5	100.0
26.5	100.0
19	100.0
9.5	100.0
4.75	99.0
2.36	97.8
1.18	90.7
0.6	72.5
0.425	63.1
0.3	56.5
0.15	48.3
0.075	42.5

PSD Graph



Notes:

Stored and Tested the Sample as received

Samples supplied by the Client

Authorized Signature: [redacted]

Perth
Unit 3, 34 Sphinx Way
Bibra Lake

[redacted]

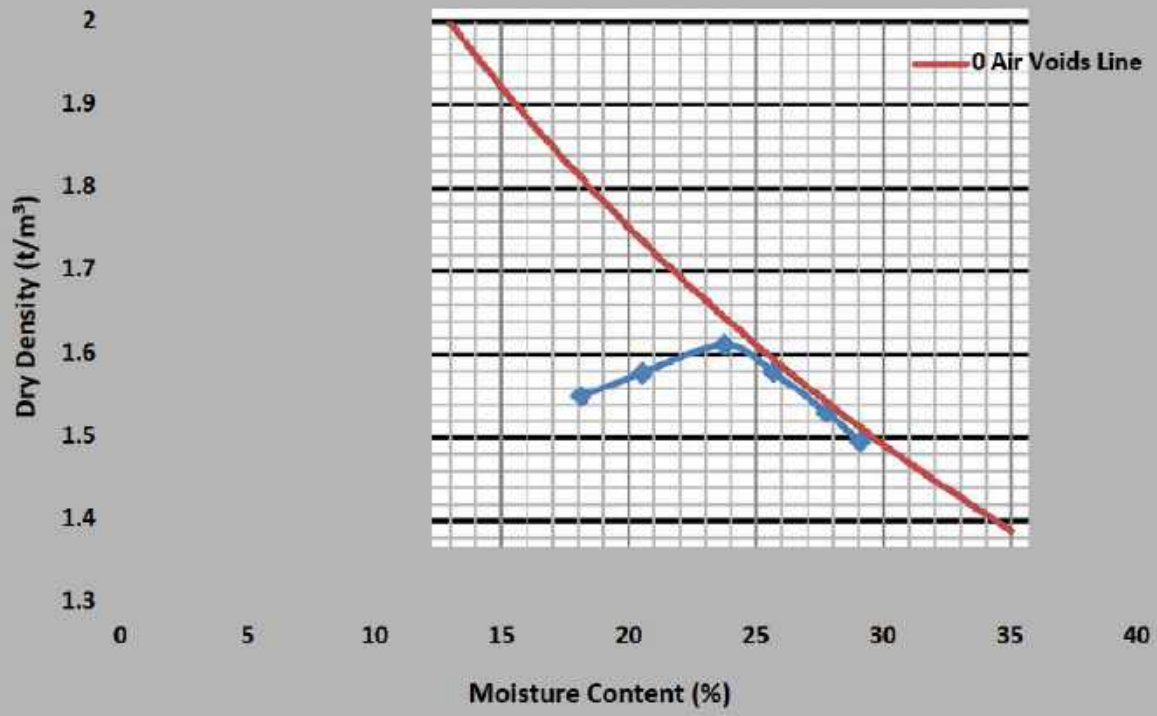
MOISTURE DENSITY RELATIONSHIP REPORT

Test Method: AS1289.5.1.1

Client:	Knight Piesold	Date Tested:	09/05/2020
Project:	Mungari TSF Cell 4	Lab:	EPLAB
Sample No:	TP50	Job Number:	KP
Lab ID:	TP50_3.00_3.50_MMDD		
Depth(m):	3.00 - 3.50	Room Temperature at Test:	20°C
Checked by:	Phil	Sample Description:	Tested in Mould A
Moisture Content (%):	-	Wet Density (t/m³):	-
		Dry Density (t/m³):	-

Results

Maximum Size (mm):	19.00	**Maximum Dry Density (t/m³):**	**1.610**
Oversize dry (%):	0.00	**Optimum Moisture Content (%):**	**24.00**



Notes: ** Particle density* *2.7 t/m³*

Stored and Tested the Sample as received

Samples supplied by the Client

Authorised Signatur [redacted]

Integrity Precision Innovation

Perth
Unit 3, 34 Sphinx Way
Bibra Lake

[redacted]

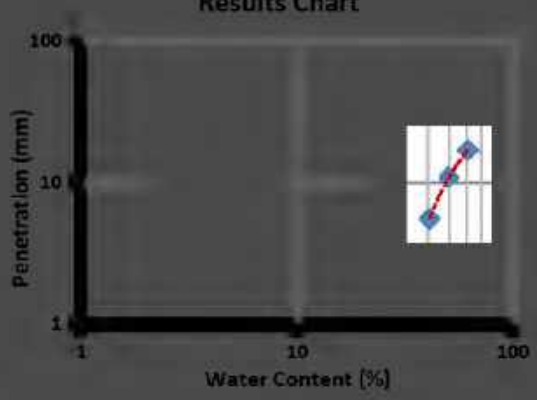
ATTERBERG LIMITS TEST REPORT

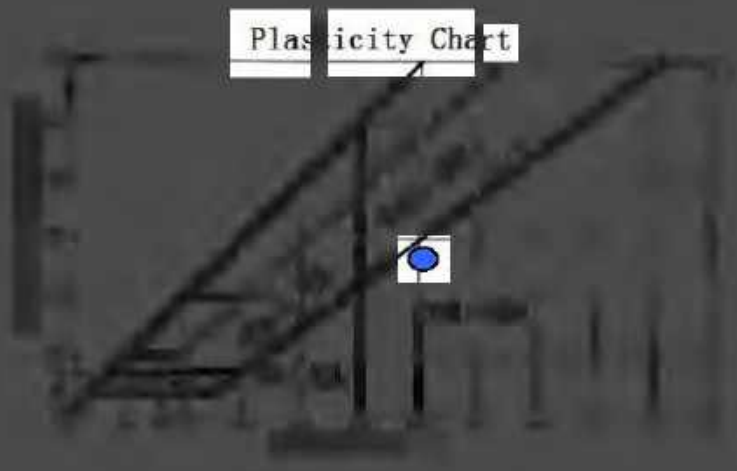
Test Method: BS1377 AS1289.2.1.1 7.1.1 3.1.1 3.2.1 3.4.1

Client:	Knight Piesold	Date Tested:	13/05/2020
Project:	Mungari TSF Cell 4	Lab:	EPLab
Sample No:	TP50	Job Number:	KP
Lab ID:	TP50_3.00_3.50_ATT		
Depth(m):	3.00 - 3.50	Room Temperature at Test:	19°C
Tested by:	Phil	Sample Description:	-
Moisture Content (%):	-	Wet Density (t/m³):	-
		Dry Density (t/m³):	-

Liquid Limit (%):	60.78
Plastic Limit (%):	34.32
Plasticity Index (%):	26.46
Liquidity Index (%):	-
Shrinkage Limit (%):	22.96
Linear Shrinkage(%):	13.51

Results Chart





Notes: The sample/s were tested oven dried, dry sieved and in a 125-250mm mould.

Stored and Tested the Sample as received

Samples supplied by the Client

Authorised Signature: [redacted]

Integrity Precision Innovation

Perth
Unit 3, 34 Sphinx Way
Bibra Lake,
WA 6163
[redacted]

E-Precision Laboratory

FALLING HEAD PERMEABILITY TEST REPORT

Test Method: AS1289 6.7.2

Client:	Knight Piesold	Date Tested:	12/05/2020
Project:	Mungari TSF Cell 4	Date Reported:	19/05/2020
Lab:	EPLAB	EP Lab Job Number:	KP
Tested by:	Phil		
Checked by:	Phil		

Lab ID:	MUG_01_FH	MUG_02_FH	MUG_03_FH	MUG_04_FH
Client ID:	TP36	TP36	TP39	TP40
Depth (m):	1.00 - 1.50	3.80 - 4.00	3.50 - 3.80	3.30 - 3.90
Sample Conditions:	Remolded 98% SMDD	Remolded 98% SMDD	Remolded 98% SMDD	Remolded 98% SMDD
Surcharge Pressure (kPa):	12.5	12.5	12.5	12.5
Initial Bulk Density (t/m³):	2.00	2.00	1.98	2.01
Initial Moisture Content (%):	16.13	20.59	20.12	21.77
Dry Density (t/m³):	1.72	1.66	1.65	1.65
Saturation (Skempton's B):	0.98	1.00	1.00	1.00
K_{20} (m/s):	**$3.459\ E^{-8}$**	**$8.541\ E^{-8}$**	**$10.646\ E^{-8}$**	**$7.494\ E^{-8}$**

Notes:
Stored and Tested the Sample as received
Samples supplied by the Client

Authorised Signatory (Geotechnical E [redacted]

Perth
Unit 3, 34 Sphinx Way
Bibra Lake,
WA 6163
[redacted]

E-Precision Laboratory

FALLING HEAD PERMEABILITY TEST REPORT

Test Method: AS1289 6.7.2

Client:	Knight Piesold	Date Tested:	12/05/2020
Project:	Mungari TSF Cell 4	Date Reported:	19/05/2020
Lab:	EPLAB	EP Lab Job Number:	KP
Tested by:	Phil		
Checked by:	Phil		

Lab ID:	MUG_05_FH	MUG_06_FH	MUG_07_FH	MUG_08_FH
Client ID:	TP42	TP47	TP47	TP50
Depth (m):	3.50 - 3.90	0.80 - 1.30	3.50 - 4.00	3.00 - 3.50
Sample Conditions:	Remolded 98% SMDD	Remolded 98% SMDD	Remolded 98% SMDD	Remolded 98% SMDD
Surcharge Pressure (kPa):	12.5	12.5	12.5	12.5
Initial Bulk Density (t/m³):	1.93	1.95	1.96	1.95
Initial Moisture Content (%):	21.47	18.44	19.66	24.19
Dry Density (t/m³):	1.59	1.65	1.64	1.57
Saturation (Skempton's B):	0.99	0.98	0.99	0.99
K_{20} (m/s):	$8.247\ E^{-8}$	$3.465\ E^{-8}$	$5.595\ E^{-8}$	$5.196\ E^{-8}$

Notes:
Stored and Tested the Sample as received
Samples supplied by the Client

Authorised Signatory (Geotechnical [redacted]

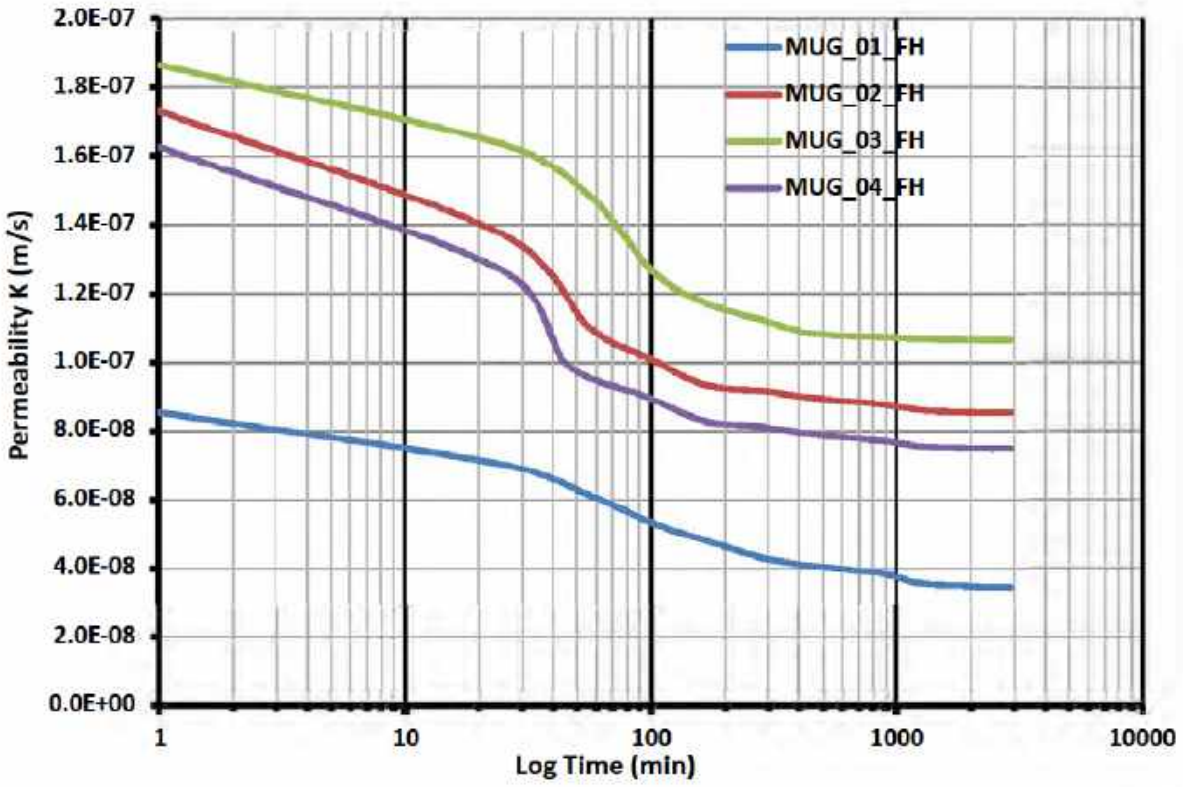
Perth
Unit 3, 34 Sphinx Way
Bibra Lake,
WA 6163
[redacted]

E-Precision Laboratory

FALLING HEAD PERMEABILITY TEST REPORT

Test Method: AS1289 6.7.2

Client:	Knight Piesold	Date Tested:	12/05/2020
Project:	Mungari TSF Cell 4	Date Reported:	19/05/2020
Lab:	EPLAB	EP Lab Job Number:	KP



Notes:

Stored and Tested the Sample as received

Samples supplied by the Client

Authorised Signatory (Geotechnical Engineer): [redacted]

Integrity Precision Innovation

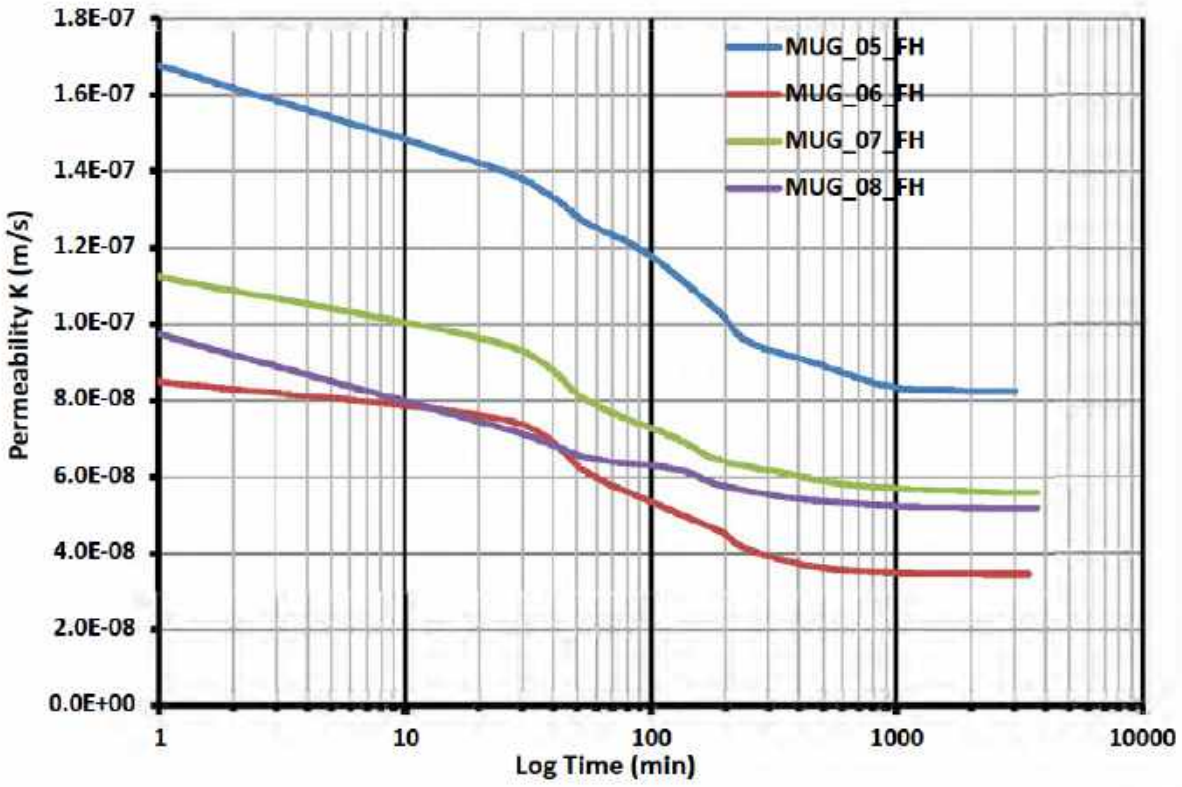
Perth
Unit 3, 34 Sphinx Way
Bibra Lake,
WA 6163
Ph: (08) 9418 8742
Mob: 0422 814 231
E-mail: Phillip.li@eprecisionlab.com

E-Precision Laboratory

FALLING HEAD PERMEABILITY TEST REPORT

Test Method: AS1289 6.7.2

Client:	Knight Piesold	Date Tested:	12/05/2020
Project:	Mungari TSF Cell 4	Date Reported:	19/05/2020
Lab:	EPLAB	EP Lab Job Number:	KP



Notes:

Stored and Tested the Sample as received

Samples supplied by the Client

Authorised Signatory (Geotechnical Engineer):

Integrity Precision Innovation

STATS WA Pty Ltd
Unit 1/24 Baile Road
Canning Vale WA 6155
PH: +61 (08) 9455 3654
ABN: 90 016 537 577
www.statswa.com.au

Test Certificate

Emerson Class Report

Client :	E-Precision Laboratory	Report Number:	PE-101055 - 1/1
Address :	Unit 3/34 Sphinx Way, Bibra Lake, WA, 6163	Report Date :	13/04/2017
Project Name :	Mungari Gold Project	Order Number :	
Project Number :	PE-101055	Test Method :	AS1289.3.8.1
Location:	Mungari	Page 1 of 1	

Sample Number :	S17-260	S17-261	S17-262	
Test Number :	1	2	3	
Sampling Method :	As Received	As Received	As Received	
Date Sampled :	7/04/2017	7/04/2017	7/04/2017	
Date Tested :	11/04/2017	11/04/2017	11/04/2017	
Material Type :	Soil Sample	Soil Sample	Soil Sample	
Material Source :	Bore Hole	Bore Hole	Bore Hole	
Lot Number :				
Sample Location :	BH01 - (3.50-4.00m)	BH03 - (4.45-4.95m)	BH02 - (7.00-7.50m)	
Primary Water Type :	Distilled Water	Distilled Water	Distilled Water	
Primary Soil Description :	Clayey SAND	Silty SAND	Sandy CLAY	
Primary Temperature :	25	25	25	
Primary Emerson Class Number :	**Class 6**	**Class 6**	**Class 4**	
Secondary Water Type :				
Secondary Soil Description :				
Secondary Temperature :				
Secondary Emerson Class Number :				
Remarks :				

NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.

APPROVED SIGNATORY

Brendon Riordan - Laboratory Manager
NATA Accreditation Number
19186 Site Number 21714

STATS WA Pty Ltd
Unit 1 / 24 Baile Road
Canning Vale WA 6155
Phone: (08) 9455 3654

STATS WA PTY LTD

TEST CERTIFICATE

CLIENT:	E-Precision	PROJECT NUMBER:	PE-101055
ADDRESS:	Unit 3/34 Sphinx Way, Bibra Lake , WA6163	REPORT NUMBER:	PE-101055 - 2/1
PROJECT:	Mungari Gold Project	REPORT DATE:	13/04/2017
LOCATION:	Mungari	ORDER NUMBER:	

Calcium Carbonate Content
WA915.1

Sample Number:	S17-	262
Sample Identification:		BH02
Sample Depth:		7-7.5m
Description:		Sandy CLAY
Date Sampled:		Apr-17
Date Tested:		11/04/2017
Test Number:		3
Calcium Carbonate Content: %		9.4

Remarks: Sample Supplied by client.

Approved Signatory:

Brendon Riordan - Laboratory Manager

Perth
Unit 3, 34 Sphinx Way
Bibra Lake
WA 6163
Ph: (08) 9418 8742
E-mail: Phillip.li@eprecisionlab.com
Mob: 0422 814 231

E-Precision Laboratory

EMERSON CLASS REPORT

Test Method: AS1289.3.8.1

Client:	Knight Piesold	**Date Tested:**	16/05/2020
Project:	Mungari TSF Cell 4	**Lab:**	EPLAB

Test Results

Sample ID	Depth (m)		Class Number
TP36	1.00	1.50	5
TP39	0.80	1.30	5
TP40	3.30	3.90	2
TP44	0.50	1.00	5
TP45	0.50	1.00	5
TP47	0.80	1.30	5
TP49	3.50	3.90	2
TP50	3.00	3.50	5

Notes: tested using distilled water @ 19deg

Samples tested as supplied by client

Samples supplied by the Client

Authorised Signature:

Integrity Precision Innovation

Perth
Unit 3, 34 Sphinx Way
Bibra Lake
WA 6163
Ph: (08) 9418 8742
E-mail: Phillip.li@eprecisionlab.com
Mob: 0422 814 231

E-Precision Laboratory

EMERSON CLASS REPORT

Test Method: AS1289.3.8.1

Client:	Knight Piesold	Date Tested:	16/05/2020
Project:	Mungari TSF Cell 4	Lab:	EPLAB

Photo of Results

Notes: tested using distilled water @ 19deg

Samples tested as supplied by client

Samples supplied by the Client

Authorised Signature:

Integrity Precision Innovation

APPENDIX B2

Foundation Soil Testwork

Knight Piésold CONSULTING

FACTUAL REPORT

Client Details:

Name:	EVOLUTION MINING
PO No.:	208614 & 208893
Pro ect:	Mungari Gold Operations
Contact:	Mr Adrian Hall
	Email: Adrian.Hall@evolutionmining.com

GTI Perth Details:

Reference No:	C27-P01-T01 & C27-P01-T02
Jo No.:	21-015 & 21-016
Address:	16 Glory Road, Gnangara, WA 6077
Contact:	Mr Hackmet Joer
	Telephone: (08) 9303 4042
	Email: hjoer@gtiperth.com.au

MUNGARI GOLD OPERATIONS PROJECT – LABORATORY TESTS

GTI Perth was contracted by Evolution Mining to provide laboratory support services for the Mungari Gold Operations project. The test specifications were provided by Knight Piésold.

Two blocks of soil samples for the North Wall locations, ID number KP-EVO-15 and KP-EVO-20 and two block samples for the South Wall locations, ID number KP-EVO-29 and KP-EVO-30, were provided to GTI Perth laboratory on 14th January 2021 and 21st January 2021, respectively. The samples are approximately 150 mm in diameter and 150 mm in length. Sub-samples of 60 mm diameter were taken from the samples. The following tests were performed as instructed by Mr Jim Lou of Knight Piésold:

- 4 x Consolidation (Oedometer) test, one test on each block sample;
- 8 x Static Simple Shear tests, 2 tests on each block sample.

TEST RESULTS

. CONSOLDATION TEST

One-dimensional consolidation (oedometer) tests were performed by using a motorised load controlled oedometer machine and following the test method as described in the Australian Standard (AS 1289 6.6.1). The test comprised multi-stage loading from a specified initial vertical stress ($\sigma'_{v\text{-}ini}$) to an intermediate stress ($\sigma'_{v\text{-}int}$) followed by unloading stages back to $\sigma'_{v\text{-}ini}$ before reloading to maximum vertical stress ($\sigma'_{v\text{-}max}$). The sample was then unloaded back to $\sigma'_{v\text{-}ini}$ before removing it from the machine. The loading pattern for each test is shown in **Fi ure A to Fi ure A .**

The results of the oedometer test are presented in **Fi ure A to Fi ure A** , 3 pages per test:

- On Page 1, the results are shown in tabulated form, including the details of the loading and unloading stages, the applied stress for each stage, and the results in terms of:

- void ratio (e),
- coefficient of consolidation (c_v) for the loading stages; estimated using the square root time method,
- coefficient of volume compressibility (m_v) for all stages:

$$m_v = \frac{\Delta H}{\Delta \sigma} \frac{1}{H} \quad (1)$$

where ΔH is the change in sample height for the stage, $\Delta\sigma$ is the increase in applied vertical stress for the stage and H is the height of the sample at the start of the stage.

- coefficient of permeability (k) for the loading stages:

$$k = \frac{c_v m_v}{\gamma_w} \quad (2)$$

where γ_w is the unit weight of water.

- On Page 2, plot of void ratio (e) versus applied vertical stress (σ'_v) for each stage is presented. Slopes for determining the compression index (C_c) and swelling indices ($C_{s\text{-}Int}$ and $C_{s\text{-}Max}$) are shown on the plot and the obtained values are provided in the table below the plot.
- On Page 3, plot of sample height (H) versus the square root of time for each loading stage is provided.

. SIMPLE SHEAR TEST

The static simple shear tests were performed using GTI Perth dynamic simple shear machine (**Fi ure**) and following GTI Perth test procedure GTI-ADT-P06. The test procedure is summarised below.

. Sample preparation

Sub sample is taken from the block sample by pushing a sharp-edged cutting ring of 60 mm diameter and 30 mm height. The sample is then trimmed flush with the ring by removing any excess material on the top and bottom of the ring. The trimmings are used to measure the initial moisture content and the wet density (bulk density) is determined from the weight and dimensions of the sample.

The trimmed sample is extruded from the cutting ring and placed between the top and bottom caps of the machine. A flexible membrane is placed around the sample and sealed using "O-rings". The sample, caps and membrane are then transferred to the machine and placed on top of the base carriage. The bottom cap is then bolted to the base carriage and the vertical loading ram is lowered and connected to the top cap.

Drainage lines are connected to the caps before closing the cell and filling it with water. A confining pressure of maximum 10 kPa is applied to the cell in order to maintain the membrane in contact with the sample.

. Saturation

During saturation of the sample, the cell pressure and back pressure were ramped up in parallel, until a back pressure of 400 kPa were reached with a difference between them maintained constant at 10 kPa. These conditions were maintained for a period of time (no less than 1 hour) to allow saturation to continue. A B-value test was then carried out, which

consisted of closing the drainage valves and increasing the cell pressure to maximum 430 kPa ($\Delta\sigma_h$ = 20 kPa). During that time, the pore pressure change (Δu) was recorded. B value, calculated as the ratio between Δu and $\Delta\sigma_h$, greater than 0.90 was achieved for all the simple shear tests.

. Consolidation

All samples were consolidated anisotropically, to a specified effective vertical stress (σ'_{vc}) and effective horizontal stress (σ'_{hc}). Values of σ'_{vc} ranging from 200 kPa to 600 kPa were used for the tests with a stress ratio $K_o = \sigma'_{hc}/\sigma'_{vc}$ of 0.7. The consolidation of the sample was carried out by ramping the cell pressure (σ'_{hc}) and vertical stress (σ'_{vc}) to the specified values, targeting the K_o path with the drainage valves open. After ramping, sufficient time was allowed for the sample to fully consolidate.

. Shearin

The undrained simple shear tests were carried out by maintaining a constant sample height and constant total vertical stress (σ_v) throughout the loading stage. This is generally achieved by locking the vertical loading ram into fixed position in order to maintain a constant sample height while adjusting the cell pressure to maintain constant total vertical stress.

All the static tests performed using the dynamic simple shear machine tests were undertaken at horizontal displacement rate of 0.1 mm/min, corresponding to strain rate of about 0.5 %/min. All static tests were terminated after reaching a final shear strain (γ_{max}) greater than 30%.

The undrained shear stress (τ_{xy}) is interpreted from the simple shear test assuming that a complimentary stress acts on the vertical boundaries of the sample. Joer et al. (2010) proposed an alternative interpretation, where the shear stress (τ_{fail}) is calculated along a discrete diagonal shear plane. **Fi ure** shows a sketch of the boundary conditions and the normal (σ'_n) and shear stress (τ_{fail}) acting on the failure plane. Note that the failure plane is assumed to develop from the top to bottom of the sample and can be confirmed from scrutinising the sample geometry after testing.

. Test Results

The simple shear test results are presented in **Fi ure B to Fi ure B** and are summarised in **Ta le** .

The results of the static simple shear tests are presented across four pages:

- Page 1: The results of the consolidation stage are presented on this page in terms of:
  - vertical (σ_v) and horizontal (σ_h) stresses versus time,
  - volumetric (ε_v) and axial (ε_a) strains versus time,
  - vertical (σ_v) stress versus the horizontal (σ_h); target K_o line is shown on this graph and
  - ε_v versus mean stress (p).
- Page 2: The results of the shearing stage based on the traditional interpretation are presented on this page in terms of:
  - shear stress (τ_{xy}) versus shear strain (γ),
  - total vertical stress (σ_v) and excess pore pressure (Δu) versus γ,
  - effective vertical (σ'_v) and horizontal (σ'_h) stresses versus γ and

- stress ratio (τ_{xy}/σ'_v) versus γ.

- Page 3: The results based on both the traditional and Joer et al. (2010) interpretations are presented on this page in terms of:
  - shear stresses (τ_{xy} and τ_{fail}) versus (γ),
  - effective vertical (σ'_v) stress and the normal stress (σ'_n) acting on the failure plane (**Fi ure**) versus γ,
  - stress ratio (τ_{xy}/σ'_v) and (τ_{fail}/σ'_n) versus γ and
  - stress path τ_{xy} versus σ'_v and τ_{fail} versus σ'_n. Note that values of friction angles are shown on these plots and were derived assuming no cohesion (line drawn through the origin of axes).
- Page 4: On this page the photograph of the sample after testing is presented.

This report presents the factual results of tests performed on the "as received" samples. These results should be used in combination with all available data from the site, by competent Geotechnical Engineers, to derive design parameters, with the knowledge of their limitation.

We trust that the tests results provided in this factual report meets your requirements, but should you have any queries then please do not hesitate to contact us.

Yours sincerely

GTI Perth Pty Ltd

Francis Lee
Director

REFERENCES

AS 1289 6.6.1 (1998), "Soil Strength and Consolidation Tests – Determination of the One-Dimensional Consolidation Properties of a Soil - Standard Method".

GTI-ADT-P06. "*Determination of Shear Strength - Static Simple Shear Test*".

Joer, H.A., Erbrich, C.T. and Sharma, S.S. (2010). "*A New Interpretation of the Simple Shear Test*", 2nd International Symposium Frontiers in Offshore Geotechnics, ISFPG-2010, Perth Australia, pp 353-358.

Ta le : Static Simple Shear Test

Client: Evolution Mining
Client Reference: PO208614 & PO208893
Pro ect: Mungari Gold Operations

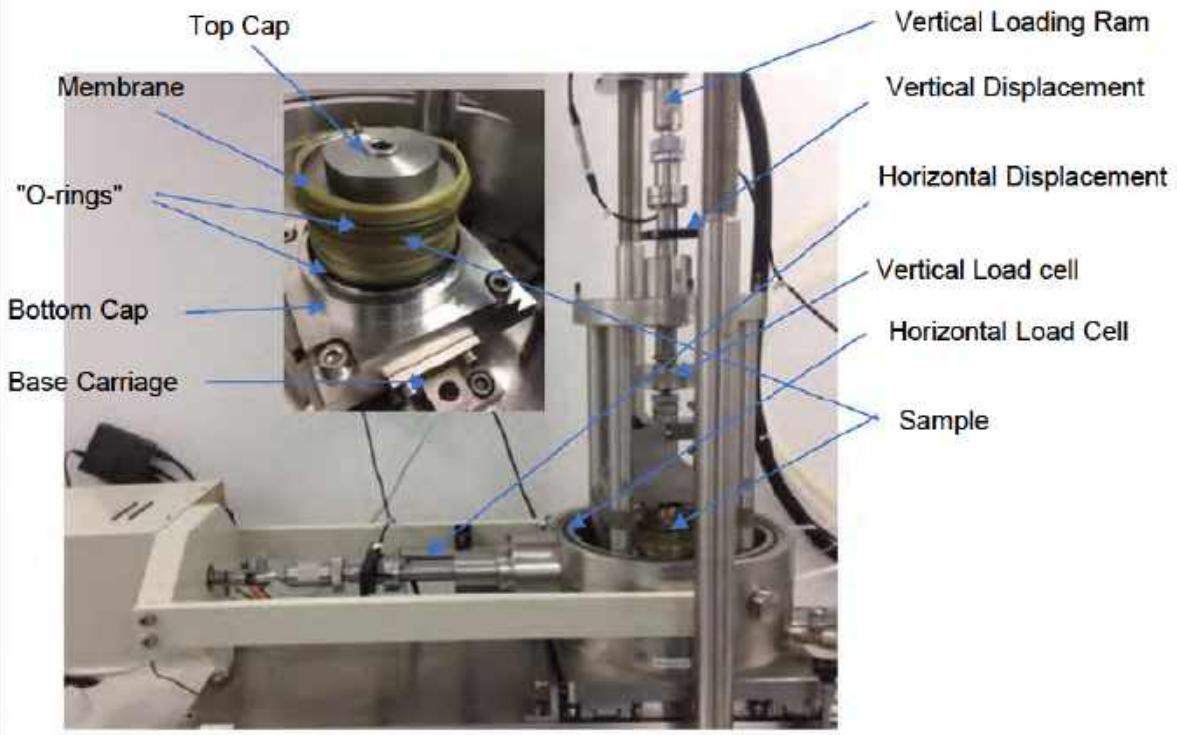
Ta le : Static Simple Shear Tests Summar Results

Location	Sample No.	Test Name	Depth		ρ	w	ρ_d	Consolidation			Loadin Rates	Shearin Static Loadin			
			From m	To m	/cm		/cm	B value	σ_v kPa	σ_h kPa	mm/min	τ_{ma} kPa	γ_{ma}	τ_{fail} kPa	σ_n kPa
North Wall	KP-EVO-15	21-015-SS-01-S	-	-	1.76	18.3	1.49	0.93	400	280	0.1	149.9	16.1	158.9	236.7
North Wall	KP-EVO-15	21-015-SS-02-S	-	-	1.76	17.4	1.50	0.92	200	140	0.1	101.9	15.3	113.2	134.4
North Wall	KP-EVO-20	21-015-SS-03-S	-	-	1.54	9.8	1.41	0.94	600	420	0.1	176.9	32.9	190.1	347.0
North Wall	KP-EVO-20	21-015-SS-04-S	-	-	1.61	9.9	1.46	0.94	300	210	0.1	94.6	31.8	102.7	180.8
South Wall	KP-EVO-29	21-016-SS-01-S	-	-	2.02	11.4	1.81	0.91	400	280	0.1	161.4	33.5	179.9	288.2
South Wall	KP-EVO-29	21-016-SS-02-S	-	-	1.96	12.3	1.74	0.91	200	140	0.1	78.0	31.6	86.0	126.4
South Wall	KP-EVO-30	21-016-SS-03-S	-	-	2.01	16.6	1.72	0.94	600	420	0.1	244.0	31.7	253.4	434.8
South Wall	KP-EVO-30	21-016-SS-04-S	-	-	1.98	16.6	1.70	0.94	300	210	0.1	140.5	31.1	151.2	197.9

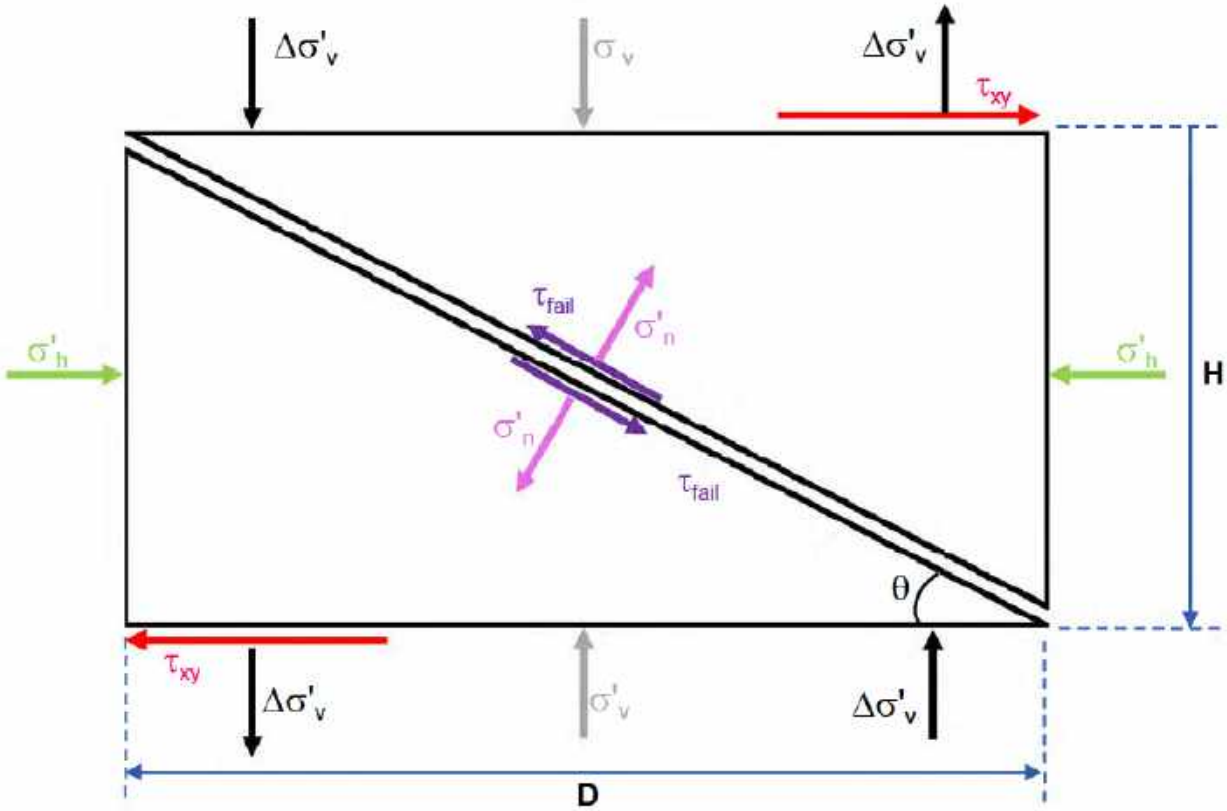
Fi ures

Client:	Evolution Mining
Client Reference:	PO208614 & PO208893
Pro ect:	Mungari Gold Operations

Fi ure : D namic Simple Shear Test Setup



Fi ure : Simple Shear Tests Alternative Interpretation Joer et al.



Appendi A: Consolidation

GTI Perth
Geotechnical Testing and Investigation

Consolidation Oedometer
Test Method: AS . . .

GTI Perth Reference:	C27-P01-T01	**Test Name:**	21-015-OED-01
GTI Perth Jo No.:	21-015	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EVO-15
Client Reference:	PO208614	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	North Wall	**Test Condition:**	Inundated at stage 1

Sample Details

Diameter mm :	60.0	**Initial Moisture Content :**	18.4*	**Final Moisture Content :**	25.8
Initial Hei ht mm :	19.2	**Initial Dr Densit /cm :**	1.42	**Final Dr Densit /cm :**	1.57
Final Hei ht mm :	17.2	**Initial De ree of Saturation :**	52.8	**Final De ree of Saturation :**	93.9

Notes: *Moisture content from trimmings; may not be representative of the whole sample

Tested :	NC/FL	**Checked :**	FL
Date:	28/01/2021	**Date:**	9/02/2021

Sta e		Vertical Stress	Void ratio	Coefficient of		
				Consolidation	Compressi ilit	Permea ilit
T pe	No.	σ_v kPa	e	c_v m / ear	m_v m /kN	k m/sec
Loadin	1	6	0.967	Sample Swelling		
	2	11	0.959	7.1	8.69E-04	1.91E-09
	3	21	0.946	44.7	6.48E-04	9.00E-09
	4	41	0.904	15.3	1.06E-03	5.06E-09
	5	81	0.847	23.6	7.59E-04	5.56E-09
	6	161	0.781	14.7	4.46E-04	2.04E-09
	7	321	0.705	13.4	2.66E-04	1.10E-09
Unloadin	8	161	0.707	-	5.93E-06	-
	9	41	0.722	-	7.72E-05	-
	10	6	0.749	-	4.43E-04	-
Reloadin	11	41	0.738	-	1.84E-04	-
	12	161	0.714	-	1.15E-04	-
	13	321	0.694	-	7.31E-05	-
Loadin	14	641	0.635	41.3	1.09E-04	1.39E-09
	15	1281	0.595	5.8	3.83E-05	6.87E-11
Unloadin	16	321	0.596	-	6.14E-07	-
	17	41	0.627	-	7.03E-05	-
	18	6	0.656	-	5.07E-04	-

GTIPerth
Geotechnical Testing and Interpretation

Consolidation Oedometer
Test Method: AS . . .

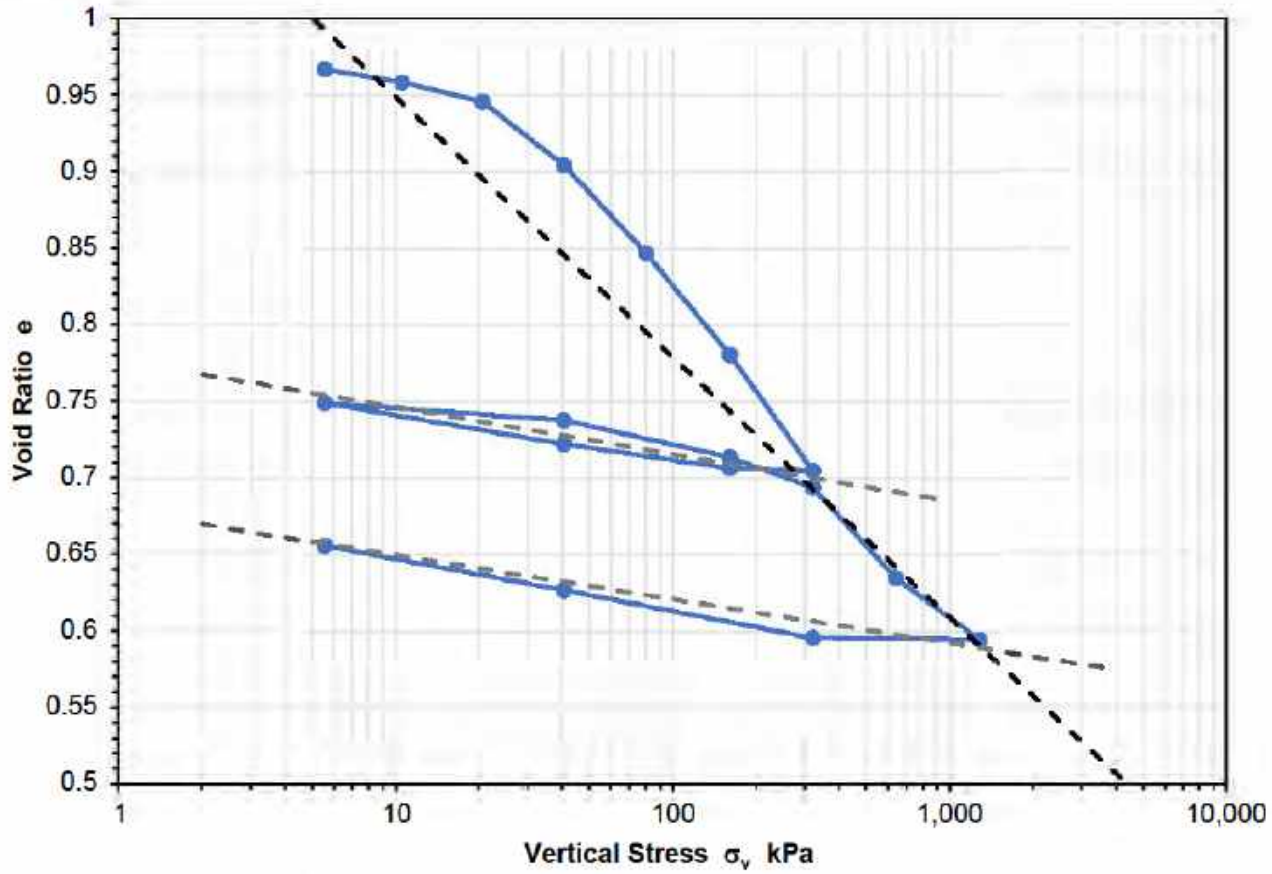
GTI Perth Reference:	C27-P01-T01	**Test Name:**	21-015-OED-01
GTI Perth Jo No.:	21-015	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EVO-15
Client Reference:	PO208614	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	North Wall	**Test Condition:**	Inundated at stage 1

Sample Details

Diameter mm :	60.0	**Initial Moisture Content :**	18.4*	**Final Moisture Content :**	25.8
Initial Hei ht mm :	19.2	**Initial Dr Densit /cm :**	1.42	**Final Dr Densit /cm :**	1.57
Final Hei ht mm :	17.2	**Initial De ree of Saturation :**	52.8	**Final De ree of Saturation :**	93.9

Notes: *Moisture content from trimmings; may not be representative of the whole sample

Tested :	NC/FL	**Checked :**	FL
Date:	28/01/2021	**Date:**	9/02/2021



Interpreted Parameters		
Compression inde C_c	0.170	
Swellin inde $C_{s\text{-}int}$	0.031	at Intermediate unload-reloading stress
Swellin inde $C_{s\text{-}Max}$	0.029	at final loading stage unload-reloading stress

GTIPerth
Geotechnical Testing and Interpretation

Consolidation Oedometer
Test Method: AS . . .

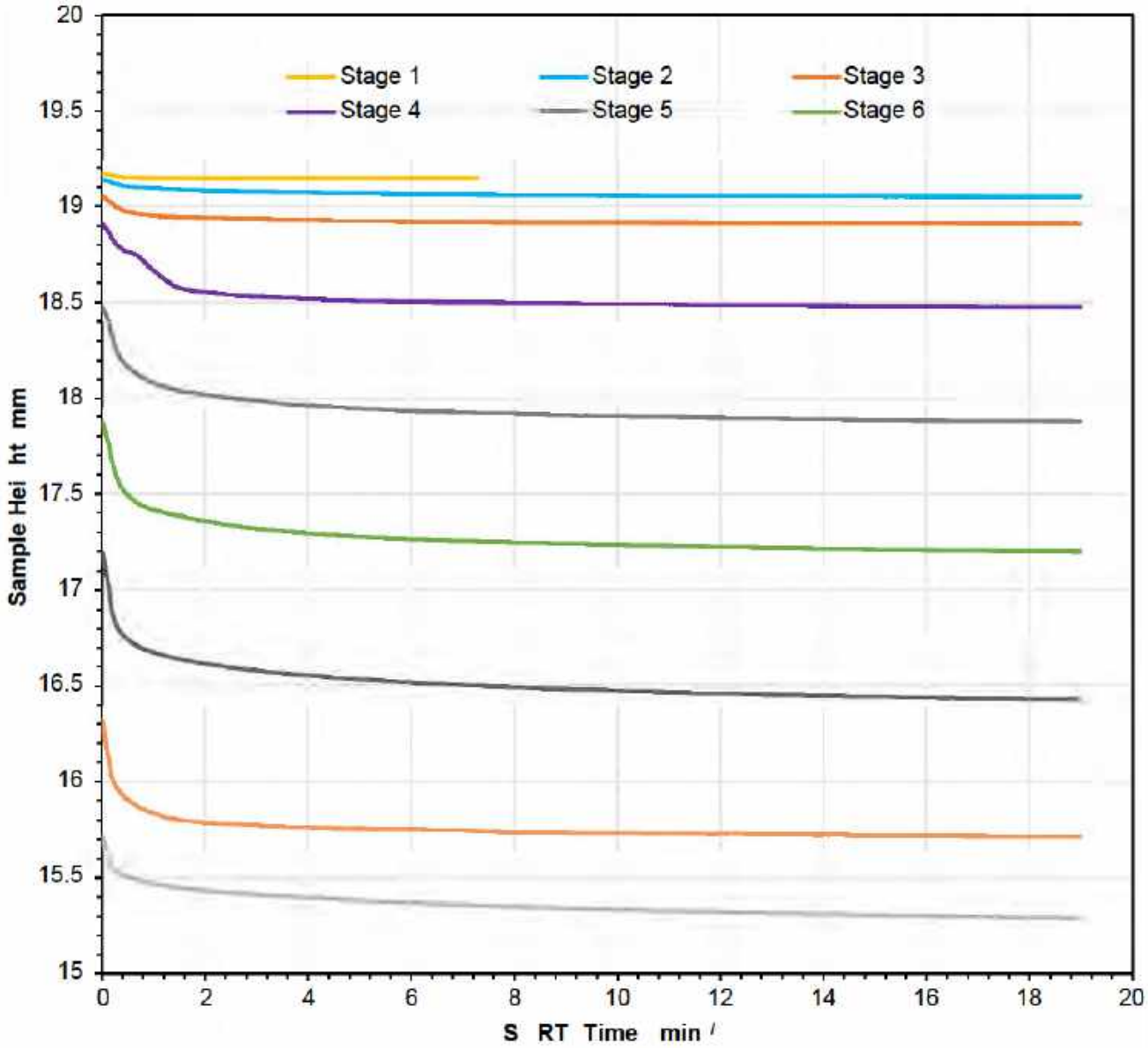
GTI Perth Reference:	C27-P01-T01	**Test Name:**	21-015-OED-01
GTI Perth Jo No.:	21-015	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EVO-15
Client Reference:	PO208614	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	North Wall	**Test Condition:**	Inundated at stage 1

Sample Details

Diameter mm :	60.0	**Initial Moisture Content :**	18.4*	**Final Moisture Content :**	25.8
Initial Hei ht mm :	19.2	**Initial Dr Densit /cm :**	1.42	**Final Dr Densit /cm :**	1.57
Final Hei ht mm :	17.2	**Initial De ree of Saturation :**	52.8	**Final De ree of Saturation :**	93.9

Notes: *Moisture content from trimmings; may not be representative of the whole sample

Tested :	NC/FL	**Checked :**	FL
Date:	28/01/2021	**Date:**	9/02/2021



Jo No.: **Evolution Minin** **Mun ari Gold Operations**

Consolidation Oedometer

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Fi ure A Pa e

GTI Perth
Geotechnical Testing and Inspection

Consolidation Oedometer
Test Method: AS . . .

GTI Perth Reference:	C27-P01-T01	**Test Name:**	21-015-OED-02
GTI Perth Jo No.:	21-015	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EVO-20
Client Reference:	PO208614	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	North Wall	**Test Condition:**	Inundated at stage 1

Sample Details

Diameter mm :	60.0	**Initial Moisture Content**	:	11.7*	**Final Moisture Content**	:	18.1
Initial Hei ht mm :	19.1	**Initial Dr Densit /cm**	:	1.43	**Final Dr Densit /cm**	:	1.81
Final Hei ht mm :	15.3	**Initial De ree of Saturation**	:	36.0	**Final De ree of Saturation**	:	96.8

Notes: *Moisture content from trimmings; may not be representative of the whole sample

Tested :	NC/FL	**Checked :**	FL
Date:	28/01/2021	**Date:**	9/02/2021

Sta e		Vertical Stress	Void ratio	Coefficient of		
				Consolidation	Compressi ilit	Permea ilit
T pe	No.	σ_v	e	c_v	m_v	k
		kPa		m / ear	m /kN	m/sec
Loadin	1	6	0.871	13.9	5.00E-03	2.16E-08
	2	11	0.841	6.2	3.18E-03	6.12E-09
	3	21	0.776	24.9	3.52E-03	2.72E-08
	4	41	0.702	57.3	2.09E-03	3.73E-08
	5	81	0.621	76.6	1.18E-03	2.82E-08
	6	201	0.522	151.6	5.08E-04	2.39E-08
	7	401	0.464	120.8	1.93E-04	7.23E-09
Unloadin	8	201	0.465	-	4.06E-06	-
	9	51	0.471	-	2.66E-05	-
	10	6	0.487	-	2.49E-04	-
Reloadin	11	51	0.479	-	1.16E-04	-
	12	201	0.468	-	5.23E-05	-
	13	401	0.455	-	4.25E-05	-
Loadin	14	801	0.407	130.6	8.36E-05	3.39E-09
Unloadin	15	201	0.412	-	6.46E-06	-
	16	51	0.421	-	4.21E-05	-
	17	6	0.438	-	2.71E-04	-

GTIPerth
Geotechnical Testing and Interpretation

Consolidation Oedometer
Test Method: AS . . .

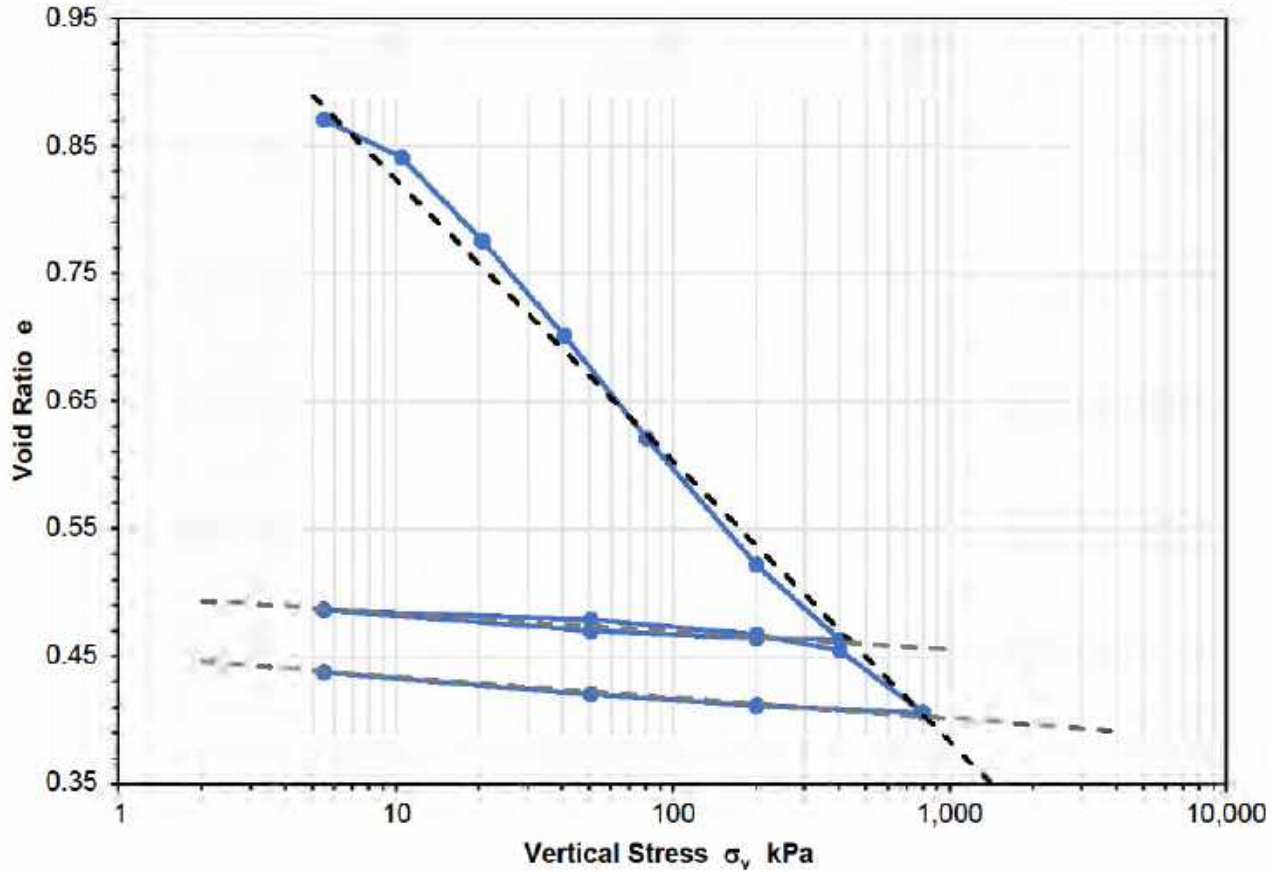
GTI Perth Reference:	C27-P01-T01	**Test Name:**	21-015-OED-02
GTI Perth Jo No.:	21-015	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EVO-20
Client Reference:	PO208614	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	North Wall	**Test Condition:**	Inundated at stage 1

Sample Details

Diameter mm :	60.0	**Initial Moisture Content :**	11.7*	**Final Moisture Content :**	18.1
Initial Hei ht mm :	19.1	**Initial Dr Densit /cm :**	1.43	**Final Dr Densit /cm :**	1.81
Final Hei ht mm :	15.3	**Initial De ree of Saturation :**	36.0	**Final De ree of Saturation :**	96.8

Notes: *Moisture content from trimmings; may not be representative of the whole sample

Tested :	NC/FL	**Checked :**	FL
Date:	28/01/2021	**Date:**	9/02/2021



Interpreted Parameters		
Compression inde C_c	0.220	
Swellin inde $C_{s\text{-}int}$	0.014	at Intermediate unload-reloading stress
Swellin inde $C_{s\text{-}Max}$	0.016	at final loading stage unload-reloading stress

GTIPerth
Geotechnical Testing and Interpretation

Consolidation Oedometer
Test Method: AS . . .

