AMB GEOTECH (SQS) REPORT FOR:

HARSANTS ROAD - THANGOOL

CLIENT: BANANA SHIRE COUNCIL

SQS
SOIL QUALITY SERVICES

Soil Testing & Investigation >

www.sqs.net.au

DATE: 11th July 2023

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❖ APPENDIXES:

1.0 INTRODUCTION

AMB Geotech (SQS) was requested by Banana Shire Council to provide a pavement investigation located at the Harsants Road Floodway and Approaches - Thangool.

2.0 FIELDWORK

Using sampling locations nominated by Banana Shire Council, three locations were excavated using a truck mounted drill rig with a 300mm auger.

- Each site was logged and classified for every layer encountered (Refer Appendix 3).
- 3 test sites were sampled for laboratory testing.

Material logging & field sampling was carried out by a technician from SQS on the date 7th June 2023.

3.0 LABORATORY TESTING

5 Samples were selected for material CBR, PSD & ATT

testing. The sites selected for testing were from the

following Test Pits:

- BORE HOLE #1 – PAVEMENT & SUBGRADE (CBR, PSD, ATT)
- BORE HOLE #2 – SUBGRADE (CBR, PSD, ATT)
- BORE HOLE #3 - PAVEMENT & SUBGRADE (CBR, PSD, ATT)

Each sample from the above selected sites was tested for California Bearing Ratio, Particle Size Distribution, Atterberg Limits & Subgrade DCP'S (Refer Appendix 1).

Yours Faithfully,

AMB Geotech SQS Pty Ltd

Ray Hicks
RPEQ Engineer
Cert No.1149

APPENDIX 1
LABORATORY TESTING
(Including Summary of Test Results and Test Reports)

	T-11181A	T-11182A	T-11182B	T-11181B	T-11182C
Sieve	**Passed %**	**Passed %**	**Passed %**	**Passed %**	**Passed %**
53.0mm	100			100	
37.5mm	98			98	
26.5mm	97			97	100
19.0mm	95			94	99
13.2mm	90	100		89	99
9.5mm	83	99		84	98
6.7mm	77	99	100	78	97
4.75mm	68	98	99	72	97
2.36mm	58	95	98	59	95
0.425mm	31	84	88	34	81
0.075mm	21	72	41	22	65
LL (%)	30.8	72.0	32.0	32.0	53.0
PL (%)	18.4	20.0	12.0	18.6	14.0
PI (%)	12.4	52.0	20.0	13.4	39.0
LS (%)	8.4	21.0	12.5	9.6	16.0
CBR (%)	**12**	**2.0**	**10.0**	**8**	**2.5**
Location	BH #1	BH #1	BH #2	BH #3	BH #3
Depth (m)	0.00-0.35	0.35-1.00	0.00-0.50	0.00-0.20	0.20 – 1.00
Material	Pavement	Subgrade	Subgrade	Pavement	Subgrade

Material Test Report

Report Number: T-23-784-1
Issue Number: 1
Date Issued: 10/07/2023
Client: Banana Shire Council
P.O Box 412, Biloela Qld 4715
Project Number: T-23-784
Project Name: Harsants Road, Thangool
Work Request: 11182
Sample Number: T-11182A
Date Sampled: 07/06/2023
Dates Tested: 23/06/2023 - 03/07/2023
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method: AS 1289.1.1 - Sampling and preparation of soils
Site Selection: Selected by Client
Sample Location: **Harsants Road, Thangool - Bore Hole 1 E: 271509, N: 7270341, Depth: 350mm - 1000mm**
Material: Refer to Bore Log
Material Source: Onsite Existing / Insitu

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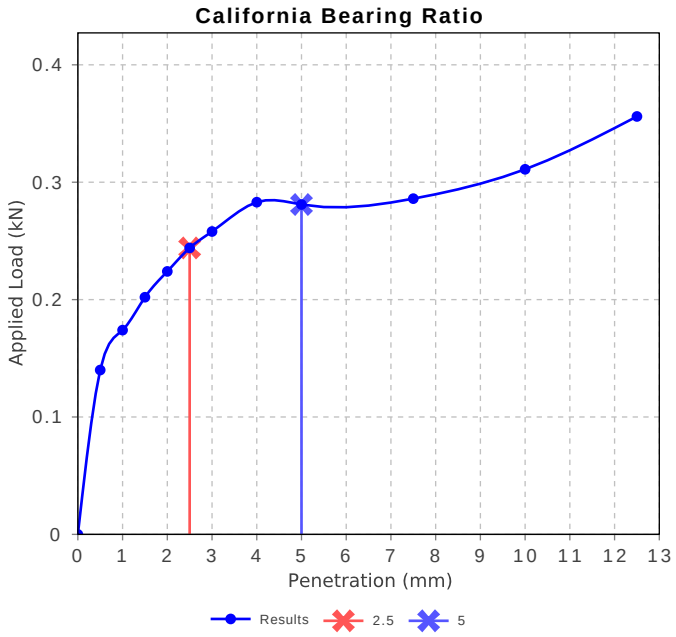
Email: Toowoomba@sqs.net.au

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Kevin Kivinen
Laboratory Manager
NATA Accredited Laboratory Number: 2911

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	2.5 mm		
CBR %	**2.0**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Visual		
Maximum Dry Density (t/m^3)	1.42		
Optimum Moisture Content (%)	29.5		
Laboratory Density Ratio (%)	97.0		
Laboratory Moisture Ratio (%)	100.0		
Dry Density after Soaking (t/m^3)	1.32		
Field Moisture Content (%)	26.6		
Moisture Content at Placement (%)	29.4		
Moisture Content Top 30mm (%)	43.8		
Moisture Content Rest of Sample (%)	34.7		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	4		
Curing Hours	44.1		
Swell (%)	4.5		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)			