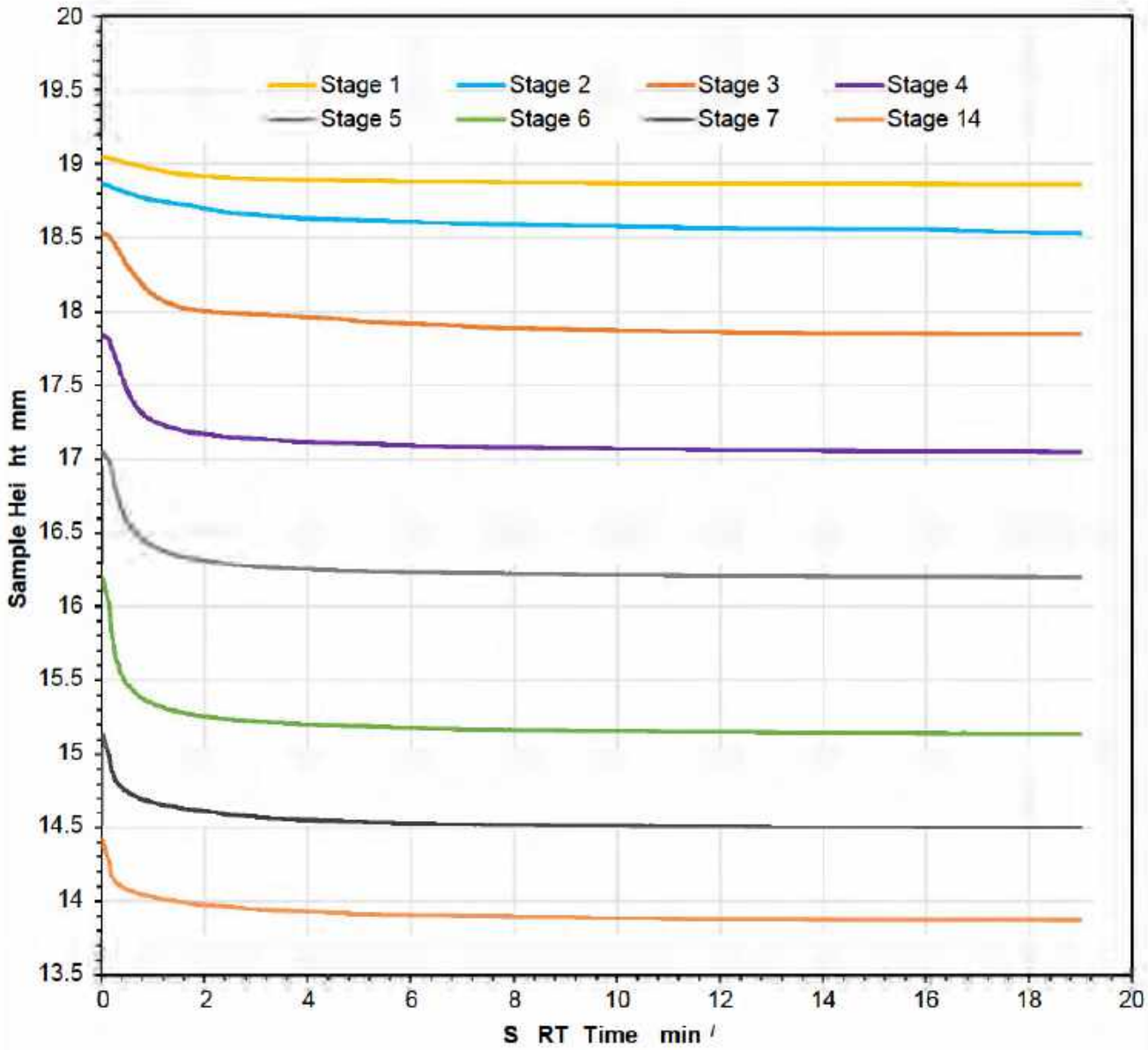
GTI Perth Reference:	C27-P01-T01	**Test Name:**	21-015-OED-02
GTI Perth Jo No.:	21-015	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EVO-20
Client Reference:	PO208614	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	North Wall	**Test Condition:**	Inundated at stage 1

Sample Details

Diameter mm :	60.0	**Initial Moisture Content :**	11.7*	**Final Moisture Content :**	18.1
Initial Hei ht mm :	19.1	**Initial Dr Densit /cm :**	1.43	**Final Dr Densit /cm :**	1.81
Final Hei ht mm :	15.3	**Initial De ree of Saturation :**	36.0	**Final De ree of Saturation :**	96.8

Notes: *Moisture content from trimmings; may not be representative of the whole sample

Tested :	NC/FL	**Checked :**	FL
Date:	28/01/2021	**Date:**	9/02/2021



GTI Perth
Geotechnical Testing and Investigation

Consolidation Oedometer
Test Method: AS . . .

GTI Perth Reference:	C27-P01-T02	**Test Name:**	21-016-OED-01
GTI Perth Jo No.:	21-016	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EVO-29
Client Reference:	PO208893	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	South Wall	**Test Condition:**	Inundated at stage 1

Sample Details

Diameter mm :	60.0	**Initial Moisture Content :**	11.6*	**Final Moisture Content :**	17.2
Initial Hei ht mm :	19.2	**Initial Dr Densit /cm :**	1.81	**Final Dr Densit /cm :**	1.90
Final Hei ht mm :	18.0	**Initial De ree of Saturation :**	58.9	**Final De ree of Saturation :**	105.3

Notes: *Moisture content from trimmings; may not be representative of the whole sample

Tested :	NC	**Checked :**	BB
Date:	8/02/2021	**Date:**	12/02/2021

Sta e		Vertical Stress	Void ratio	Coefficient of		
				Consolidation	Compressi ilit	Permea ilit
T pe	No.	σ_v kPa	e	c_v m / ear	m_v m /kN	k m/sec
Loadin	1	6	#N/A	Sample Swelling		
	2	11	#N/A			
	3	21	#N/A			
	4	41	0.525	30.5	3.50E-04	3.31E-09
	5	81	0.507	51.8	2.81E-04	4.52E-09
	6	161	0.480	62.7	2.32E-04	4.51E-09
	7	321	0.447	77.2	1.39E-04	3.32E-09
Unloadin	8	161	0.450	-	1.60E-05	-
	9	41	0.463	-	6.93E-05	-
	10	6	0.485	-	4.36E-04	-
Reloadin	11	41	0.474	-	2.00E-04	-
	12	161	0.456	-	1.06E-04	-
	13	321	0.441	-	6.28E-05	-
Loadin	14	641	0.409	41.1	6.84E-05	8.72E-10
	15	1281	0.375	56.8	3.87E-05	6.83E-10
Unloadin	16	321	0.380	-	4.17E-06	-
	17	41	0.403	-	6.00E-05	-
	18	6	0.421	-	3.69E-04	-

GTIPerth
Geotechnical Testing and Interpretation

Consolidation Oedometer
Test Method: AS . . .

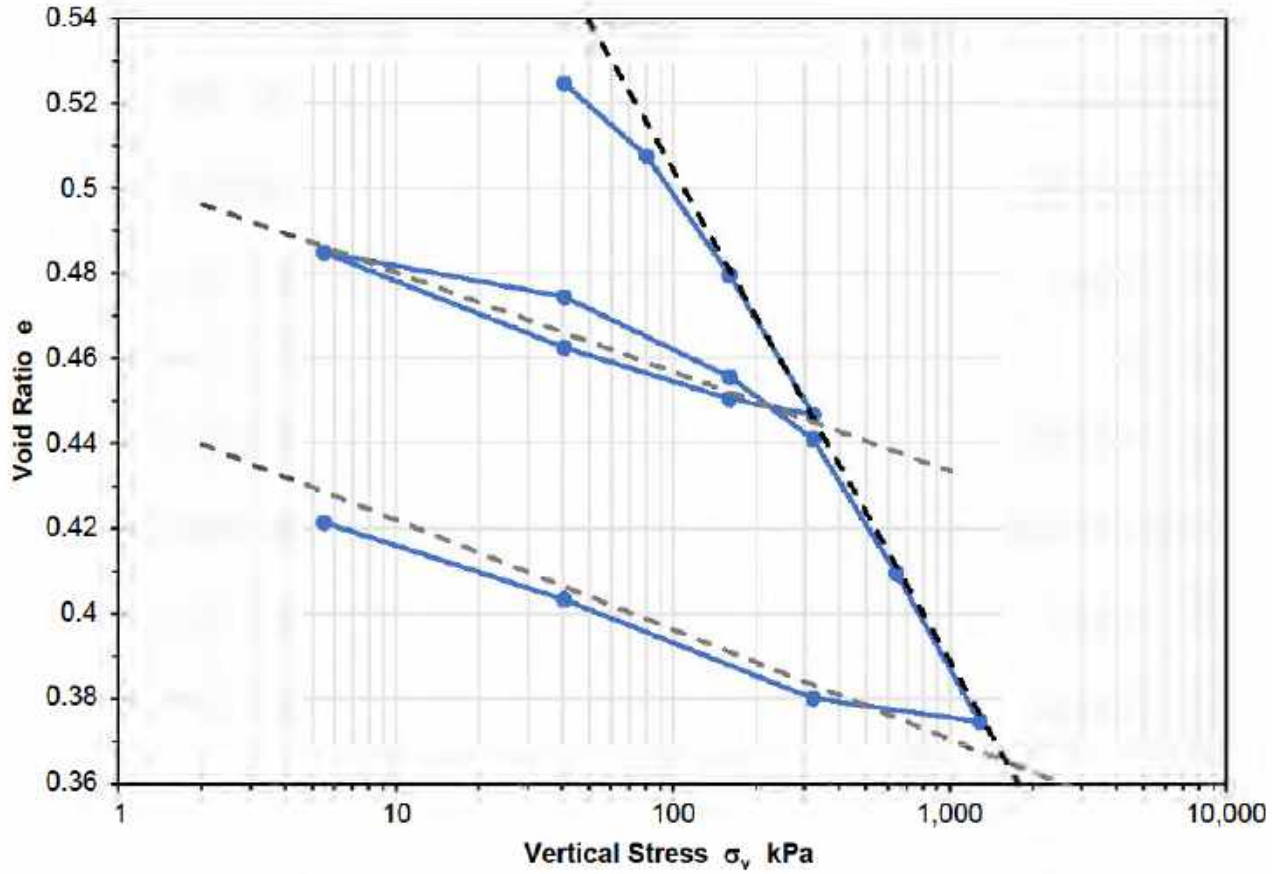
GTI Perth Reference:	C27-P01-T02	**Test Name:**	21-016-OED-01
GTI Perth Jo No.:	21-016	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EVO-29
Client Reference:	PO208893	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	South Wall	**Test Condition:**	Inundated at stage 1

Sample Details

Diameter mm :	60.0	**Initial Moisture Content :**	11.6*	**Final Moisture Content :**	17.2
Initial Hei ht mm :	19.2	**Initial Dr Densit /cm :**	1.81	**Final Dr Densit /cm :**	1.90
Final Hei ht mm :	18.0	**Initial De ree of Saturation :**	58.9	**Final De ree of Saturation :**	105.3

Notes: *Moisture content from trimmings; may not be representative of the whole sample

Tested :	NC	**Checked :**	BB
Date:	8/02/2021	**Date:**	12/02/2021



Interpreted Parameters		
Compression inde C_c	0.116	
Swellin inde $C_{s\text{-}int}$	0.023	at Intermediate unload-reloading stress
Swellin inde $C_{s\text{-}Max}$	0.026	at final loading stage unload-reloading stress

GTIPerth
Geotechnical Testing and Interpretation

Consolidation Oedometer
Test Method: AS . . .

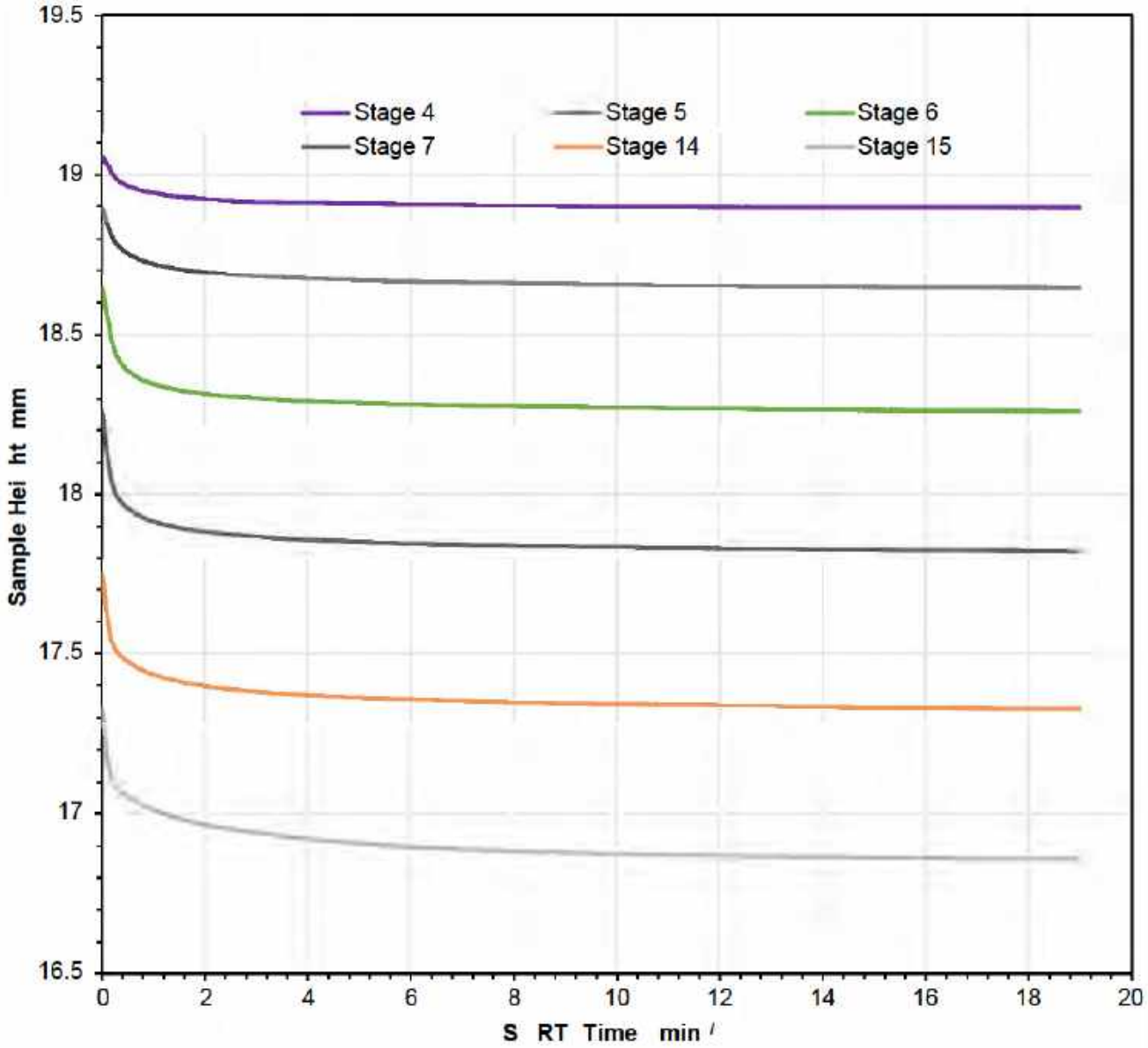
GTI Perth Reference:	C27-P01-T02	**Test Name:**	21-016-OED-01
GTI Perth Jo No.:	21-016	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EVO-29
Client Reference:	PO208893	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	South Wall	**Test Condition:**	Inundated at stage 1

Sample Details

Diameter mm :	60.0	**Initial Moisture Content :**	11.6*	**Final Moisture Content :**	17.2
Initial Hei ht mm :	19.2	**Initial Dr Densit /cm :**	1.81	**Final Dr Densit /cm :**	1.90
Final Hei ht mm :	18.0	**Initial De ree of Saturation :**	58.9	**Final De ree of Saturation :**	105.3

Notes: *Moisture content from trimmings; may not be representative of the whole sample

Tested :	NC	**Checked :**	BB
Date:	8/02/2021	**Date:**	12/02/2021



GTI Perth
Geotechnical Testing and Inspection

Consolidation Oedometer
Test Method: AS . . .

GTI Perth Reference:	C27-P01-T02	**Test Name:**	21-016-OED-02
GTI Perth Jo No.:	21-016	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EVO-30
Client Reference:	PO208893	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	South Wall	**Test Condition:**	Inundated at stage 1

Sample Details

Diameter mm :	60.0	**Initial Moisture Content :**	17.0*	**Final Moisture Content :**	20.3
Initial Hei ht mm :	18.9	**Initial Dr Densit /cm :**	1.75	**Final Dr Densit /cm :**	1.78
Final Hei ht mm :	18.5	**Initial De ree of Saturation :**	80.0	**Final De ree of Saturation :**	101.8

Notes: *Moisture content from trimmings; may not be representative of the whole sample

Tested :	NC	**Checked :**	BB
Date:	8/02/2021	**Date:**	12/02/2021

Sta e		Vertical Stress	Void ratio	Coefficient of		
				Consolidation	Compressi ilit	Permea ilit
T pe	No.	σ_v kPa	e	c_v m / ear	m_v m /kN	k m/sec
Loadin	1	6	#N/A	Sample Swelling		
	2	11	#N/A			
	3	21	0.588			
	4	41	0.581	24.6	2.22E-04	1.70E-09
	5	81	0.565	36.1	2.44E-04	2.74E-09
	6	201	0.532	62.8	1.76E-04	3.44E-09
	7	401	0.503	92.8	9.50E-05	2.74E-09
Unloadin	8	201	0.506	-	8.93E-06	-
	9	51	0.518	-	5.16E-05	-
	10	6	0.532	-	2.06E-04	-
Reloadin	11	51	0.529	-	3.89E-05	-
	12	201	0.513	-	6.98E-05	-
	13	401	0.499	-	4.60E-05	-
Loadin	14	801	0.466	33.9	5.50E-05	5.78E-10
Unloadin	15	201	0.476	-	1.13E-05	-
	16	51	0.490	-	6.14E-05	-
	17	6	0.502	-	1.86E-04	-

GTIPerth
Geotechnical Testing and Interpretation

Consolidation Oedometer
Test Method: AS . . .

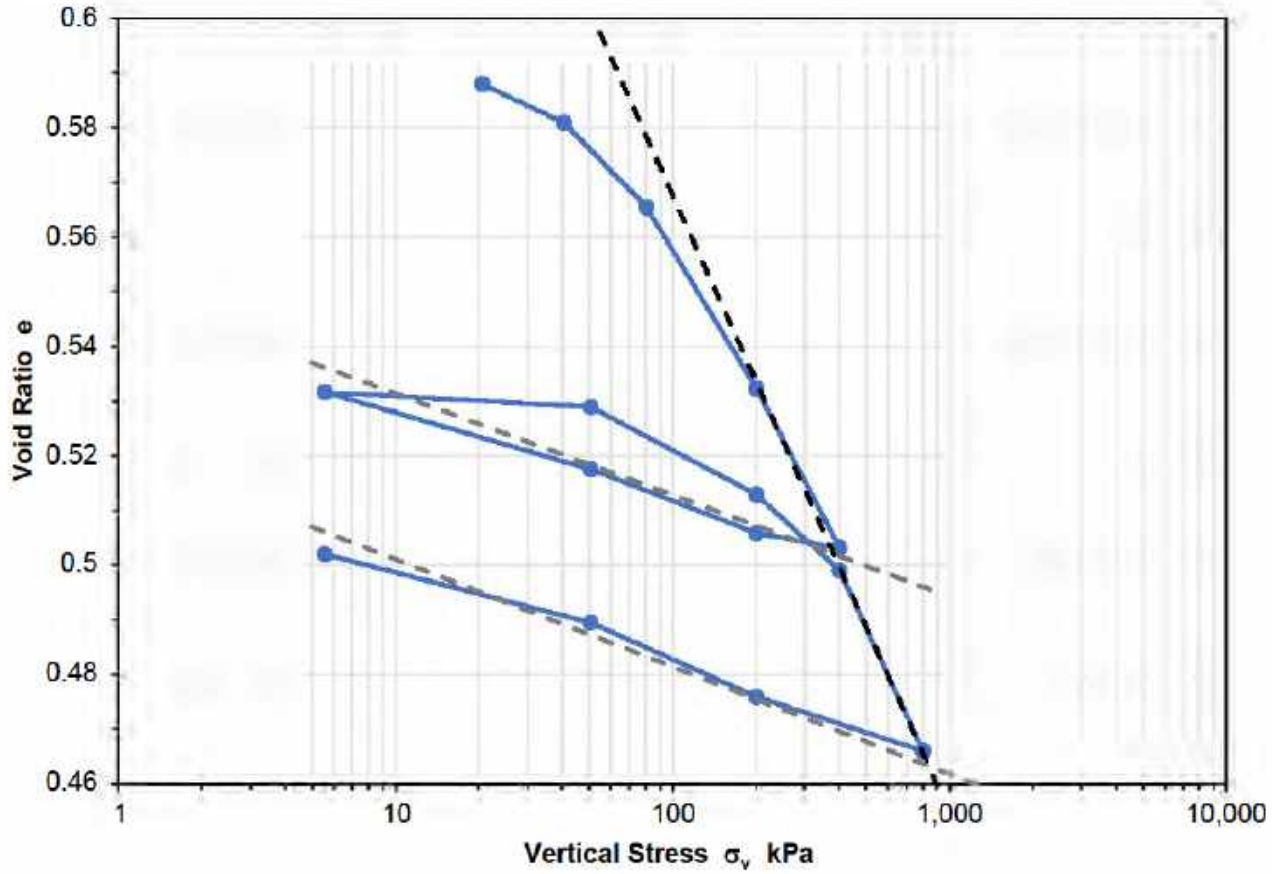
GTI Perth Reference:	C27-P01-T02	**Test Name:**	21-016-OED-02
GTI Perth Jo No.:	21-016	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EVO-30
Client Reference:	PO208893	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	South Wall	**Test Condition:**	Inundated at stage 1

Sample Details

Diameter mm :	60.0	**Initial Moisture Content :**	17.0*	**Final Moisture Content :**	20.3
Initial Hei ht mm :	18.9	**Initial Dr Densit /cm :**	1.75	**Final Dr Densit /cm :**	1.78
Final Hei ht mm :	18.5	**Initial De ree of Saturation :**	80.0	**Final De ree of Saturation :**	101.8

Notes: *Moisture content from trimmings; may not be representative of the whole sample

Tested :	NC	**Checked :**	BB
Date:	8/02/2021	**Date:**	12/02/2021



Interpreted Parameters		
Compression inde C_c	0.113	
Swellin inde $C_{s\text{-}int}$	0.019	at intermediate unload-reloading stress
Swellin inde $C_{s\text{-}Max}$	0.020	at final loading stage unload-reloading stress

GTIPerth
Geotechnical Testing and Interpretation

Consolidation Oedometer
Test Method: AS . . .

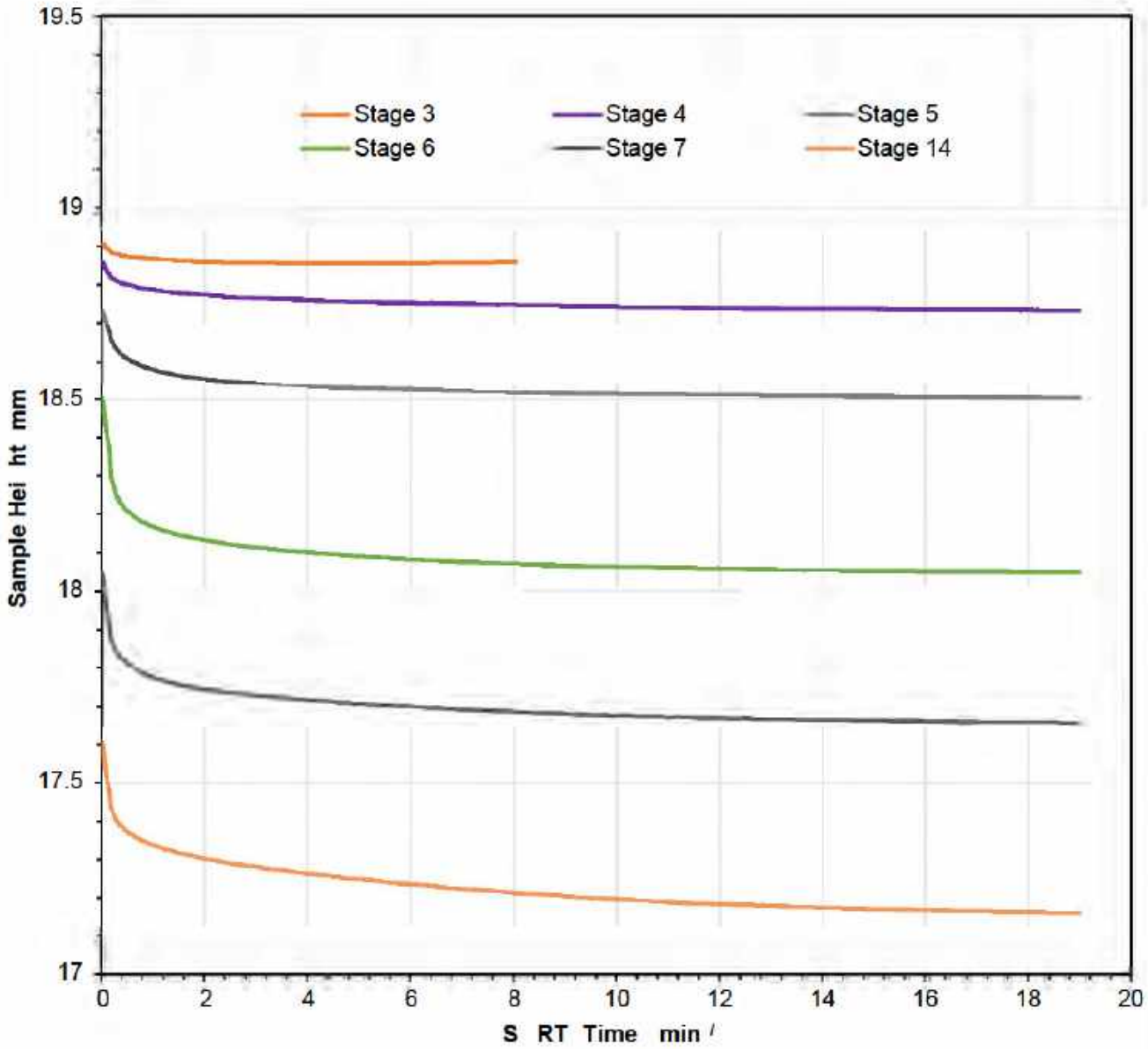
GTI Perth Reference:	C27-P01-T02	**Test Name:**	21-016-OED-02
GTI Perth Jo No.:	21-016	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EVO-30
Client Reference:	PO208893	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	South Wall	**Test Condition:**	Inundated at stage 1

Sample Details

Diameter mm :	60.0	**Initial Moisture Content :**	17.0*	**Final Moisture Content :**	20.3
Initial Hei ht mm :	18.9	**Initial Dr Densit /cm :**	1.75	**Final Dr Densit /cm :**	1.78
Final Hei ht mm :	18.5	**Initial De ree of Saturation :**	80.0	**Final De ree of Saturation :**	101.8

Notes: *Moisture content from trimmings; may not be representative of the whole sample

Tested :	NC	**Checked :**	BB
Date:	8/02/2021	**Date:**	12/02/2021



Appendi B: Static Simple Shear

GTI Perth
Geotechnical Testing and Interpretation

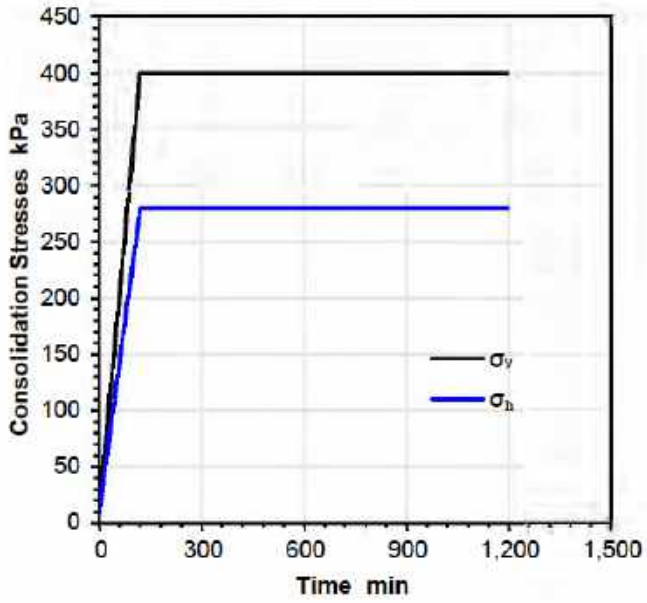
Static Simple Shear
Test Method: GTI ADT P

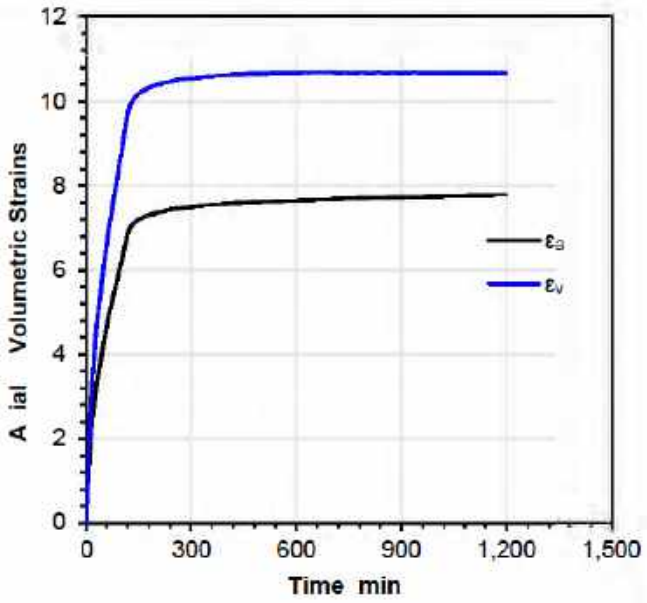
GTI Perth Reference:	C27-P01-T01	**Test Name:**	21-015-SS-01-S
GTI Perth Jo No.:	21-015	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-15
Client Reference:	PO208614	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	North Wall	**Sample Condition:**	Natural Moisture Content

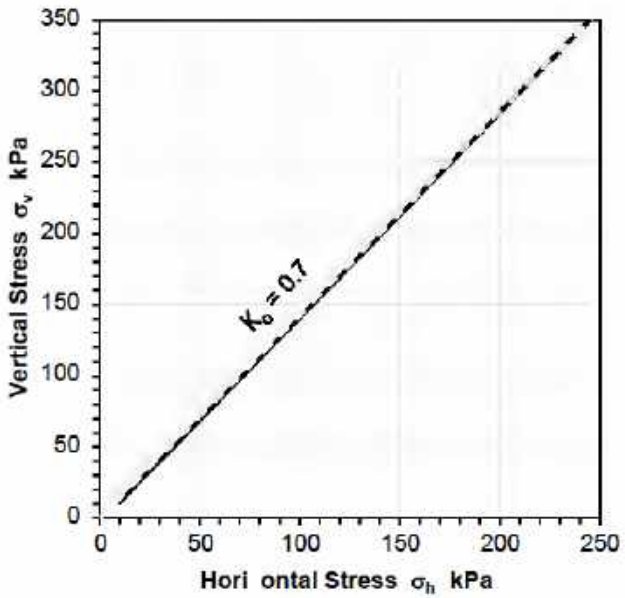
Sample Details

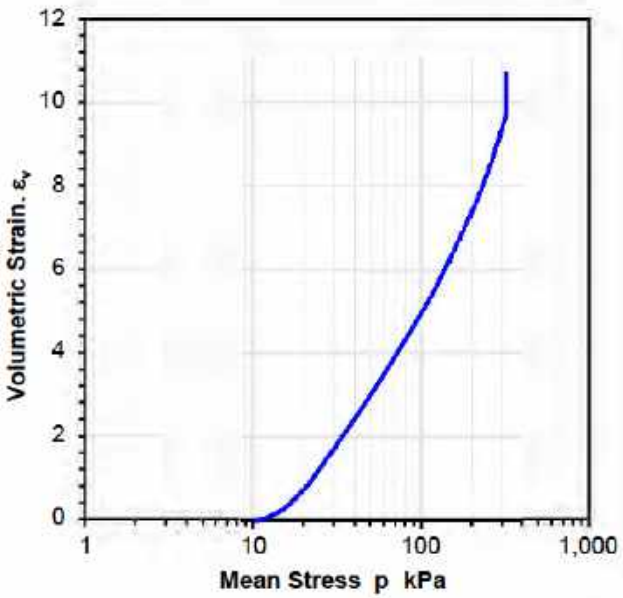
Diameter mm :	60.0	**Initial Moisture Content**	: 18.3*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	: 29.5	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	: 1.49	

Tested :	HE	**Checked :**	BB
Date:	31/01/2021	**Date:**	10/02/2021









Jo No.:

Evolution Minin Mun ari Gold Operations
CAU Static Simple Shear Consolidation Sta e
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GTIPerth
Geotechnical Testing and Interpretation

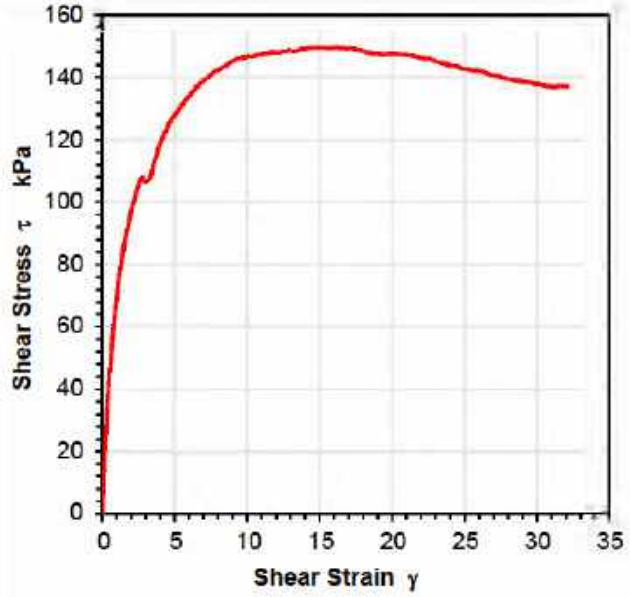
Static Simple Shear
Test Method: GTI ADT P

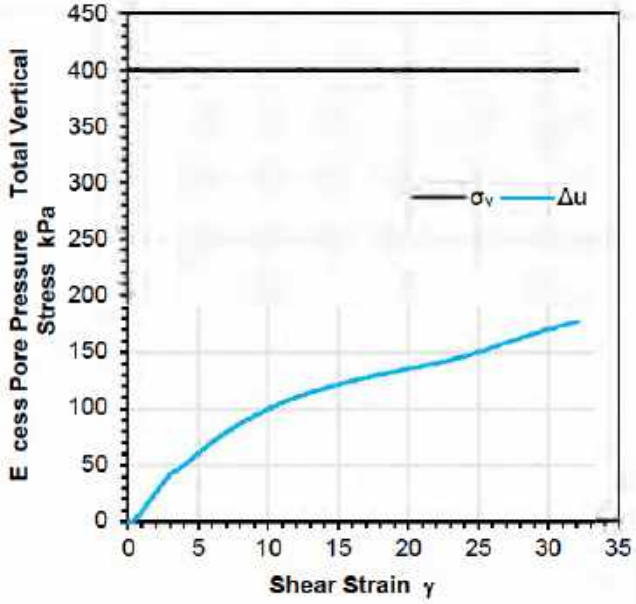
GTI Perth Reference:	C27-P01-T01	**Test Name:**	21-015-SS-01-S
GTI Perth Jo No.:	21-015	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-15
Client Reference:	PO208614	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	North Wall	**Sample Condition:**	Natural Moisture Content

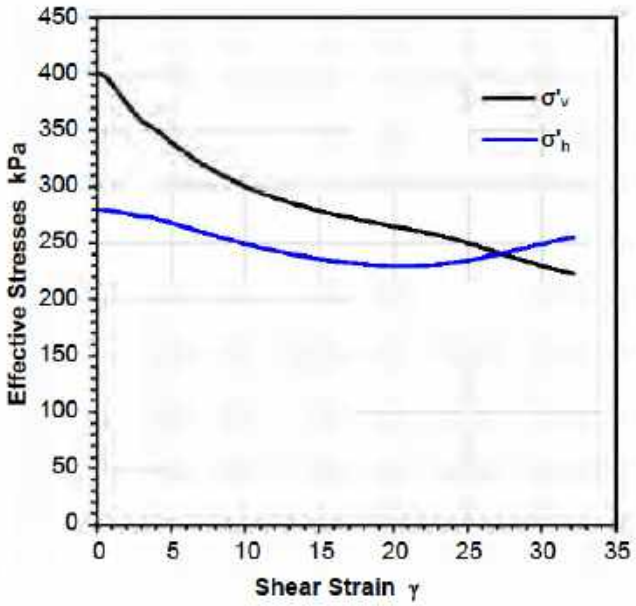
Sample Details

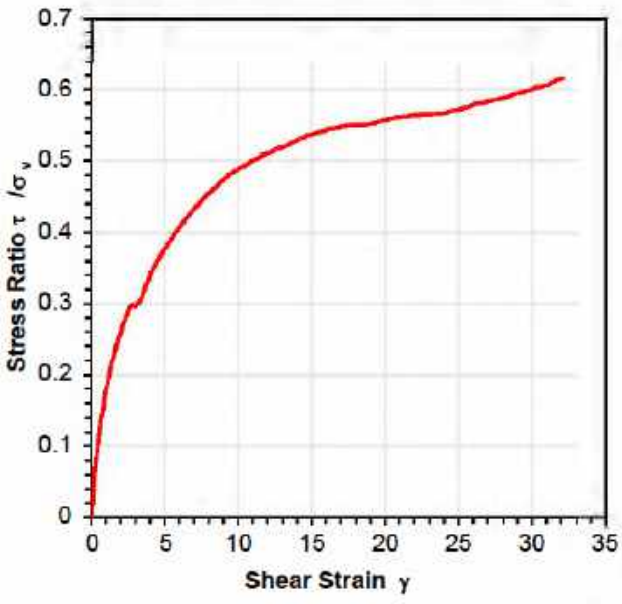
Diameter mm :	60.0	**Initial Moisture Content**	:	18.3*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	:	29.5	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	:	1.49	

Tested :	HE	**Checked :**	BB
Date:	31/01/2021	**Date:**	10/02/2021









GTI Perth
Geotechnical Testing and Interpretation

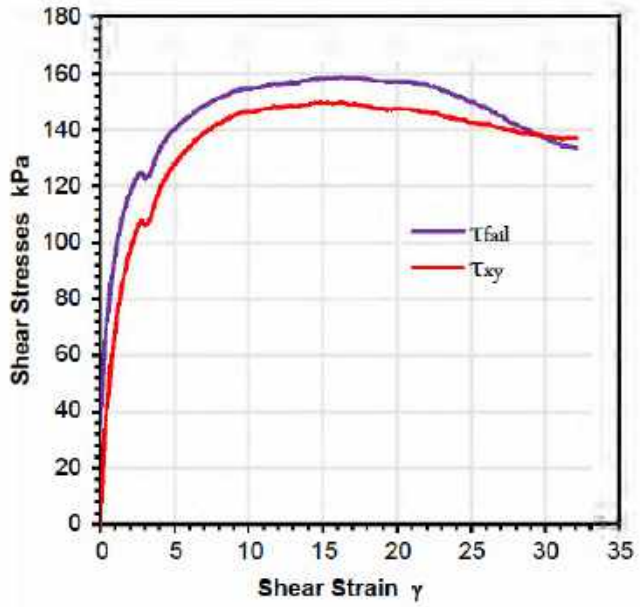
Static Simple Shear
Test Method: GTI ADT P

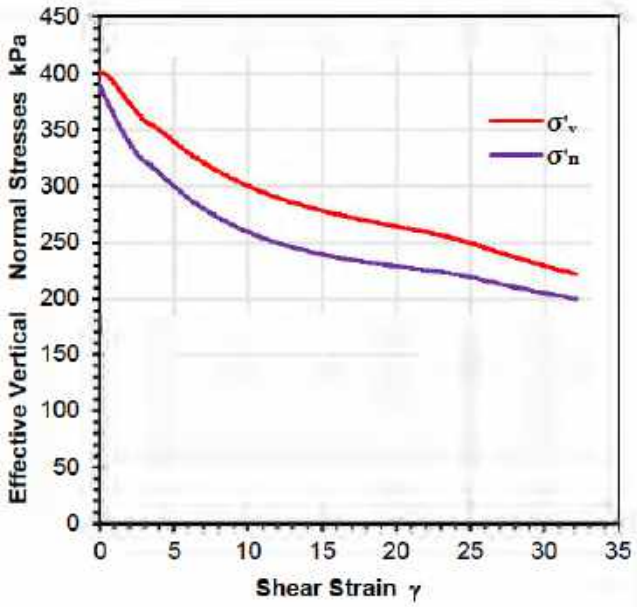
GTI Perth Reference:	C27-P01-T01	**Test Name:**	21-015-SS-01-S
GTI Perth Jo No.:	21-015	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-15
Client Reference:	PO208614	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	North Wall	**Sample Condition:**	Natural Moisture Content

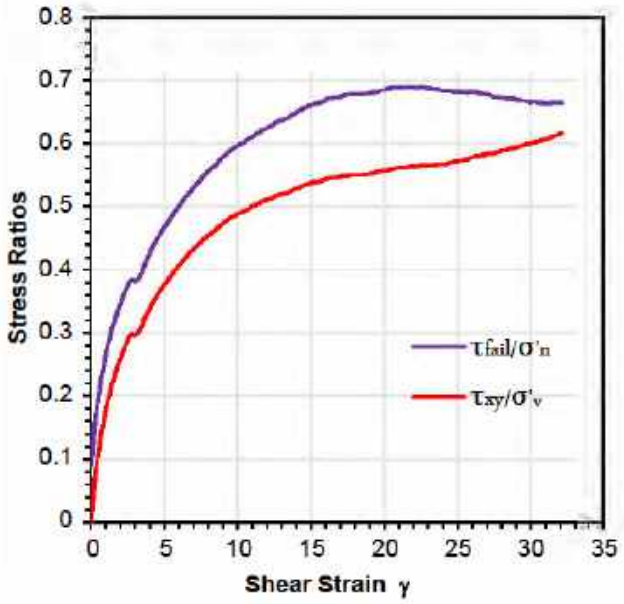
Sample Details

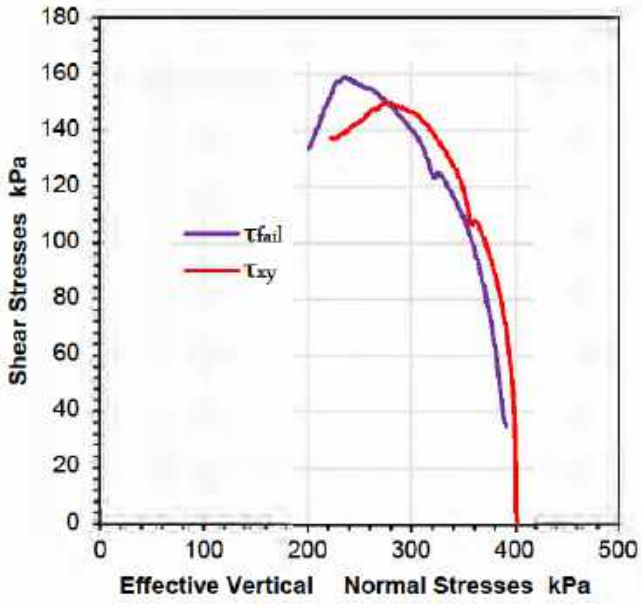
Diameter mm :	60.0	**Initial Moisture Content**	:	18.3*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	:	29.5	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	:	1.49	

Tested :	HE	**Checked :**	BB
Date:	31/01/2021	**Date:**	10/02/2021









GTI Perth
Geotechnical Testing and Interpretation

Static Simple Shear
Test Method: GTI ADT P

GTI Perth Reference:	C27-P01-T01	**Test Name:**	21-015-SS-01-S
GTI Perth Jo No.:	21-015	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-15
Client Reference:	PO208614	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	North Wall	**Sample Condition:**	Natural Moisture Content

Sample Details

Diameter mm :	60.0	**Initial Moisture Content**	:	18.3*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	:	29.5	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	:	1.49	

Tested :	HE	**Checked :**	BB
Date:	31/01/2021	**Date:**	10/02/2021

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Geotechnical Testing and Interpretation

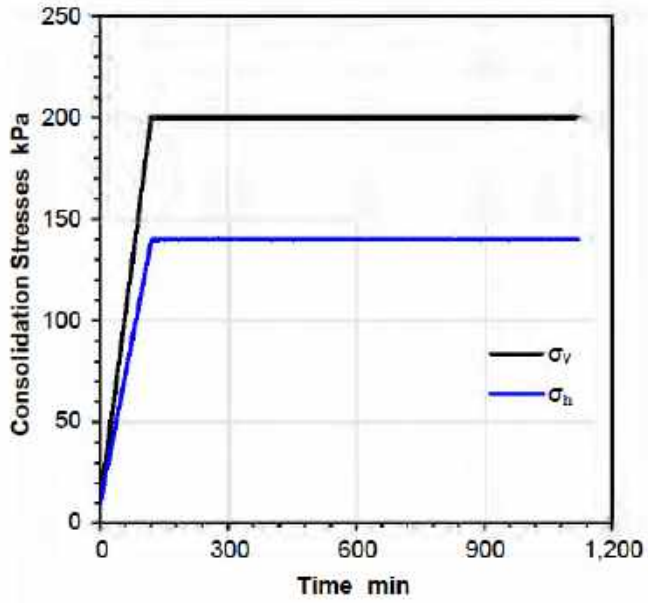
Static Simple Shear
Test Method: GTI ADT P

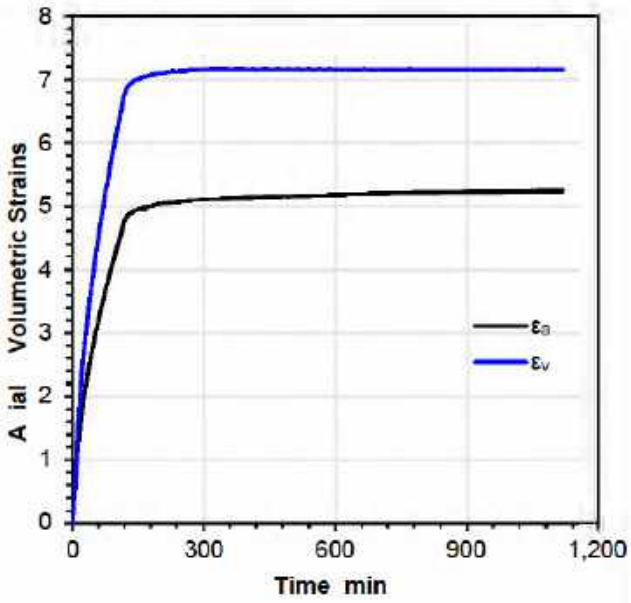
GTI Perth Reference:	C27-P01-T01	**Test Name:**	21-015-SS-02-S
GTI Perth Jo No.:	21-015	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-15
Client Reference:	PO208614	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	North Wall	**Sample Condition:**	Natural Moisture Content

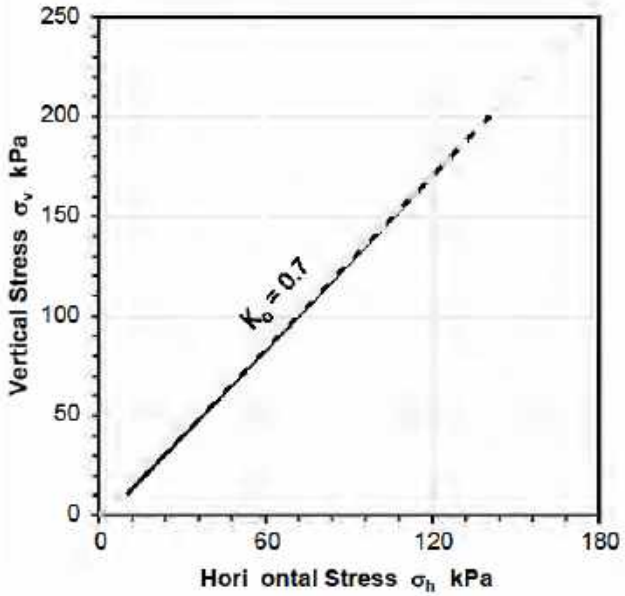
Sample Details

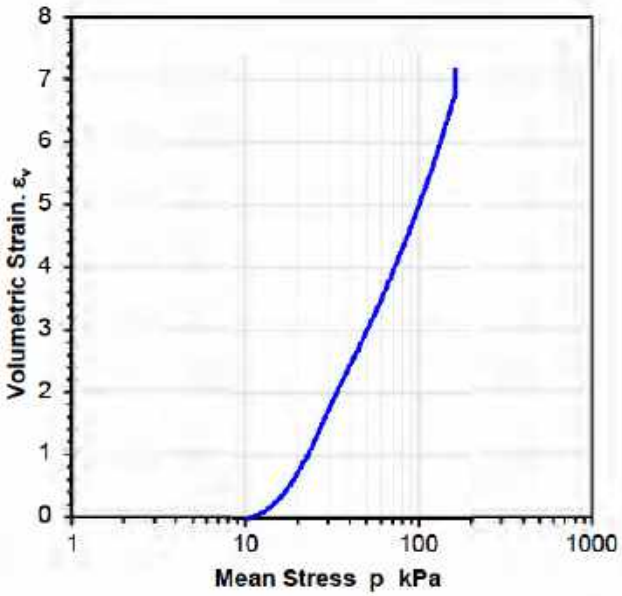
Diameter mm :	60.0	**Initial Moisture Content**	: 17.4*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	: 29.6	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	: 1.50	

Tested :	HE	**Checked :**	BB
Date:	1/02/2021	**Date:**	10/02/2021









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Geotechnical Testing and Interpretation

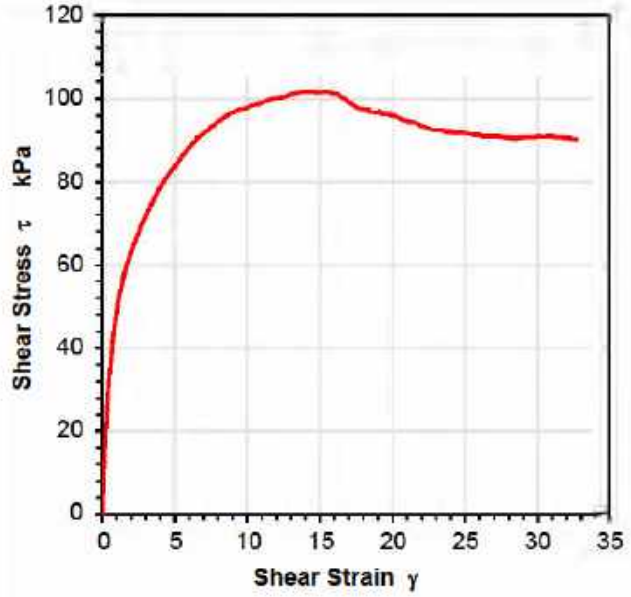
Static Simple Shear
Test Method: GTI ADT P

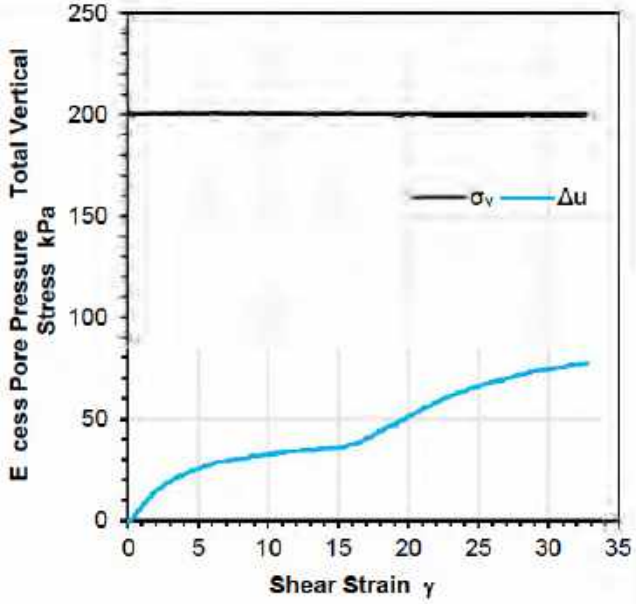
GTI Perth Reference:	C27-P01-T01	**Test Name:**	21-015-SS-02-S
GTI Perth Jo No.:	21-015	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-15
Client Reference:	PO208614	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	North Wall	**Sample Condition:**	Natural Moisture Content

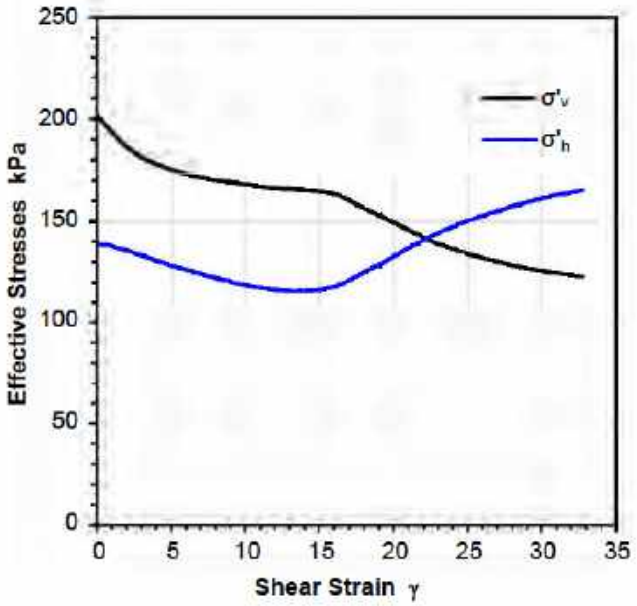
Sample Details

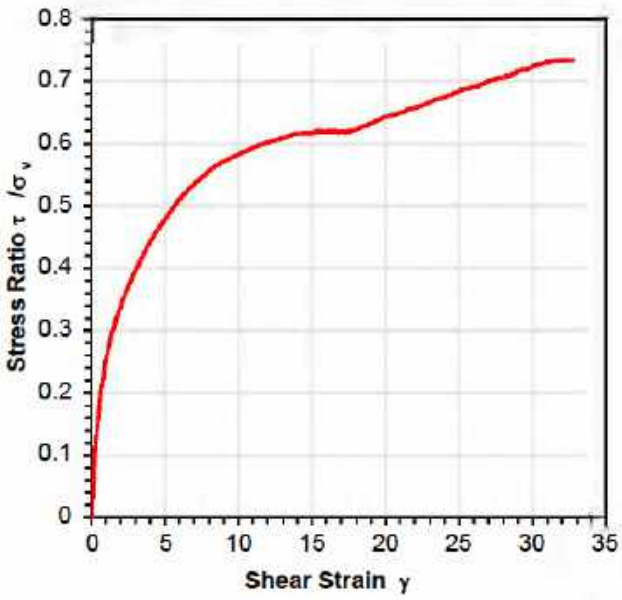
Diameter mm :	60.0	**Initial Moisture Content**	:	17.4*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	:	29.6	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	:	1.50	

Tested :	HE	**Checked :**	BB
Date:	1/02/2021	**Date:**	10/02/2021









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Geotechnical Testing and Interpretation