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Preparation Method: AS 1289.1.1 - Sampling and preparation of soils
Site Selection: Selected by Client
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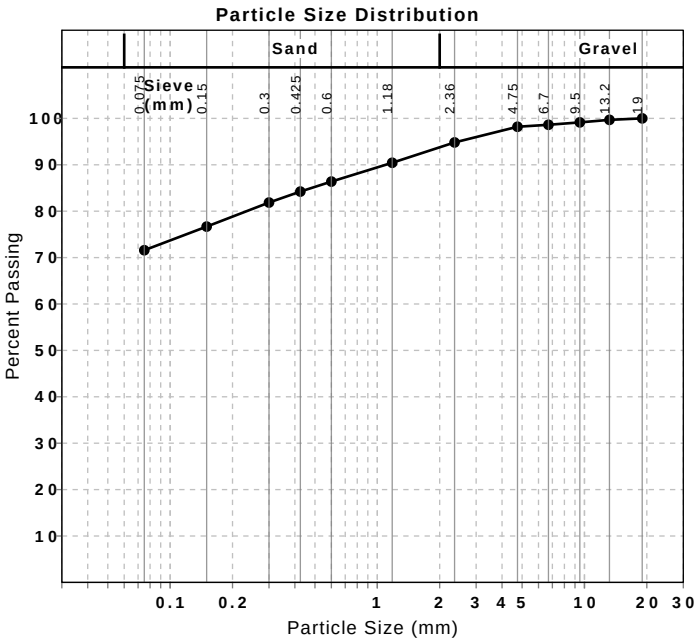
Particle Size Distribution (AS1289 3.6.1 & 2.1.1 & Q253)			
Sieve	Passed %	Passing Limits	
19 mm	**100**		
13.2 mm	**100**		
9.5 mm	**99**		
6.7 mm	**99**		
4.75 mm	**98**		
2.36 mm	**95**		
1.18 mm	**90**		
0.6 mm	**86**		
0.425 mm	**84**		
0.3 mm	**82**		
0.15 mm	**77**		
0.075 mm	**72**		

Particle size and shape properties of a soil (Q253)		Min	Max
Coefficient of Uniformity (D_{60}/D_{10})	775.0		
Fines Ratio	0.85		
Coefficient of Curvature	0.22		
Grading Coefficient			

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1 & Q252)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Passing 0.425 (%)	84		
Liquid Limit (%)	72		
Plastic Limit (%)	20		
Plasticity Index (%)	**52**		
Weighted Plasticity Index (%)	4380		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	**21.0**		
Cracking Crumbling Curling	Cracking & Curling		



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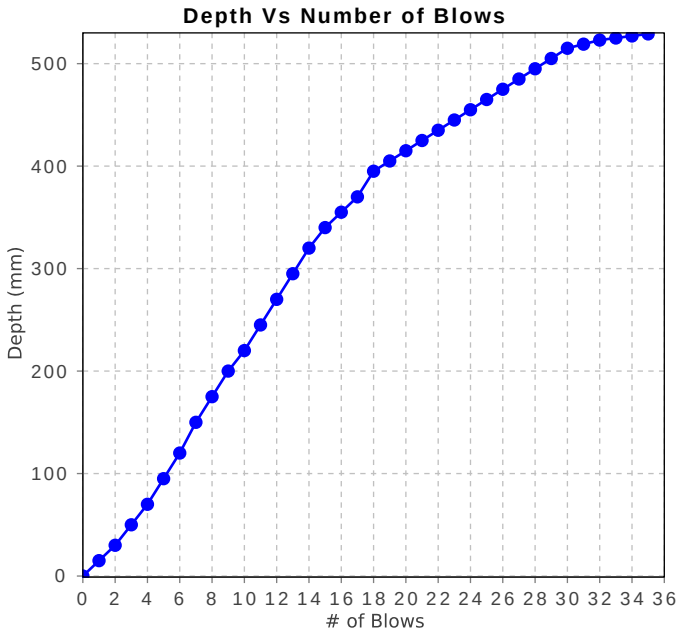
Project Number: T-23-784
Project Name: Harsants Road, Thangool
Work Request: 11182
Sample Number: T-11182A
Date Sampled: 07/06/2023
Dates Tested: 07/06/2023 - 07/06/2023
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method: AS 1289.1.1 - Sampling and preparation of soils
Site Selection: Selected by Client
Sample Location: **Harsants Road, Thangool - Bore Hole 1 E: 271509, N: 7270341, Depth: 350mm - 1000mm**
Material: Refer to Bore Log
Material Source: Onsite Existing / Insitu

Insitu California Bearing Ratio - dynamic cone penetrometer (Q114B)			
Moisture Condition		Moist	
Starting Reference Point		Subgrade	
Layer	Layer Thickness (mm)	Depth (mm)	Equivalent California Bearing Ratio
Subgrade	30	50 - 80	14
Change 1	120	80 - 200	8
Change 2	70	200 - 270	8
Change 3	150	270 - 420	9
Change 4	25	420 - 445	8
Change 5	120	445 - 565	20
Change 56	14	565 - 579	> 60



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Client: Banana Shire Council
P.O Box 412, Biloela Qld 4715
Project Number: T-23-784
Project Name: Harsants Road, Thangool
Work Request: 11182
Sample Number: T-11182B
Date Sampled: 07/06/2023
Dates Tested: 23/06/2023 - 03/07/2023
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method: AS 1289.1.1 - Sampling and preparation of soils
Site Selection: Selected by Client
Sample Location: **Harsants Road, Thangool - Bore Hole 2 E: 271469, N: 7270248, Depth: 0mm - 500mm**
Material: Refer to Bore Log
Material Source: Onsite Existing / Insitu