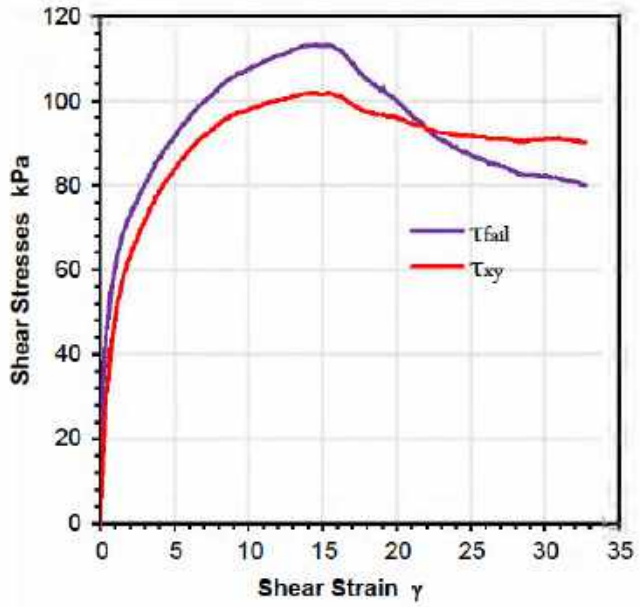
Static Simple Shear
Test Method: GTI ADT P

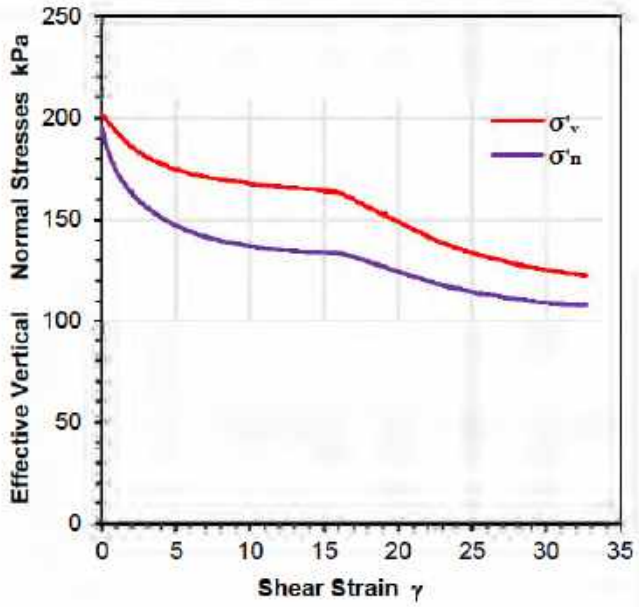
GTI Perth Reference:	C27-P01-T01	**Test Name:**	21-015-SS-02-S
GTI Perth Jo No.:	21-015	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-15
Client Reference:	PO208614	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	North Wall	**Sample Condition:**	Natural Moisture Content

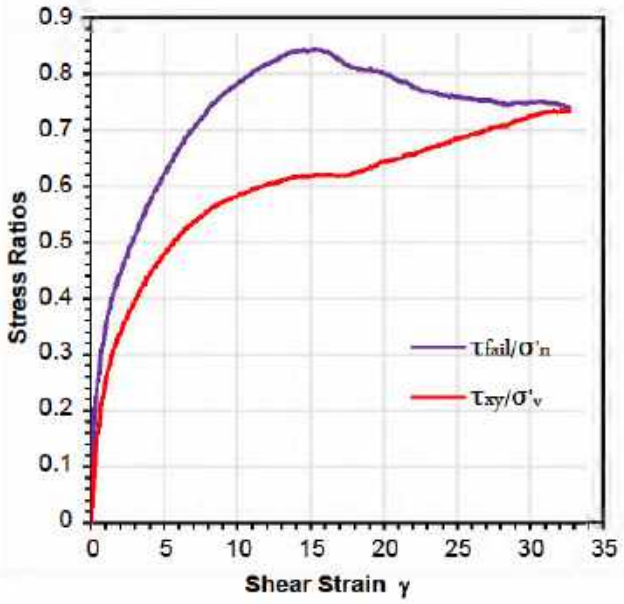
Sample Details

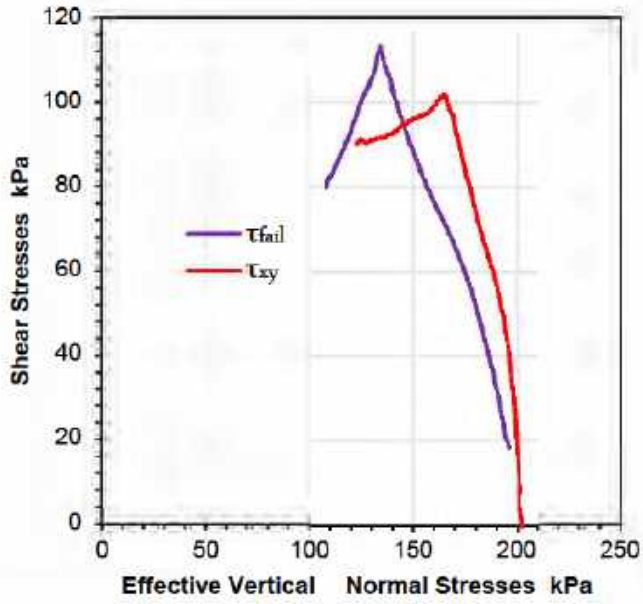
Diameter mm :	60.0	**Initial Moisture Content**	:	17.4*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	:	29.6	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	:	1.50	

Tested :	HE	**Checked :**	BB
Date:	1/02/2021	**Date:**	10/02/2021









GTIPerth
Geotechnical Testing and Interpretation

Static Simple Shear
Test Method: GTI ADT P

GTI Perth Reference:	C27-P01-T01	**Test Name:**	21-015-SS-02-S
GTI Perth Jo No.:	21-015	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-15
Client Reference:	PO208614	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	North Wall	**Sample Condition:**	Natural Moisture Content

Sample Details

Diameter mm :	60.0	**Initial Moisture Content**	: 17.4*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	: 29.6	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	: 1.50	

Tested :	HE	**Checked :**	BB
Date:	1/02/2021	**Date:**	10/02/2021

GTIPerth
Geotechnical Testing and Interpretation

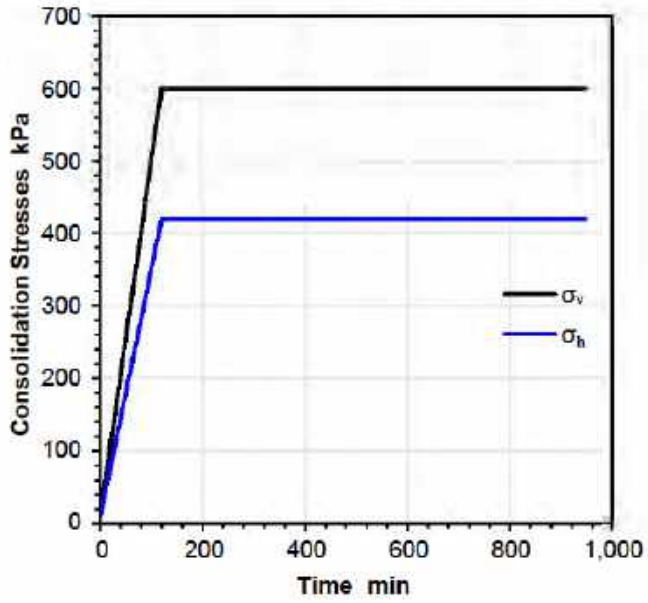
Static Simple Shear
Test Method: GTI ADT P

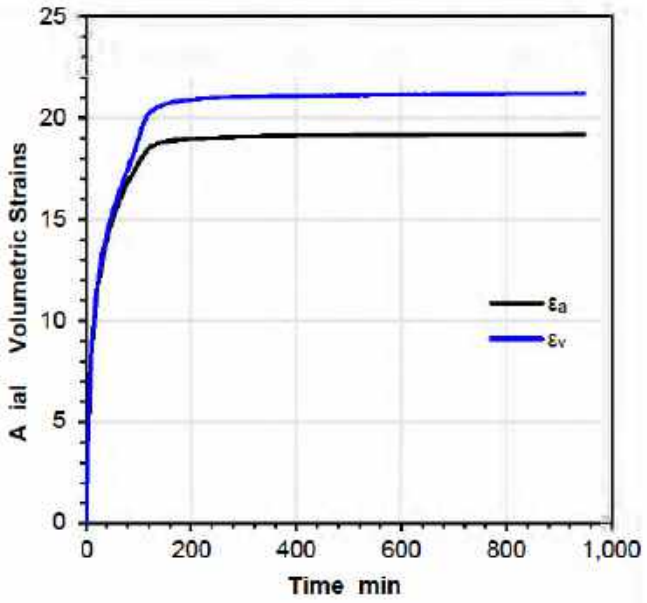
GTI Perth Reference:	C27-P01-T01	**Test Name:**	21-015-SS-03-S
GTI Perth Jo No.:	21-015	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-20
Client Reference:	PO208614	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	North Wall	**Sample Condition:**	Natural Moisture Content

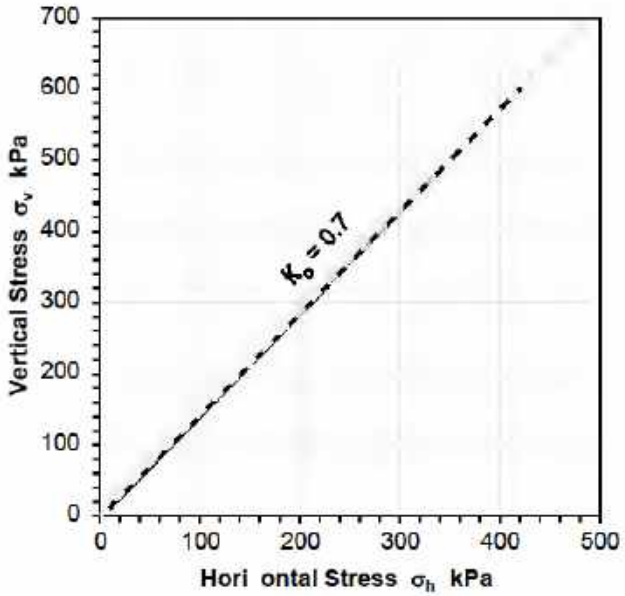
Sample Details

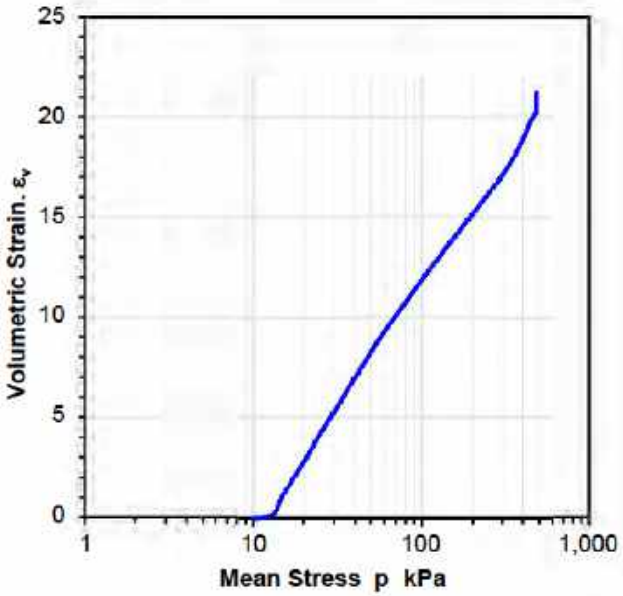
Diameter mm :	60.0	**Initial Moisture Content**	:	9.8*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	:	17.2	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	:	1.41	

Tested :	HE	**Checked :**	BB
Date:	29/01/2021	**Date:**	10/02/2021









Jo No.:

Evolution Minin Mun ari Gold Operations
CAU Static Simple Shear Consolidation Sta e
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GTI Perth
Geotechnical Testing and Interpretation

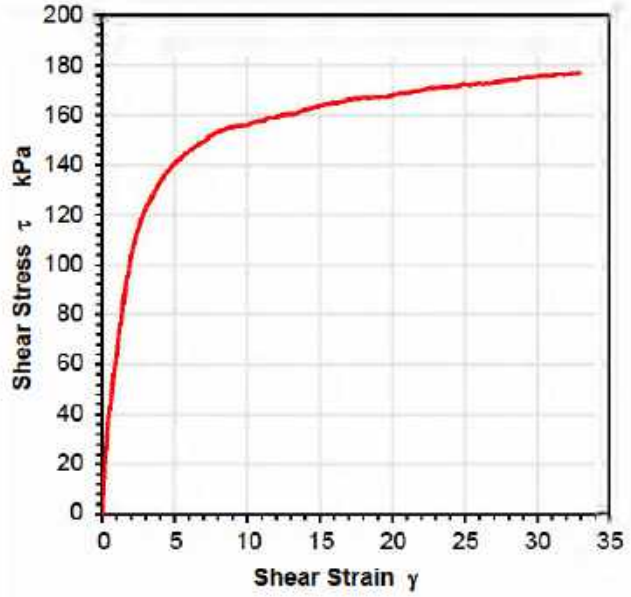
Static Simple Shear
Test Method: GTI ADT P

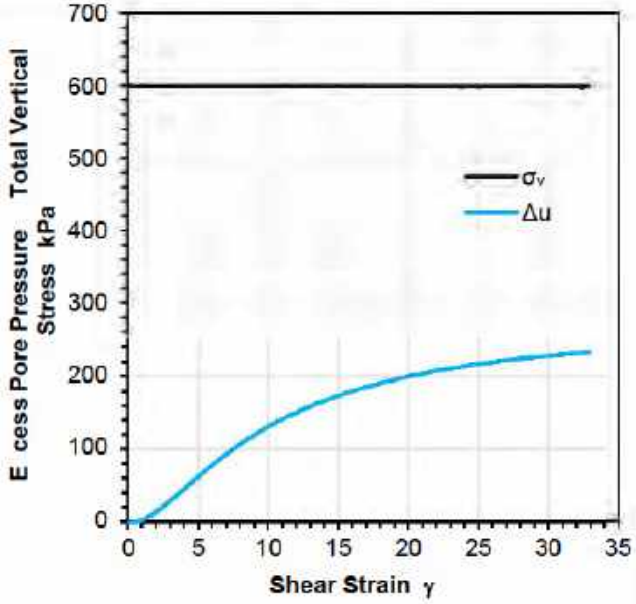
GTI Perth Reference:	C27-P01-T01	**Test Name:**	21-015-SS-03-S
GTI Perth Jo No.:	21-015	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-20
Client Reference:	PO208614	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	North Wall	**Sample Condition:**	Natural Moisture Content

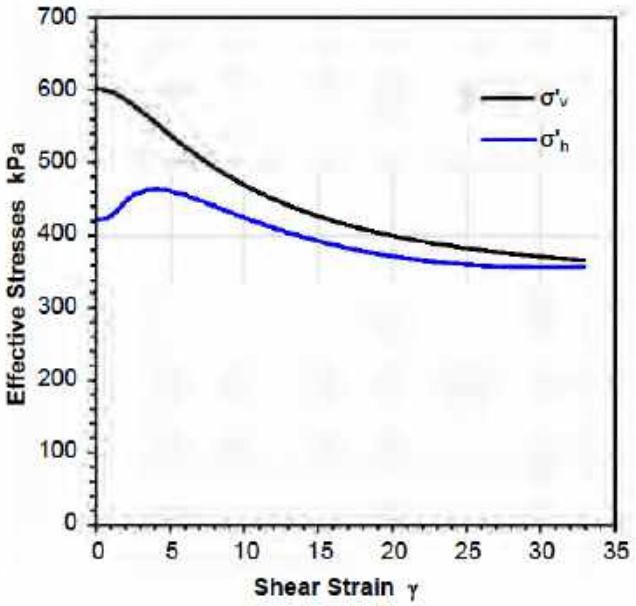
Sample Details

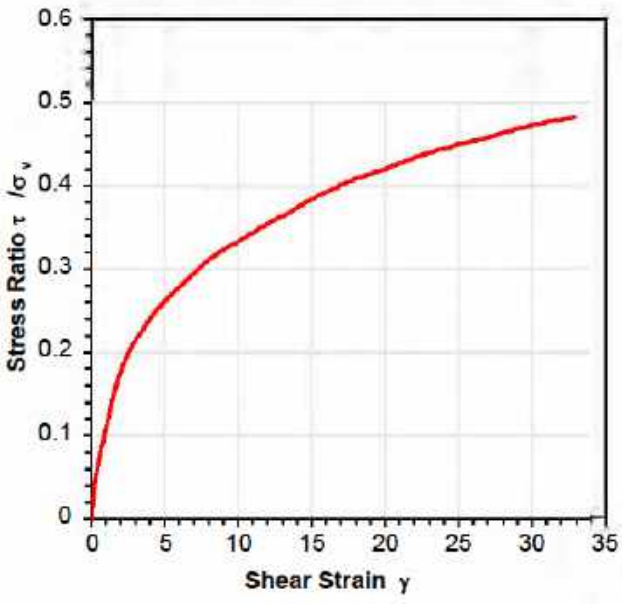
Diameter mm :	60.0	**Initial Moisture Content**	:	9.8*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	:	17.2	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	:	1.41	

Tested :	HE	**Checked :**	BB
Date:	29/01/2021	**Date:**	10/02/2021









GTIPerth
Geotechnical Testing and Interpretation

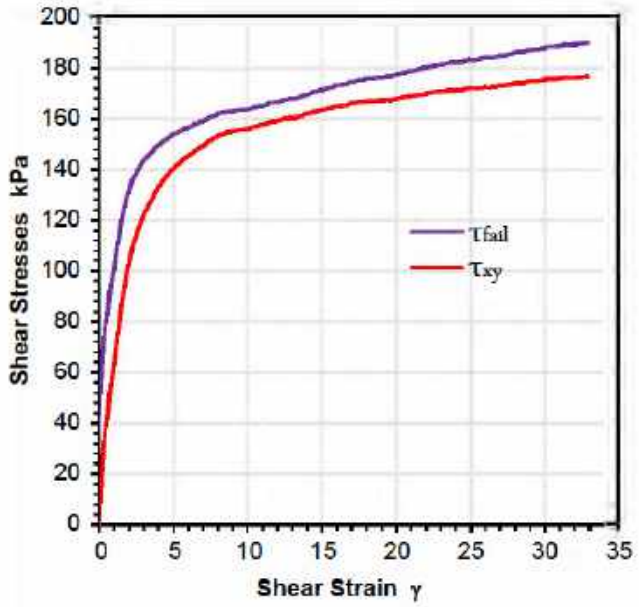
Static Simple Shear
Test Method: GTI ADT P

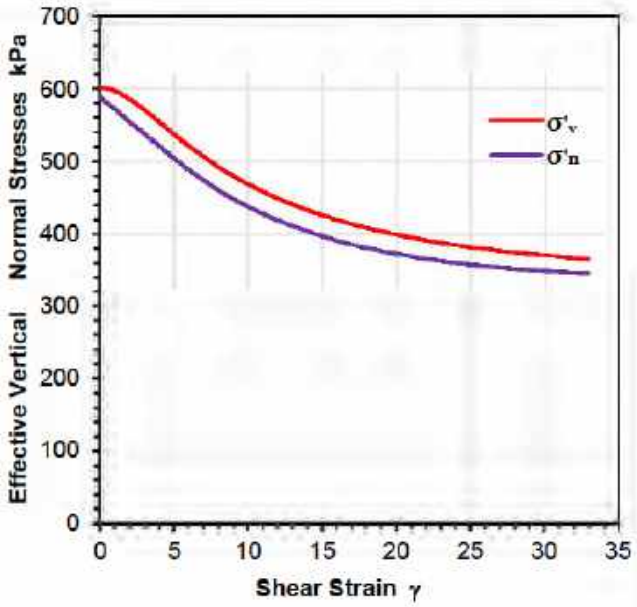
GTI Perth Reference:	C27-P01-T01	**Test Name:**	21-015-SS-03-S
GTI Perth Jo No.:	21-015	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-20
Client Reference:	PO208614	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	North Wall	**Sample Condition:**	Natural Moisture Content

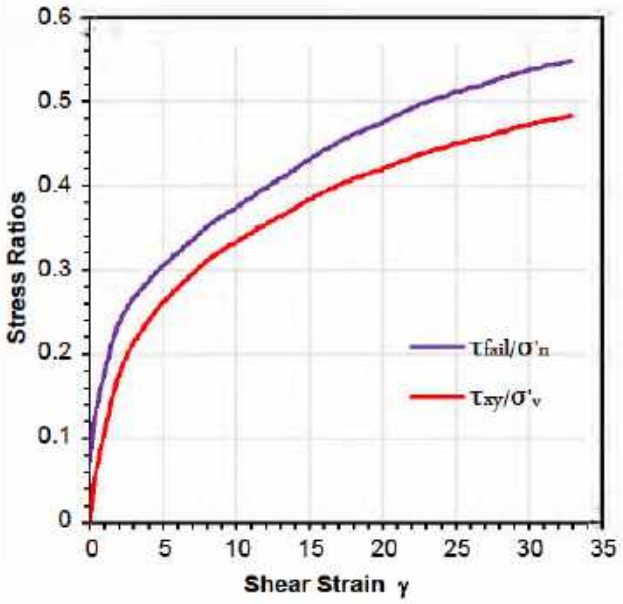
Sample Details

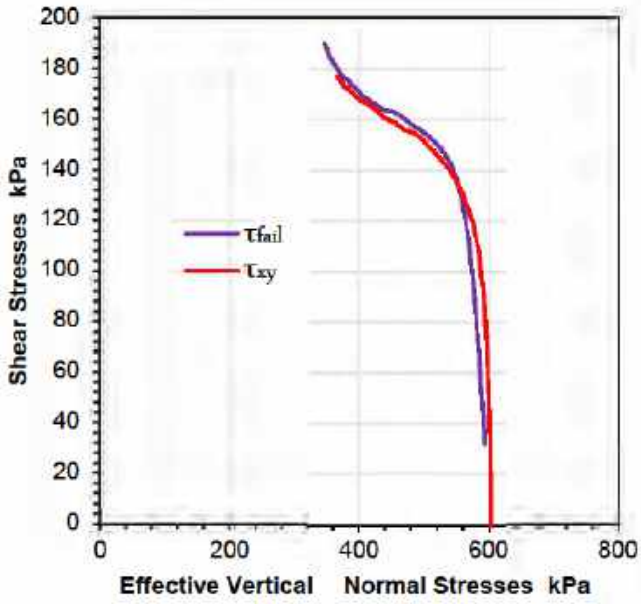
Diameter mm :	60.0	**Initial Moisture Content**	:	9.8*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	:	17.2	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	:	1.41	

Tested :	HE	**Checked :**	BB
Date:	29/01/2021	**Date:**	10/02/2021









GTI Perth
Geotechnical Testing and Interpretation

Static Simple Shear
Test Method: GTI ADT P

GTI Perth Reference:	C27-P01-T01	**Test Name:**	21-015-SS-03-S
GTI Perth Jo No.:	21-015	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-20
Client Reference:	PO208614	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	North Wall	**Sample Condition:**	Natural Moisture Content

Sample Details

Diameter mm :	60.0	**Initial Moisture Content**	:	9.8*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	:	17.2	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	:	1.41	

Tested :	HE	**Checked :**	BB
Date:	29/01/2021	**Date:**	10/02/2021

GTI Perth
Geotechnical Testing and Interpretation

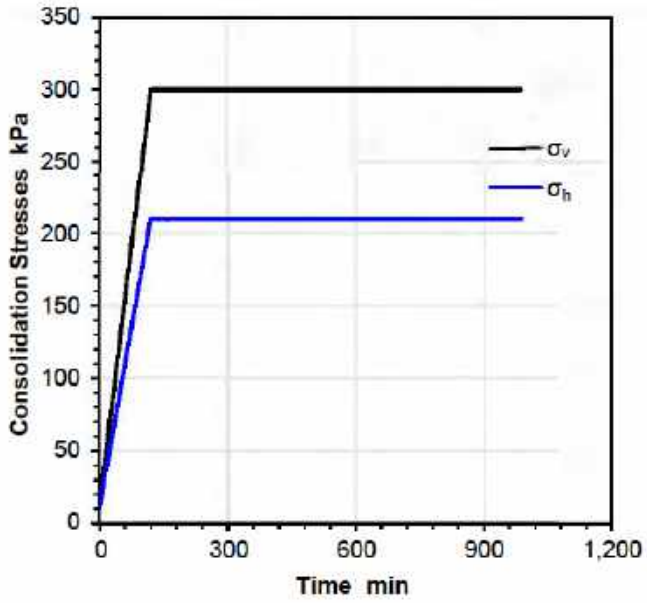
Static Simple Shear
Test Method: GTI ADT P

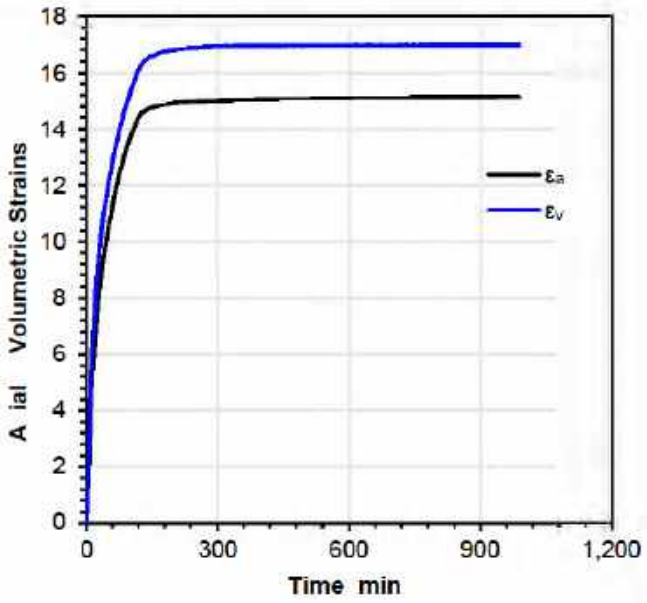
GTI Perth Reference:	C27-P01-T01	**Test Name:**	21-015-SS-04-S
GTI Perth Jo No.:	21-015	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-20
Client Reference:	PO208614	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	North Wall	**Sample Condition:**	Natural Moisture Content

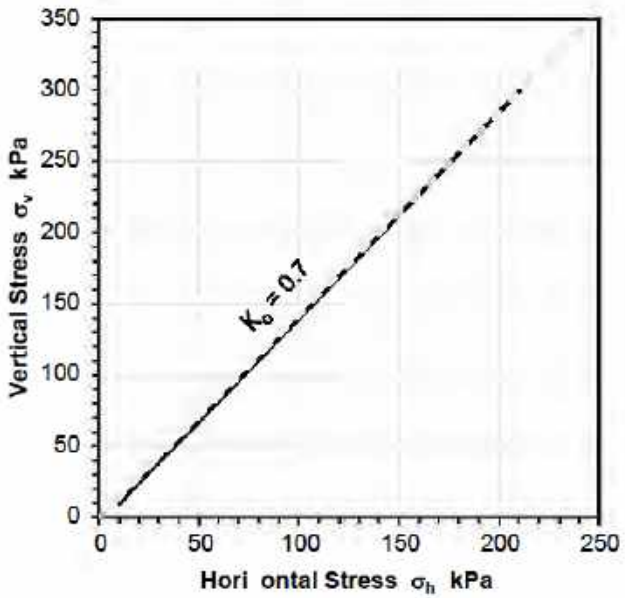
Sample Details

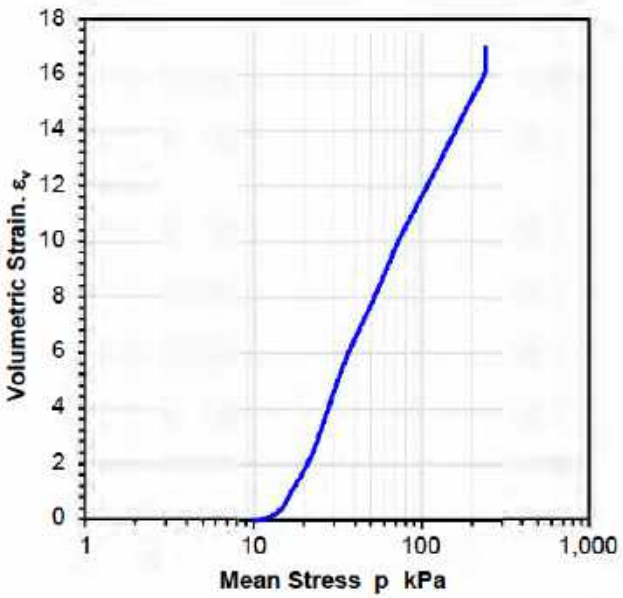
Diameter mm :	60.0	**Initial Moisture Content**	: 9.9*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	: 19.9	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	: 1.46	

Tested :	GG	**Checked :**	BB
Date:	30/01/2021	**Date:**	10/02/2014









Jo No.:

Evolution Minin Mun ari Gold Operations
CAU Static Simple Shear Consolidation Sta e
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GTIPerth
Geotechnical Testing and Interpretation

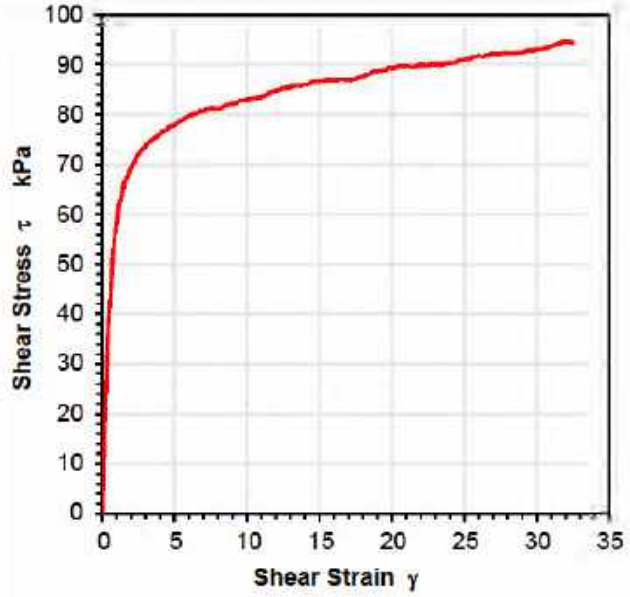
Static Simple Shear
Test Method: GTI ADT P

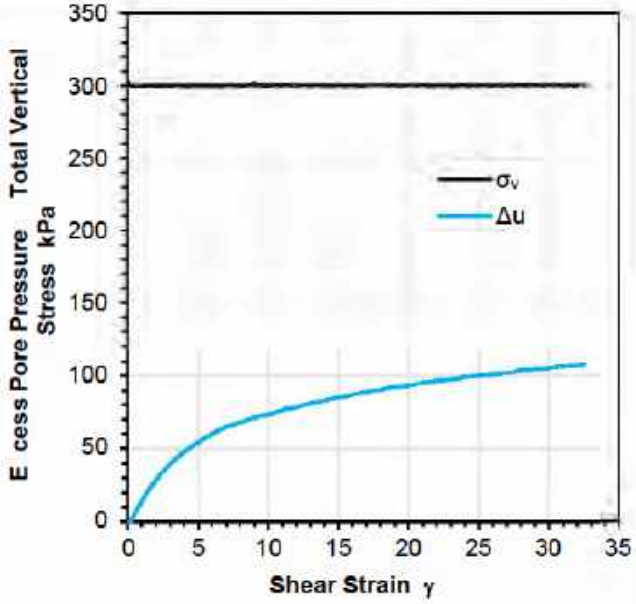
GTI Perth Reference:	C27-P01-T01	**Test Name:**	21-015-SS-04-S
GTI Perth Jo No.:	21-015	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-20
Client Reference:	PO208614	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	North Wall	**Sample Condition:**	Natural Moisture Content

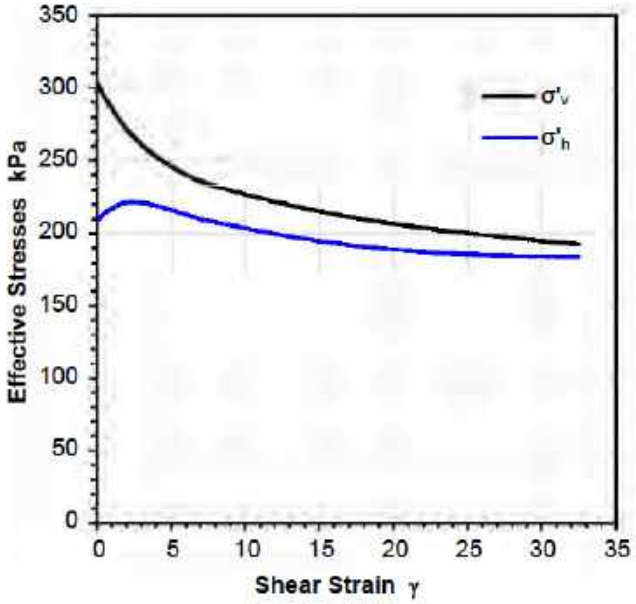
Sample Details

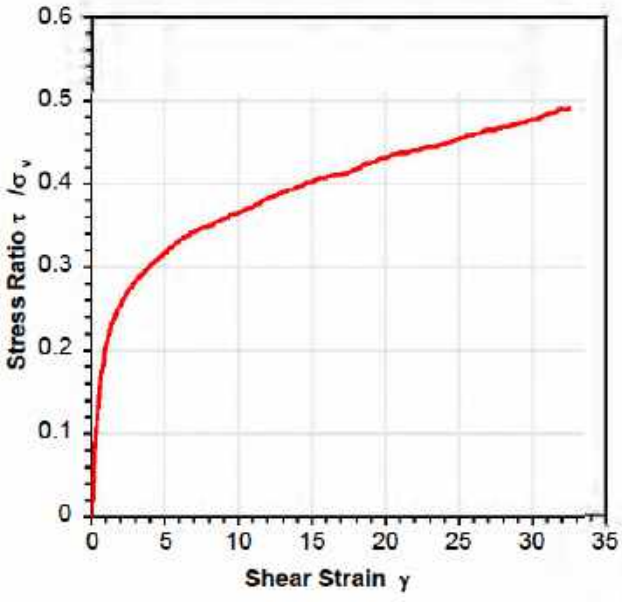
Diameter mm :	60.0	**Initial Moisture Content**	: 9.9*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	: 19.9	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	: 1.46	

Tested :	GG	**Checked :**	BB
Date:	30/01/2021	**Date:**	10/02/2014









GTIPerth
Geotechnical Testing and Interpretation

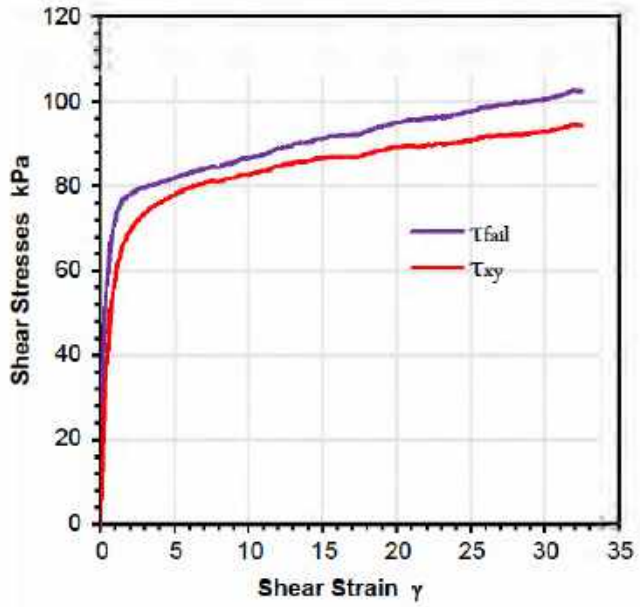
Static Simple Shear
Test Method: GTI ADT P

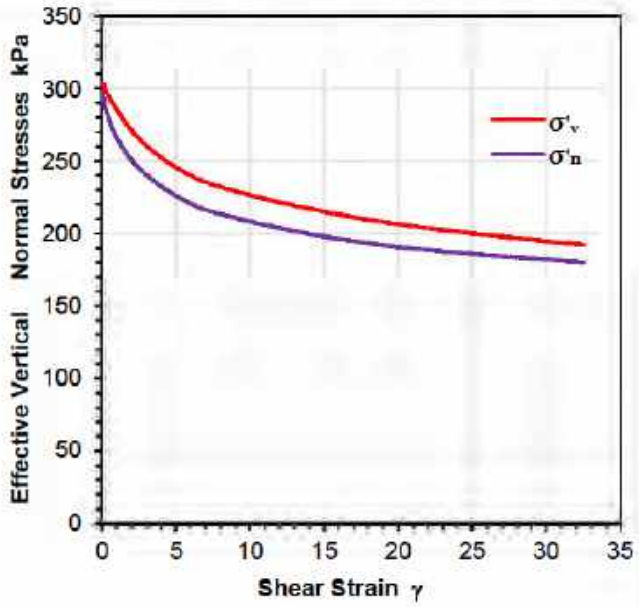
GTI Perth Reference:	C27-P01-T01	**Test Name:**	21-015-SS-04-S
GTI Perth Jo No.:	21-015	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-20
Client Reference:	PO208614	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	North Wall	**Sample Condition:**	Natural Moisture Content

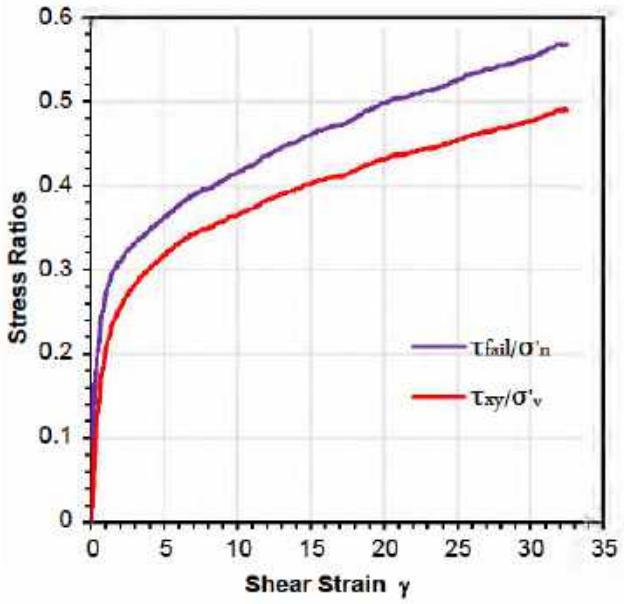
Sample Details

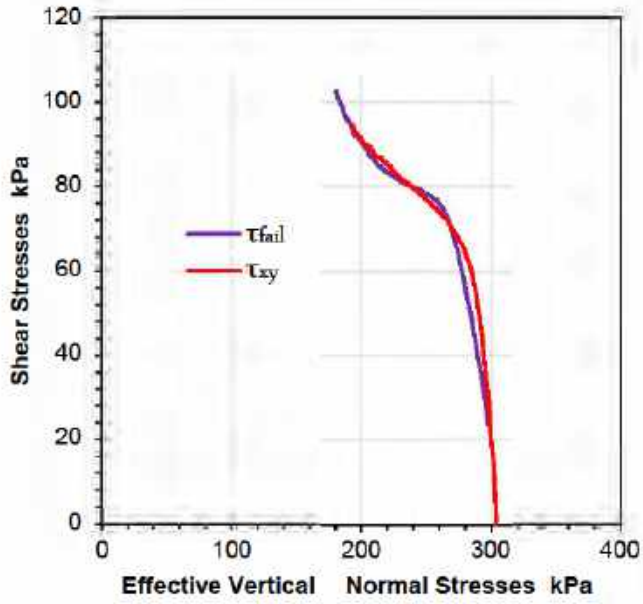
Diameter mm :	60.0	**Initial Moisture Content**	:	9.9*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	:	19.9	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	:	1.46	

Tested :	GG	**Checked :**	BB
Date:	30/01/2021	**Date:**	10/02/2014









GTI Perth
Geotechnical Testing and Interpretation

Static Simple Shear
Test Method: GTI ADT P

GTI Perth Reference:	C27-P01-T01	**Test Name:**	21-015-SS-04-S
GTI Perth Jo No.:	21-015	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-20
Client Reference:	PO208614	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	North Wall	**Sample Condition:**	Natural Moisture Content

Sample Details

Diameter mm :	60.0	**Initial Moisture Content**	: 9.9*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	: 19.9	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	: 1.46	

Tested :	GG	**Checked :**	BB
Date:	30/01/2021	**Date:**	10/02/2014

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Geotechnical Testing and Interpretation

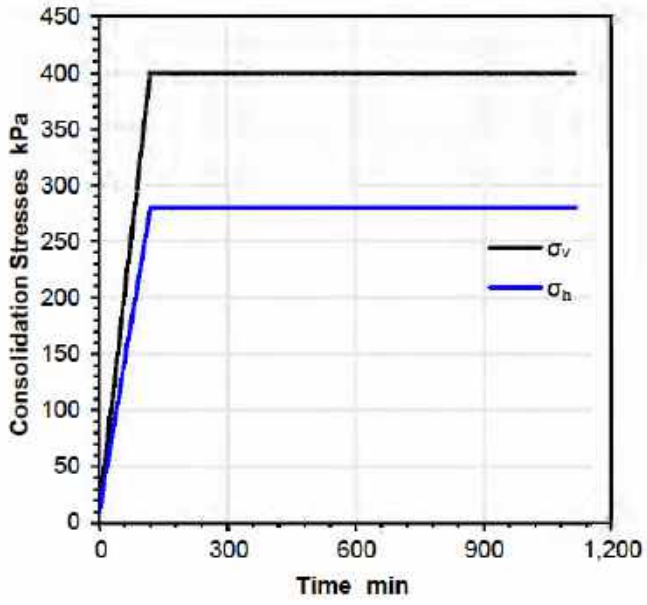
Static Simple Shear
Test Method: GTI ADT P

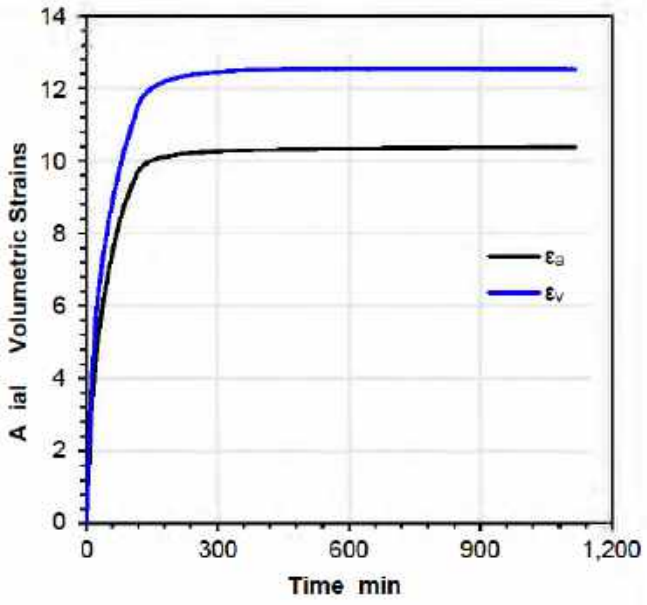
GTI Perth Reference:	C27-P01-T02	**Test Name:**	21-016-SS-01-S
GTI Perth Jo No.:	21-016	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-29
Client Reference:	PO208893	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	South Wall	**Sample Condition:**	Natural Moisture Content

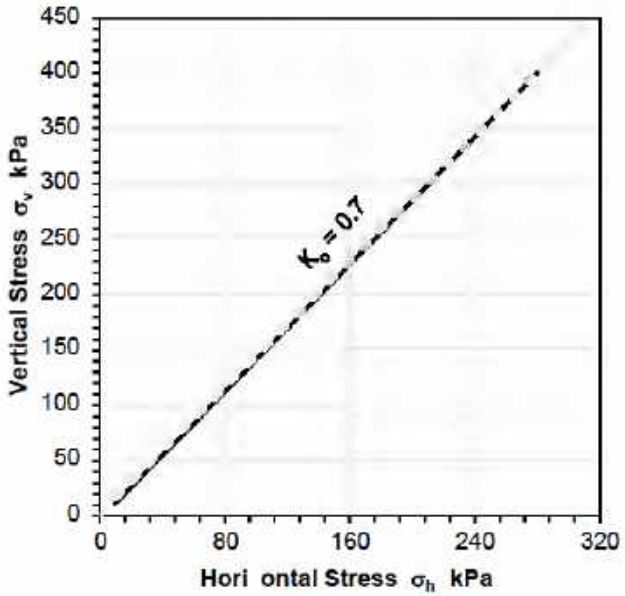
Sample Details

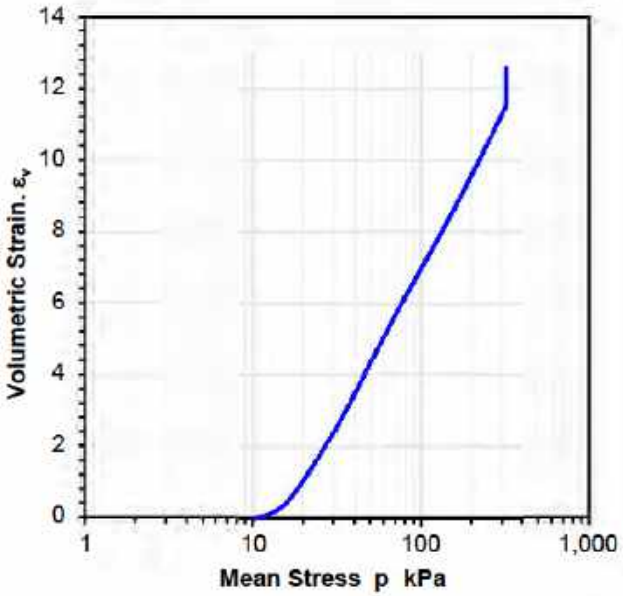
Diameter mm :	60.0	**Initial Moisture Content**	: 11.4*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	: 17.8	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	: 1.81	

Tested :	HE	**Checked :**	BB
Date:	5/02/2021	**Date:**	10/01/2021









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CAU Static Simple Shear Consolidation Sta e
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GTIPerth
Geotechnical Testing and Interpretation

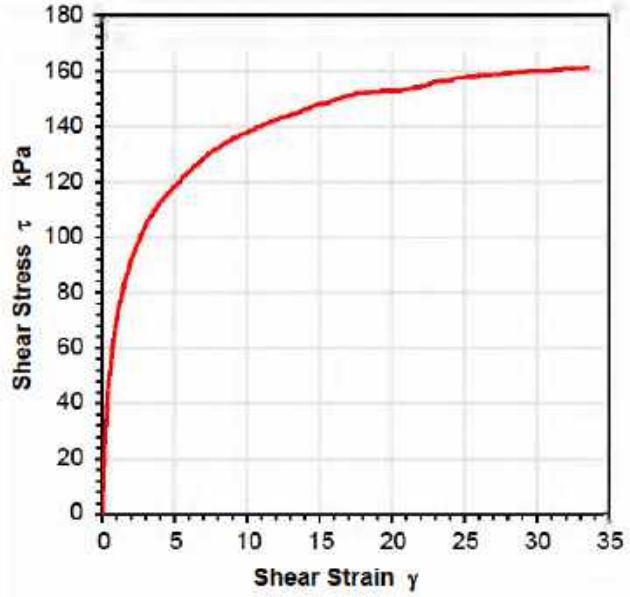
Static Simple Shear
Test Method: GTI ADT P

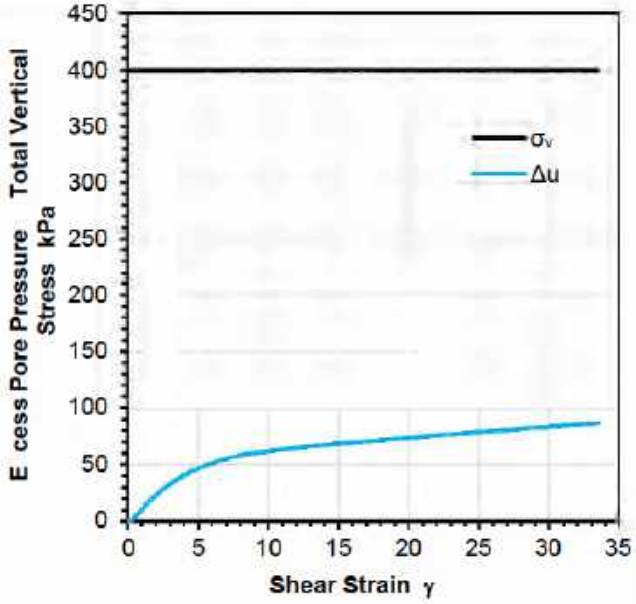
GTI Perth Reference:	C27-P01-T02	**Test Name:**	21-016-SS-01-S
GTI Perth Jo No.:	21-016	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-29
Client Reference:	PO208893	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	South Wall	**Sample Condition:**	Natural Moisture Content

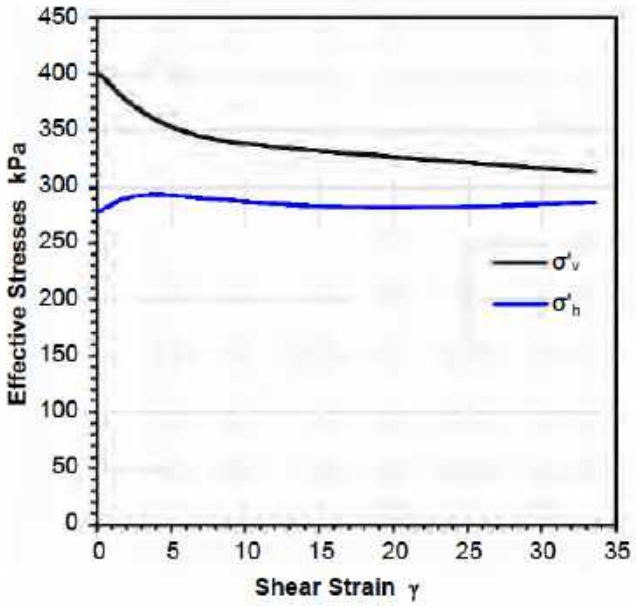
Sample Details

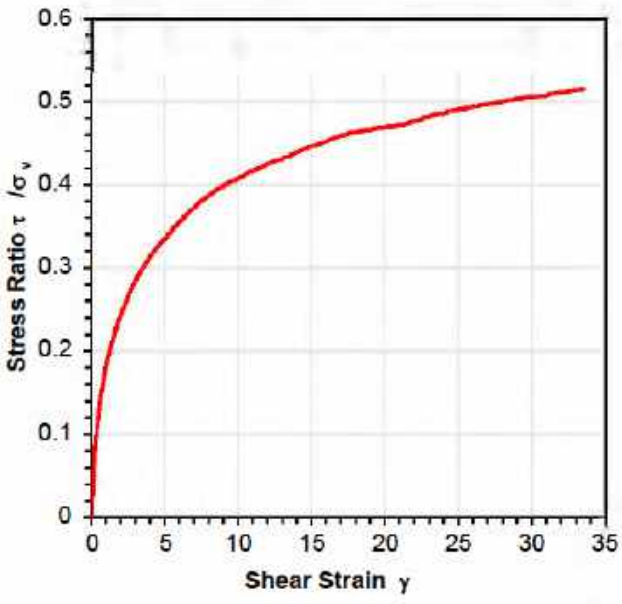
Diameter mm :	60.0	**Initial Moisture Content**	: 11.4*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	: 17.8	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	: 1.81	

Tested :	HE	**Checked :**	BB
Date:	5/02/2021	**Date:**	10/01/2021









GTIPerth
Geotechnical Testing and Interpretation

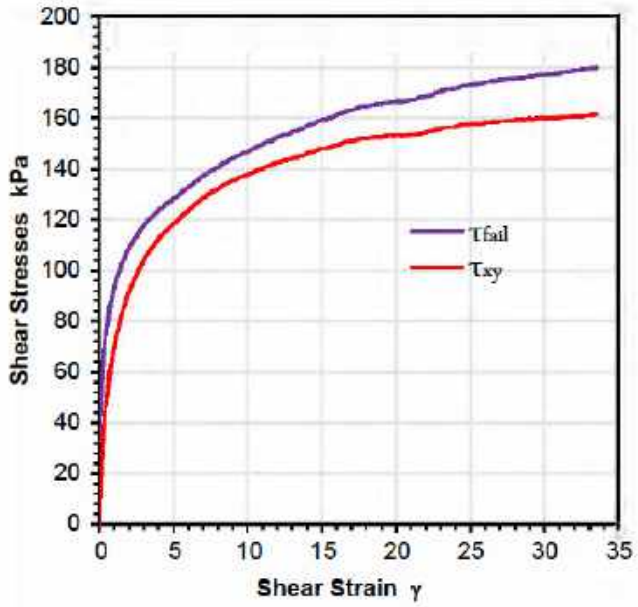
Static Simple Shear
Test Method: GTI ADT P

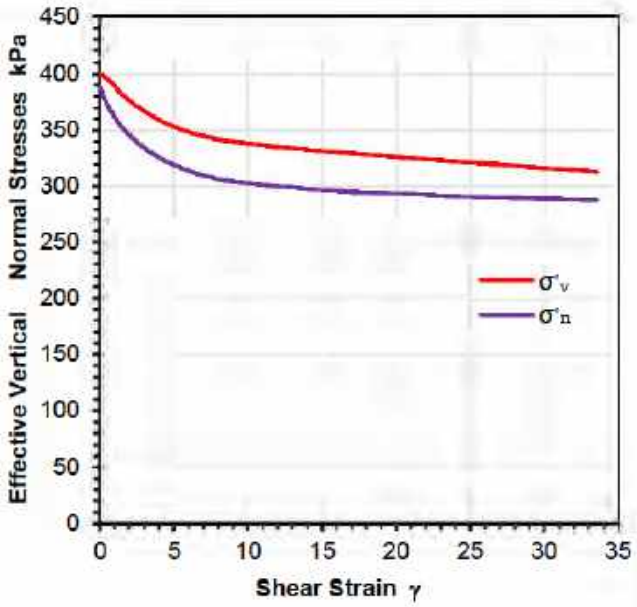
GTI Perth Reference:	C27-P01-T02	**Test Name:**	21-016-SS-01-S
GTI Perth Jo No.:	21-016	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-29
Client Reference:	PO208893	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	South Wall	**Sample Condition:**	Natural Moisture Content

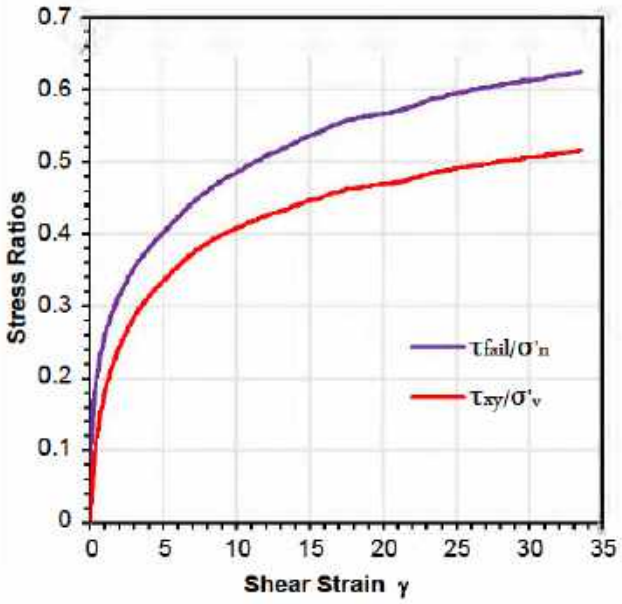
Sample Details

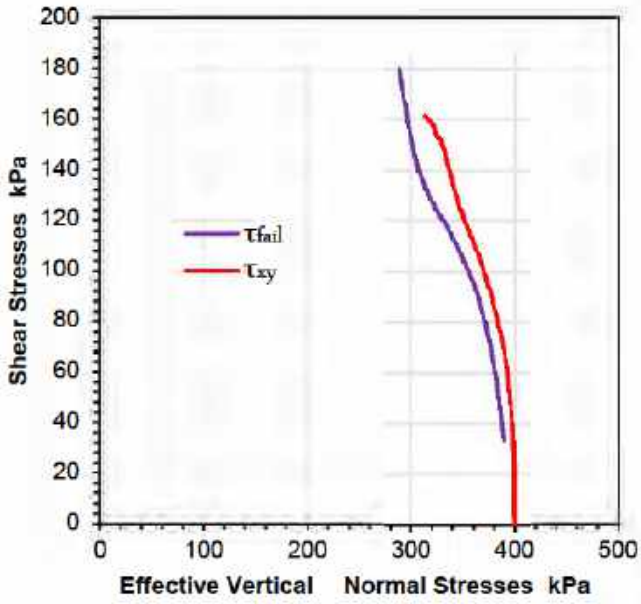
Diameter mm :	60.0	**Initial Moisture Content**	:	11.4*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	:	17.8	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	:	1.81	