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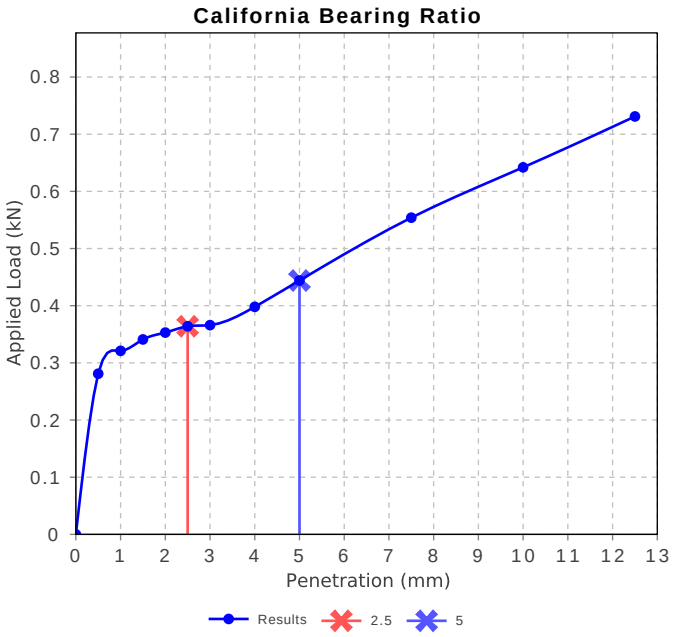
California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	2.5 mm		
CBR %	**3.0**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Visual		
Maximum Dry Density (t/m^3)	1.73		
Optimum Moisture Content (%)	17.0		
Laboratory Density Ratio (%)	97.5		
Laboratory Moisture Ratio (%)	97.5		
Dry Density after Soaking (t/m^3)	1.65		
Field Moisture Content (%)	12.9		
Moisture Content at Placement (%)	16.4		
Moisture Content Top 30mm (%)	24.5		
Moisture Content Rest of Sample (%)	20.9		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	4		
Curing Hours	45.0		
Swell (%)	2.0		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)			



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Project Name: Harsants Road, Thangool
Work Request: 11182
Sample Number: T-11182B
Date Sampled: 07/06/2023
Dates Tested: 23/06/2023 - 04/07/2023
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method: AS 1289.1.1 - Sampling and preparation of soils
Site Selection: Selected by Client
Sample Location: **Harsants Road, Thangool - Bore Hole 2 E: 271469, N: 7270248, Depth: 0mm - 500mm**
Material: Refer to Bore Log
Material Source: Onsite Existing / Insitu

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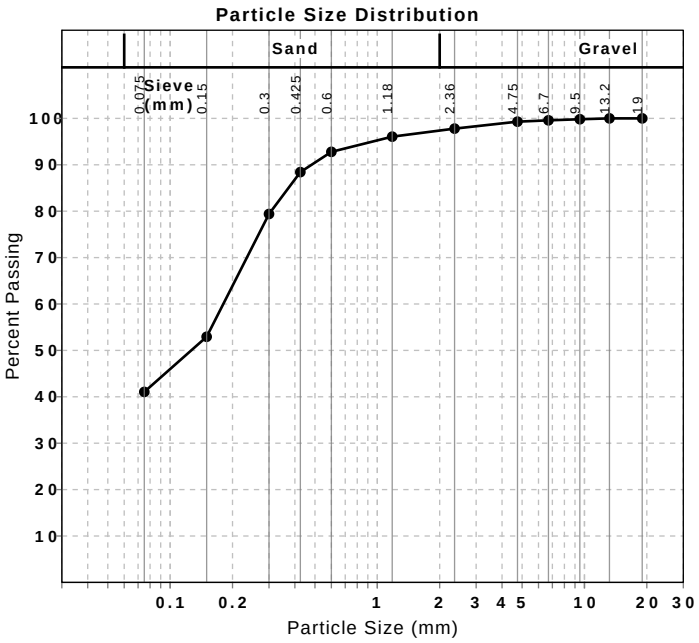
Particle Size Distribution (AS1289 3.6.1 & 2.1.1 & Q253)			
Sieve	Passed %	Passing Limits	
19 mm	**100**		
13.2 mm	**100**		
9.5 mm	**100**		
6.7 mm	**100**		
4.75 mm	**99**		
2.36 mm	**98**		
1.18 mm	**96**		
0.6 mm	**93**		
0.425 mm	**88**		
0.3 mm	**79**		
0.15 mm	**53**		
0.075 mm	**41**		

Particle size and shape properties of a soil (Q253)		Min	Max
Coefficient of Uniformity (D_{60}/D_{10})	14.7		
Fines Ratio	0.46		
Coefficient of Curvature	0.70		
Grading Coefficient			

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1 & Q252)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Passing 0.425 (%)	88		
Liquid Limit (%)	32		
Plastic Limit (%)	12		
Plasticity Index (%)	**20**		
Weighted Plasticity Index (%)	1768		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	**10.0**		
Cracking Crumbling Curling	None		