Tested :	HE	**Checked :**	BB
Date:	5/02/2021	**Date:**	10/01/2021









GTI Perth
Geotechnical Testing and Interpretation

Static Simple Shear
Test Method: GTI ADT P

GTI Perth Reference:	C27-P01-T02	**Test Name:**	21-016-SS-01-S
GTI Perth Jo No.:	21-016	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-29
Client Reference:	PO208893	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	South Wall	**Sample Condition:**	Natural Moisture Content

Sample Details

Diameter mm :	60.0	**Initial Moisture Content**	:	11.4*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	:	17.8	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	:	1.81	

Tested :	HE	**Checked :**	BB
Date:	5/02/2021	**Date:**	10/01/2021

GTIPerth
Geotechnical Testing and Interpretation

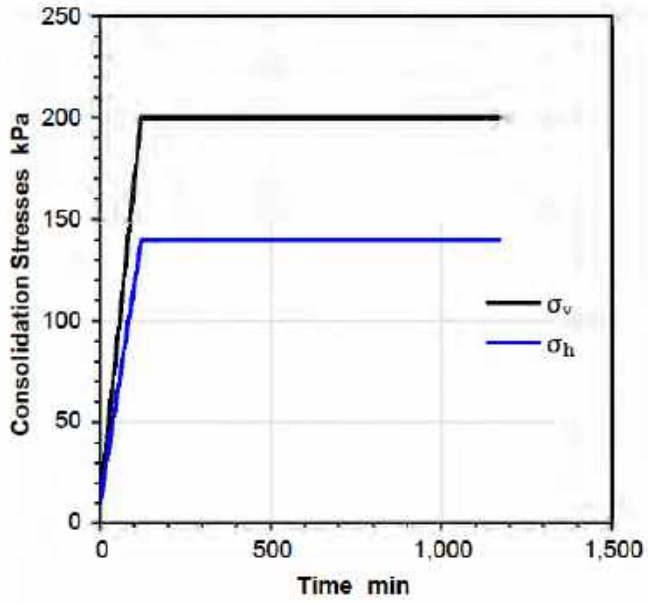
Static Simple Shear
Test Method: GTI ADT P

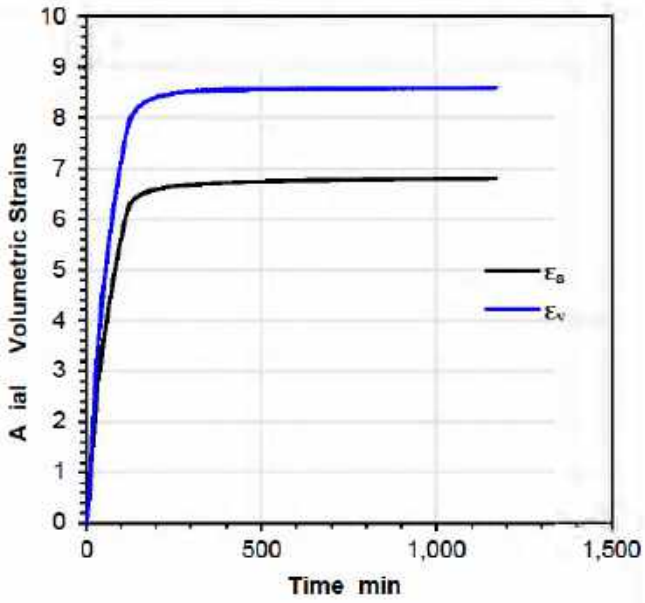
GTI Perth Reference:	C27-P01-T02	**Test Name:**	21-016-SS-02-S
GTI Perth Jo No.:	21-016	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-29
Client Reference:	PO208893	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	South Wall	**Sample Condition:**	Natural Moisture Content

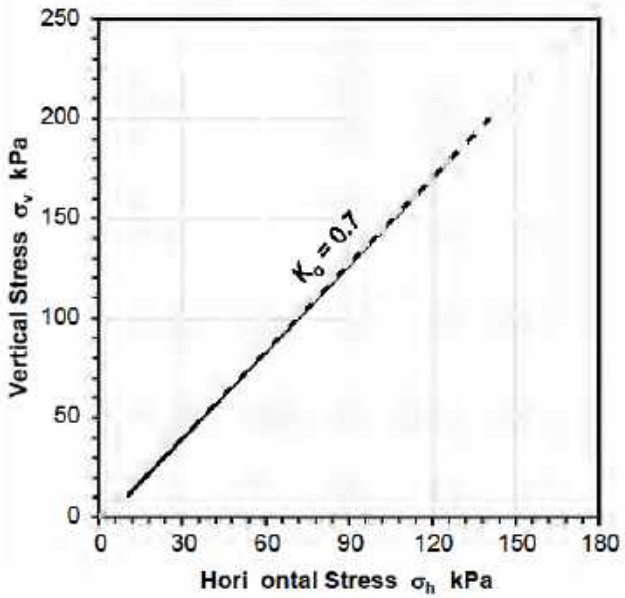
Sample Details

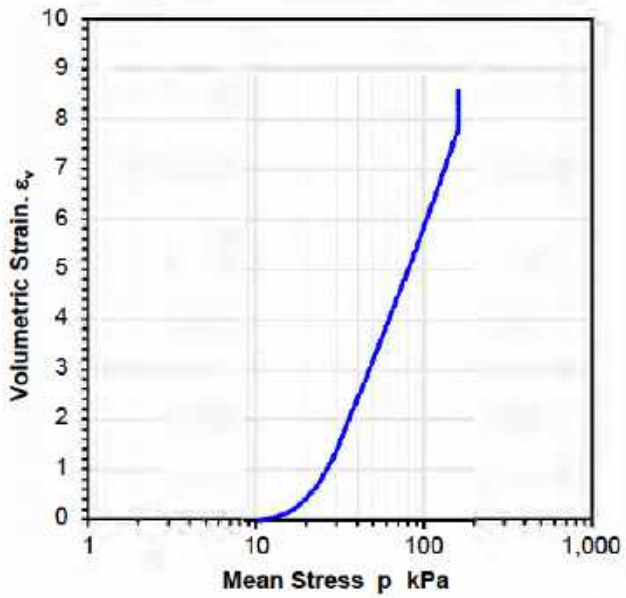
Diameter mm :	60.0	**Initial Moisture Content**	:	12.3*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	:	20.0	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	:	1.74	

Tested :	GG	**Checked :**	BB
Date:	6/02/2021	**Date:**	10/02/2021









Jo No.:

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CAU Static Simple Shear Consolidation Sta e

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Geotechnical Testing and Interpretation

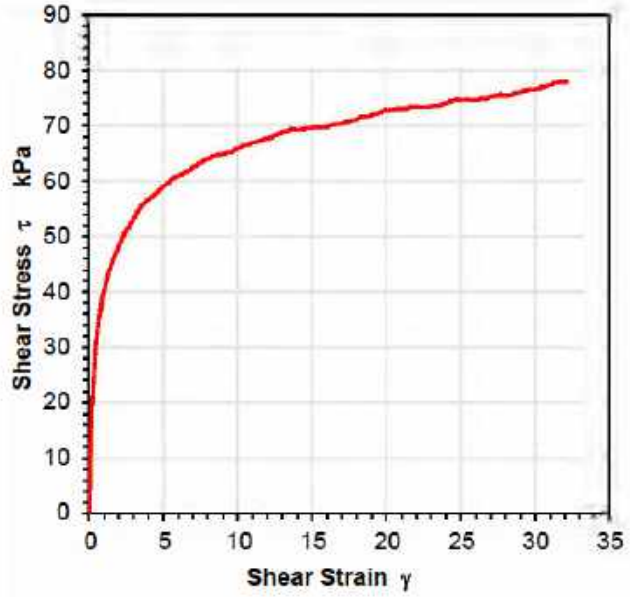
Static Simple Shear
Test Method: GTI ADT P

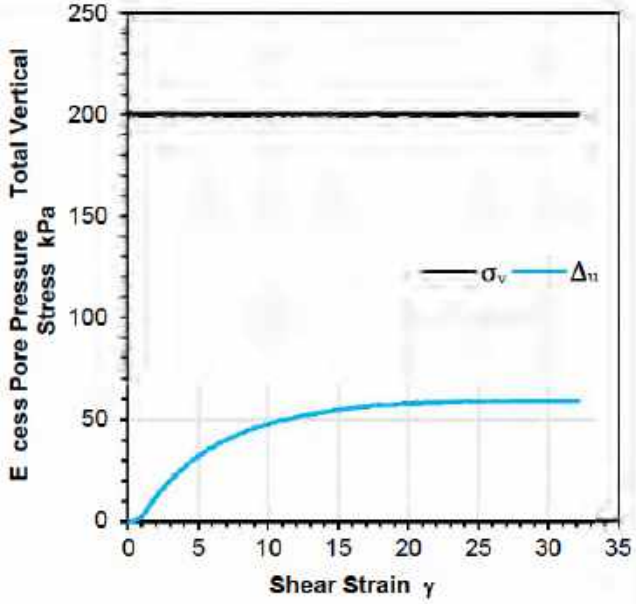
GTI Perth Reference:	C27-P01-T02	**Test Name:**	21-016-SS-02-S
GTI Perth Jo No.:	21-016	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-29
Client Reference:	PO208893	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	South Wall	**Sample Condition:**	Natural Moisture Content

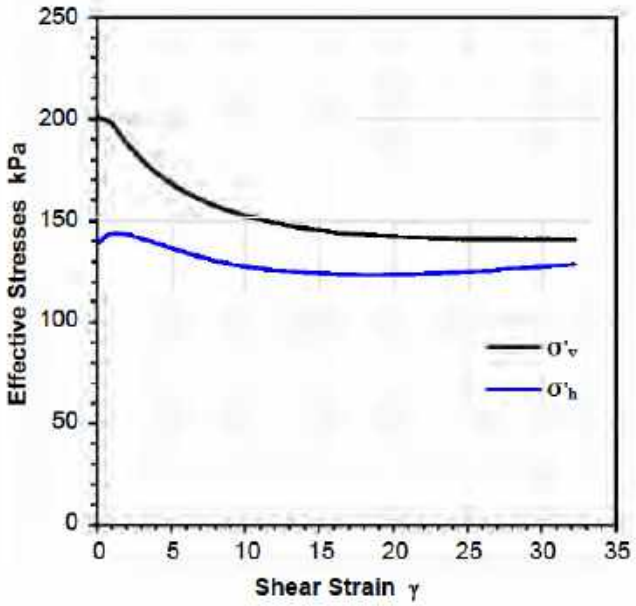
Sample Details

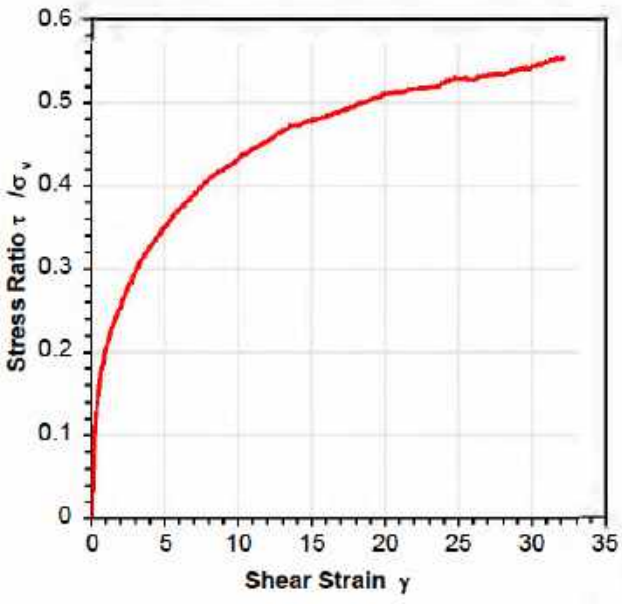
Diameter mm :	60.0	**Initial Moisture Content**	: 12.3*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	: 20.0	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	: 1.74	

Tested :	GG	**Checked :**	BB
Date:	6/02/2021	**Date:**	10/02/2021









GTIPerth
Geotechnical Testing and Interpretation

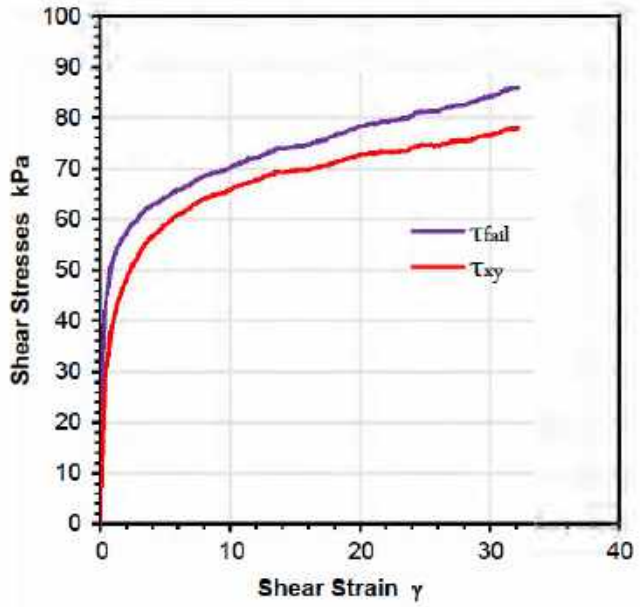
Static Simple Shear
Test Method: GTI ADT P

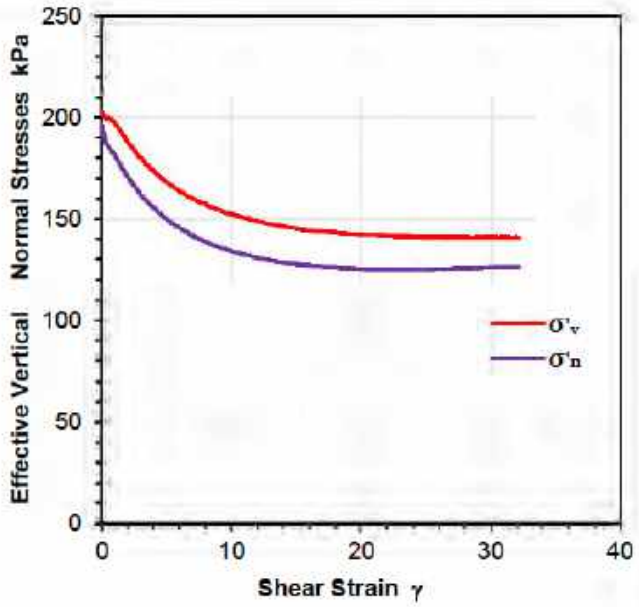
GTI Perth Reference:	C27-P01-T02	**Test Name:**	21-016-SS-02-S
GTI Perth Jo No.:	21-016	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-29
Client Reference:	PO208893	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	South Wall	**Sample Condition:**	Natural Moisture Content

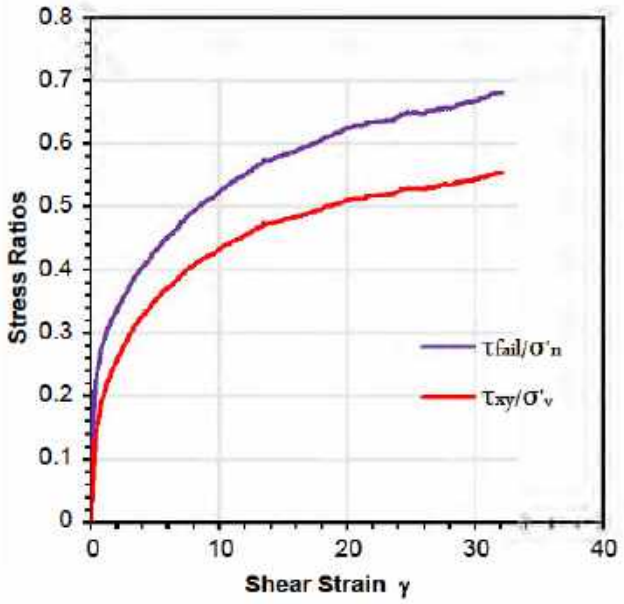
Sample Details

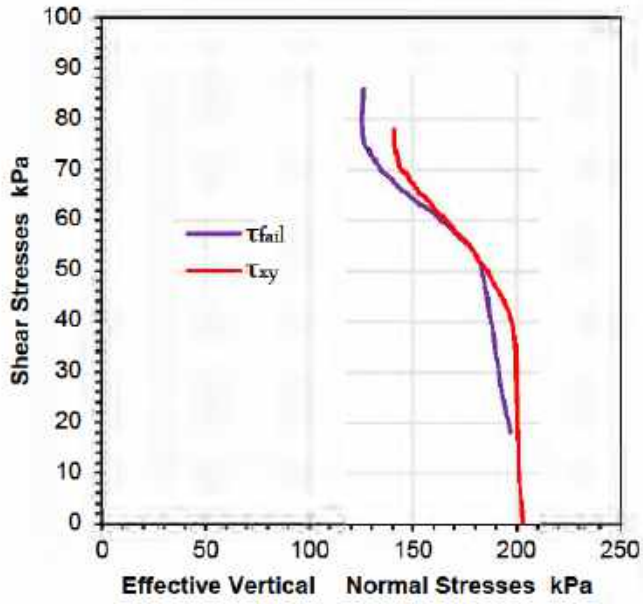
Diameter mm :	60.0	**Initial Moisture Content**	:	12.3*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	:	20.0	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	:	1.74	

Tested :	GG	**Checked :**	BB
Date:	6/02/2021	**Date:**	10/02/2021









GTI Perth
Geotechnical Testing and Interpretation

Static Simple Shear
Test Method: GTI ADT P

GTI Perth Reference:	C27-P01-T02	**Test Name:**	21-016-SS-02-S
GTI Perth Jo No.:	21-016	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-29
Client Reference:	PO208893	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	South Wall	**Sample Condition:**	Natural Moisture Content

Sample Details

Diameter mm :	60.0	**Initial Moisture Content**	:	12.3*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	:	20.0	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	:	1.74	

Tested :	GG	**Checked :**	BB
Date:	6/02/2021	**Date:**	10/02/2021

GTIPerth
Geotechnical Testing and Interpretation

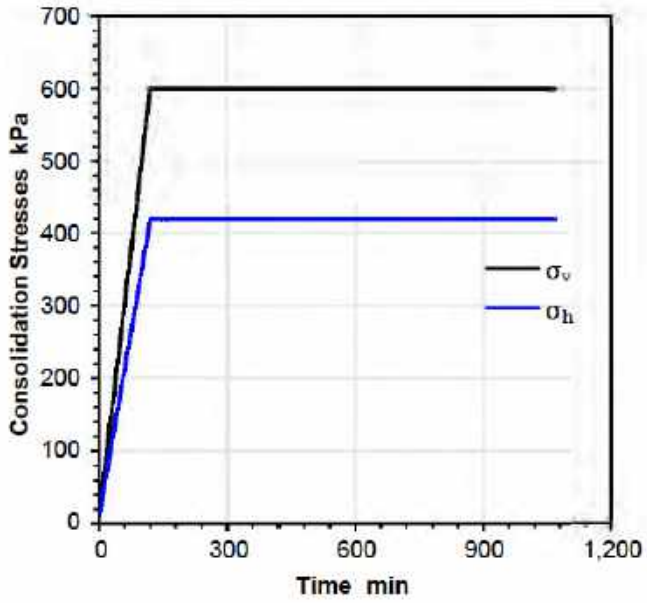
Static Simple Shear
Test Method: GTI ADT P

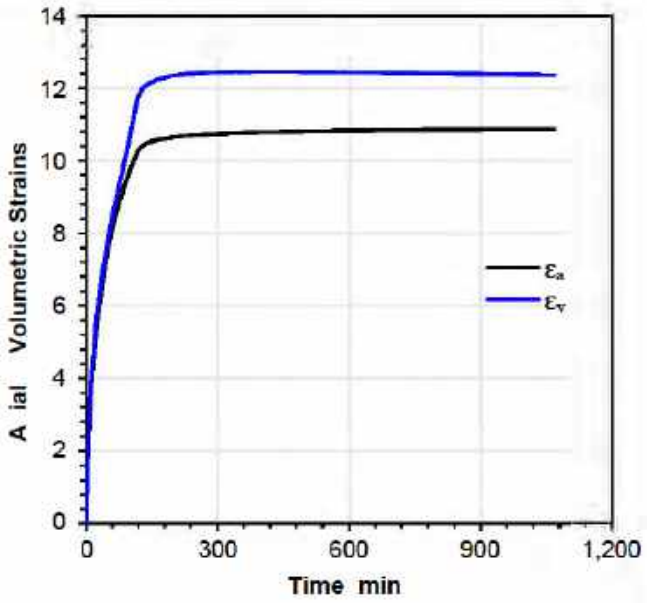
GTI Perth Reference:	C27-P01-T02	**Test Name:**	21-016-SS-03-S
GTI Perth Jo No.:	21-016	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-30
Client Reference:	PO208893	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	South Wall	**Sample Condition:**	Natural Moisture Content

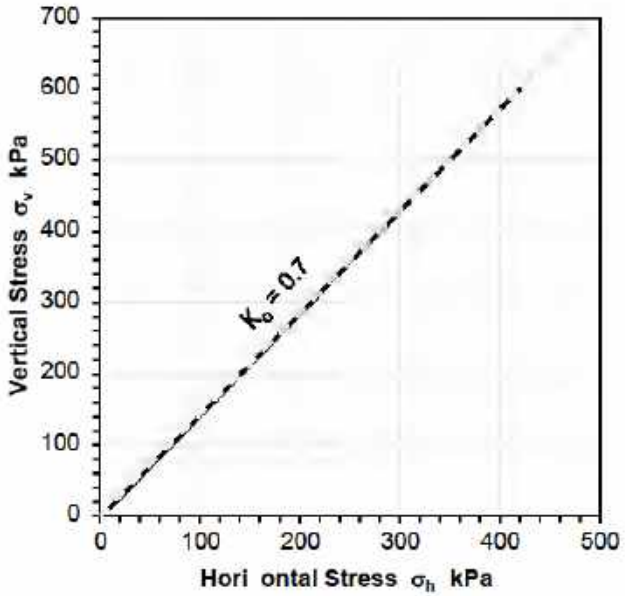
Sample Details

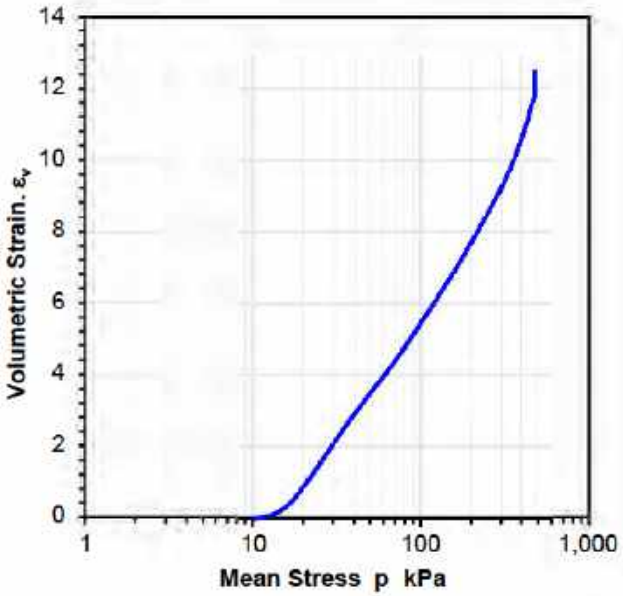
Diameter mm :	60.0	**Initial Moisture Content**	: 16.6*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	: 18.9	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	: 1.72	

Tested :	HE	**Checked :**	BB
Date:	7/02/2021	**Date:**	12/02/2021









GTI Perth
Geotechnical Testing and Interpretation

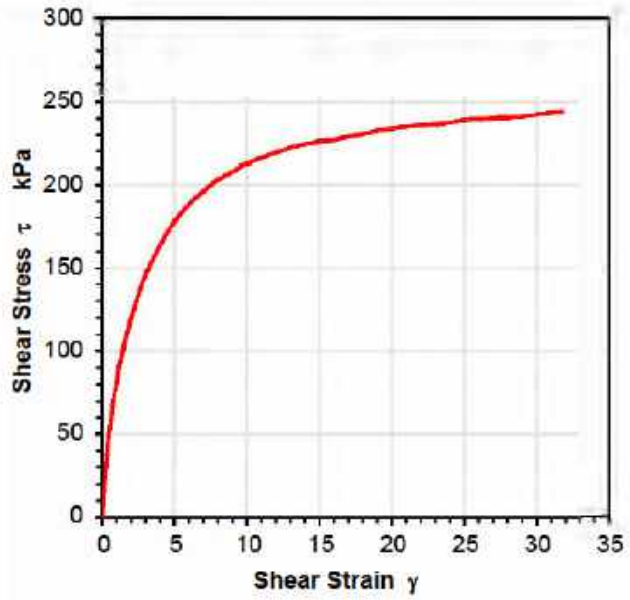
Static Simple Shear
Test Method: GTI ADT P

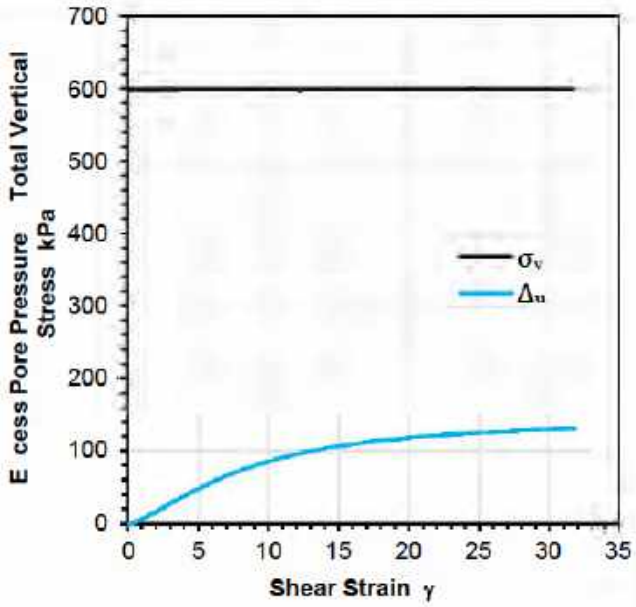
GTI Perth Reference:	C27-P01-T02	**Test Name:**	21-016-SS-03-S
GTI Perth Jo No.:	21-016	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-30
Client Reference:	PO208893	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	South Wall	**Sample Condition:**	Natural Moisture Content

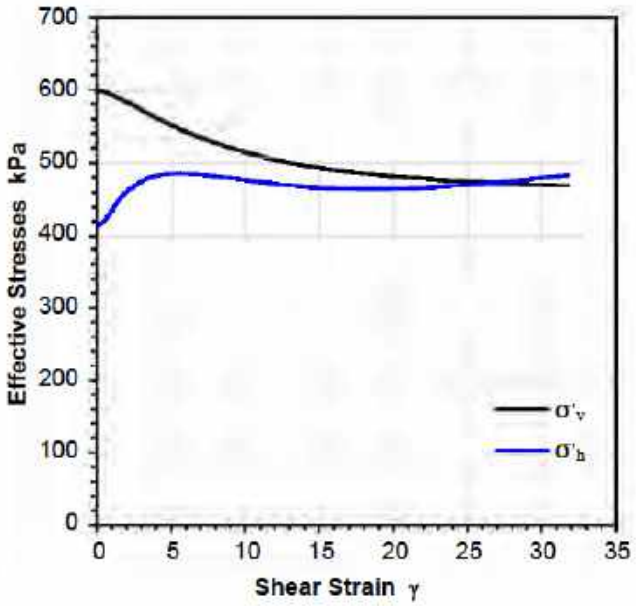
Sample Details

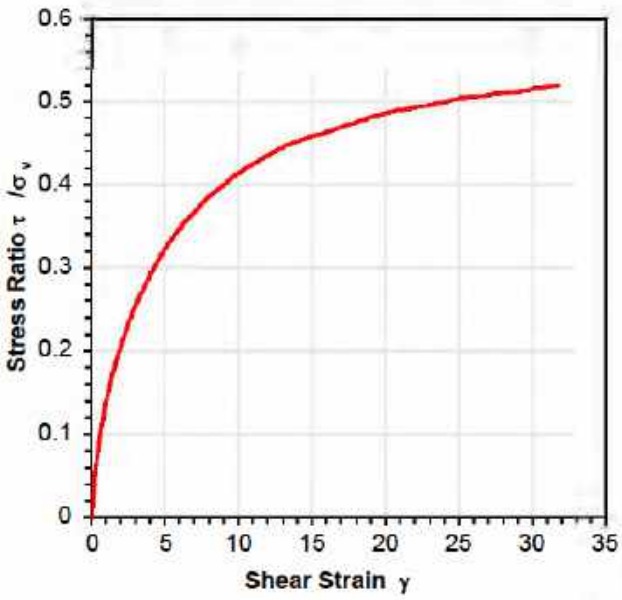
Diameter mm :	60.0	**Initial Moisture Content**	: 16.6*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	: 18.9	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	: 1.72	

Tested :	HE	**Checked :**	BB
Date:	7/02/2021	**Date:**	12/02/2021









GTIPerth
Geotechnical Testing and Interpretation

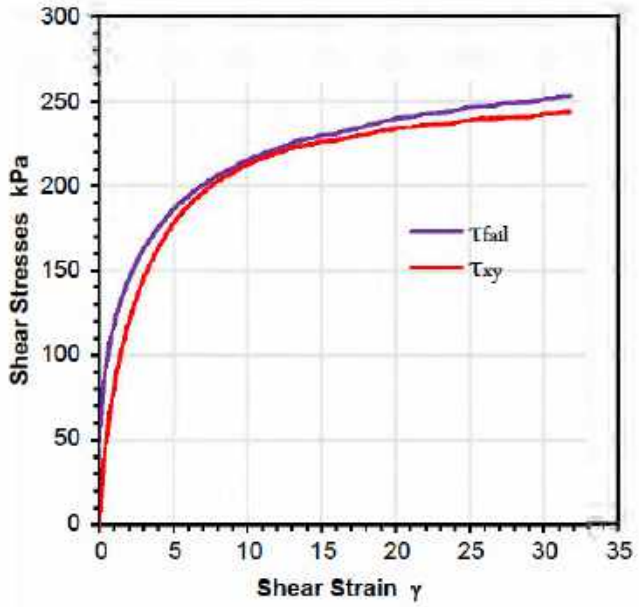
Static Simple Shear
Test Method: GTI ADT P

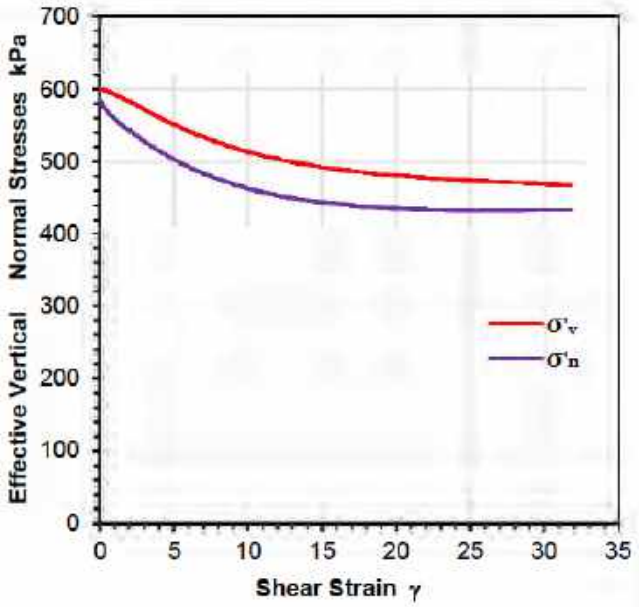
GTI Perth Reference:	C27-P01-T02	**Test Name:**	21-016-SS-03-S
GTI Perth Jo No.:	21-016	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-30
Client Reference:	PO208893	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	South Wall	**Sample Condition:**	Natural Moisture Content

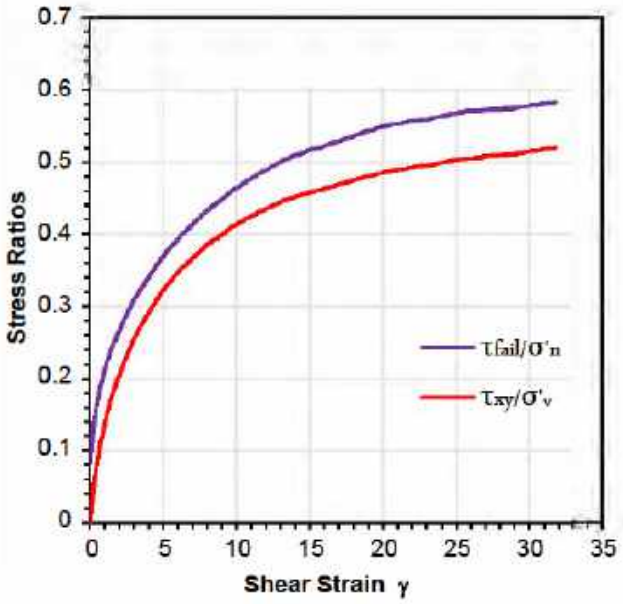
Sample Details

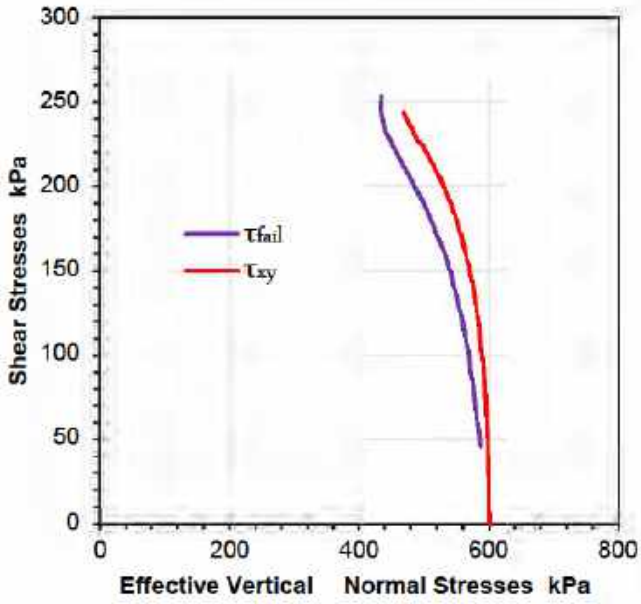
Diameter mm :	60.0	**Initial Moisture Content**	:	16.6*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	:	18.9	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	:	1.72	

Tested :	HE	**Checked :**	BB
Date:	7/02/2021	**Date:**	12/02/2021









GTI Perth
Geotechnical Testing and Interpretation

Static Simple Shear
Test Method: GTI ADT P

GTI Perth Reference:	C27-P01-T02	**Test Name:**	21-016-SS-03-S
GTI Perth Jo No.:	21-016	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-30
Client Reference:	PO208893	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	South Wall	**Sample Condition:**	Natural Moisture Content

Sample Details

Diameter mm :	60.0	**Initial Moisture Content**	:	16.6*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	:	18.9	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	:	1.72	

Tested :	HE	**Checked :**	BB
Date:	7/02/2021	**Date:**	12/02/2021

GTIPerth
Geotechnical Testing and Interpretation

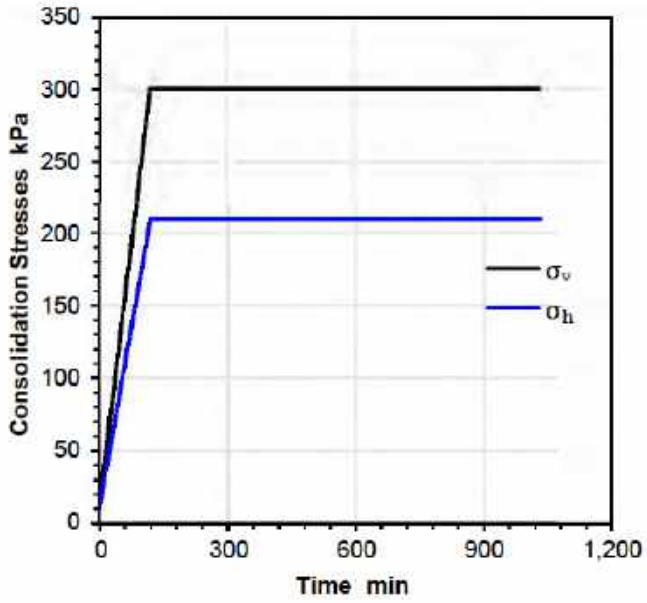
Static Simple Shear
Test Method: GTI ADT P

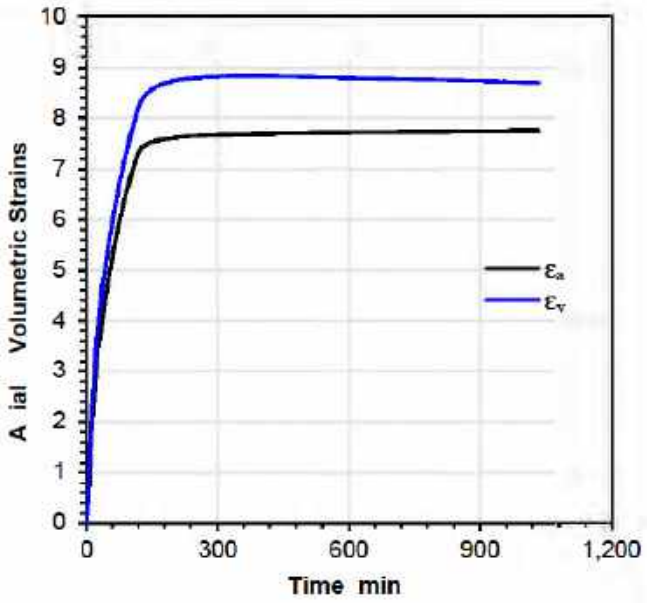
GTI Perth Reference:	C27-P01-T02	**Test Name:**	21-016-SS-04-S
GTI Perth Jo No.:	21-016	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-30
Client Reference:	PO208893	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	South Wall	**Sample Condition:**	Natural Moisture Content

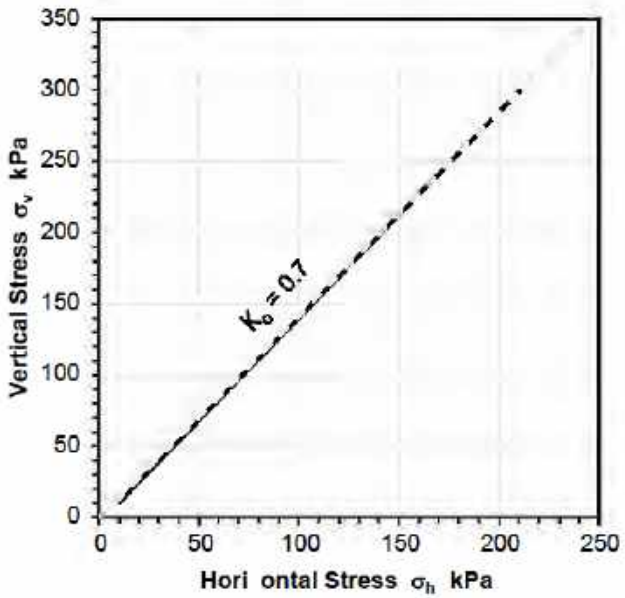
Sample Details

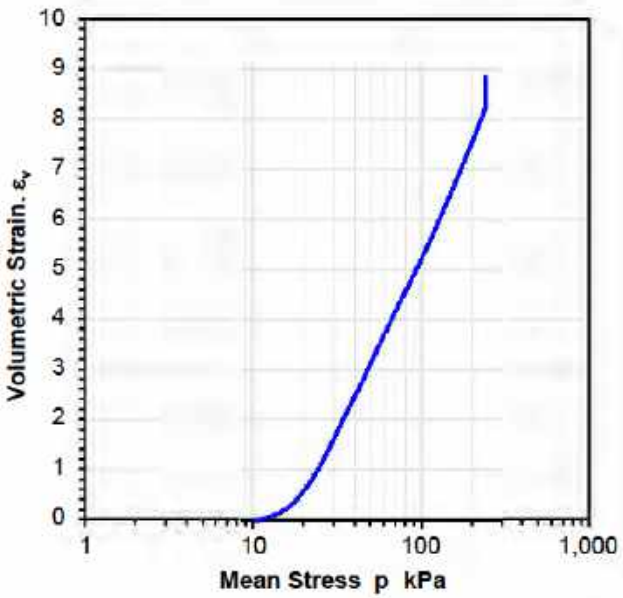
Diameter mm :	60.0	**Initial Moisture Content**	: 16.6*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	: 22.8	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	: 1.70	

Tested :	HE	**Checked :**	BB
Date:	7/02/2021	**Date:**	12/02/2021









Jo No.:

Evolution Minin Mun ari Gold Operations
CAU Static Simple Shear Consolidation Sta e
Fi ure B Pa e

GTIPerth
Geotechnical Testing and Interpretation

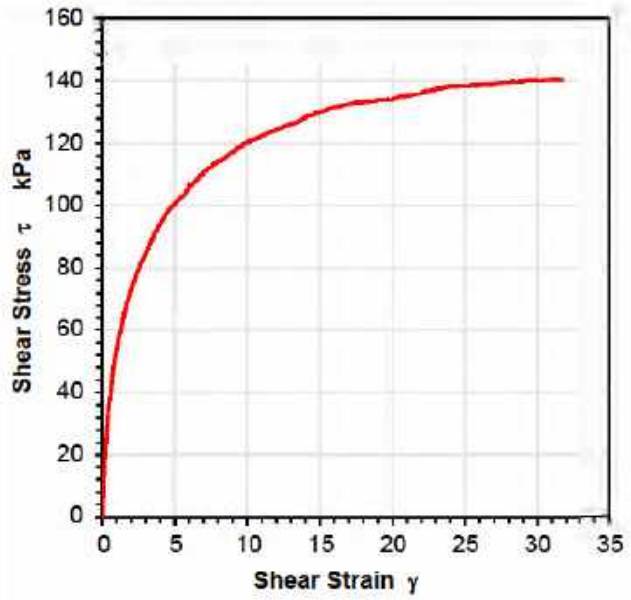
Static Simple Shear
Test Method: GTI ADT P

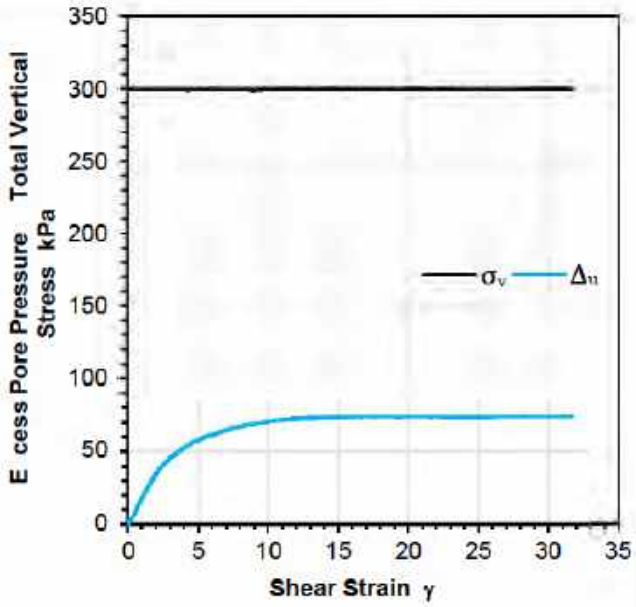
GTI Perth Reference:	C27-P01-T02	**Test Name:**	21-016-SS-04-S
GTI Perth Jo No.:	21-016	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-30
Client Reference:	PO208893	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	South Wall	**Sample Condition:**	Natural Moisture Content

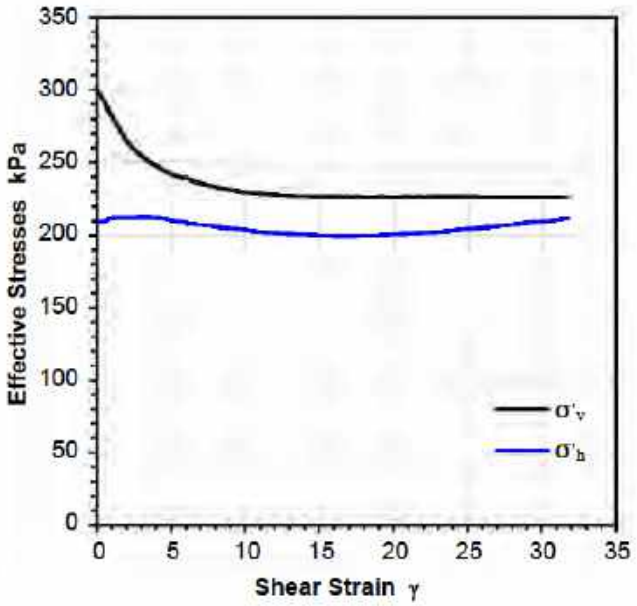
Sample Details

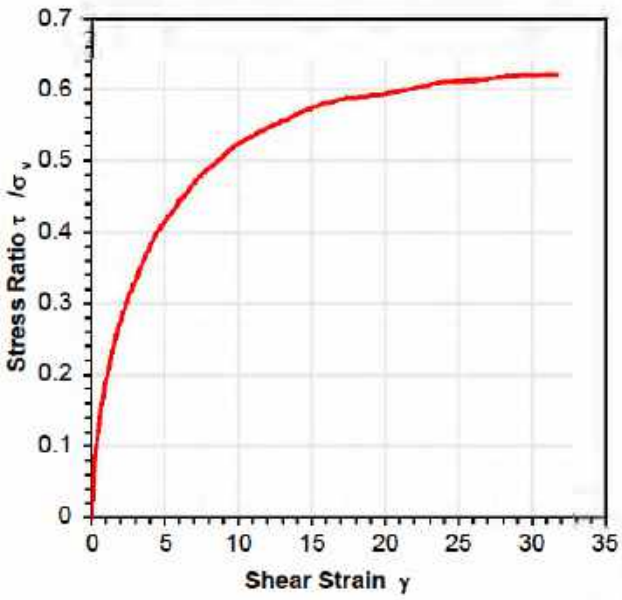
Diameter mm :	60.0	**Initial Moisture Content**	: 16.6*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	: 22.8	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	: 1.70	

Tested :	HE	**Checked :**	BB
Date:	7/02/2021	**Date:**	12/02/2021









GTIPerth
Geotechnical Testing and Interpretation

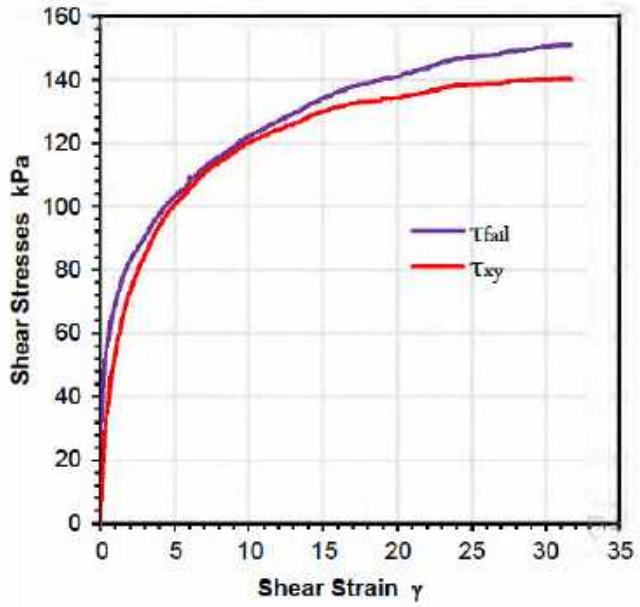
Static Simple Shear
Test Method: GTI ADT P

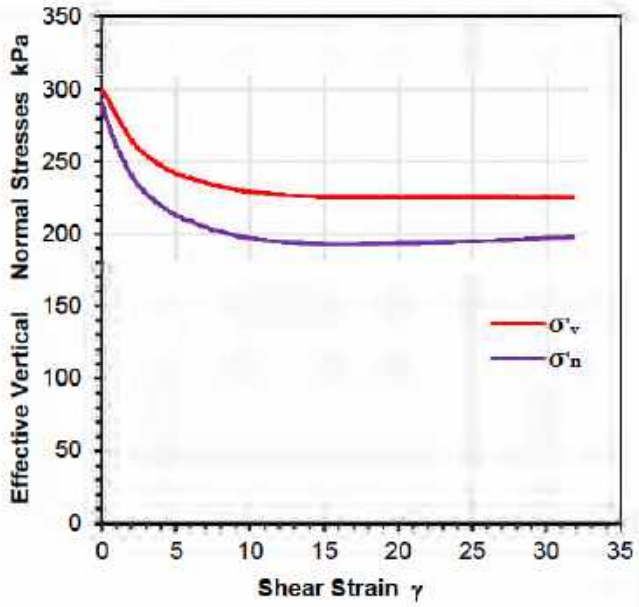
GTI Perth Reference:	C27-P01-T02	**Test Name:**	21-016-SS-04-S
GTI Perth Jo No.:	21-016	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-30
Client Reference:	PO208893	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	South Wall	**Sample Condition:**	Natural Moisture Content

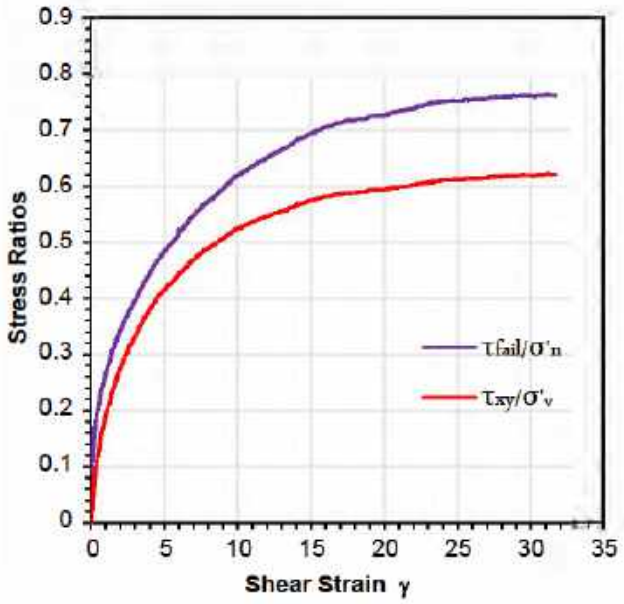
Sample Details

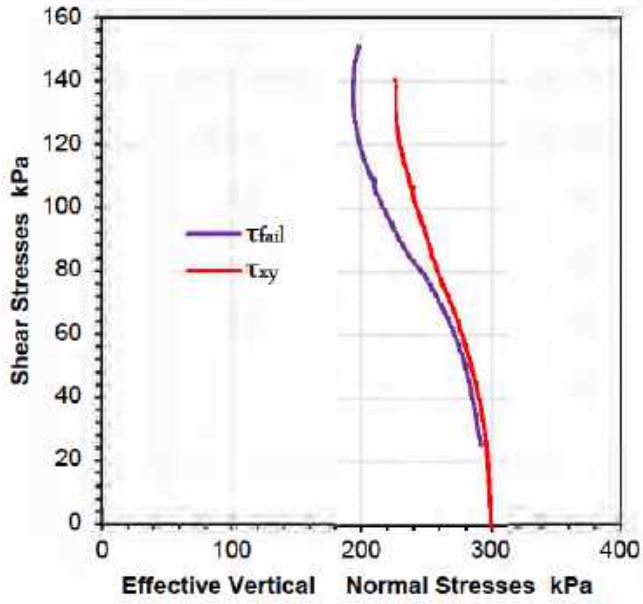
Diameter mm :	60.0	**Initial Moisture Content**	:	16.6*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	:	22.8	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	:	1.70	

Tested :	HE	**Checked :**	BB
Date:	7/02/2021	**Date:**	12/02/2021









Static Simple Shear
Test Method: GTI ADT P

GTI Perth Reference:	C27-P01-T02	**Test Name:**	21-016-SS-04-S
GTI Perth Jo No.:	21-016	**Borehole:**	Block Sample
Client:	Evolution Mining	**Sample No.:**	KP-EVO-30
Client Reference:	PO208893	**Test Depth:**	-
Pro ect:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	South Wall	**Sample Condition:**	Natural Moisture Content

Sample Details

Diameter mm :	60.0	**Initial Moisture Content**	:	16.6*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Hei ht mm :	30.0	**Final Moisture Content**	:	22.8	
Effective Hei ht mm :	21.0	**Initial Dr Densit /cm**	:	1.70	

Tested :	HE	**Checked :**	BB
Date:	7/02/2021	**Date:**	12/02/2021

GTI Perth
Geotechnical Testing and Interpretation

Consolidation - Oedometer
Test Method: AS1289.6.6.1

GTI Perth Reference:	C27-P01-T03	**Test Name:**	22-006-OED-01
GTI Perth Job No.:	22-006	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EVO-03
Client Reference:	PO 216881	**Test Depth:**	-
Project:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	Cell 4 North Wall	**Test Condition:**	Inundated at stage 1

Sample Details

Diameter (mm):	60.0	**Initial Moisture Content (%):**	14.4*	**Final Moisture Content (%):**	18.9
Initial Height (mm):	19.0	**Initial Dry Density (g/cm^3):**	1.57	**Final Dry Density (g/cm^3):**	1.79
Final Height (mm):	16.4	**Initial Degree of Saturation (%):**	49.7	**Final Degree of Saturation (%):**	92.9

Notes: *Moisture content from trimmings, may not be representative of the whole sample

Tested by:	KL	**Checked by:**	FL
Date:	12/08/2021	**Date:**	17/08/2021

Stage		Vertical Stress	Void ratio	Coefficient of		
				Consolidation	Compressibility	Permeability
Type	No.	σ_v	e	c_v	m_v	k
		kPa		m^2/year	m^2/kN	m/sec
Loading	1	12	0.788	-	1.23E-03	-
	2	22	0.769	54.0	1.10E-03	1.85E-08
	3	42	0.736	74.6	9.32E-04	2.16E-08
	4	82	0.691	64.2	6.43E-04	1.28E-08
	5	162	0.633	106.4	4.32E-04	1.43E-08
	6	322	0.576	114.3	2.18E-04	7.75E-09
Unloading	7	162	0.578	-	1.04E-05	-
	8	42	0.588	-	5.08E-05	-
	9	7	0.603	-	2.70E-04	-
Reloading	10	42	0.597	-	1.11E-04	-
	11	162	0.581	-	8.04E-05	-
	12	322	0.565	-	6.25E-05	-
Loading	13	642	0.520	45.0	9.03E-05	1.26E-09
	14	1282	0.477	1.4	4.47E-05	1.90E-11
Unloading	15	322	0.480	-	2.23E-06	-
	16	42	0.500	-	4.87E-05	-
	17	7	0.516	-	3.08E-04	-

GTI Perth
Geotechnical Testing and Interpretation

Consolidation - Oedometer
Test Method: AS1289.6.6.1

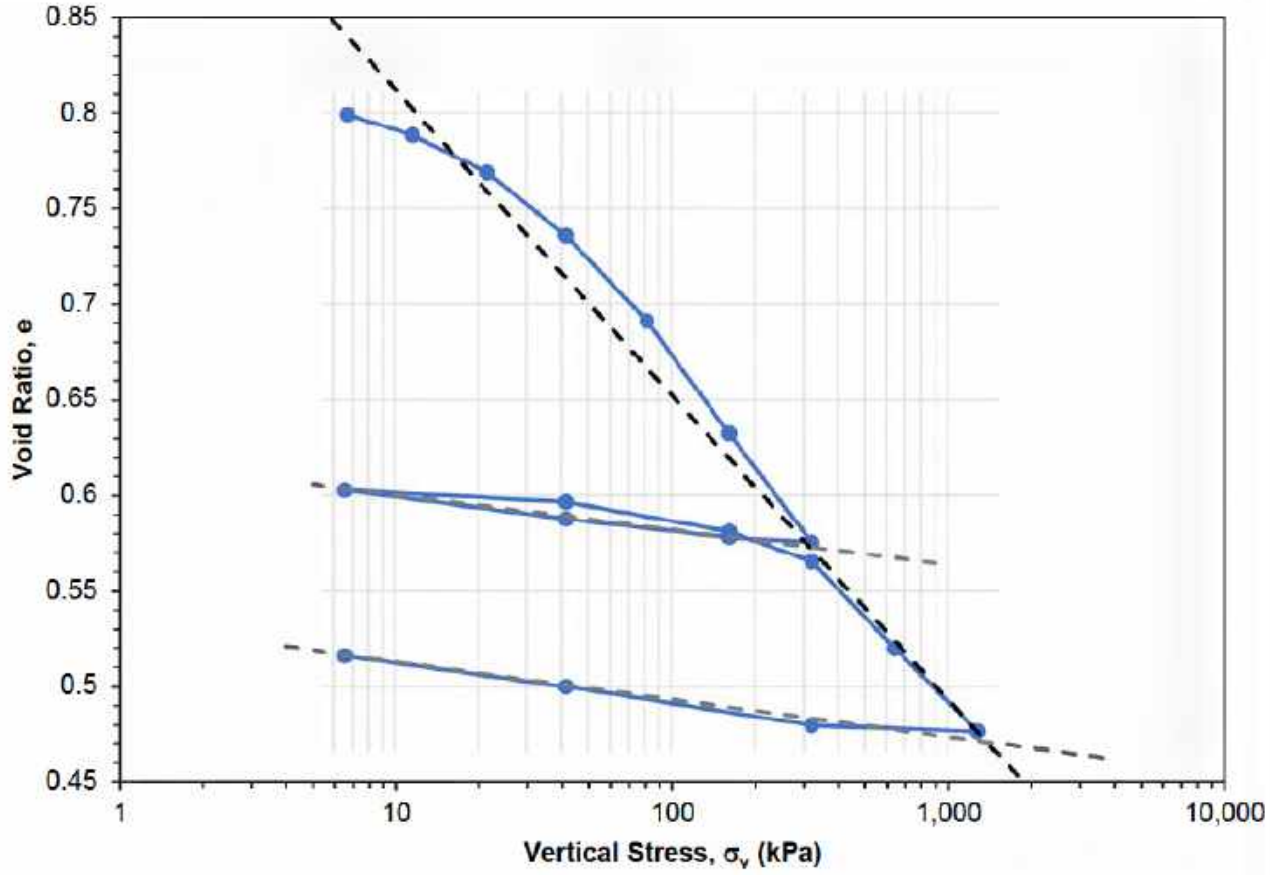
GTI Perth Reference:	C27-P01-T03	**Test Name:**	22-006-OED-01
GTI Perth Job No.:	22-006	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EVO-03
Client Reference:	PO 216881	**Test Depth:**	-
Project:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	Cell 4 North Wall	**Test Condition:**	Inundated at stage 1

Sample Details

Diameter (mm):	60.0	**Initial Moisture Content (%):**	14.4*	**Final Moisture Content (%):**	18.9
Initial Height (mm):	19.0	**Initial Dry Density (g/cm^3):**	1.57	**Final Dry Density (g/cm^3):**	1.79
Final Height (mm):	16.4	**Initial Degree of Saturation (%):**	49.7	**Final Degree of Saturation (%):**	92.9

Notes: *Moisture content from trimmings, may not be representative of the whole sample

Tested by:	KL	**Checked by:**	FL
Date:	12/08/2021	**Date:**	17/08/2021



Interpreted Parameters		
Compression index, C_c	0.159	
Swelling index, $C_{s\text{-int}}$	0.018	at intermediate unload-reloading stress
Swelling index, $C_{s\text{-Max}}$	0.020	at final loading stage unload-reloading stress

GTI Perth
Geotechnical Testing and Interpretation

Consolidation - Oedometer
Test Method: AS1289.6.6.1

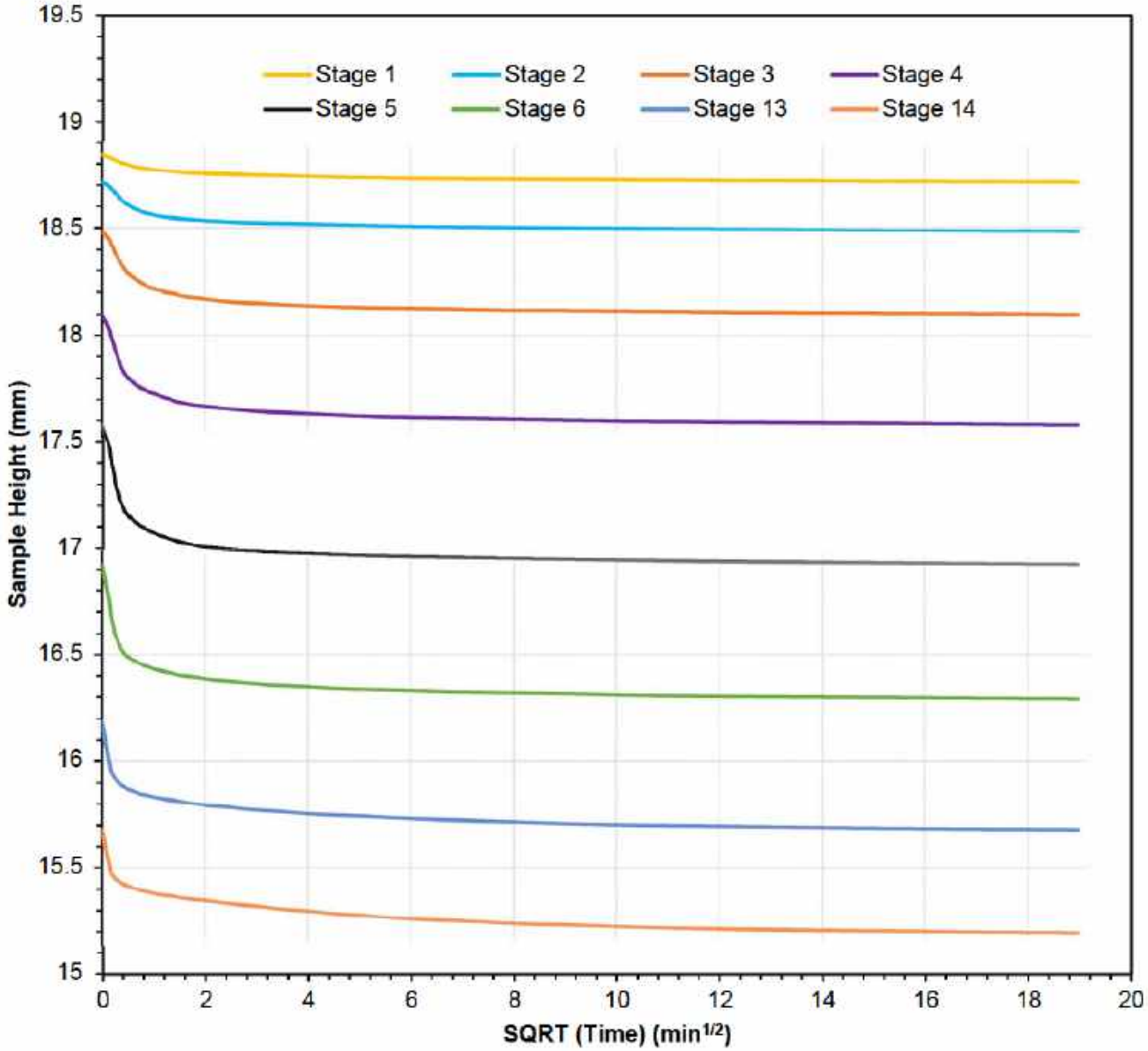
GTI Perth Reference:	C27-P01-T03	**Test Name:**	22-006-OED-01
GTI Perth Job No.:	22-006	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EVO-03
Client Reference:	PO 216881	**Test Depth:**	-
Project:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	Cell 4 North Wall	**Test Condition:**	Inundated at stage 1

Sample Details

Diameter (mm):	60.0	**Initial Moisture Content (%):**	14.4*	**Final Moisture Content (%):**	18.9
Initial Height (mm):	19.0	**Initial Dry Density (g/cm^3):**	1.57	**Final Dry Density (g/cm^3):**	1.79
Final Height (mm):	16.4	**Initial Degree of Saturation (%):**	49.7	**Final Degree of Saturation (%):**	92.9

Notes: *Moisture content from trimmings, may not be representative of the whole sample

Tested by:	KL	**Checked by:**	FL
Date:	12/08/2021	**Date:**	17/08/2021



GTI Perth
Geotechnical Testing and Interpretation

Consolidation - Oedometer
Test Method: AS1289.6.6.1

GTI Perth Reference:	C27-P01-T03	**Test Name:**	22-006-OED-02
GTI Perth Job No.:	22-006	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EVO-05
Client Reference:	PO 216881	**Test Depth:**	-
Project:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	Cell 4 North Wall	**Test Condition:**	Inundated at stage 1

Sample Details

Diameter (mm):	60.0	**Initial Moisture Content (%):**	6.3*	**Final Moisture Content (%):**	13.5
Initial Height (mm):	19.1	**Initial Dry Density (g/cm^3):**	1.58	**Final Dry Density (g/cm^3):**	1.87
Final Height (mm):	16.0	**Initial Degree of Saturation (%):**	22.6	**Final Degree of Saturation (%):**	78.0

Notes: *Moisture content from trimmings, may not be representative of the whole sample

Tested by:	KL	**Checked by:**	FL
Date:	16/08/2021	**Date:**	20/08/2021

Stage		Vertical Stress	Void ratio	Coefficient of		
				Consolidation	Compressibility	Permeability
Type	No.	σ_v	e	c_v	m_v	k
		kPa		m^2/year	m^2/kN	m/sec
Loading	1	12	0.691	-	2.11E-03	-
	2	22	0.647	52.0	2.60E-03	4.21E-08
	3	42	0.607	62.1	1.20E-03	2.31E-08
	4	82	0.571	88.0	5.59E-04	1.53E-08
	5	202	0.530	111.1	2.20E-04	7.58E-09
	6	402	0.500	144.2	9.84E-05	4.41E-09
Unloading	7	202	0.501	-	3.71E-06	-
	8	52	0.504	-	1.32E-05	-
	9	7	0.507	-	4.79E-05	-
Reloading	10	52	0.505	-	3.55E-05	-
	11	202	0.501	-	1.89E-05	-
	12	402	0.494	-	2.07E-05	-
Loading	13	802	0.470	145.5	4.14E-05	1.87E-09
Unloading	14	202	0.472	-	3.26E-06	-
	15	52	0.476	-	1.72E-05	-
	16	7	0.480	-	6.28E-05	-

GTI Perth
Geotechnical Testing and Interpretation

Consolidation - Oedometer
Test Method: AS1289.6.6.1

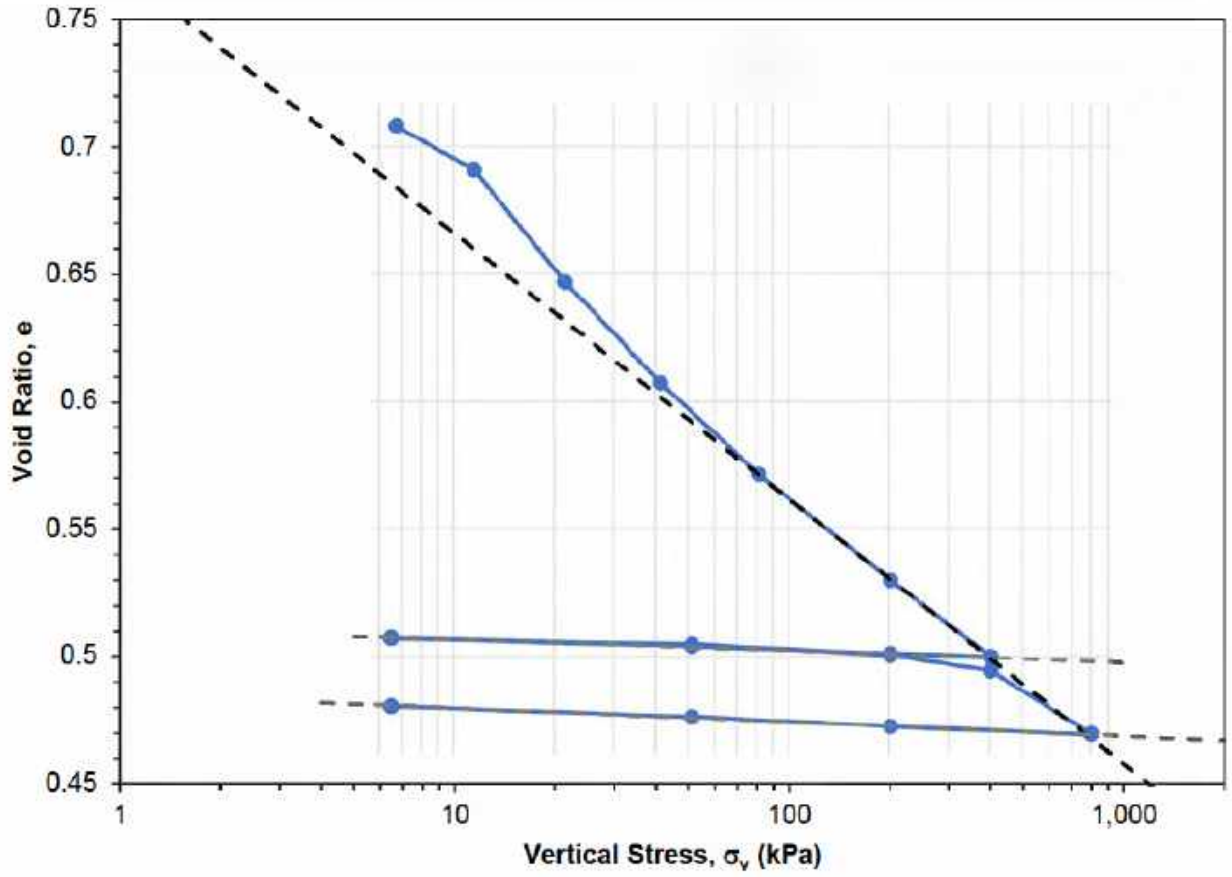
GTI Perth Reference:	C27-P01-T03	**Test Name:**	22-006-OED-02
GTI Perth Job No.:	22-006	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EVO-05
Client Reference:	PO 216881	**Test Depth:**	-
Project:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	Cell 4 North Wall	**Test Condition:**	Inundated at stage 1

Sample Details

Diameter (mm):	60.0	**Initial Moisture Content (%):**	6.3*	**Final Moisture Content (%):**	13.5
Initial Height (mm):	19.1	**Initial Dry Density (g/cm^3):**	1.58	**Final Dry Density (g/cm^3):**	1.87
Final Height (mm):	16.0	**Initial Degree of Saturation (%):**	22.6	**Final Degree of Saturation (%):**	78.0

Notes: *Moisture content from trimmings, may not be representative of the whole sample

Tested by:	KL	**Checked by:**	FL
Date:	16/08/2021	**Date:**	20/08/2021



Interpreted Parameters		
Compression index, C_c	0.104	
Swelling index, $C_{s\text{-int}}$	0.004	at intermediate unload-reloading stress
Swelling index, $C_{s\text{-Max}}$	0.005	at final loading stage unload-reloading stress

GTI Perth
Geotechnical Testing and Interpretation

Consolidation - Oedometer
Test Method: AS1289.6.6.1

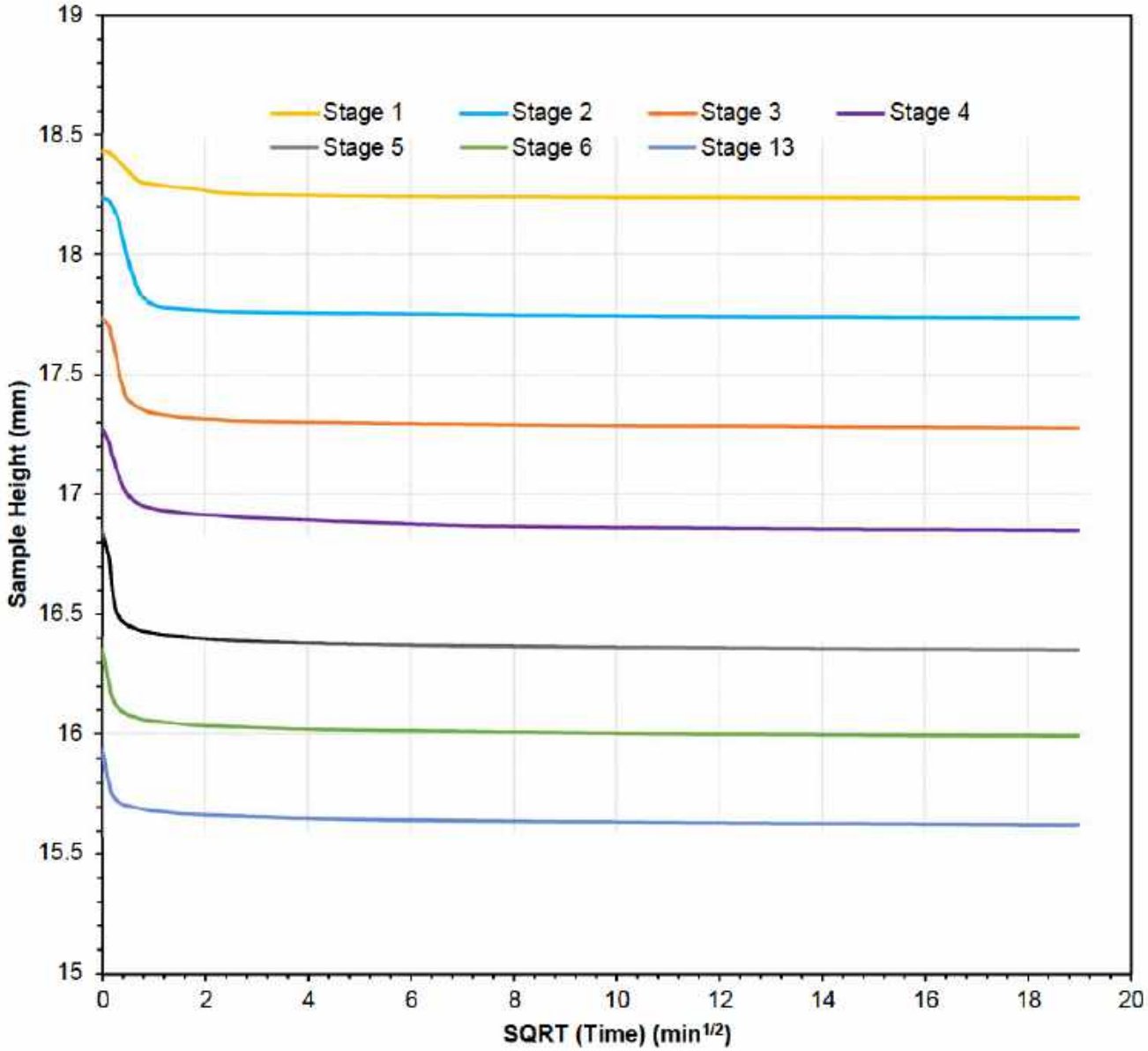
GTI Perth Reference:	C27-P01-T03	**Test Name:**	22-006-OED-02
GTI Perth Job No.:	22-006	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EVO-05
Client Reference:	PO 216881	**Test Depth:**	-
Project:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	Cell 4 North Wall	**Test Condition:**	Inundated at stage 1

Sample Details

Diameter (mm):	60.0	**Initial Moisture Content (%):**	6.3*	**Final Moisture Content (%):**	13.5
Initial Height (mm):	19.1	**Initial Dry Density (g/cm^3):**	1.58	**Final Dry Density (g/cm^3):**	1.87
Final Height (mm):	16.0	**Initial Degree of Saturation (%):**	22.6	**Final Degree of Saturation (%):**	78.0

Notes: *Moisture content from trimmings, may not be representative of the whole sample

Tested by:	KL	**Checked by:**	FL
Date:	16/08/2021	**Date:**	20/08/2021



GTI Perth
Geotechnical Testing and Interpretation

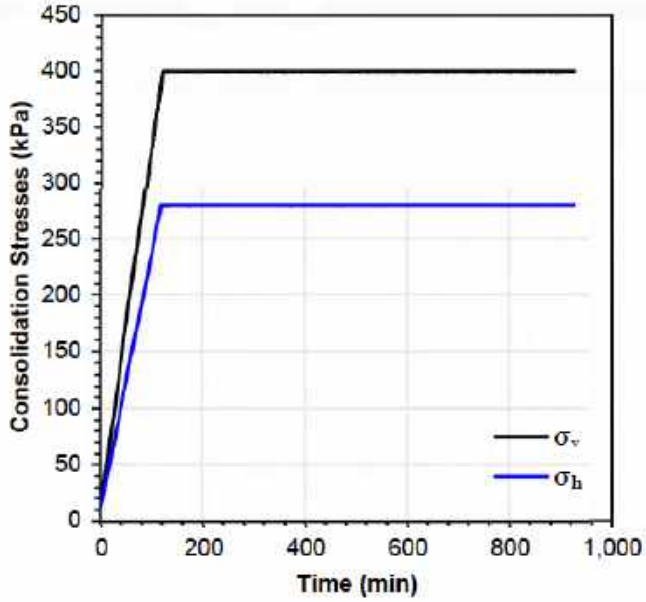
Static Simple Shear
Test Method: GTI-ADT-P06

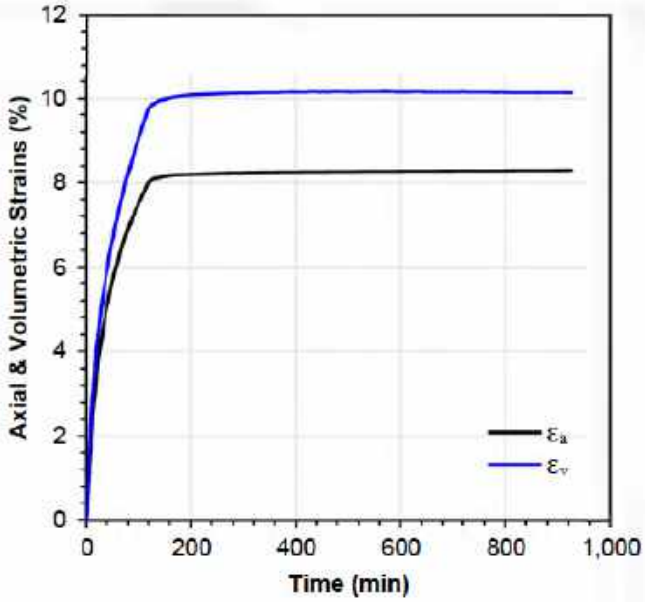
GTI Perth Reference:	C27-P01-T03	**Test Name:**	22-006-SS-01-S
GTI Perth Job No.:	22-006	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EV-03
Client Reference:	PO 216881	**Test Depth:**	-
Project:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	Cell 4 North Wall	**Sample Condition:**	Natural Moisture Content

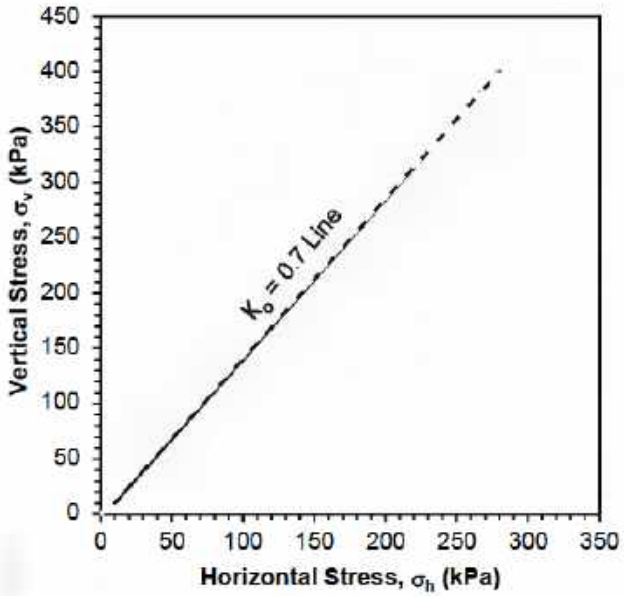
Sample Details

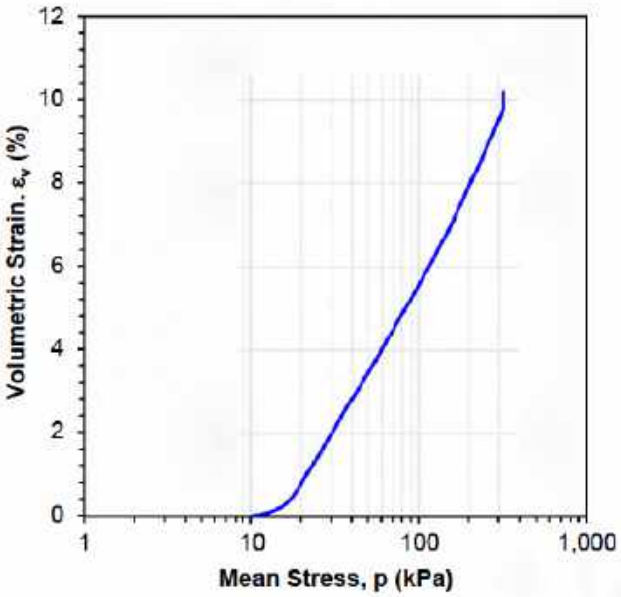
Diameter (mm):	60.0	**Initial Moisture Content (%):**	12.5*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Height (mm):	30.0	**Final Moisture Content (%):**	16.7	
Effective Height (mm):	21.0	**Initial Dry Density (g/cm^3):**	1.72	

Tested by:	HE	**Checked by:**	HJ
Date:	17/08/2021	**Date:**	19/08/2021









GTI Perth
Geotechnical Testing and Interpretation

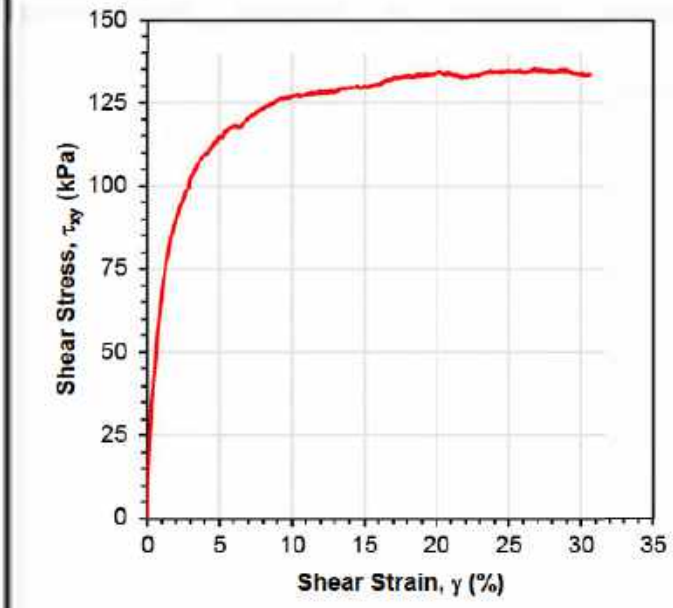
Static Simple Shear
Test Method: GTI-ADT-P06

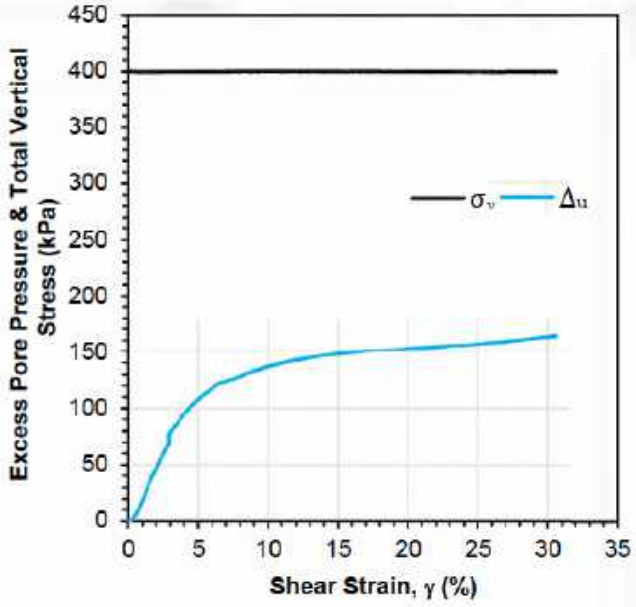
GTI Perth Reference:	C27-P01-T03	**Test Name:**	22-006-SS-01-S
GTI Perth Job No.:	22-006	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EV-03
Client Reference:	PO 216881	**Test Depth:**	-
Project:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	Cell 4 North Wall	**Sample Condition:**	Natural Moisture Content

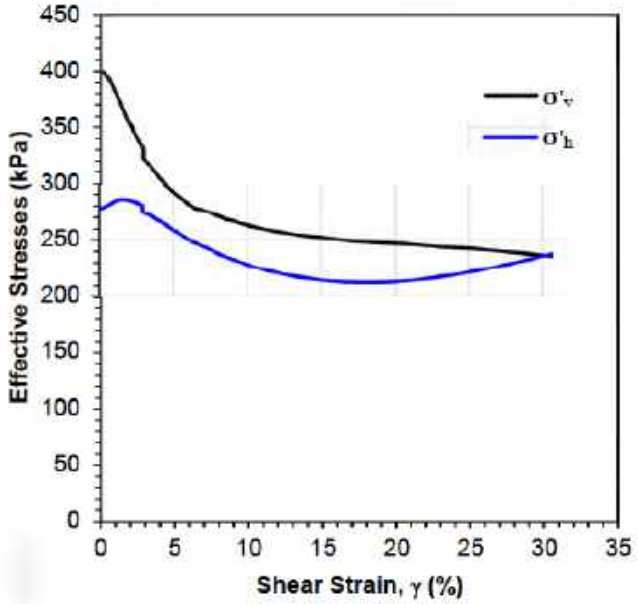
Sample Details

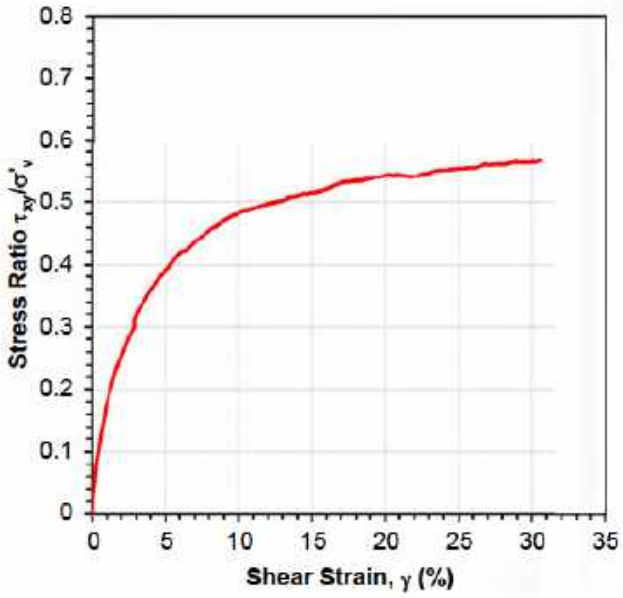
Diameter (mm):	60.0	**Initial Moisture Content (%):**	12.5*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Height (mm):	30.0	**Final Moisture Content (%):**	16.7	
Effective Height (mm):	21.0	**Initial Dry Density (g/cm^3):**	1.72	

Tested by:	HE	**Checked by:**	HJ
Date:	17/08/2021	**Date:**	19/08/2021









GTI Perth
Geotechnical Testing and Interpretation

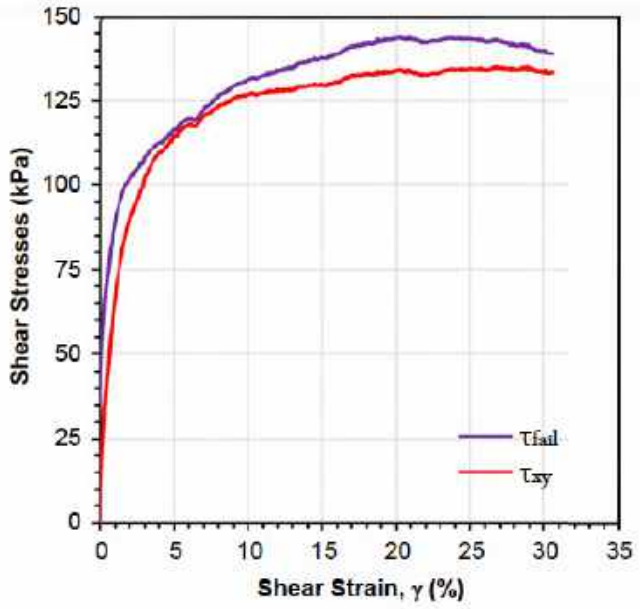
Static Simple Shear
Test Method: GTI-ADT-P06

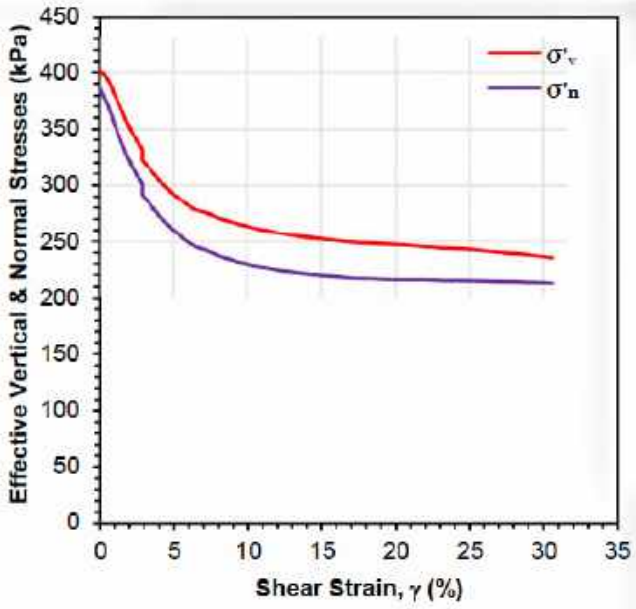
GTI Perth Reference:	C27-P01-T03	**Test Name:**	22-006-SS-01-S
GTI Perth Job No.:	22-006	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EV-03
Client Reference:	PO 216881	**Test Depth:**	-
Project:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	Cell 4 North Wall	**Sample Condition:**	Natural Moisture Content

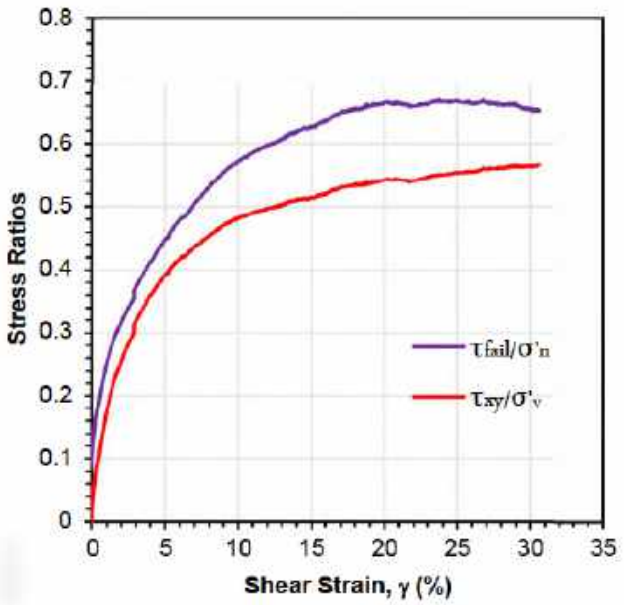
Sample Details

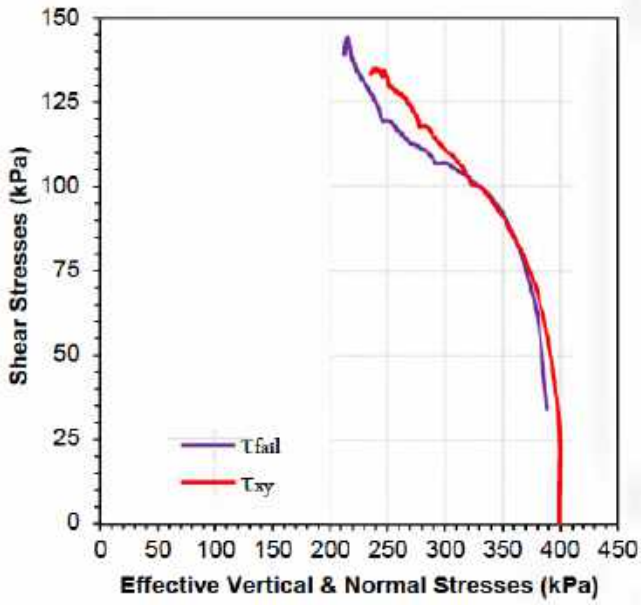
Diameter (mm):	60.0	**Initial Moisture Content (%):**	12.5*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Height (mm):	30.0	**Final Moisture Content (%):**	16.7	
Effective Height (mm):	21.0	**Initial Dry Density (g/cm^3):**	1.72	

Tested by:	HE	**Checked by:**	HJ
Date:	17/08/2021	**Date:**	19/08/2021









Job No.:22-006

Evolution Mining - Mungari Gold Operations
CAU Static Simple Shear - Shearing Stage

T:\C27-P01-T03\22-006\02 Technical\03 Simple Shear\03-Rev0\22-006-SS-03-S-Rev0.xlsx

Figure C1 - Page 3

GTI Perth
Geotechnical Testing and Interpretation

Static Simple Shear
Test Method: GTI-ADT-P06

GTI Perth Reference:	C27-P01-T03	**Test Name:**	22-006-SS-01-S
GTI Perth Job No.:	22-006	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EV-03
Client Reference:	PO 216881	**Test Depth:**	-
Project:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	Cell 4 North Wall	**Sample Condition:**	Natural Moisture Content

Sample Details

Diameter (mm):	60.0	**Initial Moisture Content (%):**	12.5*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Height (mm):	30.0	**Final Moisture Content (%):**	16.7	
Effective Height (mm):	21.0	**Initial Dry Density (g/cm^3):**	1.72	

Tested by:	HE	**Checked by:**	HJ
Date:	17/08/2021	**Date:**	19/08/2021

GTI Perth
Geotechnical Testing and Interpretation

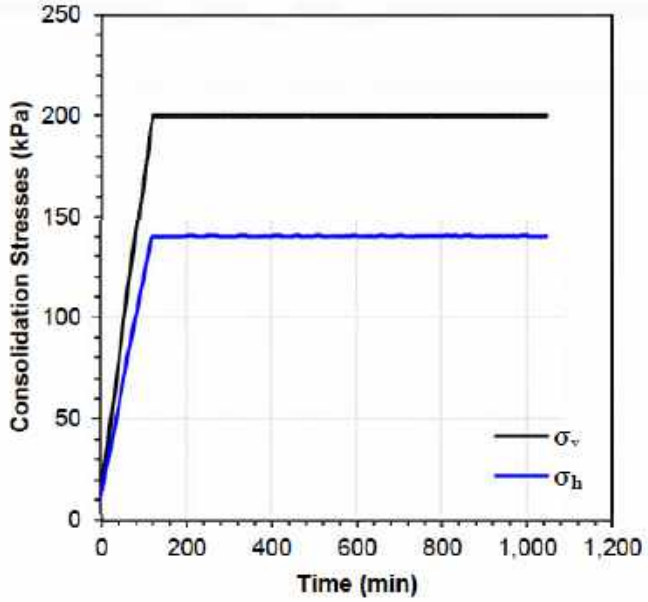
Static Simple Shear
Test Method: GTI-ADT-P06

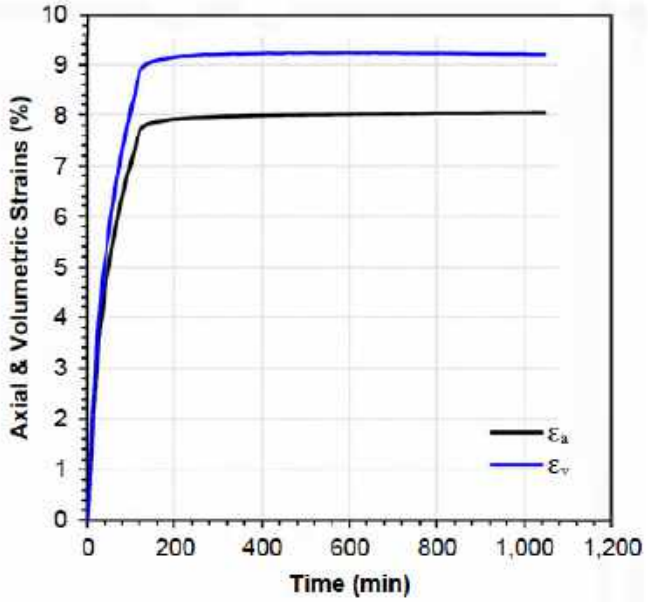
GTI Perth Reference:	C27-P01-T03	**Test Name:**	22-006-SS-02-S
GTI Perth Job No.:	22-006	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EV-03
Client Reference:	PO 216881	**Test Depth:**	-
Project:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	Cell 4 North Wall	**Sample Condition:**	Natural Moisture Content

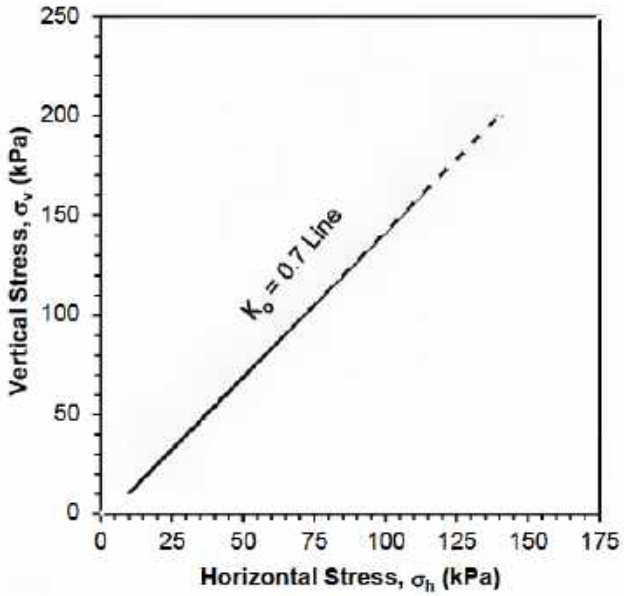
Sample Details

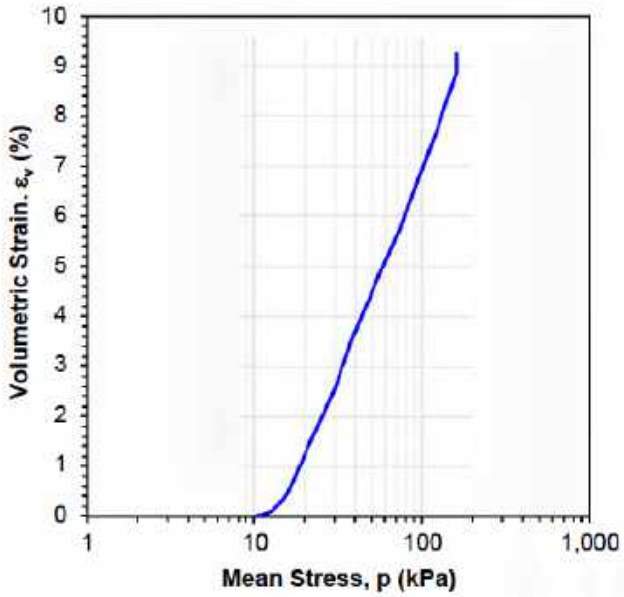
Diameter (mm):	60.0	**Initial Moisture Content (%):**	13.4*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Height (mm):	30.0	**Final Moisture Content (%):**	20.8	
Effective Height (mm):	21.0	**Initial Dry Density (g/cm^3):**	1.66	

Tested by:	HE	**Checked by:**	HJ
Date:	12/08/2021	**Date:**	19/08/2021









GTI Perth
Geotechnical Testing and Interpretation

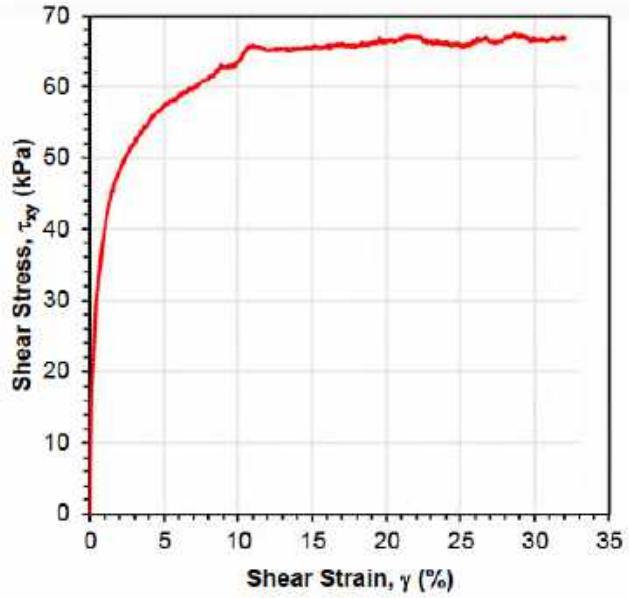
Static Simple Shear
Test Method: GTI-ADT-P06

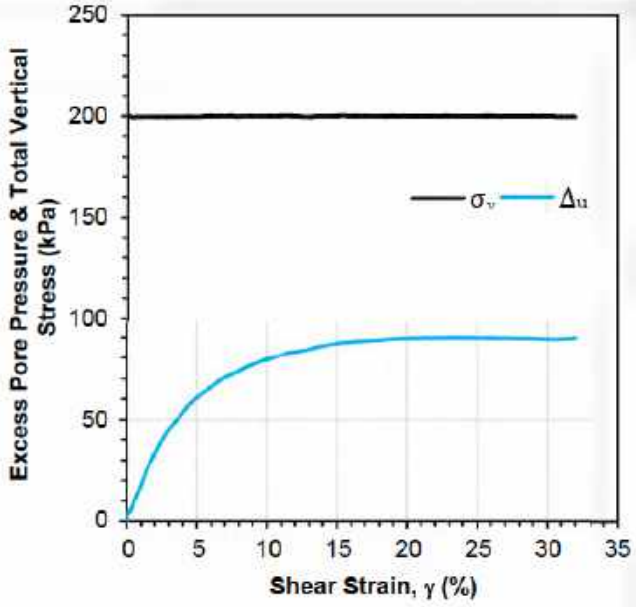
GTI Perth Reference:	C27-P01-T03	**Test Name:**	22-006-SS-02-S
GTI Perth Job No.:	22-006	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EV-03
Client Reference:	PO 216881	**Test Depth:**	-
Project:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	Cell 4 North Wall	**Sample Condition:**	Natural Moisture Content

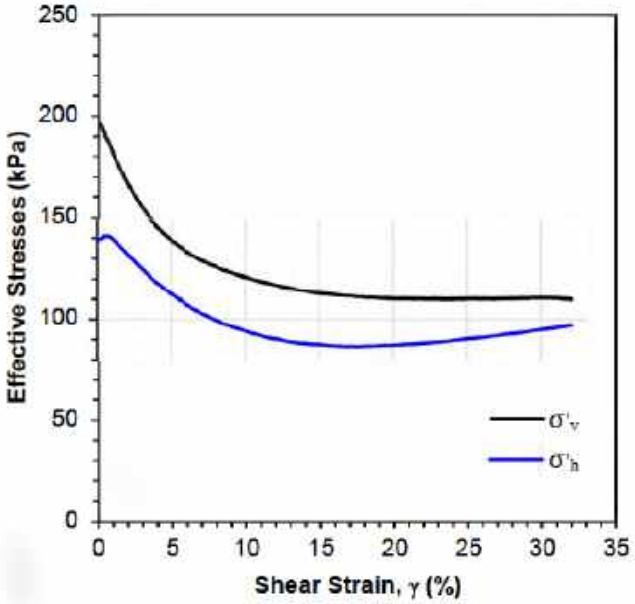
Sample Details

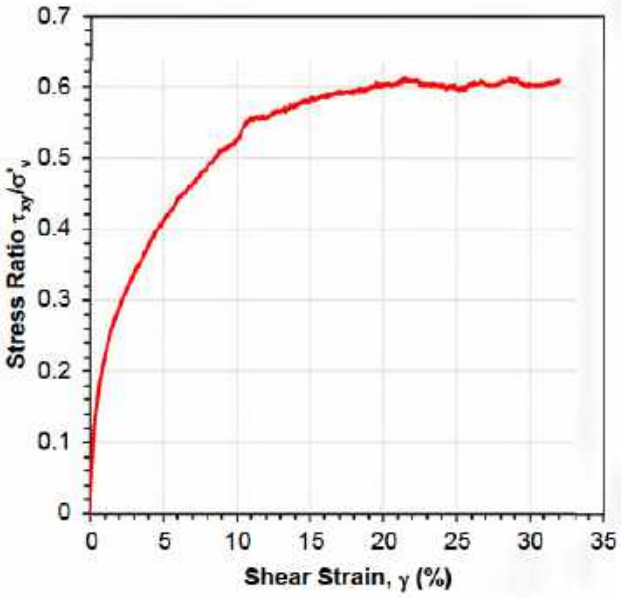
Diameter (mm):	60.0	**Initial Moisture Content (%):**	13.4*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Height (mm):	30.0	**Final Moisture Content (%):**	20.8	
Effective Height (mm):	21.0	**Initial Dry Density (g/cm^3):**	1.66	

Tested by:	HE	**Checked by:**	HJ
Date:	12/08/2021	**Date:**	19/08/2021









GTI Perth
Geotechnical Testing and Interpretation

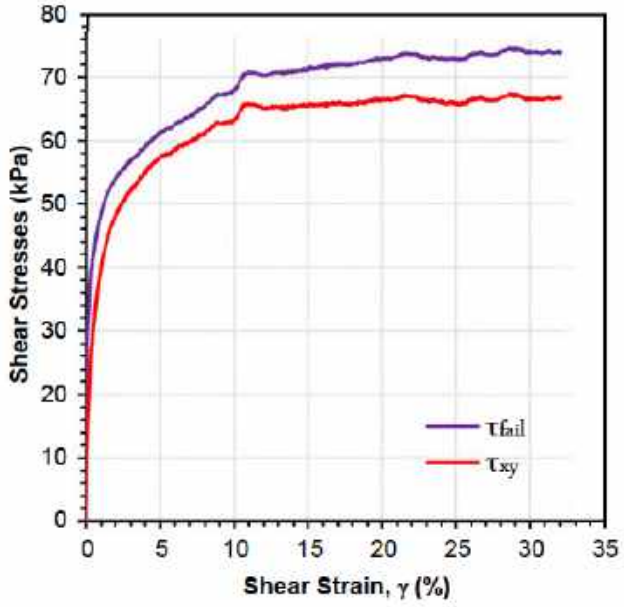
Static Simple Shear
Test Method: GTI-ADT-P06

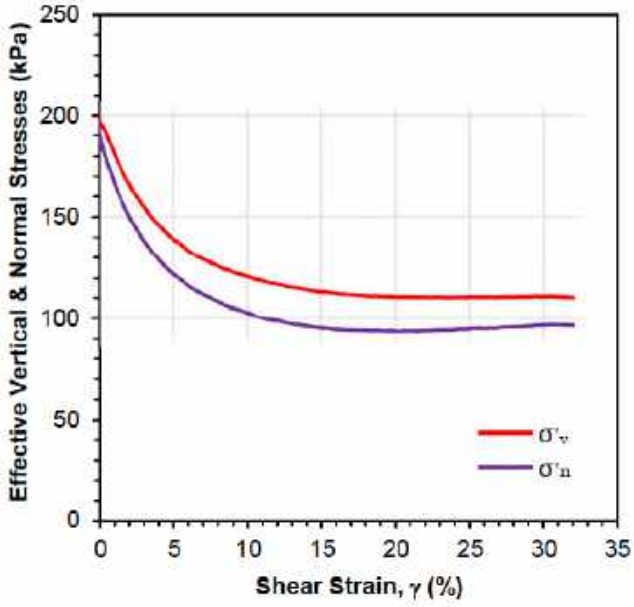
GTI Perth Reference:	C27-P01-T03	**Test Name:**	22-006-SS-02-S
GTI Perth Job No.:	22-006	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EV-03
Client Reference:	PO 216881	**Test Depth:**	-
Project:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	Cell 4 North Wall	**Sample Condition:**	Natural Moisture Content

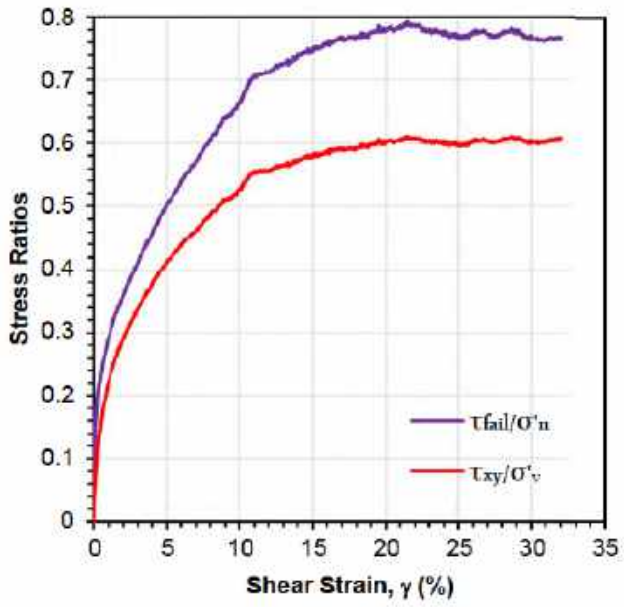
Sample Details

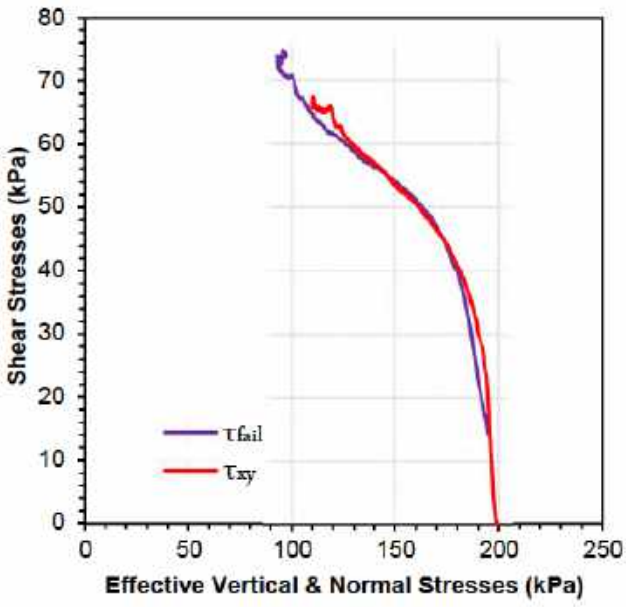
Diameter (mm):	60.0	**Initial Moisture Content (%):**	13.4*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Height (mm):	30.0	**Final Moisture Content (%):**	20.8	
Effective Height (mm):	21.0	**Initial Dry Density (g/cm^3):**	1.66	

Tested by:	HE	**Checked by:**	HJ
Date:	12/08/2021	**Date:**	19/08/2021









GTI Perth
Geotechnical Testing and Interpretation

Static Simple Shear
Test Method: GTI-ADT-P06

GTI Perth Reference:	C27-P01-T03	**Test Name:**	22-006-SS-02-S
GTI Perth Job No.:	22-006	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EV-03
Client Reference:	PO 216881	**Test Depth:**	-
Project:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	Cell 4 North Wall	**Sample Condition:**	Natural Moisture Content

Sample Details

Diameter (mm):	60.0	**Initial Moisture Content (%):**	13.4*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Height (mm):	30.0	**Final Moisture Content (%):**	20.8	
Effective Height (mm):	21.0	**Initial Dry Density (g/cm^3):**	1.66	