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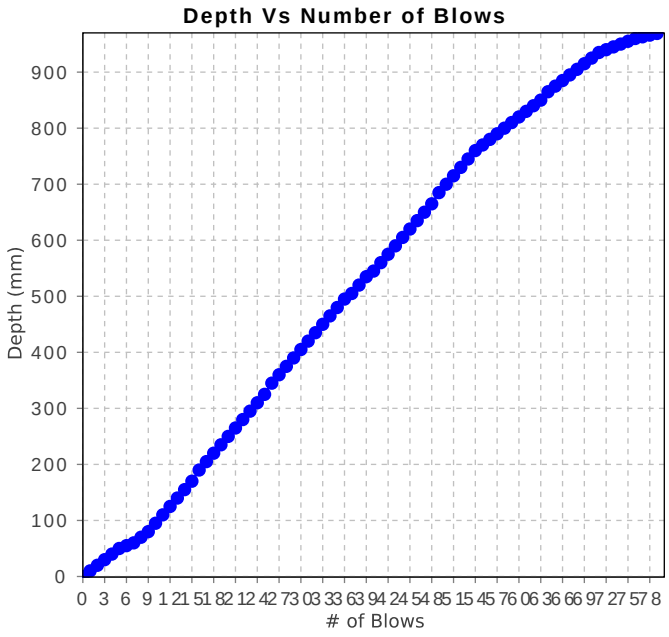
Project Number: T-23-784
Project Name: Harsants Road, Thangool
Work Request: 11182
Sample Number: T-11182B
Date Sampled: 07/06/2023
Dates Tested: 07/06/2023 - 07/06/2023
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method: AS 1289.1.1 - Sampling and preparation of soils
Site Selection: Selected by Client
Sample Location: **Harsants Road, Thangool - Bore Hole 2 E: 271469, N: 7270248, Depth: 0mm - 500mm**
Material: Refer to Bore Log
Material Source: Onsite Existing / Insitu

Insitu California Bearing Ratio - dynamic cone penetrometer (Q114B)			
Moisture Condition		Moist	
Starting Reference Point		Subgrade	
Layer	Layer Thickness (mm)	Depth (mm)	Equivalent California Bearing Ratio
Subgrade	50	50 - 100	20
Change 1	30	100 - 130	30
Change 2	265	130 - 395	13
Change 3	190	395 - 585	14
Change 4	150	585 - 735	14
Change 5	75	735 - 810	14
Change 6	105	810 - 915	20
Change 7	70	915 - 985	20
Change 8	34	985 - 1019	60



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Project Number: T-23-784
Project Name: Harsants Road, Thangool
Work Request: 11182
Sample Number: T-11182C
Date Sampled: 07/06/2023
Dates Tested: 23/06/2023 - 03/07/2023
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method: AS 1289.1.1 - Sampling and preparation of soils
Site Selection: Selected by Client
Sample Location: **Harsants Road, Thangool - Bore Hole 3 E: 271427, N: 7270100, Depth: 350mm - 1000mm**
Material: Refer to Bore Log
Material Source: Onsite Existing / Insitu

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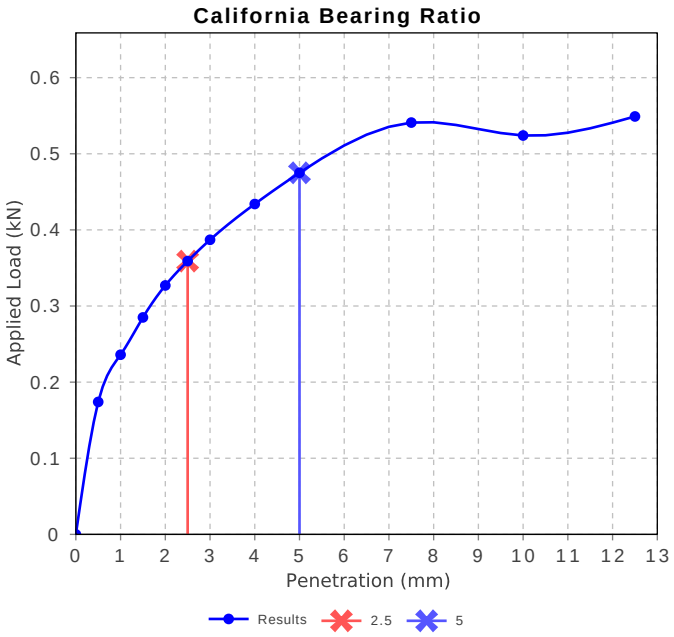
California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	2.5 mm		
CBR %	**2.5**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Visual		
Maximum Dry Density (t/m^3)	1.53		
Optimum Moisture Content (%)	24.0		
Laboratory Density Ratio (%)	97.5		
Laboratory Moisture Ratio (%)	98.0		
Dry Density after Soaking (t/m^3)	1.44		
Field Moisture Content (%)	19.5		
Moisture Content at Placement (%)	23.5		
Moisture Content Top 30mm (%)	31.5		
Moisture Content Rest of Sample (%)	29.0		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	4		
Curing Hours	45.6		
Swell (%)	3.5		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)			



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Sample Number: T-11182C
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Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method: AS 1289.1.1 - Sampling and preparation of soils
Site Selection: Selected by Client
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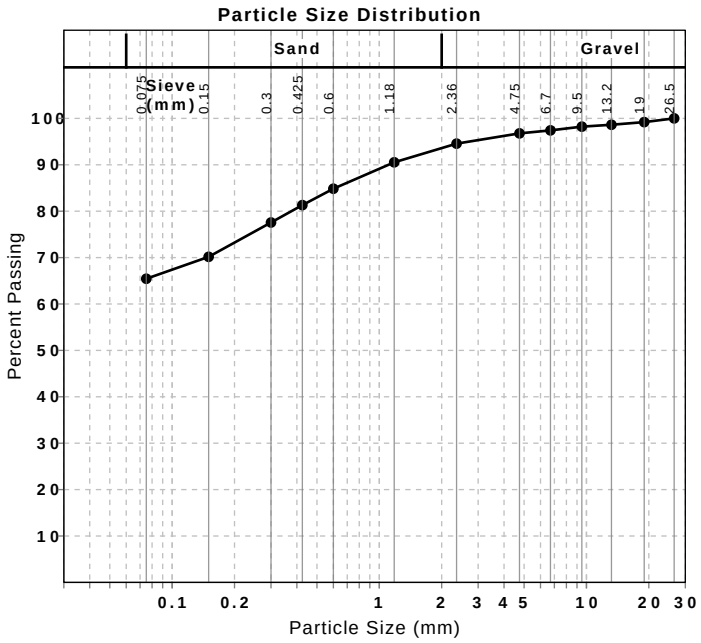
Particle Size Distribution (AS1289 3.6.1 & 2.1.1 & Q253)			
Sieve	Passed %	Passing Limits	
26.5 mm	**100**		
19 mm	**99**		
13.2 mm	**99**		
9.5 mm	**98**		
6.7 mm	**97**		
4.75 mm	**97**		
2.36 mm	**95**		
1.18 mm	**91**		
0.6 mm	**85**		
0.425 mm	**81**		
0.3 mm	**78**		
0.15 mm	**70**		
0.075 mm	**65**		