Tested by:	HE	**Checked by:**	HJ
Date:	12/08/2021	**Date:**	19/08/2021

GTI Perth
Geotechnical Testing and Interpretation

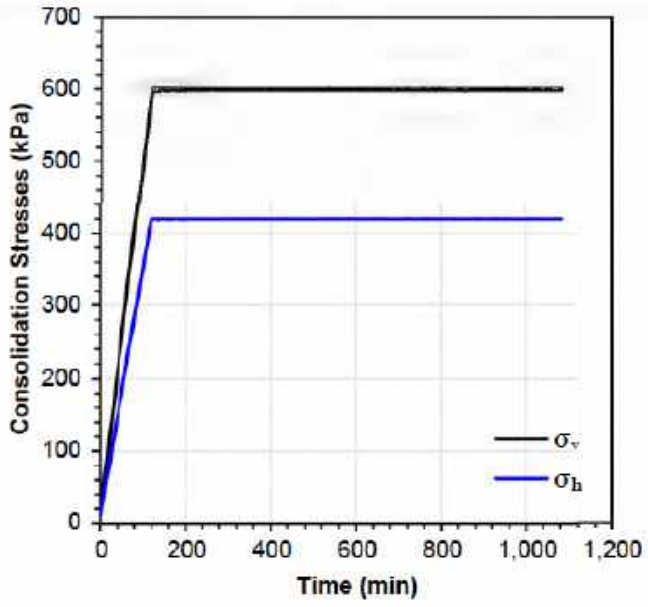
Static Simple Shear
Test Method: GTI-ADT-P06

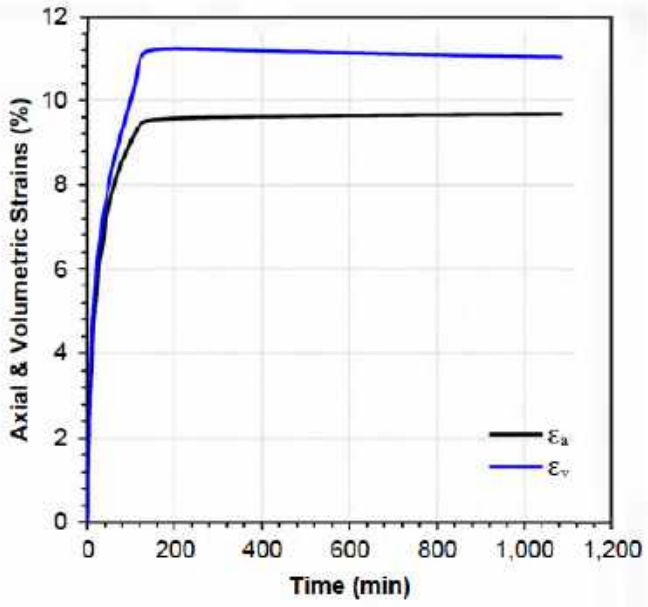
GTI Perth Reference:	C27-P01-T03	**Test Name:**	22-006-SS-03-S
GTI Perth Job No.:	22-006	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EV-05
Client Reference:	PO 216881	**Test Depth:**	-
Project:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	Cell 4 North Wall	**Sample Condition:**	Natural Moisture Content

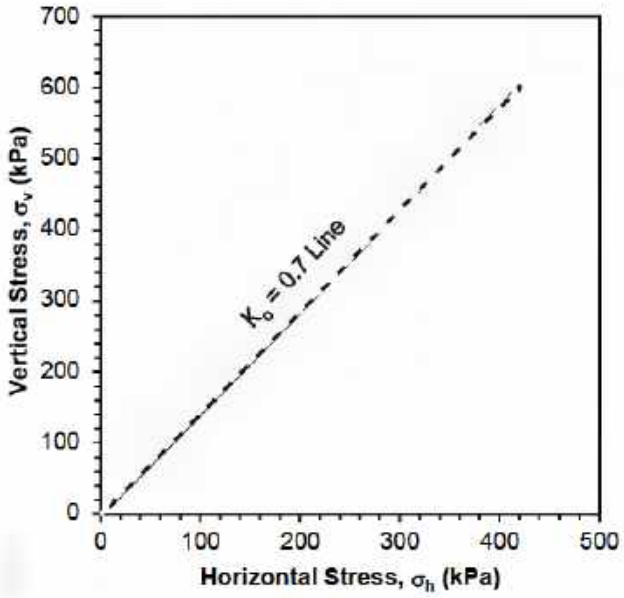
Sample Details

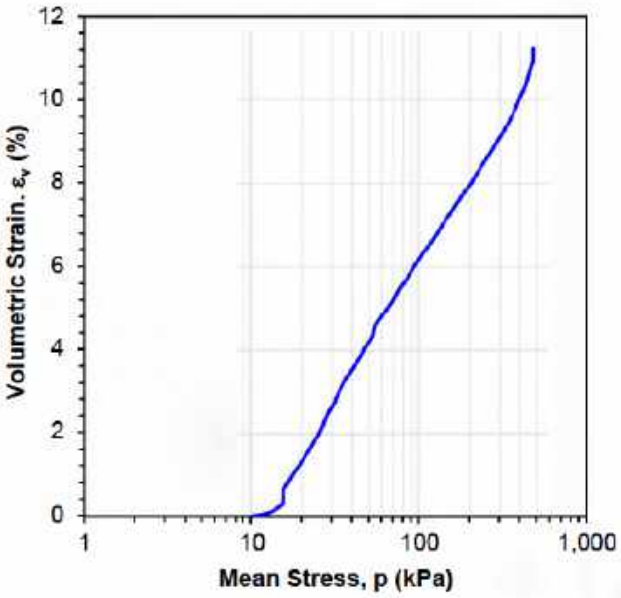
Diameter (mm):	70.0	**Initial Moisture Content (%):**	6.5*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Height (mm):	34.7	**Final Moisture Content (%):**	14.6	
Effective Height (mm):	25.7	**Initial Dry Density (g/cm^3):**	1.62	

Tested by:	HE	**Checked by:**	HJ
Date:	12/08/2021	**Date:**	19/08/2021









GTI Perth
Geotechnical Testing and Interpretation

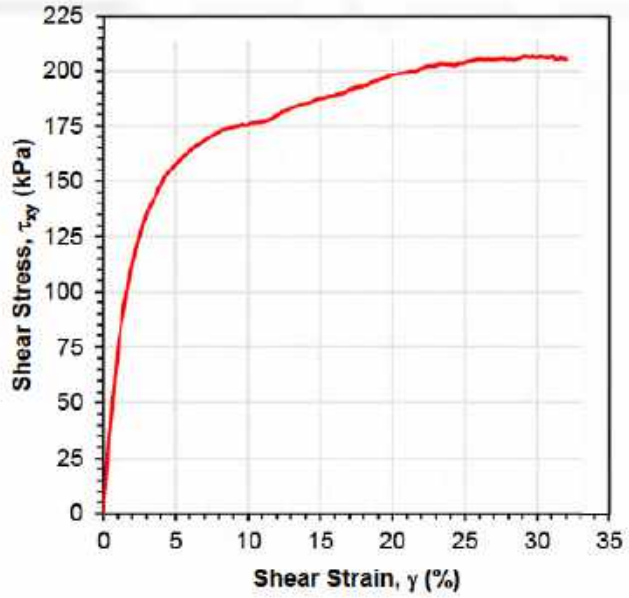
Static Simple Shear
Test Method: GTI-ADT-P06

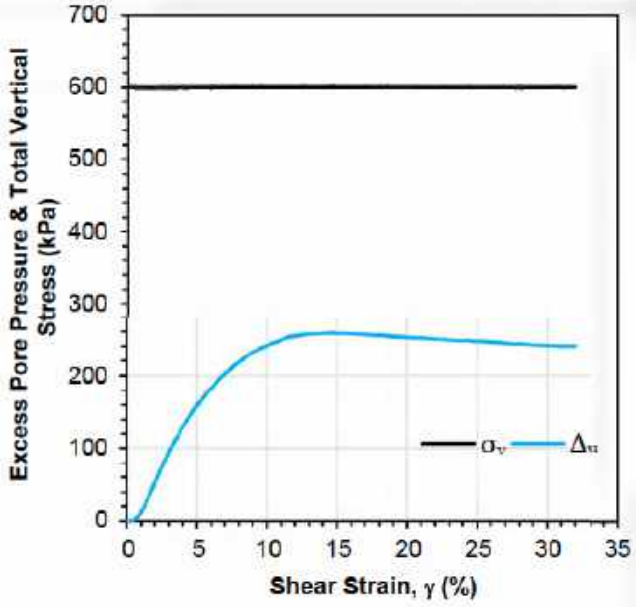
GTI Perth Reference:	C27-P01-T03	**Test Name:**	22-006-SS-03-S
GTI Perth Job No.:	22-006	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EV-05
Client Reference:	PO 216881	**Test Depth:**	-
Project:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	Cell 4 North Wall	**Sample Condition:**	Natural Moisture Content

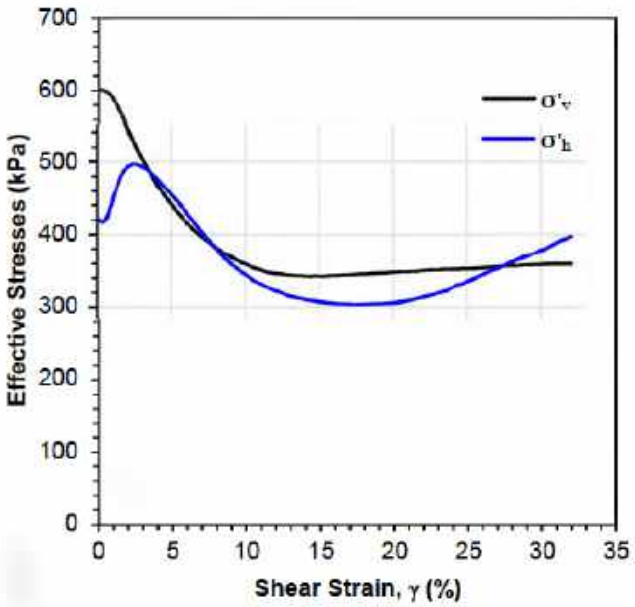
Sample Details

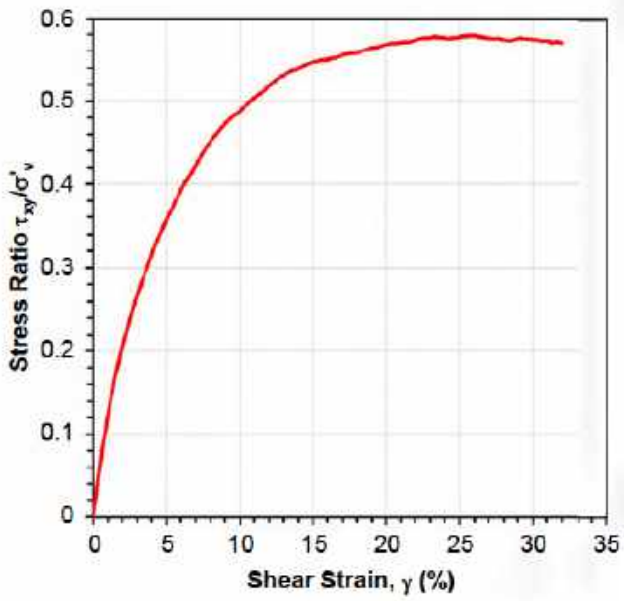
Diameter (mm):	70.0	**Initial Moisture Content (%):**	6.5*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Height (mm):	34.7	**Final Moisture Content (%):**	14.6	
Effective Height (mm):	25.7	**Initial Dry Density (g/cm^3):**	1.62	

Tested by:	HE	**Checked by:**	HJ
Date:	12/08/2021	**Date:**	19/08/2021









GTI Perth
Geotechnical Testing and Interpretation

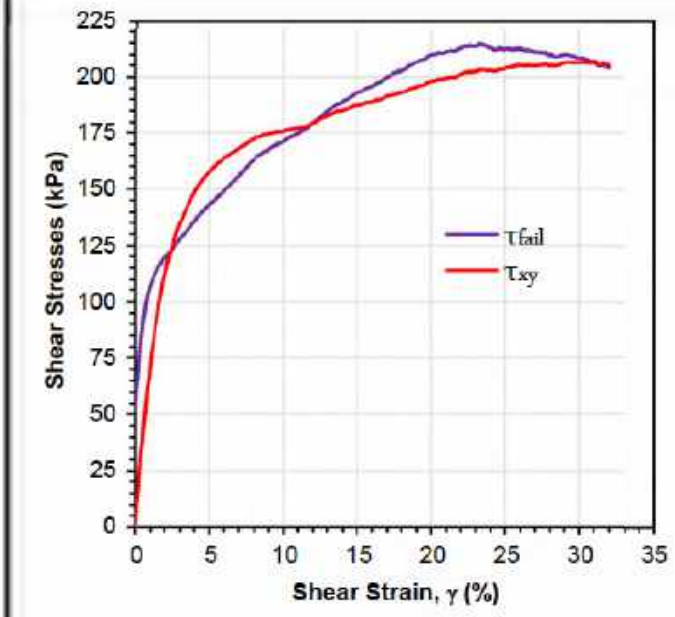
Static Simple Shear
Test Method: GTI-ADT-P06

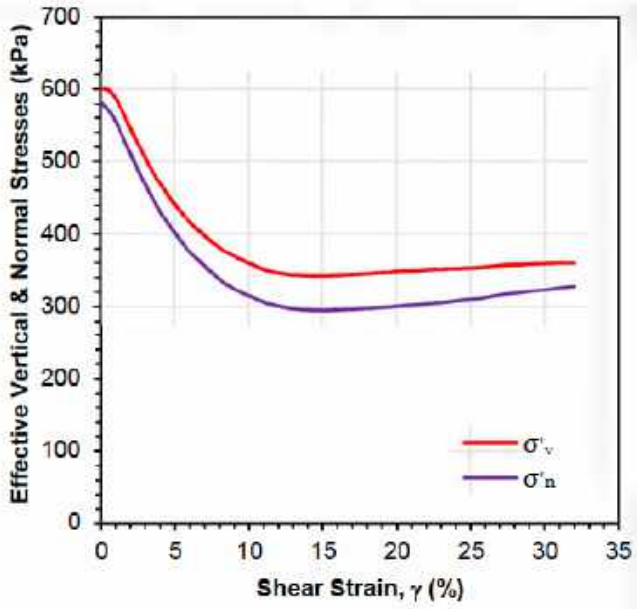
GTI Perth Reference:	C27-P01-T03	**Test Name:**	22-006-SS-03-S
GTI Perth Job No.:	22-006	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EV-05
Client Reference:	PO 216881	**Test Depth:**	-
Project:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	Cell 4 North Wall	**Sample Condition:**	Natural Moisture Content

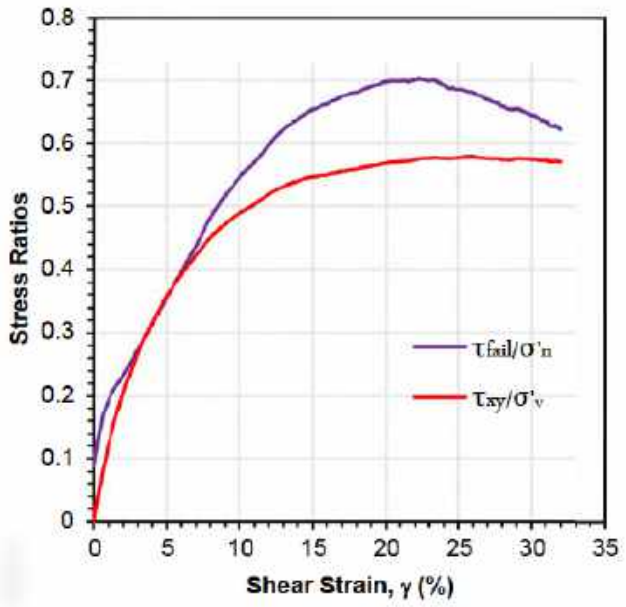
Sample Details

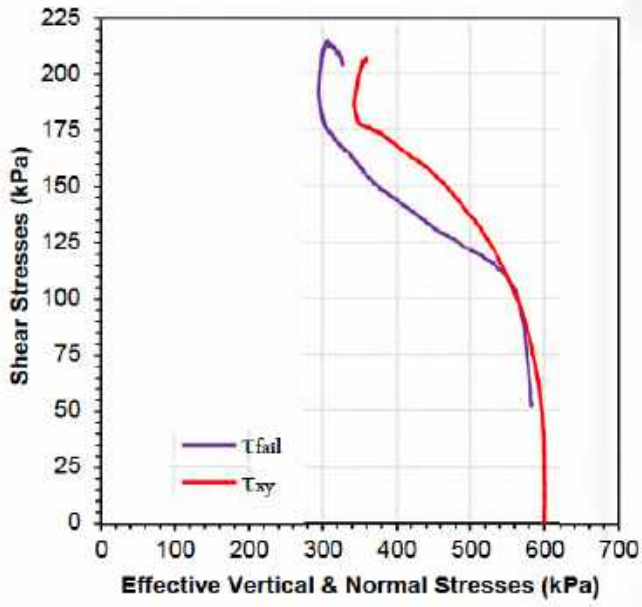
Diameter (mm):	70.0	**Initial Moisture Content (%):**	6.5*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Height (mm):	34.7	**Final Moisture Content (%):**	14.6	
Effective Height (mm):	25.7	**Initial Dry Density (g/cm^3):**	1.62	

Tested by:	HE	**Checked by:**	HJ
Date:	12/08/2021	**Date:**	19/08/2021









GTI Perth
Geotechnical Testing and Interpretation

Static Simple Shear
Test Method: GTI-ADT-P06

GTI Perth Reference:	C27-P01-T03	**Test Name:**	22-006-SS-03-S
GTI Perth Job No.:	22-006	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EV-05
Client Reference:	PO 216881	**Test Depth:**	-
Project:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	Cell 4 North Wall	**Sample Condition:**	Natural Moisture Content

Sample Details

Diameter (mm):	70.0	**Initial Moisture Content (%):**	6.5*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Height (mm):	34.7	**Final Moisture Content (%):**	14.6	
Effective Height (mm):	25.7	**Initial Dry Density (g/cm^3):**	1.62	

Tested by:	HE	**Checked by:**	HJ
Date:	12/08/2021	**Date:**	19/08/2021

GTI Perth
Geotechnical Testing and Interpretation

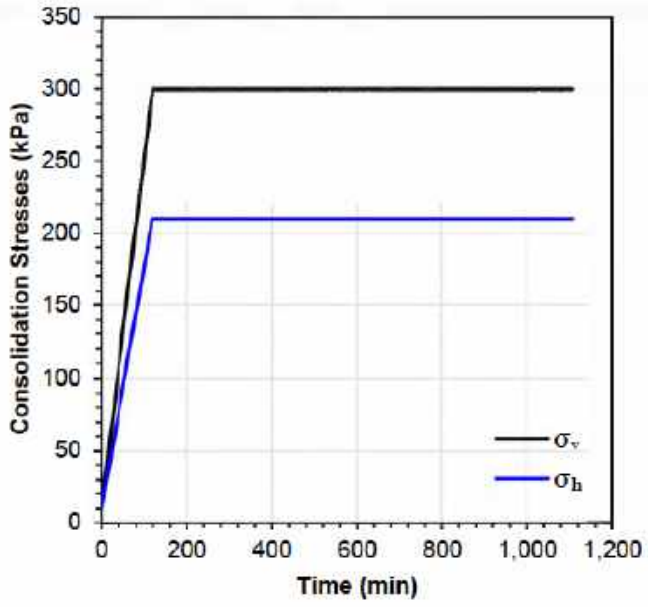
Static Simple Shear
Test Method: GTI-ADT-P06

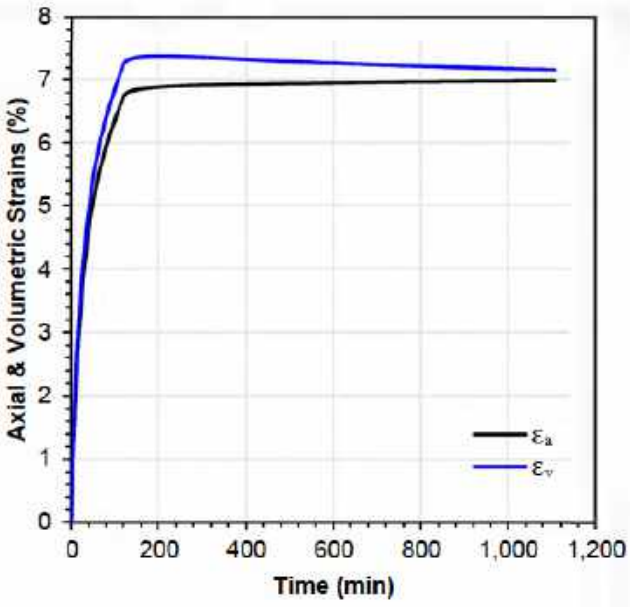
GTI Perth Reference:	C27-P01-T03	**Test Name:**	22-006-SS-04-S
GTI Perth Job No.:	22-006	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EV-05
Client Reference:	PO 216881	**Test Depth:**	-
Project:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	Cell 4 North Wall	**Sample Condition:**	Natural Moisture Content

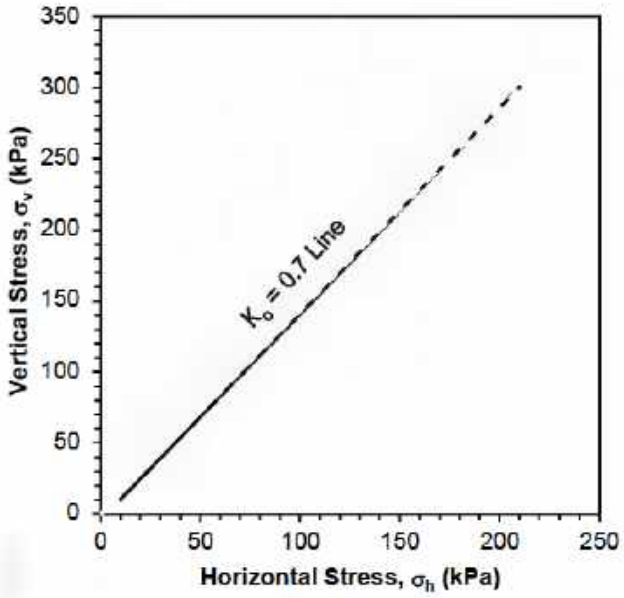
Sample Details

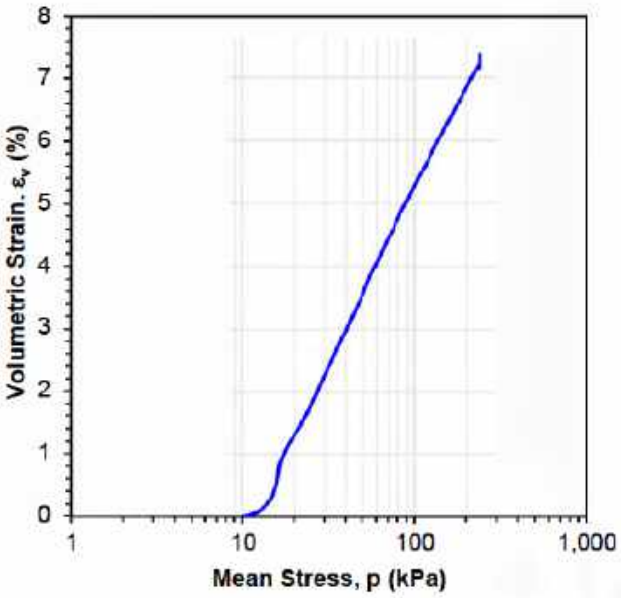
Diameter (mm):	70.0	**Initial Moisture Content (%):**	6.6*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Height (mm):	34.5	**Final Moisture Content (%):**	15.7	
Effective Height (mm):	25.5	**Initial Dry Density (g/cm^3):**	1.69	

Tested by:	HE	**Checked by:**	HJ
Date:	12/08/2021	**Date:**	19/08/2021









GTI Perth
Geotechnical Testing and Interpretation

Static Simple Shear
Test Method: GTI-ADT-P06

GTI Perth Reference:	C27-P01-T03	**Test Name:**	22-006-SS-04-S
GTI Perth Job No.:	22-006	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EV-05
Client Reference:	PO 216881	**Test Depth:**	-
Project:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	Cell 4 North Wall	**Sample Condition:**	Natural Moisture Content

Sample Details

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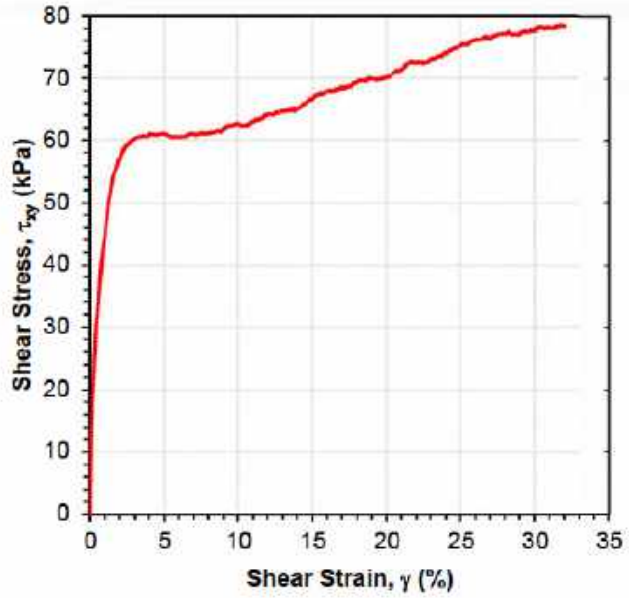
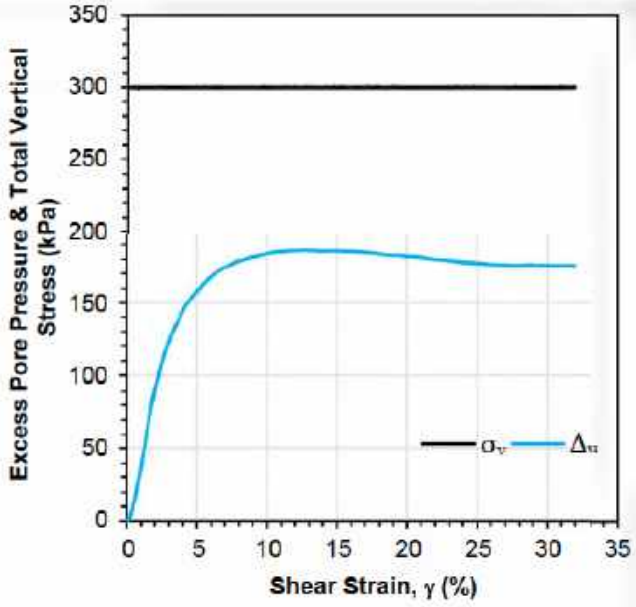
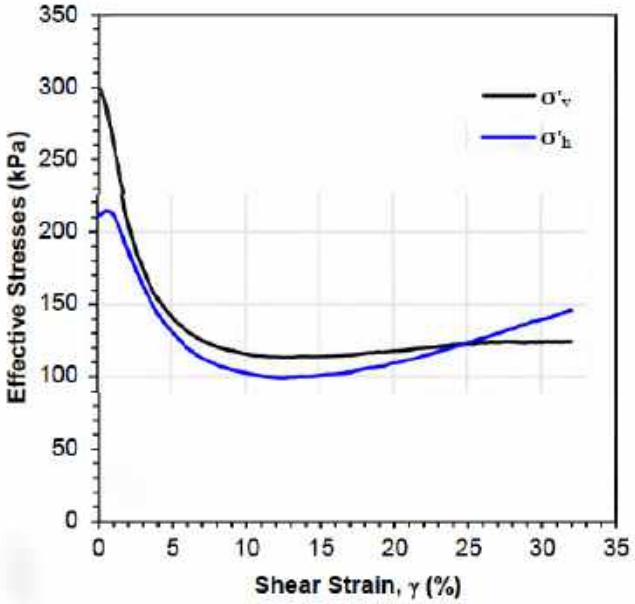
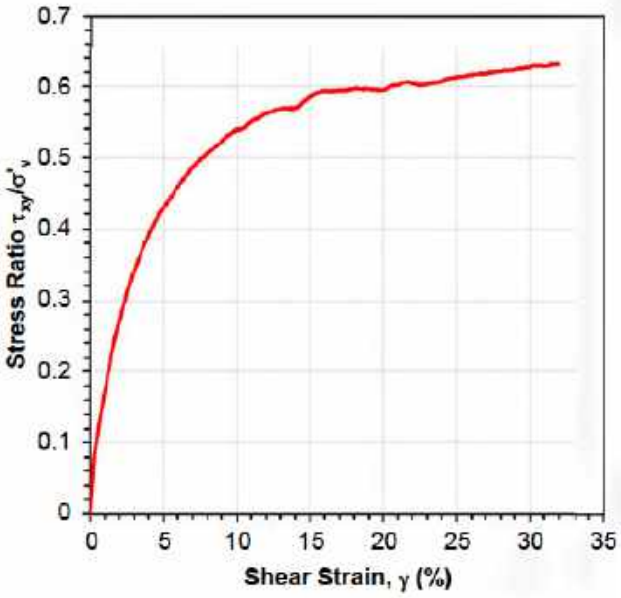
Effective Height (mm):	25.5	**Initial Dry Density (g/cm^3):**	1.69	

Tested by:	HE	**Checked by:**	HJ
Date:	12/08/2021	**Date:**	19/08/2021









GTI Perth
Geotechnical Testing and Interpretation

Static Simple Shear
Test Method: GTI-ADT-P06

GTI Perth Reference:	C27-P01-T03	**Test Name:**	22-006-SS-04-S
GTI Perth Job No.:	22-006	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EV-05
Client Reference:	PO 216881	**Test Depth:**	-
Project:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	Cell 4 North Wall	**Sample Condition:**	Natural Moisture Content

Sample Details

Diameter (mm):	70.0	**Initial Moisture Content (%):**	6.6*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
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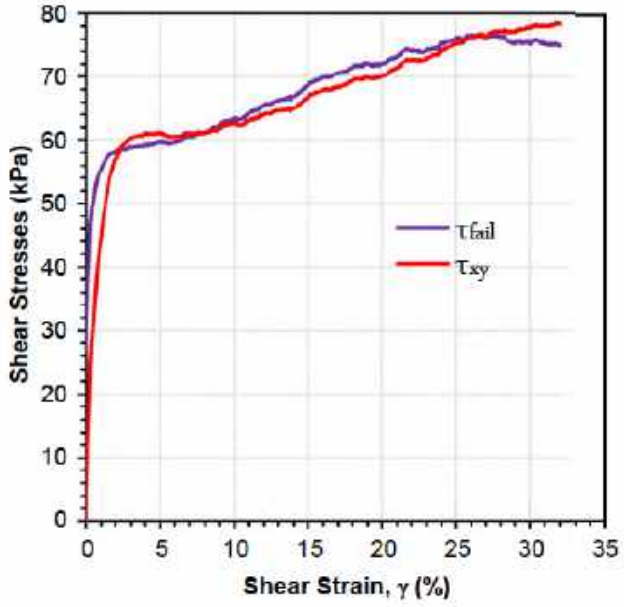
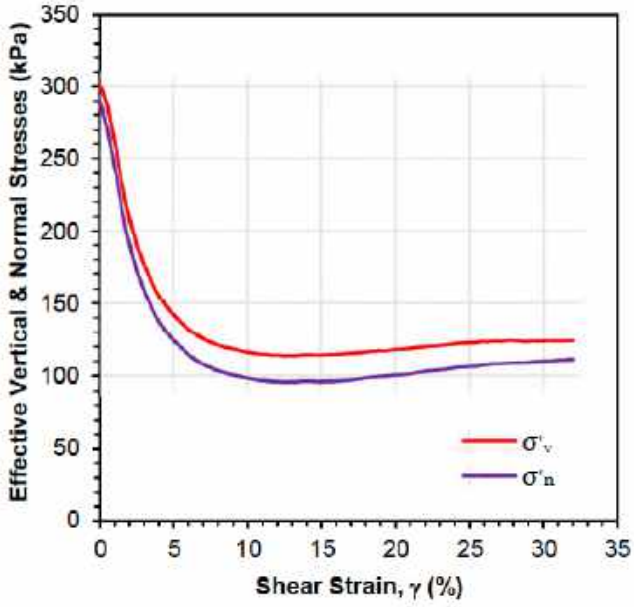
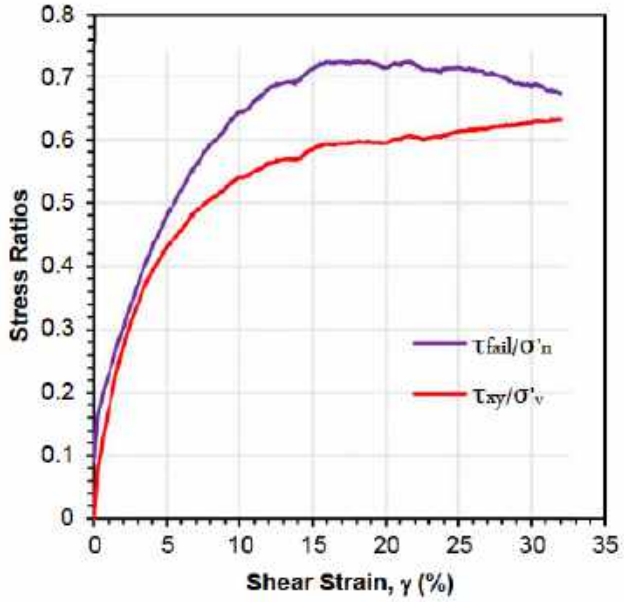
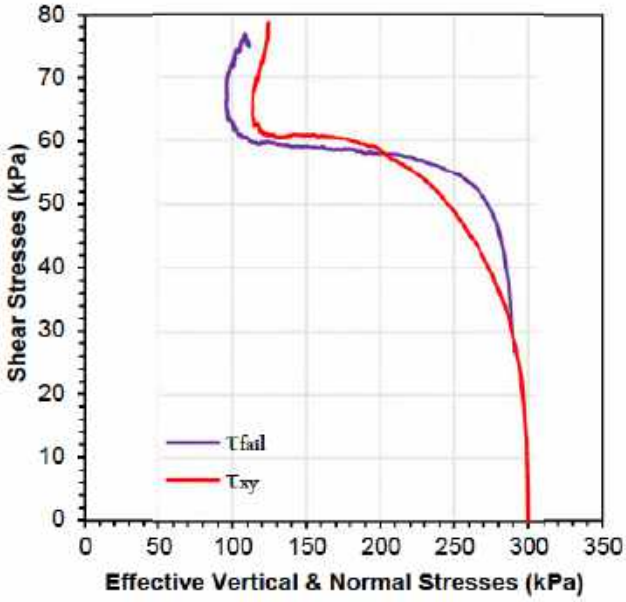
Effective Height (mm):	25.5	**Initial Dry Density (g/cm^3):**	1.69	

Tested by:	HE	**Checked by:**	HJ
Date:	12/08/2021	**Date:**	19/08/2021









GTI Perth
Geotechnical Testing and Interpretation

Static Simple Shear
Test Method: GTI-ADT-P06

GTI Perth Reference:	C27-P01-T03	**Test Name:**	22-006-SS-04-S
GTI Perth Job No.:	22-006	**Borehole:**	-
Client:	Evolution Mining	**Sample No.:**	KP-EV-05
Client Reference:	PO 216881	**Test Depth:**	-
Project:	Mungari Gold Operations	**Sample Status:**	In-situ
Location:	Cell 4 North Wall	**Sample Condition:**	Natural Moisture Content

Sample Details

Diameter (mm):	70.0	**Initial Moisture Content (%):**	6.6*	**Notes:** *Moisture content from trimmings; may not be representative of the whole sample
Height (mm):	34.5	**Final Moisture Content (%):**	15.7	
Effective Height (mm):	25.5	**Initial Dry Density (g/cm^3):**	1.69	

Tested by:	HE	**Checked by:**	HJ
Date:	12/08/2021	**Date:**	19/08/2021

APPENDIX C

Seismic Hazard Assessment

Knight Piésold CONSULTING

MEMORANDUM

To:	**Evolution Minin**	**Date:**	31 October 2019
Attn:	Shane Barker	**Our Ref:**	PE19-01182
		KP File Ref.:	PE801-00137/36-A jl M19020
cc:	Kara Postle	**From:**	Zhenhe Song/Jim Luo

RE: MUNGARI GOLD PROJECT – SEISMIC HA ARD ASSESSMENT UPDATE

. INTRODUCTION

A preliminary seismic hazard assessment was carried out for the Mungari Gold Project in 2013 (Ref 1) as part of the existing TSF design. There are ongoing developments in earthquake hazard research in Australia, including recently published attenuation functions and seismic hazard assessment by Geoscience Australia (GA) in 2012/2013 (Ref 2) and 2018 (Ref 3). The latest national seismic hazard assessment (NSHA18) map was published by GA in October 2018. ANCOLD published the "Guidelines for Design of Dams and Appurtenant Structures for Earthquake" (Ref. 19) in 2019.

The NSHA18 results were compared with the 2013 probabilistic assessment conducted by Knight Piésold (KP). This memorandum presents the recommendations of seismic design parameters based on NSH18 and latest ANCOLD guidelines.

. PREVIOUS PROBABILISTIC ANALYSIS

A computer program EZ-FRISK (Fugro Risk Engineering, Inc., 2011, Ref. 3) was used to develop a probabilistic seismic hazard model for the site in 2013. The Australian source model was primarily comprised of sources from the Australian nationwide zonation, developed by Gaull et al. (1990). Earthquake hazard maps for the Australian continent and continental margins were prepared in 1990 using these data. A user-defined Kalgoorlie seismic source zone had been input into the EZ-FRISK seismic hazard software. Based on a desktop probabilistic analysis of these earthquakes in the Kalgoorlie area, it is believed that the maximum magnitude for earthquakes in the Kalgoorlie region is M5.9 and the Mungari Gold Project is located within this region.

Attenuation functions developed for the central and eastern North America and the Somerville (2009) ground motion model developed specifically for the Yilgarn Craton were adopted in the probabilistic analysis.

The predicted values for the site in terms of earthquake return period, probability of exceedance for a range of design lives (5, 10, 25 and 50 years) and Peak Ground Acceleration (PGA) are summarised in Table 2.1.

Ta le . : Summary of 2013 probabilistic seismic hazard analysis

Return Period (years)	Annual Frequency of Exceedance	Probability of Exceedance				Peak Ground Acceleration (g)
		8 Year Design Life	12 Year Design Life	25 Year Design Life	50 Year Design Life	
50	0.02	15%	21%	39%	63%	0.016
100	0.01	8%	11%	22%	39%	0.029
200	0.005	4%	6%	12%	22%	0.051
500	0.002	1.6%	2.4%	5%	10%	0.101
1,000	0.001	0.8%	1.2%	2.5%	5%	0.158
2,500	0.0004	0.3%	0.5%	1.0%	2%	0.265
5,000	0.0002	0.2%	0.24%	0.5%	1%	0.375
10,000	0.0001	0.08%	0.12%	0.2%	0.5%	0.513

Note: Project operational life currently expected to be 8 years

The maximum accelerations presented in this memorandum report are based on rock site conditions, with an average shear wave velocity of 760 m/s over the upper 30 m. Peak ground accelerations within the tailings deposit and within the embankment dam may be higher due to amplification of ground motion through the tailings facility. Typically, ground accelerations may amplify by a factor of about 1.5 to 3.0 depending on the PGA on rock site. The ability of the embankment fill and tailings materials to transmit high seismic ground motions is dependent on their dynamic stiffness and damping characteristics. Dynamic site response analyses should be carried out to determine the amplification of ground motions as seismic waves propagate through the foundation materials and used as inputs for the deformation analysis.

. NSHA

Geoscience Australia (GA) has recently released the National Seismic Hazard Assessment (NSHA18) Map with an updated catalogue of Australian earthquakes in October 2018. This map will become a key component of Australia's earthquake standard, AS1170.4.

Epistemic uncertainty was modelled through the use of logic trees where expert-assigned weights are given to different possible parameterisations. In total, 16 alternative seismic source models were adopted, consisting of eight developed by Geoscience Australia (Leonard, 2008; Burbidge, 2012; Griffin et al., 2016) and eight by third party contributors (Hall et al., 2007; Cuthbertson, 2016; Dimas et al., 2016; Dimas and Venkatesan, 2016; Sinadinovski and McCue, 2016; Mote et al., 2017).

Nineteen attenuation models were considered and weights were assigned for each neotectonic super-domain (cratonic, non-cratonic, extended and subduction zone regions) according to the expert elicitation methodology.

The seismic hazard assessment was published as PGA maps for earthquake with return periods of 475 and 2,475 years. In addition, PGAs at other return periods can be approximately interpolated from the published data using an interpolation programme provided by Geoscience Australia.

Figure 3.1 shows the PGA map with a return period of 475 years, in which Mungari is located in a 0.05 – 0.06g zone. Figure 3.2 shows the PGA map with a return period of 2,475 years, in which Mungari is in a 0.2 – 0.3g zone.

Table 3.1 presents the comparison of the NSHA18 PGA versus the KP 2013 results. The location Lat -30.76 and Long 121.234 was used in the GA provided program.

Ta le . : Comparison of NSHA seismic hazard analysis

Return Period (yrs)	NSHA18 (g)*	2013 KP (g)
100	0.008	0.029
500	0.059	0.101
1,000	0.117	0.158
2,500	0.238	0.265
5,000	0.372	0.375
10,000	0.552	0.513

Note: * interpolated using GA's python interpolation program, Mean hazard.

The NSHA18 also included Kalgoorlie as a reported locality with the 500 and 2,500 Year PGA of 0.09g and 0.545g respectively. It is noted the Mungari TSF is 21 km to the west of the NSHA18 Kalgoorlie location which constitutes a local higher seismic zone than its surrounds.

. SEISMIC DESIGN PARAMETERS

4.1 SEISMIC DESIGN CATEGORIES

Consistent with current ANCOLD (2019) guidelines on tailings dams, three levels of design earthquake are typically considered: the Operating Basis Earthquake (OBE) for normal operations; the Safety Evaluation Earthquake (SEE) for extreme (dam safety) conditions during operations; and the Maximum Credible Earthquake (MCE) for post closure stability. Table 4.1 summarises the recommended Annual Exceedance Probability (AEP) corresponding to different earthquakes and failure consequences categories.

Table . : Recommended Design Earthquake Loadings (AEP)

Dam Consequence Category	Operating Basis Earthquake OBE[1]	Safety Evaluation Earthquake SEE[2,8]
Extreme Consequence Category Dams	Commonly 1 in 475 AEP up to 1 in 1,000 AEP	The greater of: Ground motion from MCE on known active faults[3] or Probabilistic ground motion Extreme: 1 in 10,000 AEP[4]
High A, B and C Consequence Category Dams	Commonly 1 in 475 AEP up to 1 in 1,000 AEP	Probabilistic ground motion[5,6,7]: High A: 1 in 10,000 AEP High B: 1 in 5,000 AEP High C: 1 in 2,000 AEP
Significant Consequence Category Dams	Commonly 1 in 475 AEP	Probabilistic ground motion[5,6]: 1 in 1,000 AEP
Low Consequence Category Dams	Commonly 1 in 475 AEP	Probabilistic ground motion[5,6]: 1 in 1,000 AEP

From ANCOLD (2019), Guidelines for Design of Dams and Appurtenant Structures for Earthquake
(1) To be determined by the Owner and other Stakeholders in consultation with the Consultant.
(2) The design of the dam should be such that there will be a low likelihood of the dam failing given the SEE.
(3) Active faults are as defined in ANCOLD (2019). Use the 85th percentile of the hazard from the deterministic MCE. This represents the stand deviation of the random variability about the best estimate of the hazard level from that single earthquake scenario.
(4) 85th fractile. This is required so that the design is more likely to have a sufficiently low likelihood of failure given the SEE, than if the median loading was used.
(5) Median, 50th fractile.
(6) For High B, High C, Significant, and Low Dam Failure Consequence Category dams, if the structure is susceptible to liquefaction or has components that will fail at ground motions only a little greater than those presented in the Table, check the design for the critical ground motion and assess the adequacy of the design using risk assessment methods.
(7) Adoption of these SEE criteria for High B and High C Dam Failure Consequence Category dams may not provide an acceptable level of risk in accordance with ANCOLD risk management guidelines. It is therefore recommended that some level of risk assessment should be undertaken in these cases before adopting the AEP stated in the table. If it cannot be demonstrated that an acceptable level of risk would be achieved, an AEP of 1 in 10,000 should be adopted.
(8) Post closure, tailings dams should be designed in accordance with the Guidelines on Tailings Dams, ANCOLD (2012).

The TSF has been assessed to have a SIGNIFICANT hazard which is covered under a separate report.

4.2 OPERATING BASIS EARTHQUAKE

The OBE is typically determined using probabilistic seismic hazard analysis to select an acceptable level of risk, based on the probability of exceedance over the design life of the facility. Consideration is also given to the consequence category of the facility, which considers the consequences of dam failure. This assessment includes the consideration of the potential loss of life and environmental and economic impacts due to failure of the tailings dam (ICOLD, 1989 and ANCOLD, 2012). The recommended return period for the OBE as a significant hazard is 475-years according to latest 2019 ANCOLD earthquake guidelines.

Based on NSHA18, the 1 in 475-year earthquake (as per ANCOLD 2019) PGA is 0.1g. A design earthquake magnitude of 4.10 at a distance of 5.5 km is appropriate for the OBE (mean value Allen 2012 attenuation).

Dams should remain serviceable under the OBE; the OBE is generally expected to cause limited damage/deformations that could be repaired without significantly disrupting operations.

4.3 MAXIMUM DESIGN EARTHQUAKE

An appropriate Safety Evaluation Earthquake (SEE) for a TSF is typically determined based on the Consequence Category of the facility. The recommended return period for the SEE as a significant hazard is the 1,000-years as per latest 2019 ANCOLD earthquake guidelines.

Based on NSHA18, the 1 in 1,000-year earthquake PGA was estimated to be 0.12g. A design earthquake magnitude of 4.67 at a distance of 8 km is appropriate for the SEE (mean value Allen 2012 attenuation).

Limited deformation of the tailings dam is acceptable under seismic loading from the SEE, provided that the overall stability and integrity of the facility is maintained and that there is no release of stored tailings or water.

4.4 MAXIMUM CREDIBLE EARTHQUAKE

The MCE is considered to be the maximum credible acceleration that can occur, on the basis of available seismic and tectonic information. The MCE is calculated deterministically and, therefore, is not associated with a return period. The MCE is the maximum ground motions attributable to all large magnitude earthquakes that could ever occur at the site (ANCOLD, 2012).

While the general consensus among Australian Seismologists is that the maximum credible magnitude of an earthquake in Australia could be M7.5 (ANCOLD, 1998), the seismic source zone that controls the design of the Mungari Gold Project is not amongst source zones capable of such magnitudes. The user-designed Kalgoorlie seismic source in 2013 KP assessment was developed to address the 90 earthquakes that have occurred within 30 km of the Mungari Gold Project between 1955 and 2013, while 78 of these earthquakes had magnitudes less than M3.5 and only three had magnitudes greater than M4.0; this source zone was created to more aptly address the site specific seismic hazard. Based on a desktop probabilistic assessment, this seismic source zone has been formulated with a maximum magnitude of M5.9.

Therefore, for the MCE it has been assumed that M5.9 earthquake occurs at a distance of 15 km from the site, causing a peak ground acceleration of 0.49g (PGA plus one standard deviation value).

The long term drained properties of the tailings should be taken into account when considering the stability under the MCE. This could include lowered phreatic surface and increased strength from consolidation and possible chemical bonding (ANCOLD, 2012).

SUMMARY

The NSHA18 seismic hazard analyses results at the Mungari Gold Project is compared with the KP 2013 assessment and presented in Table 5.1. The seismic

design parameters have been determined based on SIGNIFICANT hazard category of the TSF.

Table 5.1: Comparison of Seismic Parameters

Scenario	Operational Phase	Return Period	Distance (source to site)	Magnitude	PGA (g)
KP 2013	OBE	100	10	4.1	0.03
	SEE	1,000	6.5	4.67	0.16
NSHA18	OBE	475	5.5	4.1	0.10
	SEE	1,000	8	4.67	0.12
MCE		10,000+	15	5.9	0.49

It is recommended to adopt the values from the NSHA18 assessment for design despite being smaller than the previous assessment for SEE condition. The recommended Seismic parameters are shown in Table 5.2.

Table 5.2: Recommended Seismic Parameters

Scenario	Operational Phase	Return Period	Distance (source to site)	Magnitude	PGA (g)
NSHA18	OBE	475	5.5	4.1	0.10
	SEE	1,000	8	4.67	0.12
MCE		10,000+	15	5.9	0.49

We trust that this memorandum is sufficient for your current needs. Please contact us should you have any queries.

Yours faithfully
KNIGHT PIÉSOLD PTY LTD

ZHENHE SONG
Senior Geotechnical Engineer

JIM LUO
Manager Geotechnical Services

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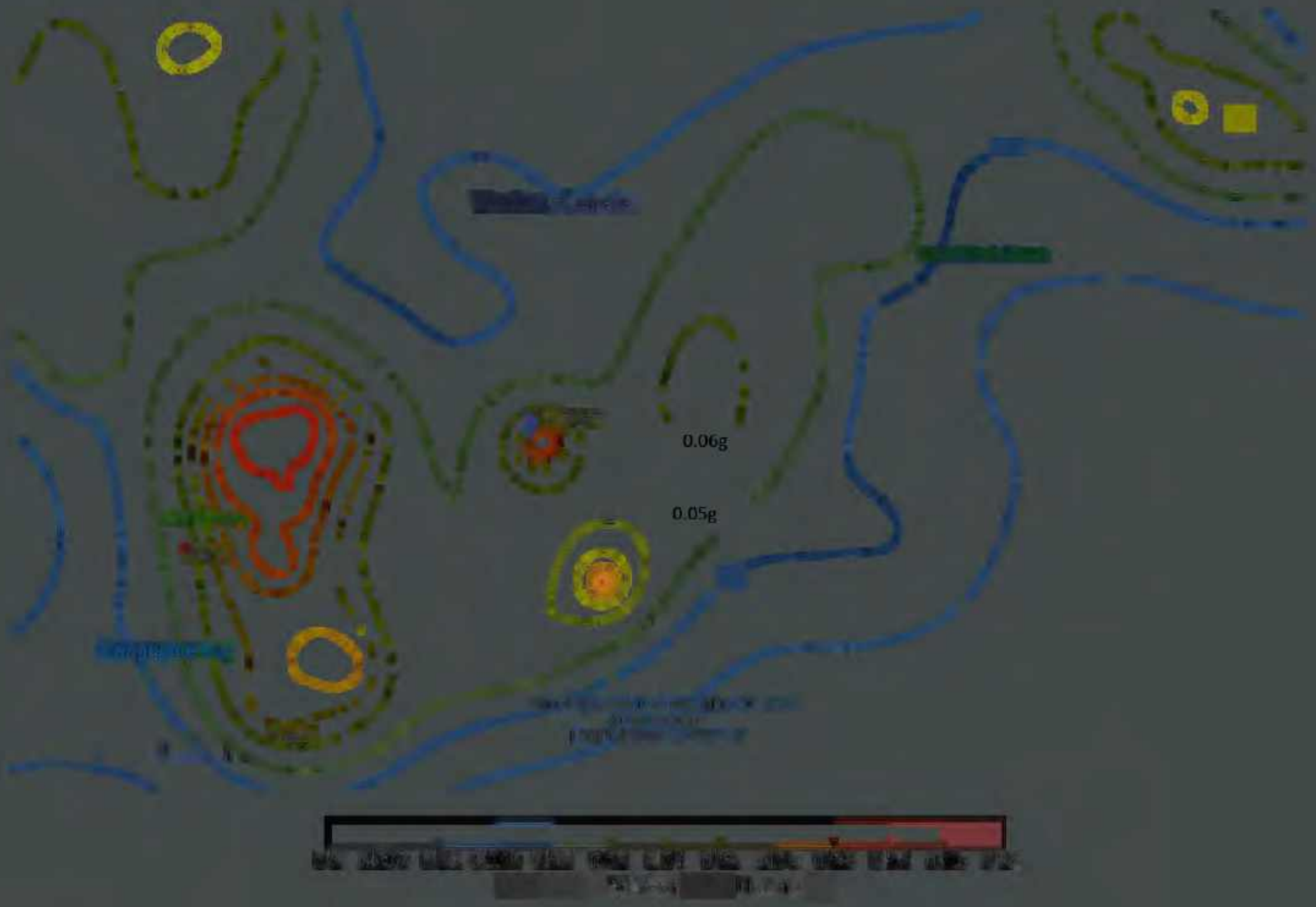
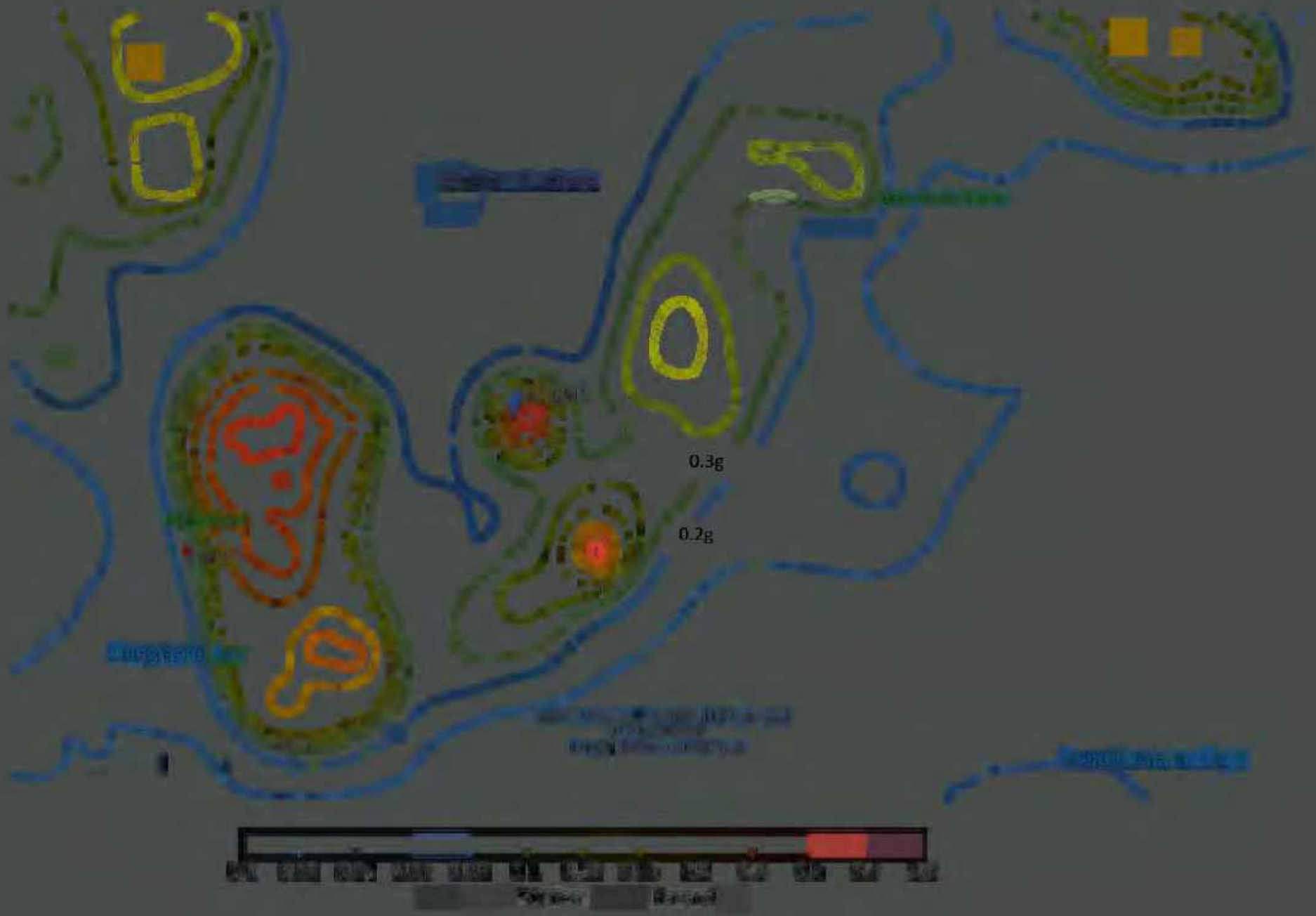
FIGURES



MUNGARI GOLD MINE
SEISMIC HAZARD ASSESSMENT
PGA MAP - 475 YEARS RETURN PERIOD

PE801-00137 M19020
Figure 3.1



MUNGARI GOLD MINE
SEISMIC HAZARD ASSESSMENT
PGA MAP - 2475 YEARS RETURN PERIOD

PE801-00137 M19020
Figure 3.2

APPENDIX D

Dam Break Assessment

Knight Piésold CONSULTING

Knight Piésold CONSULTING

MEMORANDUM

To:	**Evolution Minin**	**Date:**	01 August 2024
Attn:	Anthony Kerr	**Our Ref:**	PE24-00939
		KP File Ref.:	PE801-00137/61-A djtm M24007
cc:	Shane Barker, Paul Botting	**From:**	Brad Charles

RE: MUNGARI GOLD MINE – TSF CELL AND CELL DAM BREAK AND CLASSIFICATION UPDATE

Knight Piesold (KP) is currently updating the design of Mungari Tailings Storage Facility (TSF) Cell 3 and Cell 4 to incorporate Stage 4 to Stage 10, as part of the requirements prescribed by DWER (Ref. 1) for continued operation of the facility. Cell 3 and Cell 4 were commissioned in 2021 and 2022 respectively.

As part of the design update, a dam break assessment has been carried out for the Cell 3 and Cell 4 facility. This includes a review of the Population at Risk (PAR), business risk and environmental impact in the event of a dam failure. The inundation mapping produced below can also be used for a site Emergency Action Plan (EAP) and locating muster points on site.

This memorandum shall be read in conjunction with the dam break assessment conducted for Cells 1 and 2 (Ref. 2).

. INTRODUCTION

The key design parameters and associated drawings which relate to the dam break assessment are as follows:

- The layout, topography and local infrastructure around the TSF are shown on Figure 1.1;
- The facility is a four sided two cell paddock style facility with a central divider embankment. The perimeter embankments have similar geometry on all sides, except the shared east wall with Cell 2;
- The cross section consists of a starter embankment, one downstream raise, one centreline raise and several upstream raises onto the tailings beach. A typical cross section is shown on Figure 1.2;
- The basin includes an underdrainage and toe drain system;
- A central decant tower with causeway access in each cell is used to pump water back to the plant;
- A downstream footprint area of 95 Ha;
- Design throughput of 2.1 Mtpa for the remaining 10 years;
- An ultimate level of RL363.15 m for a maximum height of 20 m; and
- No emergency spillway exists as part of the TSF design.

Other information provided for the update consists of the following:

- Digital Surface Model of the greater area consisting of 1.0 m spatial resolution dated 29/04/2024, with the Cells 3 and 4 Stage 2 embankments raise complete;

- An associated satellite image of the above area using Google Earth imagery dated February 2023;
- Digital Lidar survey consisting of 1.0 m contours dated 09/02/2018, of the Western waste dump to the south of the TSF; and
- Cells 3 and 4 final proposed embankment profile shown.

2. DAM BREAK ASSESSMENT

2.1 GENERAL

A tailings inundation exercise was conducted for the dam break scenario of Cell 3 or Cell 4 of the TSF. Dam break methods were obtained from ANCOLD (Ref. 3) and other publications. As these methods are structured to water dams in defined creeks or rivers, the method was modified to suit the tailings solids in very flat terrain. The modelled inundation assists in determining the impact areas and PAR due to a dam break. A significant failure of the embankment will result in a release of tailings and water depending on the location of the breach, its size and the cause. For the analysis, the end conditions, regardless of the cause, were assessed as follows:

- Tailings discharge resulting from an embankment breach (modelled at final height) in a relatively dry condition from the south east embankment of Cell 3; and
- Tailings discharge resulting from an embankment breach (modelled at final height) in a relatively dry condition from the south west embankment of Cell 4.

A breach on the north side of the facility will not impact infrastructure to the south any more than the southern breaches, therefore, it was not modelled for this assessment.

2.2 EMBANKMENT SOLIDS BREACH

An embankment breach resulting in a release of slurry/solids was analysed for the ultimate facility height. A number of methods of analysing the flow of slurry and run out from a breached tailings dam have been presented over the years. These have been based on reviews of past failures and attempts to predict the flow slides using analytical means and simple correlations with facility geometry. The correlations proposed by Rico in 2007 (Ref. 4) and Larrauri and Lall (Ref. 5) were used to correlate outflow volume from stored volume followed by correlating runouf distance estimates from the outflow volume. In addition, a breach volume estimation methodology developed by KP was applied to the dam to provide an additional estimate for outflow volume. This methodology takes into account the stage storage of the TSF, the downstream topography and the assumed failure surface slope.

The tailings deposition modelling software Rift TD was used to superimpose the tailings mass on the downstream digital terrain model surface to determine the potential inundation maps.

Rico et al. (Ref. 4) proposed a correlation between stored volume at the time of failure and the outflow volume from a historical data set of twenty nine tailings dam failures of varying embankment configurations, tailings consistency and stored volumes. An empirical relationship with a good correlation ($r^2 = 0.86$) was found that indicates that approximately 37% of the stored tailings and water is released. The formula developed by Rico et al. is as follows:

$$V_F = 0.354 \times V_T^{1.01}$$

Where V_F is the failure volume in cubic meters and V_T is the total tailings volume of the TSF in million cubic meters. It is noted that the solids breach was increased by 0.4 Mm^3, which is the assumed supernatant pond volume. For the Mungari TSF Cell 3 and Cell 4, the LOM V_T assumed for each was 9 Mm^3 and the resulting V_F was calculated as 3.3 Mm^3.

The original regressions proposed by Rico et al. were updated by Larrauri and Lall (Ref. 5). This model has an improved linear fit (r^2=0.887) than the Rico model through use of an updated dataset and indicates that approximately 28% of the stored tailings and water is released. The formula developed by Larrauri and Lall is as follows:

$$V_F = 10\text{^}(-0.477 + 0.954 * Log(V_T))$$

The methodology developed by KP was applied to the Mungari TSF. The logic behind the methodology is that the stronger the tailings mass, the steeper the assumed tailings breach will be. If the breach slope is very steep, then at a certain elevation the released tailings will block the outlet, preventing further tailings from being released. The tailings outflow volume has been estimated assuming a conical failure plane. The Canadian Dam Association (Ref. 6) indicates that the average post-liquefaction slope in the TSF may be shallow, at 1 - 4 degrees (equivalent to 2 to 7%). The residual angle of the tailings mass after liquefaction serves as a guide to determine a reasonable limit for the final backscarp in the TSF. A conservative failure surface of 3% has been adopted for the estimation. This limit is then used to create a cone of depression to estimate the volume of liquefied tailings, as shown in Figure 2.1.

The KP methodology was used for three assumed slopes at the two assessed breach locations: 50H:1V, 100H:1V and 150H:1V. Slopes flatter than 150H:1V were not assessed as the natural grade of the topography downstream of the TSF is greater than this.

RiftTD models were run for the two breach locations and the three breach slopes. The point at which the released tailings would prevent the further release of tailings was found for each case. The volume released is found by finding the elevation which gives the same volume for the assumed conical failure plane volume and the breach stage storage as shown on Figure 2.2.

Figure 2.2 also includes the failure volume calculated using the equation developed by Rico et al (Ref. 4) and by Larrauri and Lall (Ref. 5). The results of this assessment are summarised in Table 2.1.

Table . : KP Methodology Volume of Failures

Breach Location	Assumed Slope	Volume of Failure (Mm^3)	Percentage Released
Cell 3 South East	50H:1V	0.66	7%
Cell 3 South East	100H:1V	1.10	12%
Cell 3 South East	150H:1V	1.36	15%
Cell 4 South West	50H:1V	0.42	5%
Cell 4 South West	100H:1V	0.77	9%
Cell 4 South West	150H:1V	1.05	12%

As shown in Table 2.1, the volume of failure estimated using the KP methodology is slightly lower than what was estimated using the methodologies developed by Rico et al. and Larrauri and Lall. This discrepancy is possibly due to the assumption that a conical failure surface forms in the TSF following a breach, whereas typically a backwards sloping surface would develop, resulting in a lower percentage of the stored tailings volume being released.

In deciding what failure volume to assume, a number of variables were considered. The topography downstream of the facility is gently sloped, which would facilitate the flow of tailings away from the facility. Additionally, the tailings (if at or near saturation) has the potential to be susceptible to flow liquefaction (Ref. 7). Due to these factors it was decided to use the rational estimates of tailings release calculated using the KP methodology.

2.3 INUNDATION RESULTS

For a failure occurring in the southeast corner of Cell 3, the results indicate the flows will continue in a south east direction. Water discharge will be directed toward Kopai Lake through the manmade diversion channel running west to east but it was considered unlikely that solids would initially travel this far. Flow is constrained from heading further south by both the existing Western waste dump and a slight elevation in the road and topography between the TSF and the plant. The Cell 3 south east breach is shown on Figure 2.3.

For a failure occurring from the southwest corner of Cell 4, the results indicate the flows will encroach Cutters Ridge Access Road south of the facility. The Cell 4 southwest breach is shown on Figure 2.4.

2.4 DAM BREAK CONCLUSION

The impacts from a dam break of the TSF is not dependent on the specific embankment or direction of failure. As a combined effect, the dam break is considered to have the following impacts:

- The access road to the TSF and the haul road from the pit is at risk of being cut off, including the cutters ridge access road south;
- The open pit does not appear to be at risk due to the presence of a surface water drain directing flow to Kopai Lake;
- Kopai Lake is at risk of receiving discharge water;
- Kurrawang Lake is at risk of receiving residual tailings which could be carried with runoff water;
- The plant site does not appear to be at risk due to the Western waste dump and slight rise in topography;
- No notable infrastructure is located to the north or west of the TSF.

The tailings inundation depth is likely to be relatively thin and not concentrated in one location due to the flat topography. It is suggested if there are no muster points currently near the TSF, one should be located on the road to the TSF, located south of the middle scour pit (south west of the Western waste dump) outside of the inundation areas.

The intersection of the Cutters Ridge Access Road and TSF access road should form the limit if access is required for the EAP. The EAP will require an update if any new infrastructure is proposed to be located in the vicinity of the TSF.

. POPULATION AT RISK ASSESSMENT

As part of the calculation of the hazard/consequence category, an assessment of the PAR was undertaken for the dam break results. There are a number of factors impacting the PAR calculation as follows:

- The tailings solids indicate low health risk thus dust from the facility does not pose a short term or long term health risk;
- The water may have some residual cyanide in solution and is hypersaline which may impact vegetation growth;
- Once per shift inspections by Processing Department are expected at the TSF which requires access along the pipeline access road; and
- No notable public roads, camps, tracks are located within the immediate catchment area to the south.

A breakdown of estimated staff working within the inundation area as a whole was determined as shown in Table 3.1.

It is not anticipated that all of the staff would be at the downstream of the TSF at the same time; hence a percentage estimate of each role was approximated. A total PAR was then calculated and is only an indication of the potential PAR.

Ta le . : Inundation Area Population at Risk

Staff	Number	Approximate percent at base of TSF (%)	PAR
Construction Equipment*	5	5	0.25
De-Watering (Day only)	1	5	0.05
Support Staff (Day only)	1	20	0.20
Total			.

*Construction Equipment only operational during TSF construction raises.

Based on the above estimate, the PAR can be restricted to potential loss of life due to the physical outcomes resulting from a facility failure (i.e. dam break events) and not health or environmental issues. On this basis, the PAR category is defined as '< 1'.

. DMIRS HA ARD RATING

The TSF category was assessed by the methods set out in the DMIRS (formally DMP) Code of Practice (Ref. 8). The hazard rating was determined first by investigating the potential adverse impacts or damage from either embankment or structural failure, or controlled/ uncontrolled release or seepage of tailings/water. The likelihood of occurrence is not considered in the evaluation. The storage category was determined based on embankment >15 m as the maximum final embankment height is ~20 m.

Ta le . : DMIRS Hazard Rating

Type of impact or damage	Hazard Rating
Loss of Human Life or personal in ur The possibilities exist for the TSF operation/inspection personnel or construction staff to be impacted by embankment failure.	**Hi h**
Adverse human health due to direct ph sical impact or contamination of the environment e. . chemical or radiation deni ration of water soil air Supernatant water quality is similar to groundwater, hypersaline and requires treatment prior to consumption. The water may contain cyanide. Contamination of habitable areas is expected as the supernatant water quality from seepage or water release does not pass drinking water guidelines. There is also potential for limited human exposure and temporary adverse health effects.	**Low**
Loss of assets due to direct ph sical impact or contamination of the environment e. . chemical or radioactive pollution of water soil or air Contamination of water for livestock is expected as the water quality from seepage or water release does not pass drinking water guidelines. Groundwater is hypersaline and is unsuitable for livestock use. There may be potential for temporary loss of assets of mine infrastructure located downstream of the main embankment in the event of a dam break. Loss of TSF storage capacity is possible but repair is practicable relatively quickly at a cost for earthworks.	**Medium**
Dama e to items of environmental herita e or historical value due to direct ph sical impact or contamination of the environment e. . chemical or radioactive pollution of water soil or air The site does not contain any Threatened Ecological or Priority Ecological Communities. Temporary adverse effects on fauna and flora are possible. Temporary damage of items of heritage or historical value is possible. Vegetation impacts of hypersaline water	**Low**

The TSF category is a function of the highest hazard rating identified above and the maximum embankment or structure height using the matrix provided in Table 2 of DMP (2013). As a result, the facility is considered a "**HIGH Cate or** " facility.

. ANCOLD CONSE UENCE CATEGORY

An assessment has been conducted to determine the severity level of impacts based on ANCOLD (Ref. 9). An assessment to determine the severity level of impacts from a large scale failure of the facility "Dam Failure Severity Level" and a spillway flow or other water release "Environmental Spill Severity Level" was conducted. Similar to the DMIRS Hazard Rating, the likelihood of failure is not considered in the ANCOLD Consequence Category Assessment. The Dam Failure Severity Level is presented in Table 5.1.

Ta le . : ANCOLD Guideline on Severity Level (Dam Failure)

Damage Type	Dam Failure Severity Level
Infrastructure dam houses commerce farms communit Damage to the storage itself is expected to be repairable relatively quickly but at a cost for earthworks (<$10M). Site roads, pipework and power supply cables may be inundated but repairs are expected to be minor.	**Minor**
Business Importance Processing operations could continue as an alternate TSF cell would likely be operational but tailings may report to an area where loss of mining production and equipment occurs. Extreme discontent due to (potential) loss of life. Significant costs in recovering/replacing equipment and re-establishing working areas. There would likely be severe reaction from the community and some loss of business credibility hence "crippling to business" was selected but bankruptcy unlikely.	**Ma or**
Pu lic Health No contamination of habitable areas is expected as there are no structures or recognised camping areas located in the vicinity. Emergency management costs associated with response to inundation of access roads and clean-up.	**Minor**
Social Dislocation There are no structures or public facilities located in the vicinity of the TSF.	**Minor**
Impact Area The embankment solids breach inundation is immediately downstream of the embankment. Less than 5 km^2 is expected.	**Medium**
Impact Duration Released tailings can be recovered and affected areas remediated in a short period of time with no long-term environmental damage. Impact not expected to exceed 1 year in duration.	**Minor**
Impact on Natural Environment Potential of tailings to inundate surface water features used by native fauna.	**Medium**

A secondary assessment of an Environmental Spill consequence has been assessed for the case of water spilling during flood events, extreme wet weather or operator error. As there is no spillway, the effect would be similar to a tailings breach due to erosion of the perimeter embankment. The severity level would be considered 'MAJOR' due to Business Importance.

Hence, based on a PAR of <1 and the 'MAJOR' Dam Failure Severity Level, the facility would be rated as **SIGNIFICANT** for the Dam Failure Consequence Category. Based on a PAR of <1 and the 'MAJOR' Environmental Spill Severity Level, the facility would be rated as **SIGNIFICANT** for the Dam Spill Consequence Category.

6. CONCLUSIONS

The release of solids or water due to a dam break exposes operational staff and support staff to risk, whereas the flow can cause local environmental damage.

The result of the dam break and subsequent category determination define the design criteria to be used for design. The TSF is considered to be **HIGH Category 1** and **SIGNIFICANT** for the DMIRS and ANCOLD guidelines respectively.

The PAR would need to be reassessed for each embankment design stage or new TSF cell to ensure that no new infrastructure has been constructed downstream or is proposed in the future.

We trust this is sufficient information for your current requirements. Please do not hesitate to contact us should you require any further information.

Yours faithfully
KNIGHT PIÉSOLD PTY LTD

BRAD CHARLES
Senior Project Engineer

DAWD MORGAN
Managing Director

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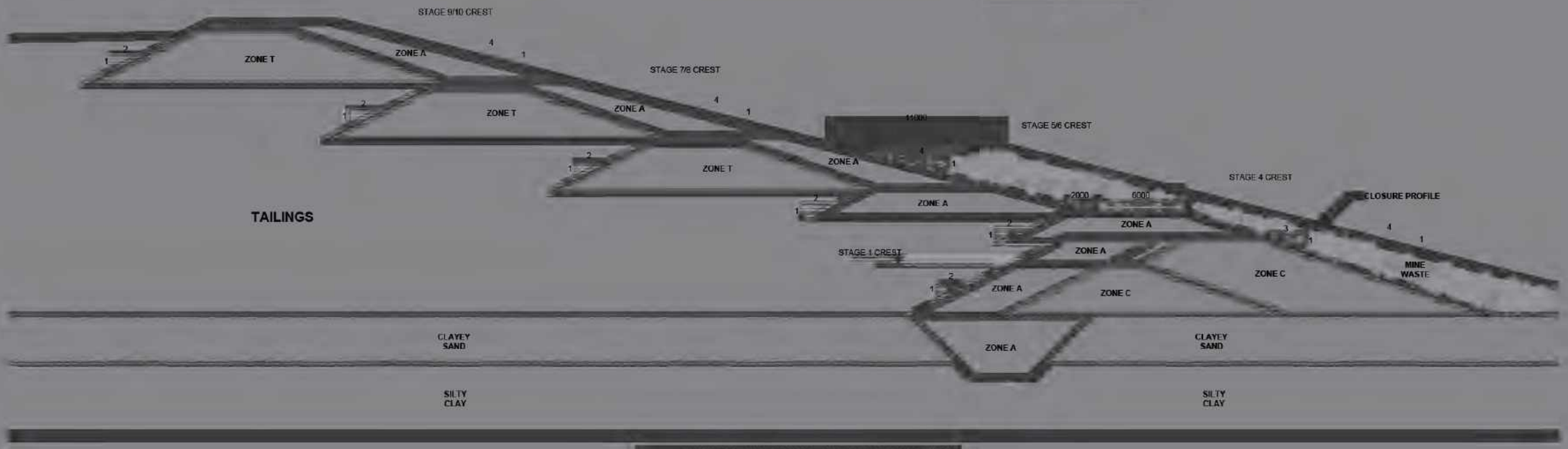
FIGURES

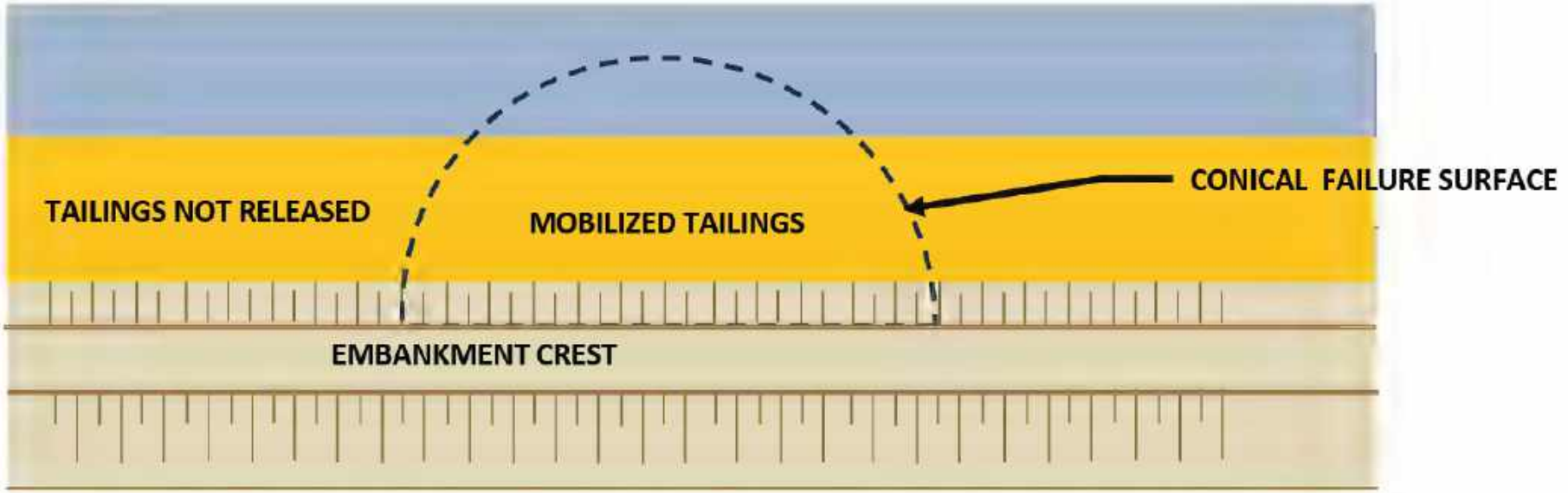
MUNGARI GOLD PROJECT
DAM BREAK ASSESSMENT
GENERAL ARRANGEMENT

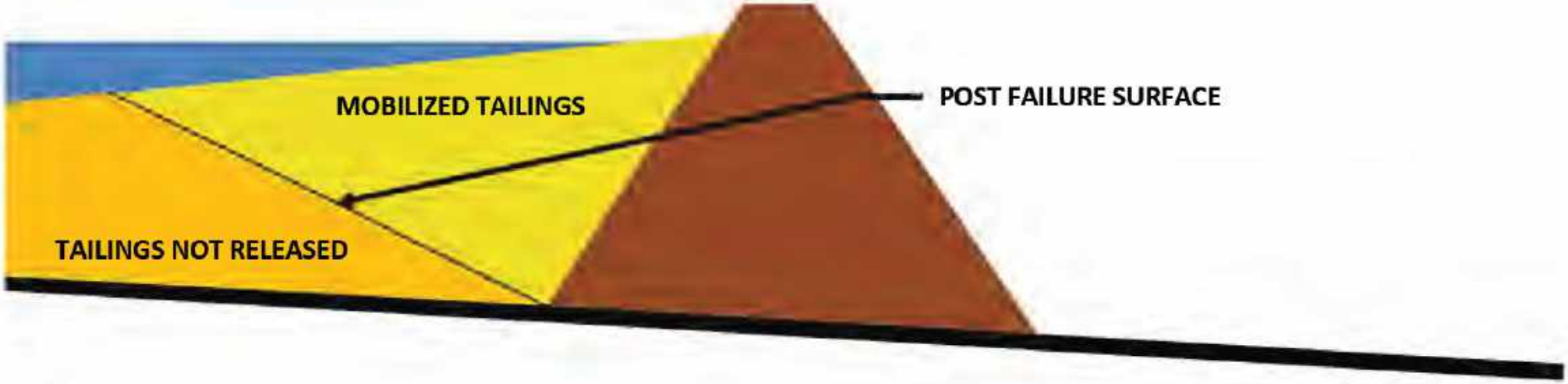
PE801-00137 M24007
Figure 1.1

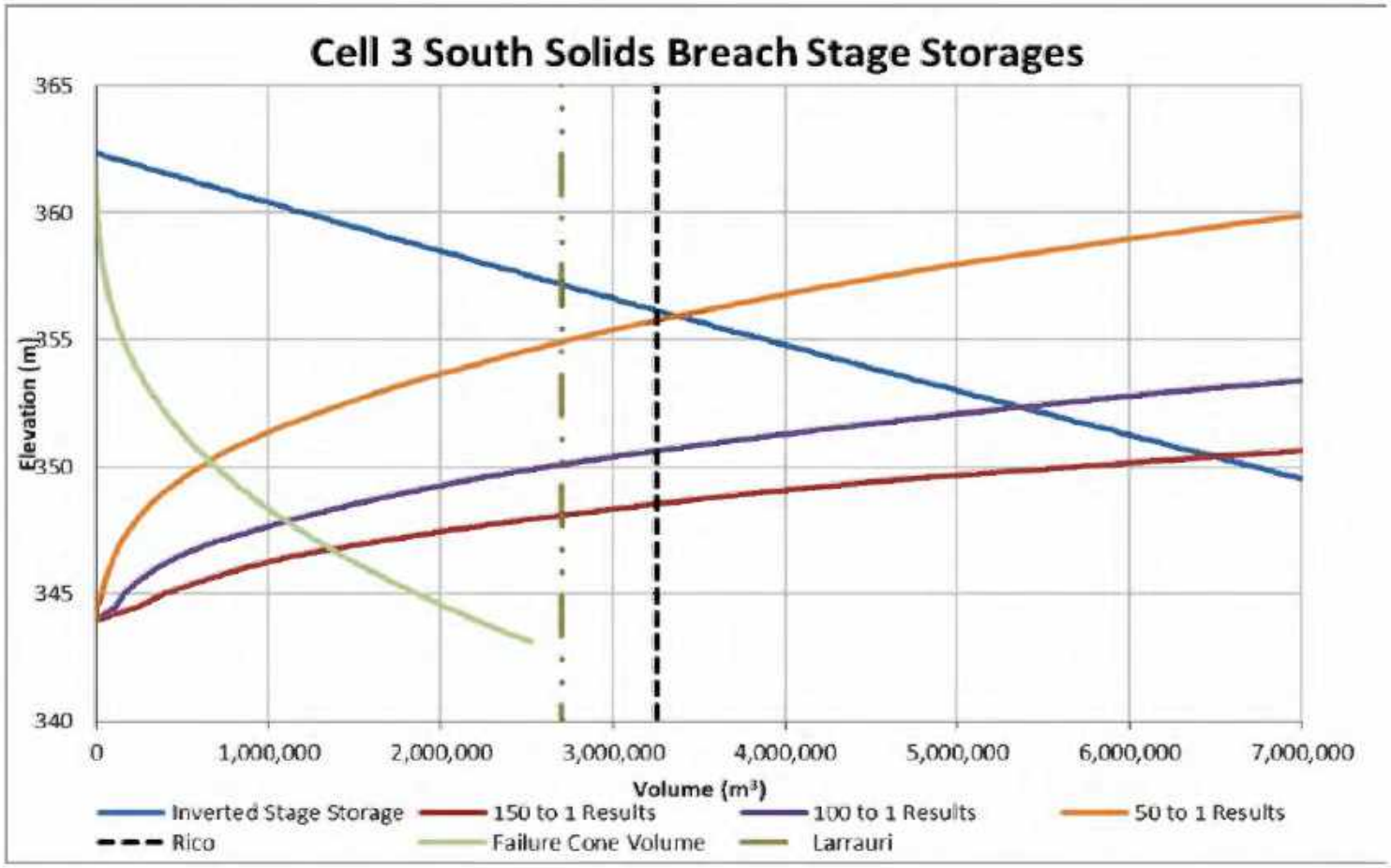
TABLE No. 1	
STAGE	ELEVATION (mR.L.)
1	347.40
2	349.10
3	350.70
4	352.35
5/6	355.75
7/8	359.35
9/10	363.15

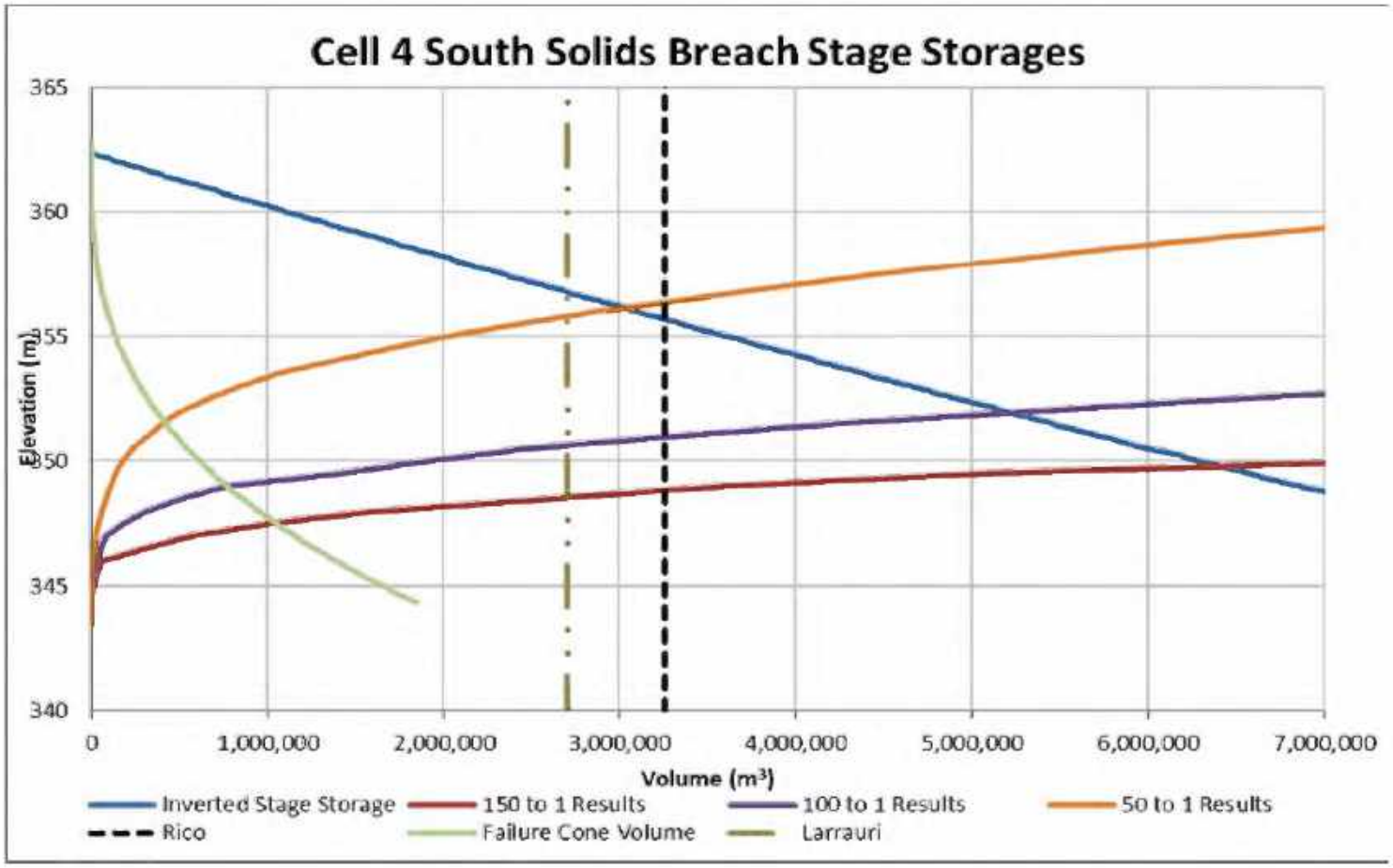


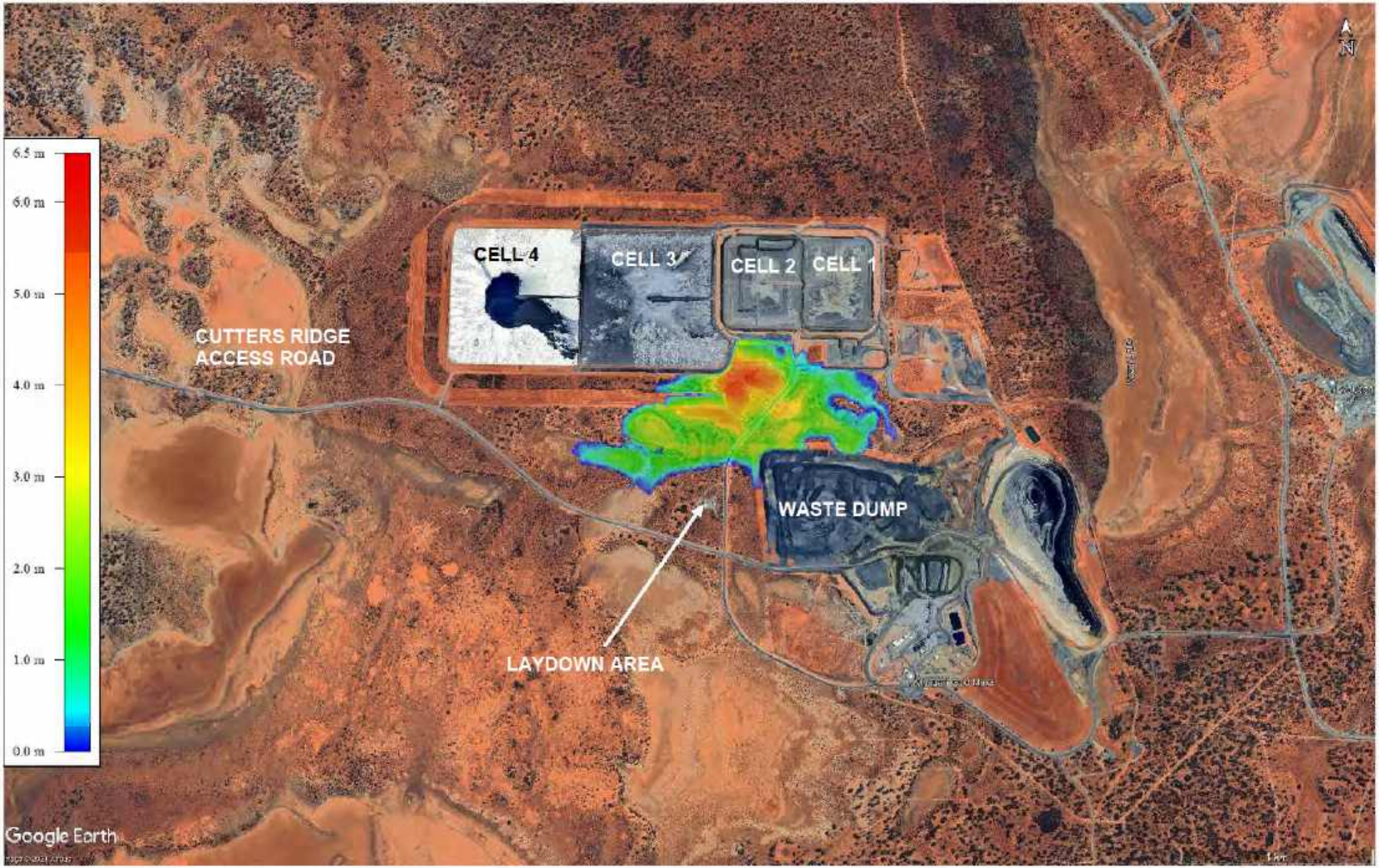
TYPICAL EMBANKMENT CROSS SECTION


TAILINGS NOT RELEASED
MOBILIZED TAILINGS
CONICAL FAILURE SURFACE
EMBANKMENT CREST


MOBILIZED TAILINGS
POST FAILURE SURFACE
TAILINGS NOT RELEASED


Cell 3 South Solids Breach Stage Storages
365
360
355
350
345
340
Elevation (m)
0
1,000,000
2,000,000
3,000,000
4,000,000
5,000,000
6,000,000
7,000,000
Volume (m³)
Inverted Stage Storage
150 to 1 Results
100 to 1 Results
50 to 1 Results
Rico
Failure Cone Volume
Larrauri

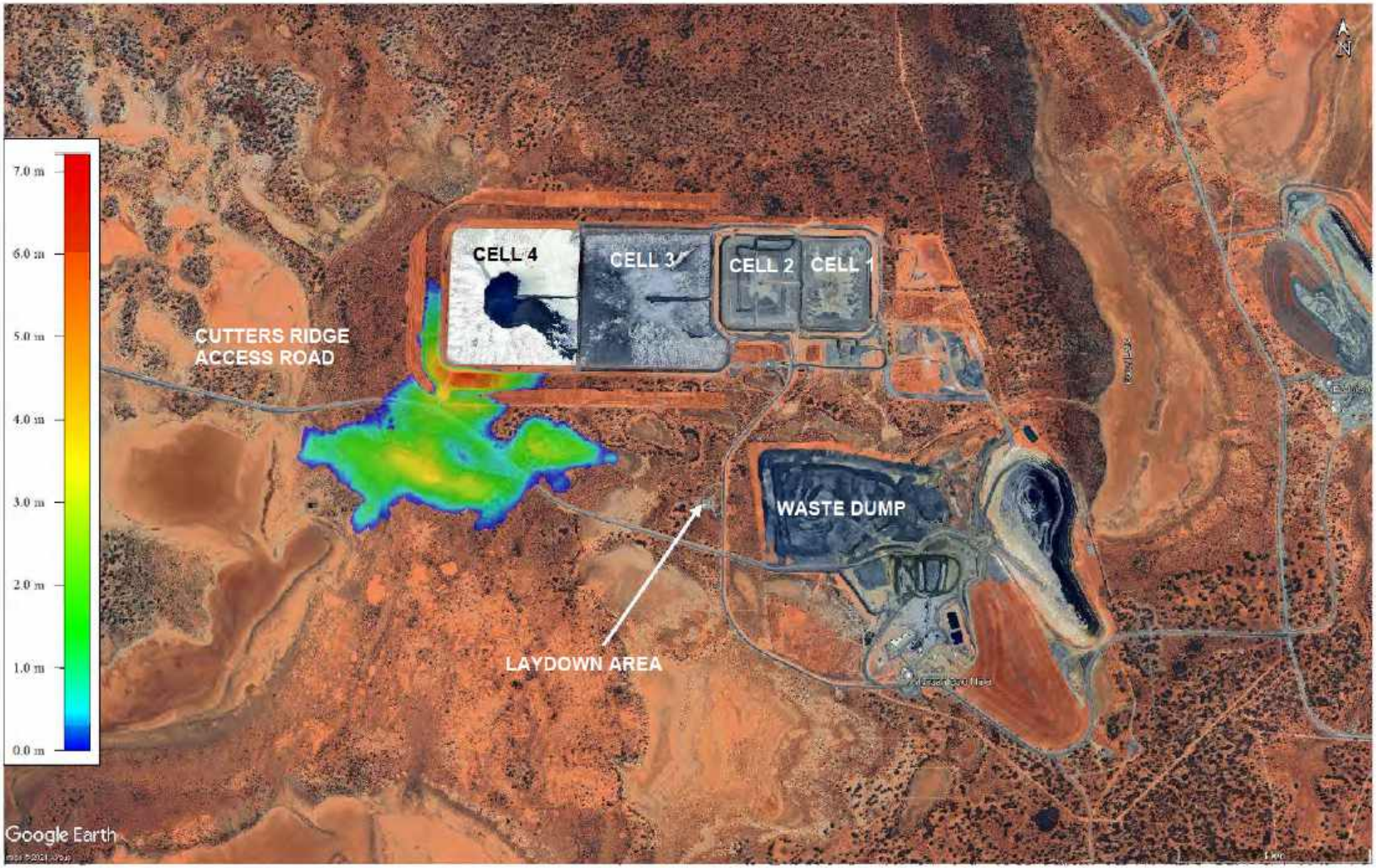

Cell 4 South Solids Breach Stage Storages
365
360
355
350
345
340
Elevation (m)
0
1,000,000
2,000,000
3,000,000
4,000,000
5,000,000
6,000,000
7,000,000
Volume (m³)
Inverted Stage Storage
150 to 1 Results
100 to 1 Results
50 to 1 Results
Rico
Failure Cone Volume
Larrauri



Knight Piésold CONSULTING

MUNGARI GOLD PROJECT
DAM BREAK ASSESSMENT
CELL 3 SOUTH EAST EMBANKMENT BREACH

PE801-00137 M24007
Figure 2.3



Knight Piésold CONSULTING

MUNGARI GOLD PROJECT
DAM BREAK ASSESSMENT
CELL 4 SOUTH WEST EMBANKMENT BREACH

PE801-00137 M24007
Figure 2.4

APPENDIX E
Tailings Testwork

Knight Piésold CONSULTING

Knight Piésold CONSULTING

MEMORANDUM

To:	Evolution Mining	**Date:**	27 October 2022
Attn:	Shane Barker	**Our Ref:**	PE22-01037
		KP File Ref.:	PE801-00137/50-A dss M22010
cc:		**From:**	Dean Sawyer

RE: MUNGARI GOLD PROJECT – OPERATING JUNE TESTING **TAILINGS PHYSICAL**

. INTRODUCTION

Knight Piésold Pty Ltd (KP) is engaged by Evolution Mining to undertake the ongoing operational assistance with the Tailings Storage Facility (TSF) at the Mungari Gold Mine approximately 20 km west of Kalgoorlie in Western Australia. As part of the design, one operating tailings sample was sourced for testing in order to validate the density and water release characteristics for the TSF operation. The previous operating sample was conducted in 2015 and a regular update of testing is required.

. SAMPLE DESCRIPTION AND TESTING

Two buckets of slurry of combined weight of around 50 kg were sent to the KP Perth laboratory in July 2022 from the Mungari operating mine. The buckets were labelled "*GEKKO GoldiLOX, Gold Leach Accelerant*" (these were likely used buckets and were not labelled correctly as they were confirmed to be operating tailings sampled from June 2022. The sample will be referred to as "Operating Sample June 2022" for the purposes of this memorandum.

The as received percent solids (oven dry method) was about 57% w/w however the undrained flask method indicated around 46% w/w. The discrepancy is likely associated with the estimate of the hypersaline water in slurry specific gravity. No adjustment was made for percentage solids of the sample on the basis the sample is at the operating percent solids at the time of sampling.

The following tests were carried out on the sample:

i. Classification tests to determine:
   - Particle Size Distribution (PSD) of the tailings;
   - Supernatant liquor density and pH;
   - Tailings solids particle density; and
   - Atterberg limits of the tailings solids;
ii. Undrained and drained sedimentation tests;
iii. Air drying tests;
iv. Permeability tests; and
v. Consolidation testing.

Geochemical testing was also conducted and will be reported under a separate memorandum.

During laboratory testing it is Knight Piésold's normal practice to duplicate each test as a means to verify the consistency of the test results. The results of each individual test are plotted on the corresponding figures. The interpreted mean values are given in the tables and text of the document. A brief description of the method employed in each test is also provided.

. PHYSICAL TESTING

The following section discusses the physical testing results for the tailings samples. Predicted tailings behaviour is discussed in Section 4; however, it should be noted that field results are also dependent on the facility area, deposition strategy, pond size and height of the storage facilities, climatic conditions at site, and operating parameters (percent solids and blend) of the processing plant.

3.1 CLASSIFICATION TESTING

Classification testing of the sample was completed by Trilab, Perth. Where appropriate, classification tests were conducted in accordance with relevant Australian Standards. The results of the classification tests for the sample and relevant Australian Standards are summarised in Table 3.1. The Trilab laboratory test reports are presented in Appendix A.

Ta le . : Classification testing – results and relevant standards

Test	Operating Sample June 2022	AS1289
Solids Particle Density (t/m^3)	2.90	3.5.1
Supernatant Density (t/m^3)	1.093	(hydrometer)
Supernatant pH	8.12	(pH meter)
Liquid Limit (%)	18	3.9.1, 3.9.2
Plastic Limit (%)	Not Obtainable	3.2.1
Plasticity Index (%)	Non-Plastic	3.3.1
Linear Shrinkage (%)	0.0	3.4.1

The Particle Size Distribution (PSD) analysis for the samples was completed in accordance with AS1289 3.6.3. The measured particle size distribution is presented in Table 3.2 and the grading curve is shown on Figure 3.1.

Ta le . : Particle size distribution

Fraction	Particle Size (µm)	Percent Passing (%)
Sand	200	85
Silt	75	64
	20	38
	6	22
Clay	2	16

The Operating Sample June 2022 consists of 36% sand, 48% silt and 16% clay. The testing indicates the material is Non plastic SILT with sand and would be classified as ML in the Unified Soil Classification System. The sample has a P_{80} of approximately 160 µm.

The grading curves indicate the sample falls inside the boundary for potentially liquefiable soils and therefore liquefaction of the tailings mass needs to be considered in design.

3.2 SEDIMENTATION TEST

Drained and undrained sedimentation tests were carried out to determine the settling rate, volume of supernatant, and settled dry density of the tailings.

In the undrained sedimentation test tailings slurry is allowed to settle in a measuring cylinder. This is equivalent to the deposition of tailings under water. The results indicate the expected rate and quantity of supernatant release, and enable the minimum expected dry density of the tailings to be determined.

In the drained sedimentation test tailings slurry is allowed to settle and drain in a cylinder with a fine sand filter drain at the base. This simulates the deposition of tailings where both settling and free drainage can occur. The results indicate the relative quantities of supernatant and underdrainage released by the settling slurry, and enables the dry density of the drained tailings to be determined. The underdrainage values are maximum values, as the drainage layer is free-draining without back pressure and the tailings is deposited directly over the drainage medium.

The results of the sedimentation tests are presented on figures 3.2 and 3.3. Table 3.3 presents a summary of the measured sedimentation test data.

Table 3.3: Sedimentation test results

	Test	Initial Solids (%)	Supernatant (% of initial water volume)	Underdrainage (% of initial water volume)	Time to Achieve Final Density (days)	Final Dry Density (t/m^3)	Final Void Ratio	Figure
Operating Sample June 2022	Undrained	46	53	-	1	1.17	1.49	3.2
	Drained	48	36	28	2	1.41	1.05	3.3

The test indicates Operating Sample June 2022 will settle quickly with settlement completing in around a day. The sample released approximately 53% of water in slurry to supernatant in the undrained test, reducing to about 36% in the drained test. The sample achieved a moderate dry density from settlement before air drying or consolidation with a void ratio of 1.1.

3.3 AIR DRYING TESTS

Air drying tests were carried out on slurry samples to determine the effect of drying of the tailings after initial settling and removal of supernatant liquor, thereby simulating conditions expected on the tailings beach following sub-aerial deposition.

Continuous monitoring of the weight and volume of each specimen was carried out in order to quantify the relationship between dry density, moisture content, volumetric change and the degree of saturation of the tailings against a measured evaporation rate.

A direct relationship exists between dry density and moisture content up to a breakaway point, at which the degree of saturation falls below 100%. At this point negative pore water pressures are developed, which further consolidates the tailings. Drying below a limiting saturation produces no further consolidation, and the density at this point represents the maximum that can be achieved via air drying of the tailings.

The results of the air drying tests are presented on figures 3.4 and 3.5, and are summarised in Table 3.4.

Table . : Results of air drying tests

	Moisture Content at Breakaway Point (%MC)	Dry Density at Breakaway Point (t/m^3)	Final Dry Density (t/m^3)	Void Ratio	Figures
Operating Sample June 2022	34	1.59	1.60	0.82	3.4, 3.5

The Operating Sample June 2022 sample achieved a maximum dry density from air drying of 1.60 t/m^3 taking about 7 days at an average evaporation rate of 6.8 mm/day (approximately 48 mm of total evaporation). This is an increase of about 13% over the density achieved in the drained sedimentation test. The dry density is high with a void ratio of approximately 0.8.

3.4 CONSOLIDATION TESTS

The consolidation of the tailings can be quantified in terms of the compression index C_C and the coefficient of consolidation C_V. The compression index relates the void ratio or tailings density to the effective stress of the tailings sample. The larger the value of C_C, the more compressible the tailings. The coefficient of consolidation defines the rate of excess pore water dissipation, and hence the rate of increase in effective stress within the tailings. Higher values of C_V indicate more rapid consolidation of the sample.

The void ratio and dry density relative to the stress condition are presented on Figure 3.6 and the results of the consolidation tests are summarised in Table 3.5.

Table . : Consolidation test results

	Void Ratio	Dry Density (t/m^3)	Stress Range (kPa)	Coeff. of Consolidation C_V (m^2/y)	Coeff. of Volume Decrease M_V (m^2/kN)	Comp. Index C_C
Operating Sample June 2022	1.55 - 1.25	1.14 - 1.29	1.35 – 4.43	78	0.039	0.588

The results indicate the tailings sample is moderately compressible and will consolidate quickly with loading.

3.5 PERMEABILITY TESTS

Falling head permeability tests were completed on saturated tailings samples, with drainage through the drained sedimentation samples being measured. In addition, permeability values were derived from the results of the consolidation tests. Measured permeability data are summarised in Table 3.6 and presented on Figure 3.6.

Ta le . : Permeability test results

	Test Type	Void Ratio	Dry Density (t/m^3)	Permeability (m/s)
Operating Sample June 2022	Falling Head	1.05	1.41	4×10^{-7}
	Constant Head	1.33 1.25	1.24 1.29	1×10^{-6} 5×10^{-7}

These results represent the vertical permeability of saturated tailings prior to additional consolidation due to additional deposition loading or negative suction due to air-drying.

In the range of expected settled densities, the vertical permeability of the sample is approximately 4×10^{-7} m/s. As the tailings consolidate it is anticipated that the permeability may reduce by half an order of magnitude.

. INTERPRETATION OF RESULTS

The operating discharge percent solids for Operating Sample June 2022 was tested as received. It should be noted that field results are also dependent on the processing plant operation, the layout and design of the TSF and site climatic conditions. The interpretation of the test results provided herein is based on the operating percent solids.

4.1 WATER PRODUCTION

The release of supernatant/underdrainage following deposition can be estimated based on the climatic conditions, particle size distribution and permeability of the tailings, and the results of the undrained and drained sedimentation tests. The rate of supernatant release will also affect the potential decant recovery.

The testing indicated the rate of supernatant release for the sample was quick, with the majority of water released within a day.

The expected water release would be around 36 - 53% of the water in slurry at the operating percent solids. This is not accounting for rainfall and evaporation but considering the loss of water to re-saturate lower tailings layers.

The quantity of underdrainage release in the field would be expected to be lower than the values indicated by the test work, due to the thickness of the deposited tailings, further consolidation of the tailings, drying of intermediate layers and underdrainage collection efficiency. Underdrainage release will be relatively quick due to the high permeability and could be as high as 28% of the water in slurry. A recovery rate between 5% and 10% could be expected depending on the arrangement of the underdrainage collection and basin treatment of each cell.

4.2 TAILINGS DENSITY

The settled dry density deposited into a TSF can be predicted from the laboratory test work, facility design and site climatic conditions. It has been observed over a number of years that densities achieved in the field are generally lower than those obtained in the laboratory. In addition, field densities achieved are dependent on the area available for drying and the thickness of deposited layers.

The tests provided final dry density values for the sample ranging from undrained sedimentation to air drying as follows:

- Undrained test 1.17 t/m^3.
- Drained test 1.41 t/m^3.
- Air drying test 1.60 t/m^3.

The test work indicated that samples achieved moderately dry densities with some improvement in density achieved between tailings based on settlement and tailings exposed to air drying. This suggests that having an exposed tailings beach will overall benefit the dry density and should be targeted. Back calculation from filling of Cell 1, Cell 2 and Cell 3 indicates that a settled dry density of approximately 1.4 t/m^3 is being achieved in the facility.

We trust that this meets your current requirements; however, if you have any queries, please do not hesitate to contact us.