Particle size and shape properties of a soil (Q253)		Min	Max
Coefficient of Uniformity (D_{60}/D_{10})	1689.0		
Fines Ratio	0.80		
Coefficient of Curvature	0.26		
Grading Coefficient	5.3		

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1 & Q252)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Passing 0.425 (%)	81		
Liquid Limit (%)	53		
Plastic Limit (%)	14		
Plasticity Index (%)	**39**		
Weighted Plasticity Index (%)	3171		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	**16.0**		
Cracking Crumbling Curling	Cracking		

Material Test Report

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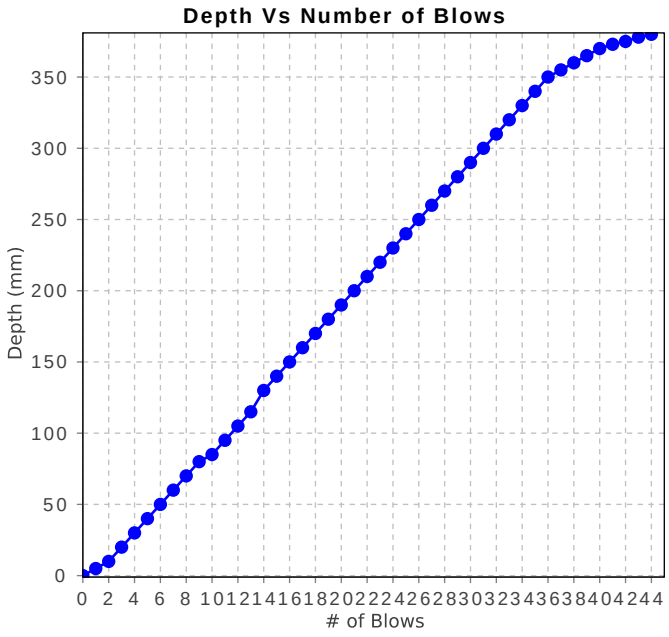
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method: AS 1289.1.1 - Sampling and preparation of soils
Site Selection: Selected by Client
Sample Location: **Harsants Road, Thangool - Bore Hole 3 E: 271427, N: 7270100, Depth: 350mm - 1000mm**
Material: Refer to Bore Log
Material Source: Onsite Existing / Insitu

Insitu California Bearing Ratio - dynamic cone penetrometer (Q114B)			
Moisture Condition		Moist	
Starting Reference Point		Subgrade	
Layer	Layer Thickness (mm)	Depth (mm)	Equivalent California Bearing Ratio
Subgrade	10	50 - 60	50
Change 1	75	60 - 135	25
Change 2	45	135 - 180	19
Change 3	220	180 - 400	20
Change 4	23	400 - 423	50
Change 5	7	423 - 430	> 60



Material Test Report

Report Number: **T-23-784-1**
Issue Number: 1
Date Issued: 10/07/2023
Client: Banana Shire Council
P.O Box 412, Biloela Qld 4715
Project Number: T-23-784
Project Name: Harsants Road, Thangool
Work Request: 11182
Date Sampled: 07/06/2023
Dates Tested: 23/06/2023 - 27/06/2023
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method: AS 1289.1.1 - Sampling and preparation of soils
Site Selection: Selected by Client
Location: Harsants Road, Thangool - Subgrade Investigation
Material: Refer to Bore Log
Material Source: Onsite Existing / Insitu

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Approved Signatory: Kevin Kivinen
Laboratory Manager
NATA Accredited Laboratory Number: 2911

Moisture Content AS 1289 2.1.1

Sample Number	Sample Location	Moisture Content (%)	Min	Max	Material
T-11182A	Harsants Road, Thangool - Bore Hole 1 E: 271509, N: 7270341, Depth: 350mm - 1000mm	26.6 %	**	**	Refer to Bore Log
T-11182B	Harsants Road, Thangool - Bore Hole 2 E: 271469, N: 7270248, Depth: 0mm - 500mm	12.9 %	**	**	Refer to Bore Log
T-11182C	Harsants Road, Thangool - Bore Hole 3 E: 271427, N: 7270100, Depth: 350mm - 1000mm	19.5 %	**	**	Refer to Bore Log

Material Test Report

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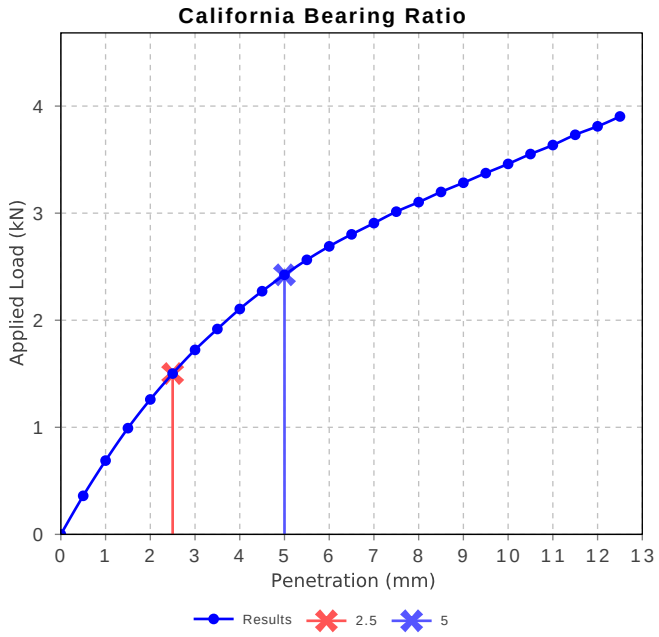
Approved Signatory: Kevin Kivinen
Laboratory Manager
NATA Accredited Laboratory Number: 2911