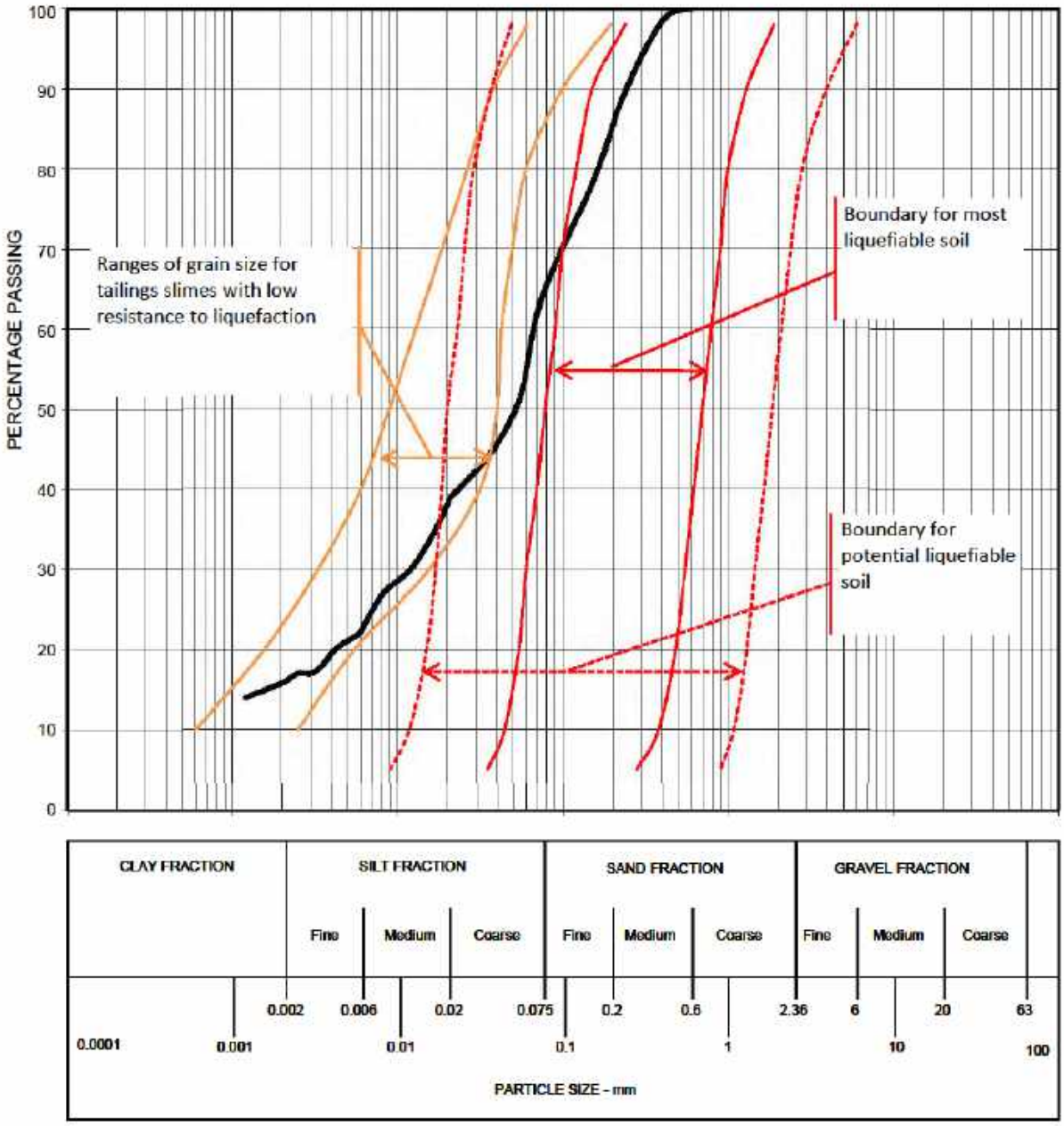
Yours faithfully
KNIGHT PIÉSOLD PTY LTD

DEAN SAWYER
Senior Engineer

DAVID MORGAN
Managing Director

FIGURES

PARTICLE SIZE DISTRIBUTION

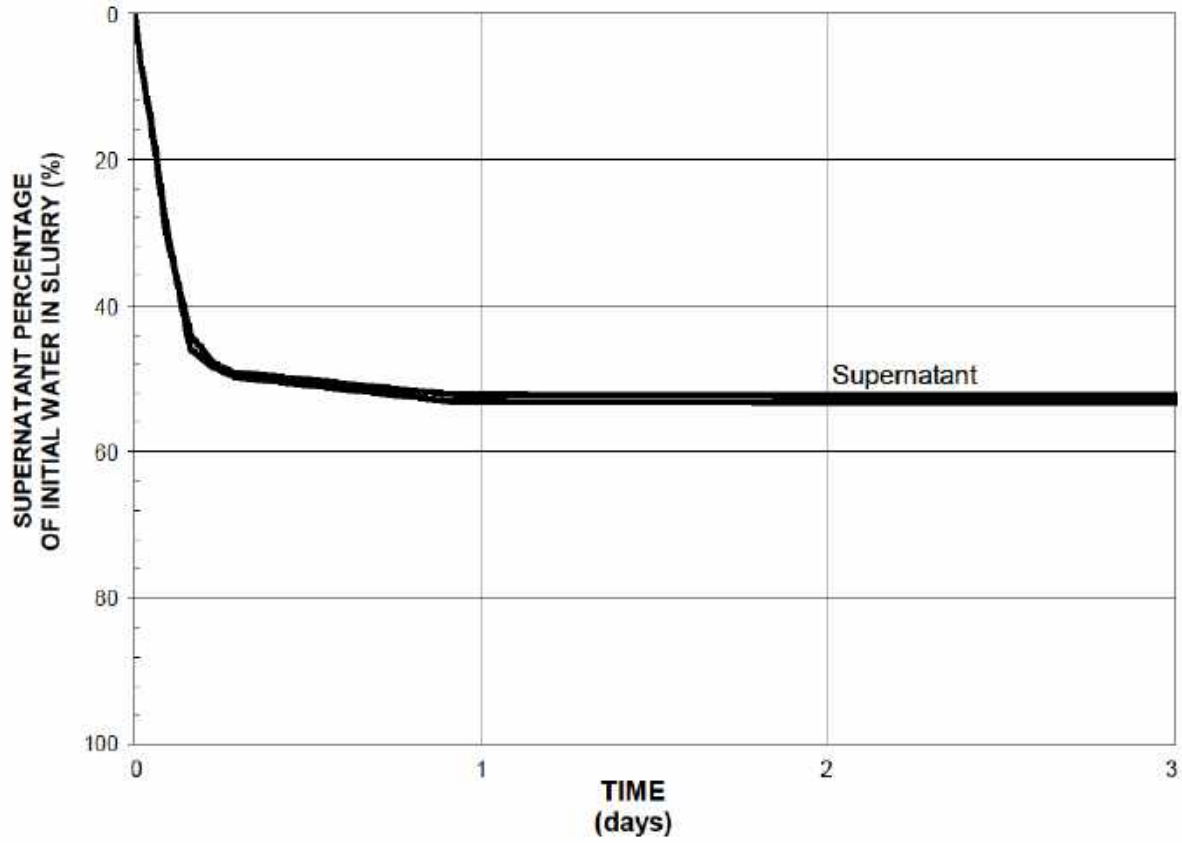


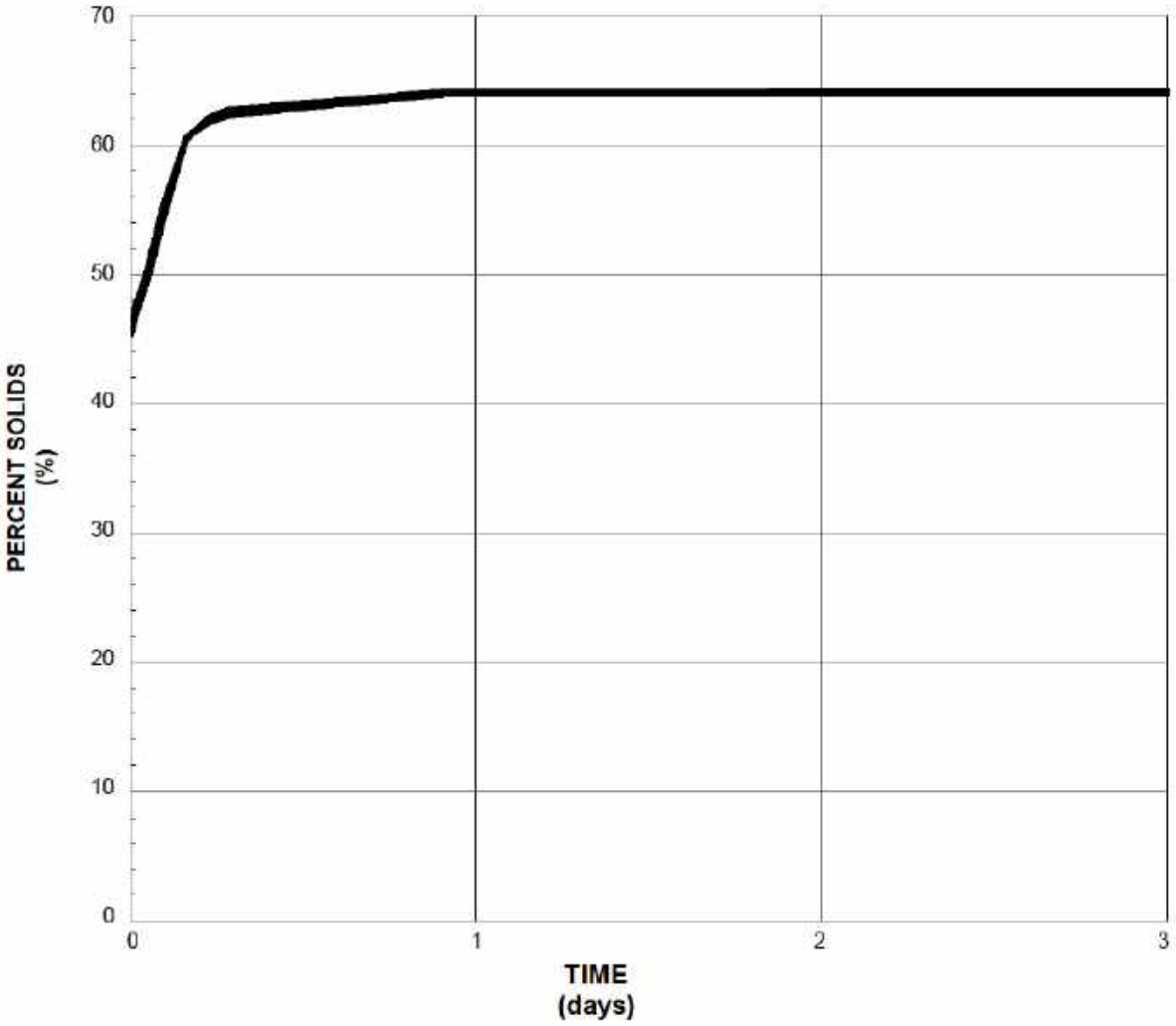
SYMBOL	SOIL DESCRIPTION	LIQUID LIMIT	PLASTICITY INDEX	SPECIFIC GRAVITY
———	Mungari Operating Sample July 2022	18	Non Plastic	2.90

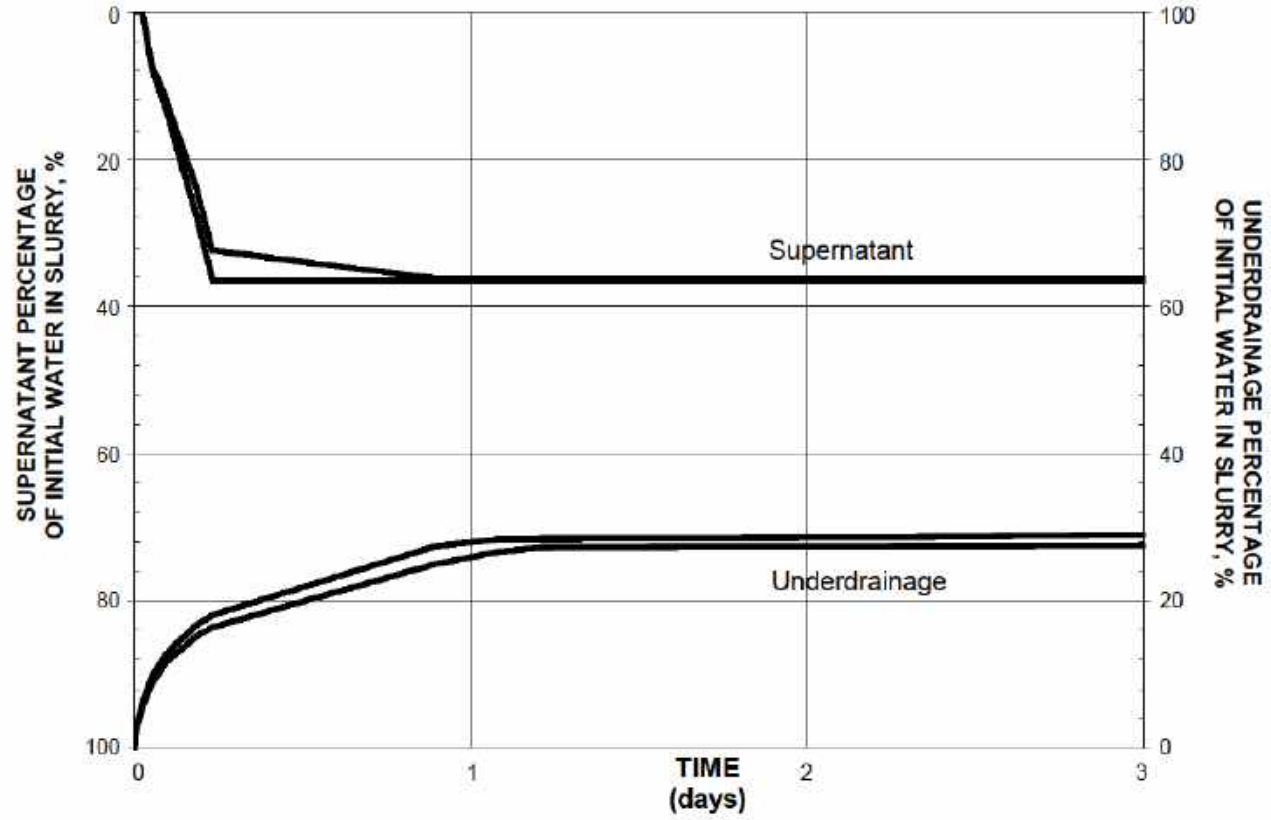
INSERT NAME

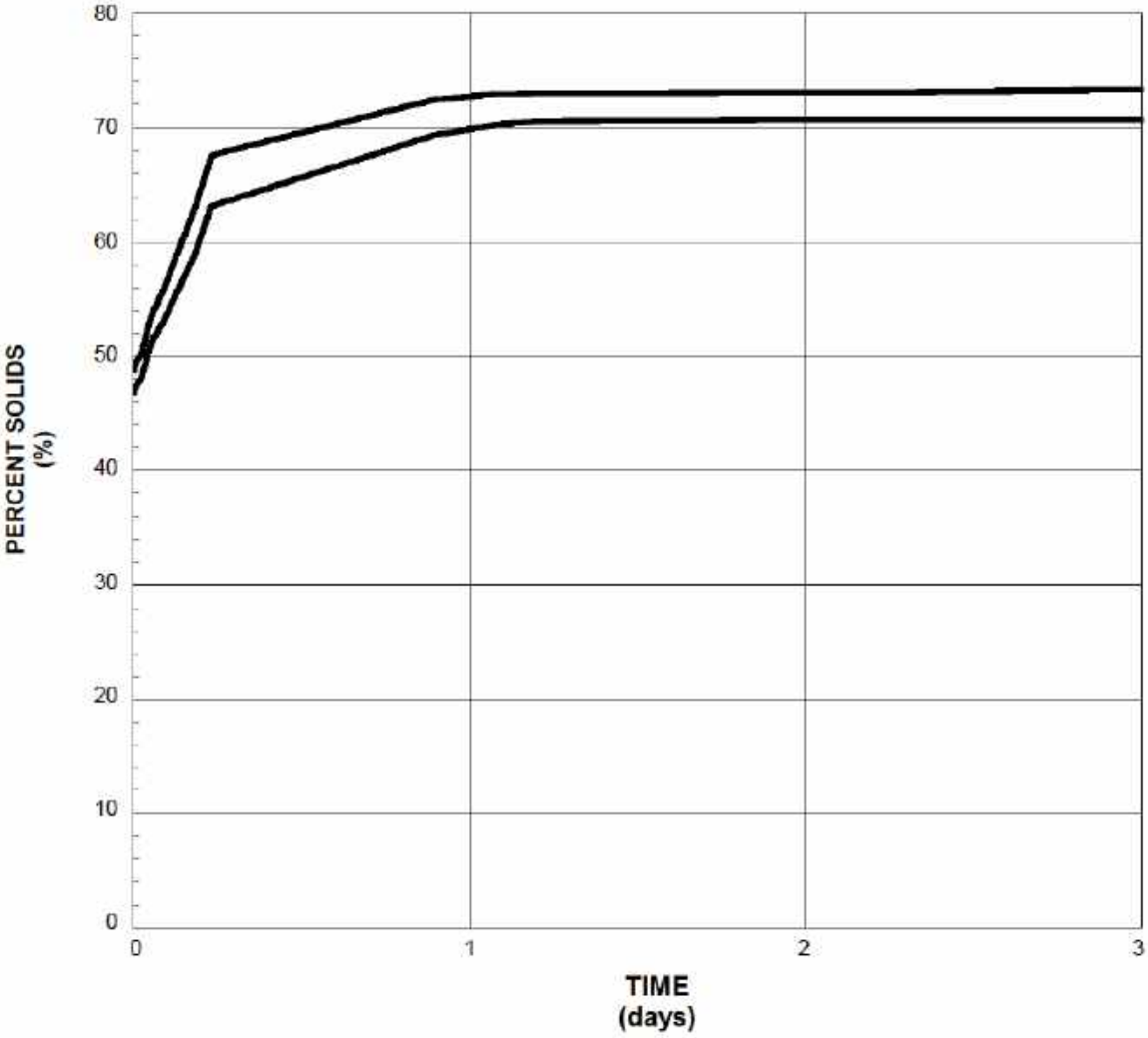
Series16
Series17
Series18

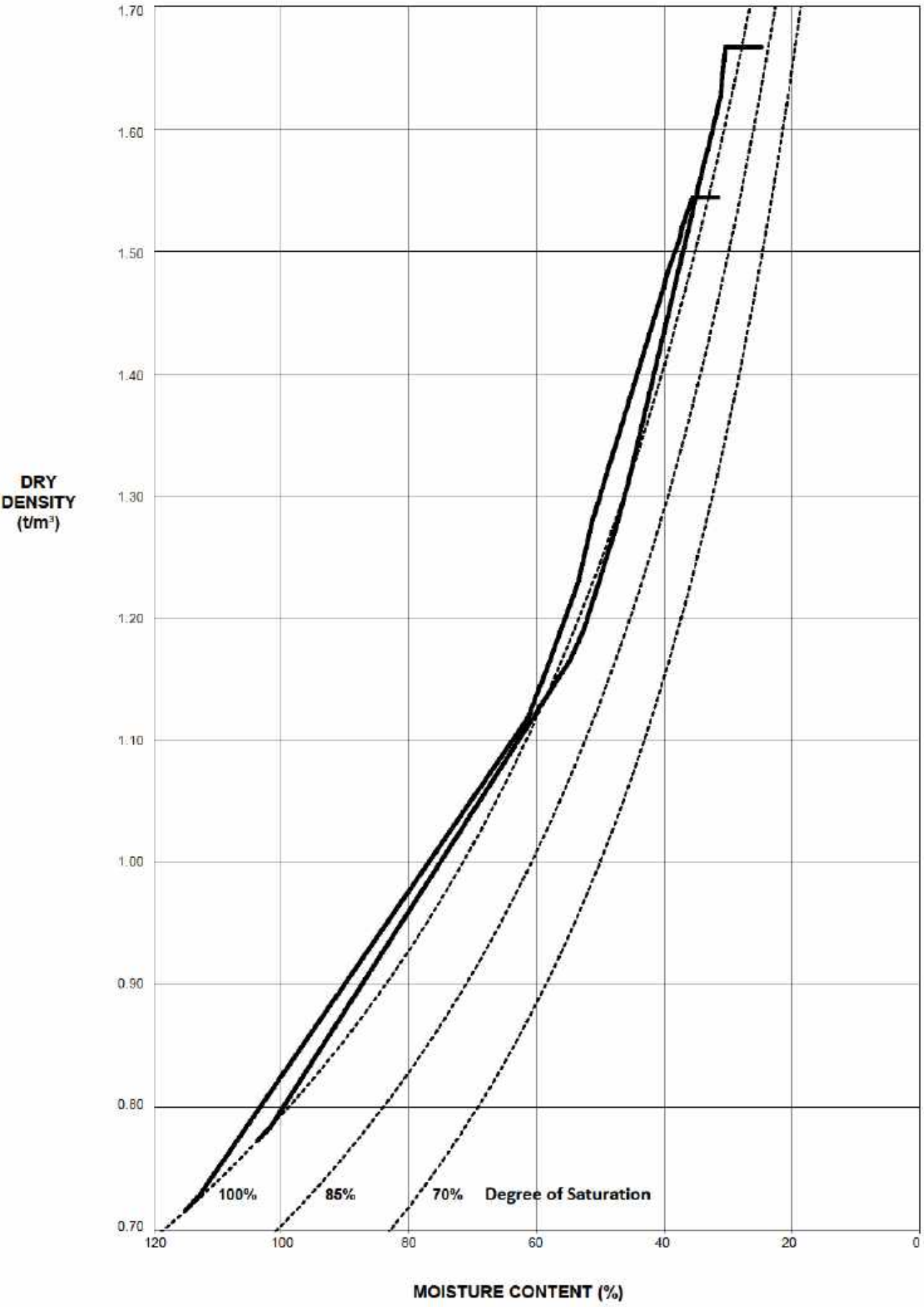
Note:
Liquefiable and potentially liquefiable soil limits suggested by USNRC 1985.
Data obtained from Figure 12.15 and 12.16 of Geotechnical Engineering of Dams, Fell 2005

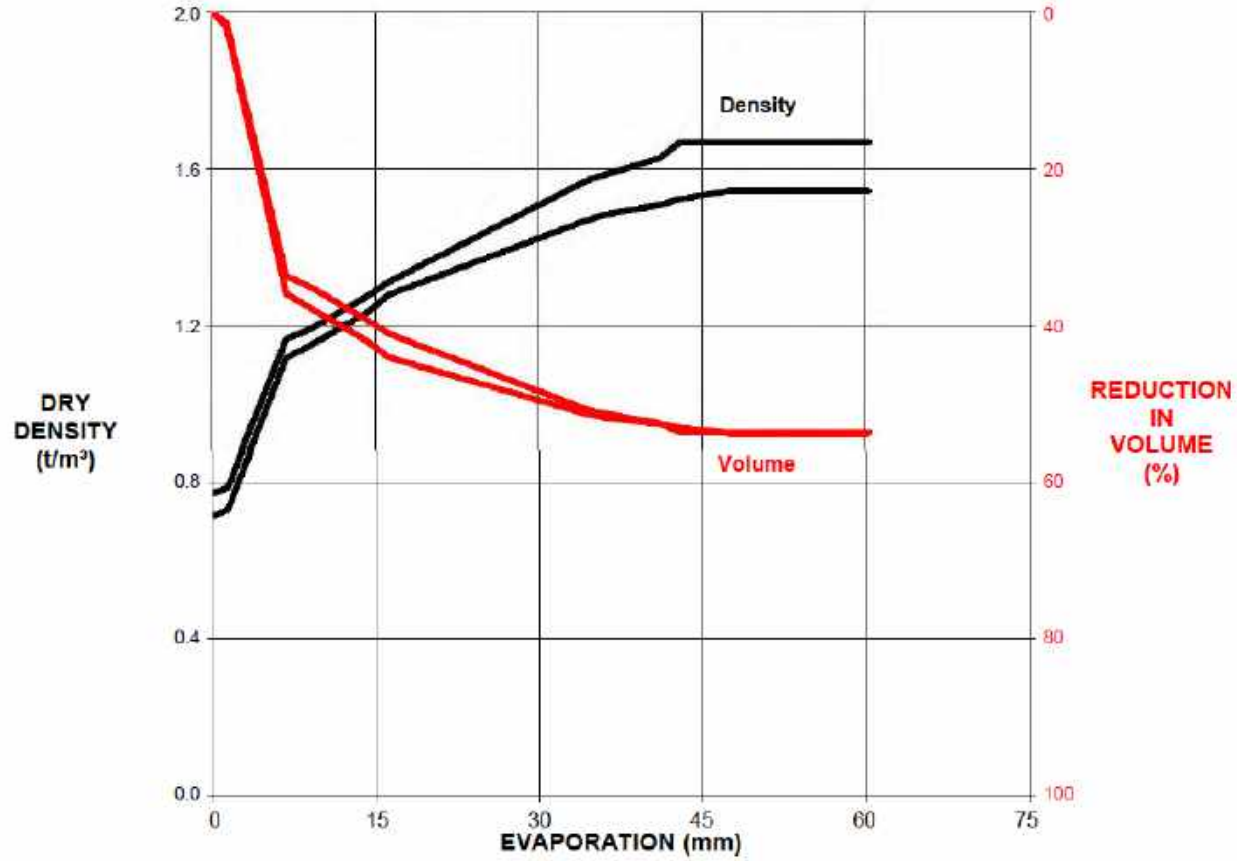

SUPERNATANT PERCENTAGE OF INITIAL WATER IN SLURRY (%)
0
20
40
60
80
100
Supernatant
0
1
2
3
TIME
(days)

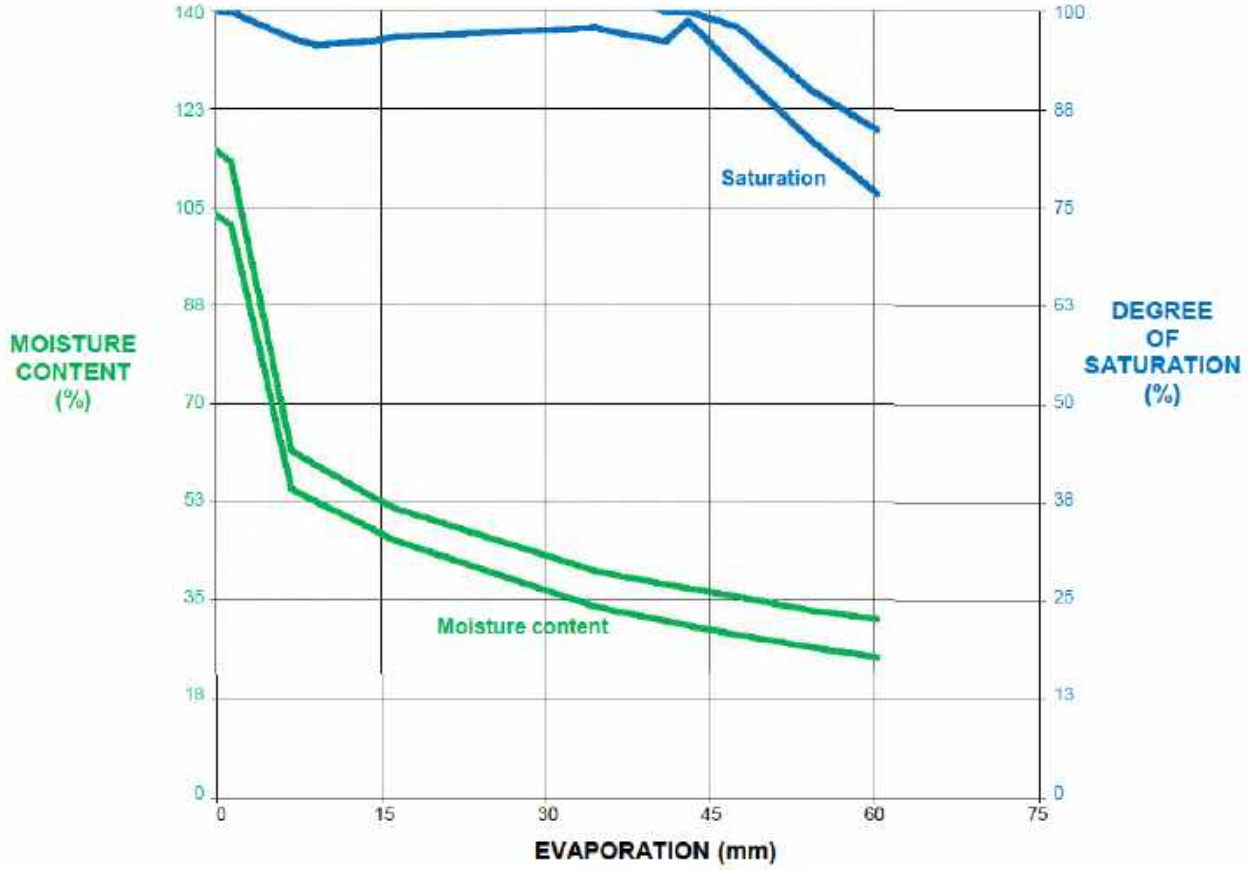

PERCENT SOLIDS (%)
70
60
50
40
30
20
10
0
0
1
2
3
TIME
(days)

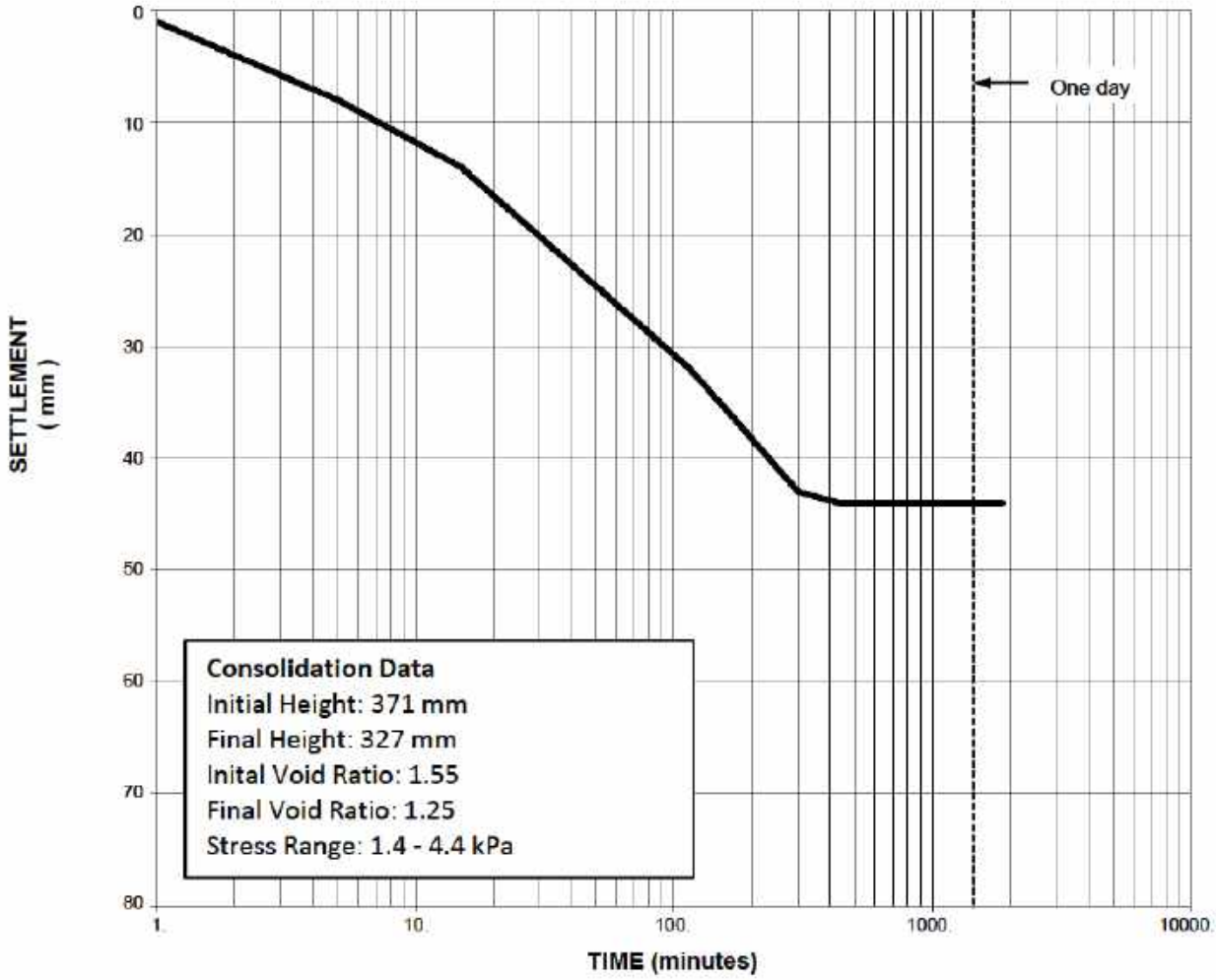

SUPERNATANT PERCENTAGE OF INITIAL WATER IN SLURRY, %
UNDERDRAINAGE PERCENTAGE OF INITIAL WATER IN SLURRY, %
Supernatant
Underdrainage
TIME (days)
0
20
40
60
80
100
0
1
2
3

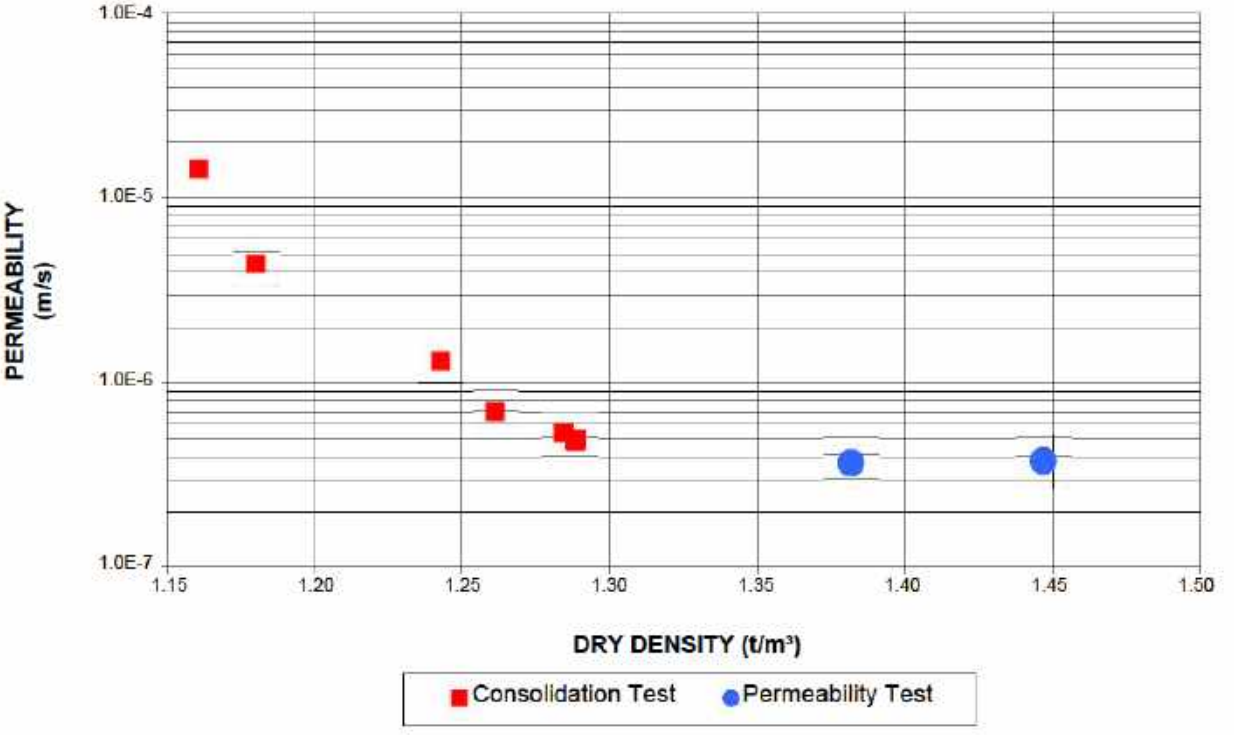

PERCENT SOLIDS (%)
TIME (days)
0
10
20
30
40
50
60
70
80
0
1
2
3


DRY DENSITY (t/m³)
1.70
1.60
1.50
1.40
1.30
1.20
1.10
1.00
0.90
0.80
0.70
120
100
80
60
40
20
0
100%
85%
70%
Degree of Saturation
MOISTURE CONTENT (%)


DRY DENSITY (t/m³)
REDUCTION IN VOLUME (%)
Density
Volume
2.0
1.6
1.2
0.8
0.4
0.0
0
20
40
60
80
100
0
15
30
45
60
75
EVAPORATION (mm)


MOISTURE CONTENT (%)
DEGREE OF SATURATION (%)
Saturation
Moisture content
140
123
105
88
70
53
35
18
0
100
88
75
63
50
38
25
13
0
0
15
30
45
60
75
EVAPORATION (mm)


SETTLEMENT (mm)
0
10
20
30
40
50
60
70
80
One day
Consolidation Data
Initial Height: 371 mm
Final Height: 327 mm
Inital Void Ratio: 1.55
Final Void Ratio: 1.25
Stress Range: 1.4 - 4.4 kPa
1.
10.
100.
1000.
10000.
TIME (minutes)


PERMEABILITY (m/s)
1.0E-4
1.0E-5
1.0E-6
1.0E-7
1.15
1.20
1.25
1.30
1.35
1.40
1.45
1.50
DRY DENSITY (t/m³)
Consolidation Test
Permeability Test

APPENDIX A

Trilab Laboratory Test Results

Trilab
Soil Rock Calibration

Brisbane
346A Bilsen Road,
Geebung
QLD 4034
Ph: +61 7 3265 5656

Perth
2 Kimmer Place,
Queens Park
WA 6107
Ph: +61 8 9258 8323

ATTERBERG LIMITS TEST REPORT

Test Method: AS

Client	Knight Piesold Pty Ltd	**Report No.**	P22070156-AL
		Workorder No.	0020618
Address	Level 1 184 Adelaide Terrace, EAST PERTH WA 6004	**Report Date**	01/08/2022
Project	PE801-00137 - Mungari Project		

Sample No.	22070156					
Liquid Limit Determination	AS 12893.9.2					
Test Date	28/07/2022					
Client ID	Mungari Operating Sample July 2022					
Depth m	Not Supplied					
Liquid Limit	18					
Plastic Limit	Not Obtainable					
Plasticity Index	Non plastic					
Linear Shrinkage	0.0					
Moisture Content	82.6					

Sample No.						
Liquid Limit Determination						
Test Date						
Client ID						
Depth m						
Liquid Limit						
Plastic Limit						
Plasticity Index						
Linear Shrinkage						
Moisture Content						

NOTES/REMARKS: The samples were tested oven dried, dry sieved and in a 125-250mm mould.

Sample/s supplied by the client * Cracking occurred + Curling occurred

Trilab
Soil Rock Calibration

Brisbane
346A Bilsen Road,
Geebung
QLD 4034
Ph: +61 7 3265 5655

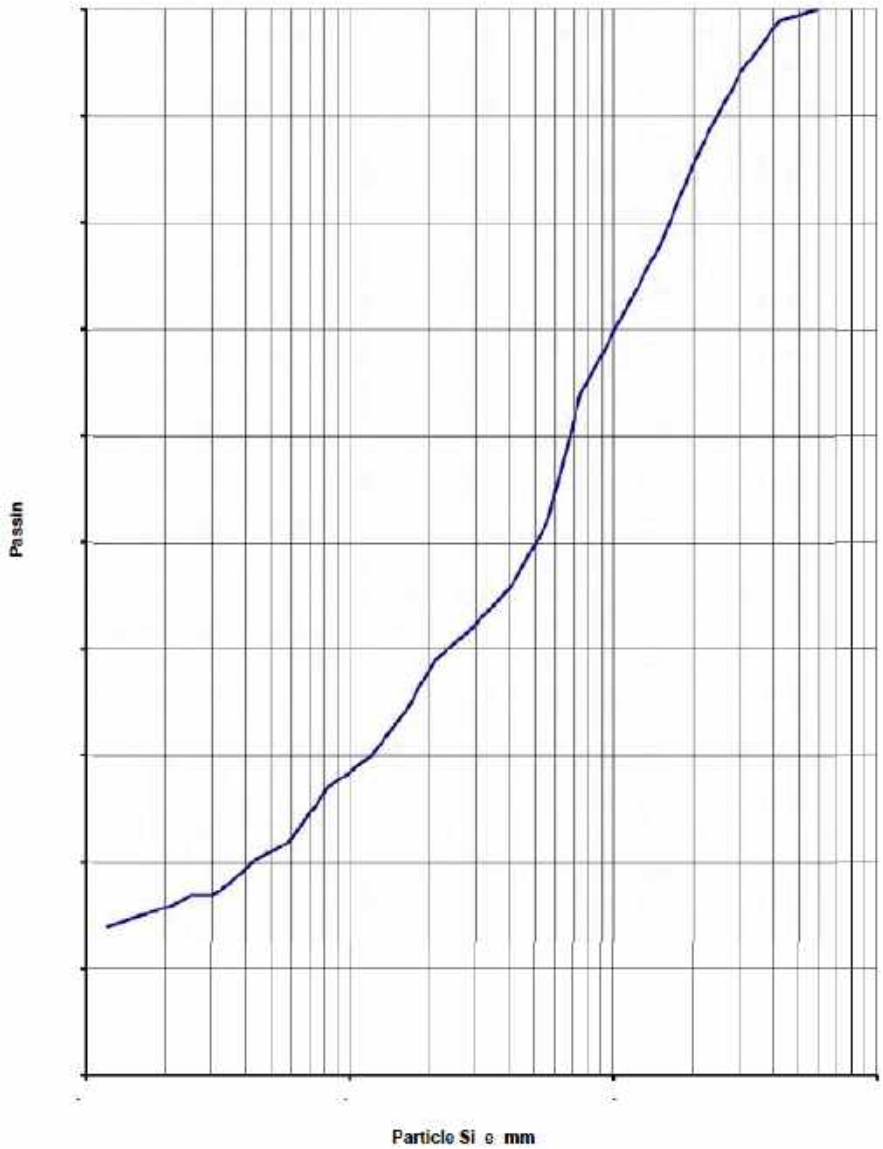
Perth
2 Kimmer Place,
Queens Park
WA 6107
Ph: +61 8 9258 8323

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS

Client	Knight Piesold Pty Ltd	**Report No.**	P22070156-G
		Workorder No.	0020618
Address	Level 1 184 Adelaide Terrace, EAST PERTH WA 6004	**Test Date**	19/7/2022
		Report Date	29/7/2022
Project	PE801-00137 - Mungari Project		
Client ID	Mungari Operating Sample July 2022	**Depth m**	Not Supplied

Sieve Size mm	Passing
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	
1.18	
0.600	100
0.425	99
0.300	94
0.212	87
0.150	78
0.075	64
0.056	52
0.041	46
0.029	42
0.021	39
0.016	34
0.012	30
0.0082	27
0.0059	22
0.0042	20
0.0035	18
0.003	17
0.0025	17
0.0021	16
0.0012	14



NOTES/REMARKS:

Moisture Content 82.6% -2.36mm Soil Particle Density(t/m^3) 2.90

Sample/s supplied by the client

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to the International System of Units (SI). References are traceable to National Measurement Institutes or laboratories accredited to ISO/IEC 17025 by a signatory to the ILAC MRA.

Tested at Trilab Perth Laboratory

Authorised Signatory
C. Channon
A/Manager

NATA
TECHNICAL COMPETENCE

Laboratory No.

MEMORANDUM

To:	Evolution Mining	**Date:**	29 November 2023
Attn:	Matt Thompson	**Our Ref:**	PE23-01285
		KP File Ref.:	PE801-00137/56-A tdr M23012
cc:		**From:**	Tim Rowles

RE: MUNGARI PROJECT – TAILINGS GEOCHEMICAL CHARACTERISTICS REV

. INTRODUCTION

Knight Piésold Pty Ltd (KP) was engaged by Evolution Mining to undertake a tailings geochemical assessment as part of the Cutters Ridge In Pit Facility (CRIPTSF) design, which has been completed by others. The CRIPTSF is located 6 km west of the Mungari plant site, which is 20 km west of Kalgoorlie, Western Australia.

Five samples were provided by Evolution for the assessment, labelled as wet cake, which were filtered slurry samples remaining from previous viscosity testwork completed by others. The samples provided were based on the expected annual ore blends in line with the forecasted life of mine plan determined in July 2023.

This memorandum provides details of the tailings geochemical testwork conducted on the five samples.

. GEOCHEMICAL CHARACTERISATION

2.1 INTRODUCTION

The testwork results are presented and discussed in the following sections. It should be noted that this assessment of the tailings geochemistry does not include assessment of residual proprietary process chemicals which may be present within the tailings slurry. However, should it be foreseeable under normal operating conditions that release of tailings slurry or supernatant into any waterways could occur, a detailed assessment of the residual process chemicals is recommended.

This detailed assessment would require input from the process chemical supplier to determine the most appropriate laboratory methods to analyse for the specific process chemicals used in ore beneficiation.

2.2 ACID BASE ACCOUNTING

Acid base accounting (ABA) assesses a sample's potential to form acid from the oxidation of sulfides and the ability to neutralise acid by the dissolution of minerals, especially carbonates, contained in the sample.

The results of the ABA test work are used to calculate the Maximum Potential Acidity (MPA) which is a measure of the maximum amount of sulfuric acid which can be produced from the total oxidation of all sulfides within the sample, assuming all sulfide is present as pyrite.

The Net Acid Producing Potential (NAPP) is the balance between the Maximum Potential Acidity and the Acid Neutralising Capacity. A negative NAPP indicates that there is an excess neutralising capacity and a positive NAPP indicates there is excess potential acidity.

The sulfur levels seen in the samples were low with an average value of 0.16% and a maximum MPA of 6 kgH_2SO_4/t which is low.

The acid neutralising capacity (ANC) of the samples was measured using the Amira ANC method with values ranging from 41 to 45 kgH_2SO_4/t at an average of 43 kgH_2SO_4/t which is considered high. The carbonate ANC was calculated from the carbonate carbon content ranging from 18 to 22 kgH_2SO_4/t indicating that approximately 50% of the ANC is attributable to carbonates and therefore is likely readily available to neutralise acid even at circum-neutral pH conditions.

Based on the acid base accounting results all samples were found to have negative NAPP and ANC/MPA ratios > 3 which indicates there is a high factor of safety against acidification. The results of the acid base accounting are provided in Table 2.1.

2.3 NET ACID GENERATION

The net acid generation (NAG) test aids in interpretation of acid formation potential classifications. It also identifies whether the sulfides and neutralising minerals contained in the sample are readily available to produce or consume acid.

The results of the NAG test are given in Table 2.2 and indicate that under extreme oxidising conditions, the tailings did not produce any measurable acid, with the final pH of the NAG solutions recorded at pH 9.8 and 10.7.

2.4 ACID FORMATION POTENTIAL

The acid formation potential of a sample is calculated based on the acid base accounting results and the NAG test. The acid base accounting results for the samples indicate negative NAPP values with alkaline NAG values and no measurable acid produced during strongly oxidising conditions. Therefore, the samples are classified as Non Acid Forming (NAF).

The acid formation potential is shown in Figure 2.1.

Table . : Mungari Tailing Samples - Acid Base Accounting Results

Sample ID	Sulfur Species		ANC	Carbon Species			Calculations		
	Total S	Sulfide S		C	Acid Insol. C	$CaCO_3$-ANC	MPA	ANC/MPA	NAPP
	%	%	kgH_2SO_4/t	%	%	kgH_2SO_4/t	kgH_2SO_4/t	-	kgH_2SO_4/t
FY26	0.16	0.16	44	0.23	0.01	18	5	9.0	-39
FY28	0.18	0.18	42	0.27	0.01	21	6	7.6	-36
FY29	0.18	0.18	42	0.27	0.01	21	6	7.6	-36
FY30	0.16	0.16	42	0.23	0.01	18	5	8.6	-37
FY31	0.10	0.10	45	0.28	0.01	22	3	14.7	-42

Note: Values in the tables have been rounded. MPA calculated from Sulfide Sulfur

Table . : NAG tests & Acid Formation Potential Results

Sample ID	Net Acid Generation			Net Acid Producing Potential	Acid Formation Potential
	NAG (7.0)	NAG (4.5)	NAGpH		
	kgH_2SO_4/t	kgH_2SO_4/t		kgH_2SO_4/t	
FY26	0	0	9.9	-39	NAF
FY28	0	0	10.3	-36	NAF
FY29	0	0	10.2	-36	NAF
FY30	0	0	9.8	-37	NAF
FY31	0	0	10.7	-42	NAF

2.5 ELEMENTAL ENRICHMENTS

Whole rock multi-element analysis of the tailings solids was conducted to assess element enrichments within the solid fraction of the tailings. Multi-element analysis results were compared to the average crustal abundance (ACA) to calculate the geochemical abundance indices (GAIs). The GAI quantifies an assay result for a particular element in terms of ACA. Full multi-element analysis results are provided in Appendix B.

The testing indicated that the samples were highly enriched with arsenic, significantly enriched with Molybdenum and Selenium and slightly enriched with Sulfur. Element Enrichments are presented in Table 2.3.

Table . : Enrichment Results

Element	Assay Result (ppm)			ACA (ppm)	No. of Sample Enriched			
	Min	Ave	Max		Non-Enriched	Slightly Enriched	Significantly Enriched	Highly Enriched
Ag	0.13	0.178	0.23	0.07	5	0	0	0
Al	78647	80360.4	81984	82000	5	0	0	0
As	683.7	1567.9	1920.2	1.5	0	0	0	5
Ba	391.7	469.4	535.1	500	5	0	0	0
Be	0.98	1.042	1.23	2.6	5	0	0	0
Bi	0.11	0.146	0.2	0.048	5	0	0	0
C	2300	2560	2800	480	5	0	0	0
Ca	14521	16163.2	18198	41000	5	0	0	0
Cd	0.03	0.044	0.06	0.11	5	0	0	0
Co	16.2	18.88	21.1	20	5	0	0	0
Cr	468	498.2	536	100	5	0	0	0
Cu	19	28.6	38	50	5	0	0	0
Fe	19700	23940	30300	41000	5	0	0	0
K	7653	9611.4	11734	21000	5	0	0	0
Mg	5632	6977	8227	23000	5	0	0	0
Mn	252	327.8	462	950	5	0	0	0
Mo	52.3	57	63.7	1.5	0	0	5	0
Na	34309	40632.8	42877	23000	5	0	0	0
Ni	274	293.2	327	80	5	0	0	0
P	336	364.4	421	1000	5	0	0	0
Pb	7.5	10.6	16.4	14	5	0	0	0
S	1000	1560	1800	260	1	4	0	0
Sb	0.45	0.59	0.73	0.2	5	0	0	0
Se	0.5	0.56	0.7	0.05	0	3	2	0
Sn	0.6	0.72	0.9	2.2	5	0	0	0
Sr	282.24	334.898	377.23	370	5	0	0	0
Th	4.08	4.748	6.29	12	5	0	0	0
U	1.08	1.236	1.52	2.4	5	0	0	0
V	49	65.2	95	160	5	0	0	0
Zn	28	39	56	75	5	0	0	0

Legend:

Classification	GAI
Not Enriched	0 – 1
Slightly Enriched	2
Significantly Enriched	3 – 4
Highly Enriched	5 – 6

2.6 SOIL QUALITY SCREENING

The results of the multi-element analysis have also been compared to a set of soil quality screening guidelines for human health, ecology and soil contamination intervention values. These screening criteria are used for preliminary screening of potential health or environmental concerns which may results from the elemental concentration contained within the tailings.

The results indicate that the samples contain multiple elements above guideline values. Arsenic is the only element exceeding Human health criteria with all 5 samples above guideline levels. Soil screening levels are exceeded by Arsenic, Chromium, nickel, Sulfur, Antimony, and selenium. Remediation guidelines are exceeded by Arsenic, Chromium and Nickel as well.

Summarised results compared to the assessment criteria are presented in tables 2.4 to 2.6.

Ta le . : Assay Results and Soil Quality Screening – Human Health Guidelines

Element	Assay Results (ppm)			Human Health-Based Investigation Levels (ppm) [1]	No. of Samples in Exceedance
	Min	Ave	Max		
Sliver	0.13	0.178	0.23	N/G	0
Arsenic	683.7	1567.9	1920.2	300	5
Barium	391.7	469.4	535.1	N/G	0
Beryllium	0.98	1.042	1.23	90	0
Cadmium	0.03	0.044	0.06	90	0
Cobalt	16.2	18.88	21.1	300	0
Chromium	468	498.2	536	N/G	0
Copper	19	28.6	38	17000	0
Manganese	252	327.8	462	19000	0
Molybdenum	52.3	57	63.7	N/G	0
Nickel	274	293.2	327	1200	0
Phosphorus	336	364.4	421	N/G	0
Lead	7.5	10.6	16.4	600	0
Sulfur	1000	1560	1800	N/G	0
Antimony	0.45	0.59	0.73	N/G	0
Selenium	0.5	0.56	0.7	700	0
Tin	0.6	0.72	0.9	N/G	0
Vanadium	49	65.2	95	N/G	0
Zinc	28	39	56	30000	0

Notes:

Values in red bold indicate where a guideline value has been exceeded.

[1] National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1). Health Investigation Levels for Soil Contaminants, Generic Land Use HIL C – Recreational.

Table . : Assay Results and Soil Quality Screening – Ecological Soil Guidelines

Element	Assay Results (ppm)			Ecological Soil Screening Levels [1,2] (ppm)	No. of Samples in Exceedance
	Min	Ave	Max		
Sliver	0.13	0.178	0.23	14	0
Arsenic	683.7	1567.9	1920.2	46	5
Barium	391.7	469.4	535.1	2000	0
Beryllium	0.98	1.042	1.23	21	0
Cadmium	0.03	0.044	0.06	0.36	0
Cobalt	16.2	18.88	21.1	230	0
Chromium	468	498.2	536	34	5
Copper	19	28.6	38	49	0
Manganese	252	327.8	462	4000	0
Molybdenum	52.3	57	63.7	N/G	0
Nickel	274	293.2	327	130	5
Phosphorus	336	364.4	421	2000	0
Lead	7.5	10.6	16.4	56	0
Sulfur	1000	1560	1800	600	5
Antimony	0.45	0.59	0.73	0.27	5
Selenium	0.5	0.56	0.7	0.63	1
Tin	0.6	0.72	0.9	N/G	0
Vanadium	49	65.2	95	280	0
Zinc	28	39	56	79	0

Notes:

Values in red bold indicate where a guideline value has been exceeded.

[1] United States Environmental Protection Agency (U.S. EPA) Ecological Soil Screening Levels (Eco-SSLs), http://www.epa.gov/ecotox/ecossl/ (mammalian wildlife).

[2] Ecological guideline values for phosphorous, sulfur and sulfate are based on National Environment Protection (Assessment of Site Contamination) Measure (NEPC, 1999). These former Australian ecological investigation levels for urban areas have been included for reference purposes in the absence of other more applicable ecological assessment criteria.

Ta le . : Assay Results and Soil Quality Screening – Soil Intervention Values

Element	Assay Results (ppm)			Soil Remediation Intervention Values [1] (ppm)	No. of Samples in Exceedance
	Min	Ave	Max		
Sliver	0.13	0.178	0.23	15	0
Arsenic	683.7	1567.9	1920.2	55	5
Barium	391.7	469.4	535.1	625	0
Beryllium	0.98	1.042	1.23	30	0
Cadmium	0.03	0.044	0.06	12	0
Cobalt	16.2	18.88	21.1	240	0
Chromium	468	498.2	536	380	5
Copper	19	28.6	38	190	0
Manganese	252	327.8	462	N/G	0
Molybdenum	52.3	57	63.7	200	0
Nickel	274	293.2	327	210	5
Phosphorus	336	364.4	421	N/G	0
Lead	7.5	10.6	16.4	530	0
Sulfur	1000	1560	1800	N/G	0
Antimony	0.45	0.59	0.73	15	0
Selenium	0.5	0.56	0.7	100	0
Tin	0.6	0.72	0.9	900	0
Vanadium	49	65.2	95	250	0
Zinc	28	39	56	720	0

Notes:

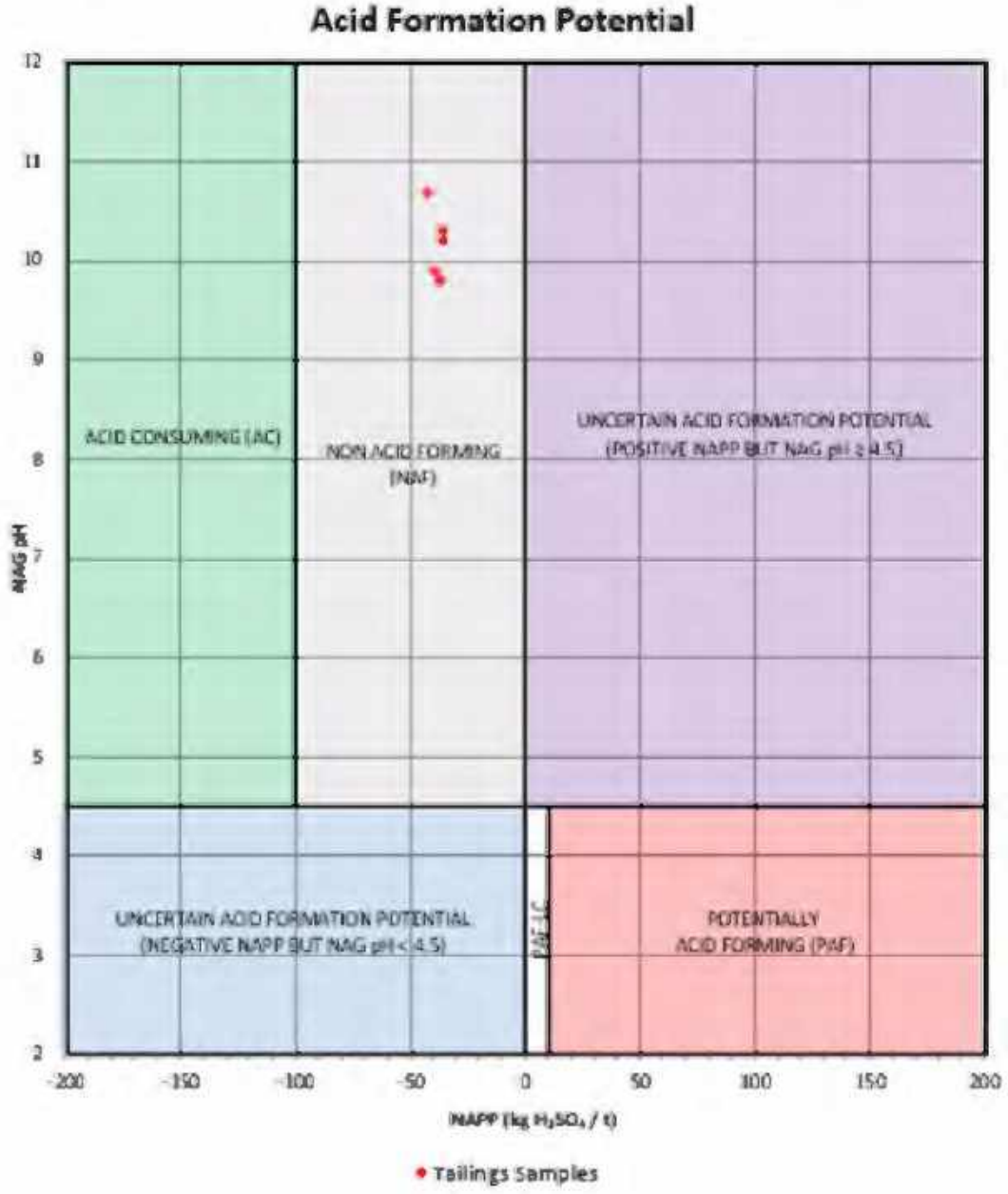
Values in red bold indicate where a guideline value has been exceeded.

[1]Netherlands Ministry of Housing, Spatial Planning and the Environment (VROM) 2000. Circular on Target Values and Intervention Values for Soil Remediation, Reference DBO/1999226863. Soil remediation intervention values. In the absence of intervention values for beryllium, selenium, silver, tin and vanadium, "indicative levels for serious soil contamination" have been applied.

. SUMMARY AND CONCLUSIONS

3.1 ACID FORMING POTENTIAL

The tailings samples are considered Non-Acid Forming (NAF) based on the low sulfur contents, negative NAPP values and no acid generation from the NAG testing. Based on these results, there is no perceived risk of the tailings samples generating acid. The results of the analyses conducted are provided in Figure 3.1 below.



Fi ure . : Acid Formation Plots

3.2 MULTI-ELEMENT ENRICHMENT

The samples had a moderate number of enrichments with only one element being highly enriched being arsenic with all 5 samples. All samples showed fairly consistent enrichment of elements with most elements returning the same level of enrichment.

When compared to a set of soil screening guidelines arsenic was the only element which exceeded the guideline value for human health however multiple elements exceed the guidelines for ecological screening indicating that the tailings solids may have the potential to negatively impact ecological systems if not adequately contained.

Elements of concern for ecological systems include arsenic, chromium, nickel, sulfur, antimony, and selenium. Exceedance of the guideline indicates that assessment of the potential impacts of the tailings on ecological systems would be merited if the tailings are left exposed to the environment on closure.

Arsenic, chromium, and nickel were found to exceed soil remediation guidelines which in urban or industrial setting would classify the site as contaminated. This warrants the covering of the tailings on closure to isolate the tailings from the environment.

We trust this memorandum report meets your current requirements however, please do not hesitate to contact us should you have any queries.

Yours faithfully
KNIGHT PIÉSOLD PTY LTD

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