Report Number: **T-23-784-2**
Issue Number: 1
Date Issued: 10/07/2023
Client: Banana Shire Council
P.O Box 412, Biloela Qld 4715
Project Number: T-23-784
Project Name: Harsants Road, Thangool
Work Request: 11181
Sample Number: T-11181A
Date Sampled: 07/06/2023
Dates Tested: 23/06/2023 - 03/07/2023
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method: Q101A - Sample combination and splitting
Site Selection: Selected by Client
Sample Location: **Harsants Road, Thangool - Bore Hole 1 E: 271509, N: 7270341, Depth: 0mm - 350mm**
Material: Refer to Bore Log
Material Source: Existing Pavement Material

California Bearing Ratio (Q113C & AS 1289.2.1.1)		Min	Max
CBR % (at 2.5 mm)	11		
CBR % (at 5 mm)	12		
CBR %	**12**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	Q142A & AS 1289.2.1.1 & Q143		
Method used to Determine Plasticity	Visual		
Maximum Dry Density (t/m^3)	1.97		
Optimum Moisture Content (%)	11.5		
Target Dry Density (t/m^3)	1.97		
Achieved Dry Density (t/m^3)	1.97		
Target Laboratory Density Ratio (%)	100		
Laboratory Density Ratio (%)	100.0		
Target Moisture Content (%)	11.4		
Achieved Moisture Content (%)	11.4		
Target Laboratory Moisture Ratio (%)	100		
Laboratory Moisture Ratio (%)	100.5		
Dry Density after Soaking (t/m^3)	1.96		
Field Moisture Content (%)			
Moisture Content at Placement (%)	11.4		
Moisture Content Top 30mm (%)	15.2		
Moisture Content Rest of Sample (%)	13.3		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	4		
Test Condition	Soaked		
Curing Hours	23.0		
Swell (%)	0.3		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)			



Material Test Report

Report Number: **T-23-784-2**
Issue Number: 1
Date Issued: 10/07/2023
Client: Banana Shire Council
P.O Box 412, Biloela Qld 4715
Project Number: T-23-784
Project Name: Harsants Road, Thangool
Work Request: 11181
Sample Number: T-11181A
Date Sampled: 07/06/2023
Dates Tested: 23/06/2023 - 09/07/2023
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method: Q101A - Sample combination and splitting
Site Selection: Selected by Client
Sample Location: **Harsants Road, Thangool - Bore Hole 1 E: 271509, N: 7270341, Depth: 0mm - 350mm**
Material: Refer to Bore Log
Material Source: Existing Pavement Material

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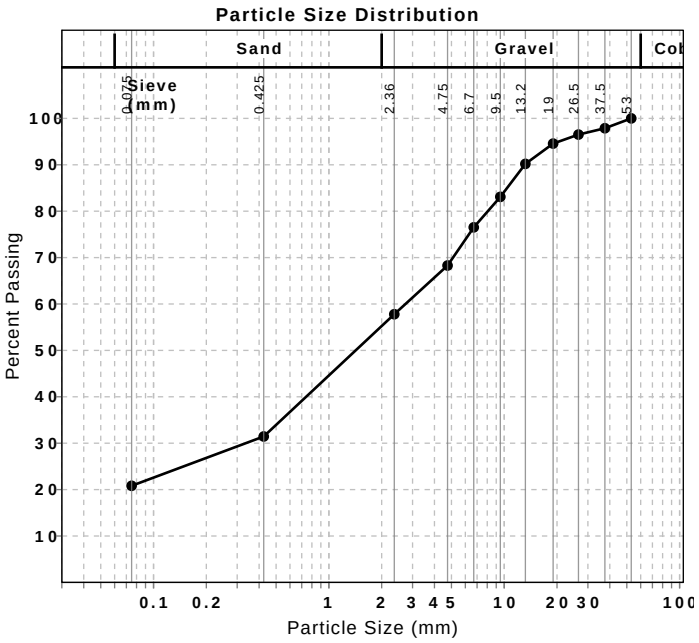
Approved Signatory: Kevin Kivinen
Laboratory Manager
NATA Accredited Laboratory Number: 2911

Particle Size Distribution (Q103A & AS 1289.2.1.1 & Q253)			
Sieve	Passed %	Passing Limits	
53 mm	**100**		
37.5 mm	**98**		
26.5 mm	**97**		
19 mm	**95**		
13.2 mm	**90**		
9.5 mm	**83**		
6.7 mm	**77**		
4.75 mm	**68**		
2.36 mm	**58**		
0.425 mm	**31**		
0.075 mm	**21**		

Particle size and shape properties of a soil (Q253)		Min	Max
Coefficient of Uniformity (D_{60}/D_{10})	212.8		
Fines Ratio	0.66		
Coefficient of Curvature	3.2		
Grading Coefficient	26.4		

Atterberg Limit (Q104D & Q105 & AS 1289.2.1.1)		Min	Max
Liquid Limit (%)	30.8		
Plastic Limit (%)	18.4		
Plasticity Index (%)	**12.4**		
Weighted Plasticity Index (%)	390		

Linear Shrinkage (Q106)		Min	Max
Linear Shrinkage (%)	**8.4**		
Weighted Linear Shrinkage (%)	266		



Material Test Report

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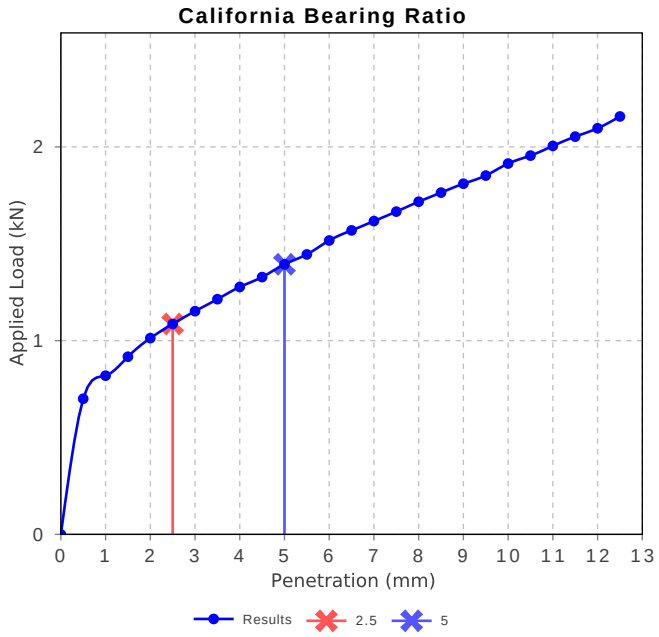
Approved Signatory: Kevin Kivinen
Laboratory Manager
NATA Accredited Laboratory Number: 2911

Report Number: **T-23-784-2**
Issue Number: 1
Date Issued: 10/07/2023
Client: Banana Shire Council
P.O Box 412, Biloela Qld 4715
Project Number: T-23-784
Project Name: Harsants Road, Thangool
Work Request: 11181
Sample Number: T-11181B
Date Sampled: 07/06/2023
Dates Tested: 23/06/2023 - 03/07/2023
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method: Q101A - Sample combination and splitting
Site Selection: Selected by Client
Sample Location: **Harsants Road, Thangool - Bore Hole 3 E: 271427, N: 7270100, Depth: 0mm - 200mm**
Material: Refer to Bore Log
Material Source: Existing Pavement Material

California Bearing Ratio (Q113C & AS 1289.2.1.1)		Min	Max
CBR % (at 2.5 mm)	8		
CBR % (at 5 mm)	7		
CBR %	**8**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	Q142A & AS 1289.2.1.1 & Q143		
Method used to Determine Plasticity	Visual		
Maximum Dry Density (t/m^3)	1.99		
Optimum Moisture Content (%)	12.0		
Target Dry Density (t/m^3)	1.99		
Achieved Dry Density (t/m^3)	1.99		
Target Laboratory Density Ratio (%)	100		
Laboratory Density Ratio (%)	100.0		
Target Moisture Content (%)	11.8		
Achieved Moisture Content (%)	11.6		
Target Laboratory Moisture Ratio (%)	100		
Laboratory Moisture Ratio (%)	98.5		
Dry Density after Soaking (t/m^3)	1.99		
Field Moisture Content (%)			
Moisture Content at Placement (%)	11.6		
Moisture Content Top 30mm (%)	14.1		
Moisture Content Rest of Sample (%)	13.2		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	4		
Test Condition	Soaked		
Curing Hours	2.5		
Swell (%)	0.2		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)			



Material Test Report

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Approved Signatory: Kevin Kivinen
Laboratory Manager
NATA Accredited Laboratory Number: 2911

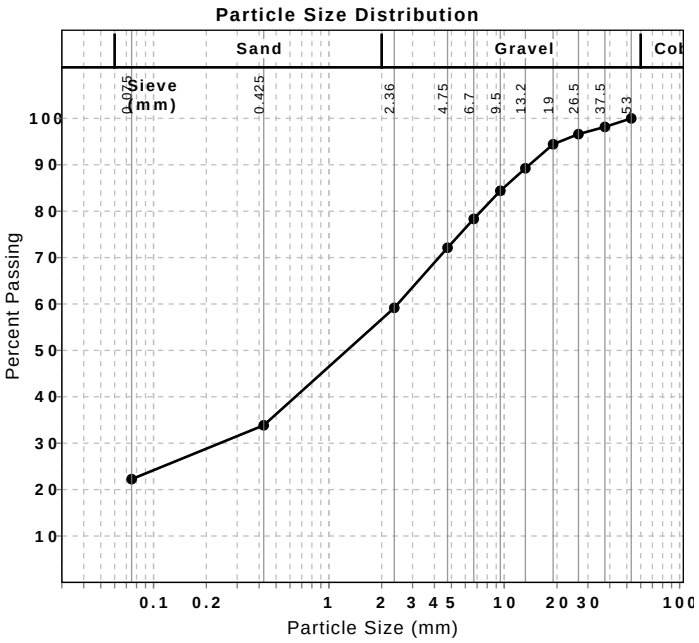
Report Number: **T-23-784-2**
Issue Number: 1
Date Issued: 10/07/2023
Client: Banana Shire Council
P.O Box 412, Biloela Qld 4715
Project Number: T-23-784
Project Name: Harsants Road, Thangool
Work Request: 11181
Sample Number: T-11181B
Date Sampled: 07/06/2023
Dates Tested: 23/06/2023 - 10/07/2023
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method: Q101A - Sample combination and splitting
Site Selection: Selected by Client
Sample Location: **Harsants Road, Thangool - Bore Hole 3 E: 271427, N: 7270100, Depth: 0mm - 200mm**
Material: Refer to Bore Log
Material Source: Existing Pavement Material

Particle Size Distribution (Q103A & AS 1289.2.1.1 & Q253)			
Sieve	Passed %	Passing Limits	
53 mm	**100**		
37.5 mm	**98**		
26.5 mm	**97**		
19 mm	**94**		
13.2 mm	**89**		
9.5 mm	**84**		
6.7 mm	**78**		
4.75 mm	**72**		
2.36 mm	**59**		
0.425 mm	**34**		
0.075 mm	**22**		

Particle size and shape properties of a soil (Q253)		Min	Max
Coefficient of Uniformity (D_{60}/D_{10})	205.4		
Fines Ratio	0.66		
Coefficient of Curvature	1.9		
Grading Coefficient	27.0		

Atterberg Limit (Q104D & Q105 & AS 1289.2.1.1)		Min	Max
Liquid Limit (%)	32.0		
Plastic Limit (%)	18.6		
Plasticity Index (%)	**13.4**		
Weighted Plasticity Index (%)	454		

Linear Shrinkage (Q106)		Min	Max
Linear Shrinkage (%)	**9.6**		
Weighted Linear Shrinkage (%)	327		



APPENDIX 2
SITE LOCATIONS
(INCLUDING TEST PIT LOCATIONS BORE LOGS AND SITE PHOTOGRAPHS

CLIENT:	BANANA SHIRE COUNCIL	E: 271509	BH No.
PROJECT:	CROWSDALE CAMBOON	N: 7270341	1
LOCATION:	HARSANTS ROAD FLOODWAY - THANGOOL	Date: 07/06/2023	

Hole Depth (m)	Soil Origin	Soil Code	SOIL DESCRIPTION (AS 1726)	Consistency / Density	FIELD TEST / SAMPLES		DCP	
					Test Type & Depth Range (m)	RESULT (%)	Test Depth (m)	Blows
0.0		GC	Clayey GRAVEL, brown, dry, medium grained gravel, Medium plastic fines	Hard	CBR	12	0.00 – 0.10	-
0.1			"				0.10 – 0.20	-
0.2		"	"				0.23 – 0.30	
0.35		CH	Silty CLAY, brown, high plasticity, fine grained, moist	Stiff	CBR M/C	2.0 26.6	0.30 – 0.40	5
0.4		"	"				0.40 – 0.50	4
0.5		"	"				0.50 – 0.60	5
0.6		"	"				0.60 – 0.70	5
0.7		"	"				0.70 – 0.80	10
0.8		"	"				0.80 – 0.90	6+
0.9		"	"				0.90 - 1.00	Refusal
1.0		"	"				1.00 – 1.10	

Rig Type	ADDITIONAL NOTES (seepages, delays etc.)	Termination Depth (m)
Truck	PROJECT NO. T-23-784	1.0
Auger Type		
300mm Diameter		

LEGEND: **D**= Disturbed Bag, **SPT** = Standard Penetration Test, **U50**=Undisturbed 50mm Tube, **PP**= Pocket Penetrometer, **DCP**=Dynamic Cone Penetrometer

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CLIENT:	BANANA SHIRE COUNCIL	E: 271469	BH No.
PROJECT:	CROWSDALE CAMBOON	N: 7270248	2
LOCATION:	HARSANTS ROAD FLOODWAY - THANGOOL	Date: 07/06/2023	

Hole Depth (m)	Soil Origin	Soil Code	SOIL DESCRIPTION (AS 1726)	Consistency / Density	FIELD TEST / SAMPLES		DCP	
					Test Type & Depth Range (m)	RESULT (%)	Test Depth (m)	Blows
0.0		CL	Sandy Silty CLAY, brown, low plasticity, fine grained, moist	Firm	CBR M/C	3.0 12.9	0.00 – 0.10	10
0.1		"	"				0.10 – 0.20	6
0.2		"	"				0.23 – 0.30	7
0.3		"	"				0.30 – 0.40	6
0.4		"	"				0.40 – 0.50	7
0.5		"	Terminated				0.50 – 0.60	7

Rig Type	ADDITIONAL NOTES (seepages, delays etc.)	Termination Depth (m)
Truck	PROJECT NO. T-23-784	0.50
Auger Type		
300mm Diameter		

LEGEND: **D**= Disturbed Bag, **SPT** = Standard Penetration Test, **U50**=Undisturbed 50mm Tube, **PP**= Pocket Penetrometer, **DCP**=Dynamic Cone Penetrometer

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CLIENT: BANANA SHIRE COUNCIL	E: 271427	BH No.
PROJECT: CROWSDALE CAMBOON	N: 7270100	3
LOCATION: HARSANTS ROAD FLOODWAY - THANGOOL	Date: 07/06/2023	

Hole Depth (m)	Soil Origin	Soil Code	SOIL DESCRIPTION (AS 1726)	Consistency / Density	FIELD TEST / SAMPLES		DCP	
					Test Type & Depth Range (m)	RESULT (%)	Test Depth (m)	Blows
0.0		GC	Clayey GRAVEL, brown, dry, medium grained gravel, Medium plastic fines	Hard	CBR	8	0.00 – 0.10	-
0.1			"				0.10 – 0.20	-
0.2		CH	Silty CLAY, red, high plasticity, fine grained, moist	Stiff	CBR M/C	2.5 19.5	0.23 – 0.30	12
0.3		"	"				0.30 – 0.40	9
0.4		"	"				0.40 – 0.50	10
0.5		"	"				0.50 – 0.60	13+
0.6		"	"				0.60 – 0.70	Refusal
0.7		"	"				0.70 – 0.80	
0.8		"	"				0.80 – 0.90	
0.9		"	"				0.90 - 1.00	
1.0		"	"				1.00 – 1.10	

Rig Type	ADDITIONAL NOTES (seepages, delays etc.)	Termination Depth (m)
Truck	PROJECT NO. T-23-784	1.0
Auger Type		
300mm Diameter		

LEGEND: **D**= Disturbed Bag, **SPT** = Standard Penetration Test, **U50**=Undisturbed 50mm Tube, **PP**= Pocket Penetrometer, **DCP**=Dynamic Cone Penetrometer

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HARSANTS ROAD – THANGOOL