

CONE PENETRATION TEST

CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Oonoonba

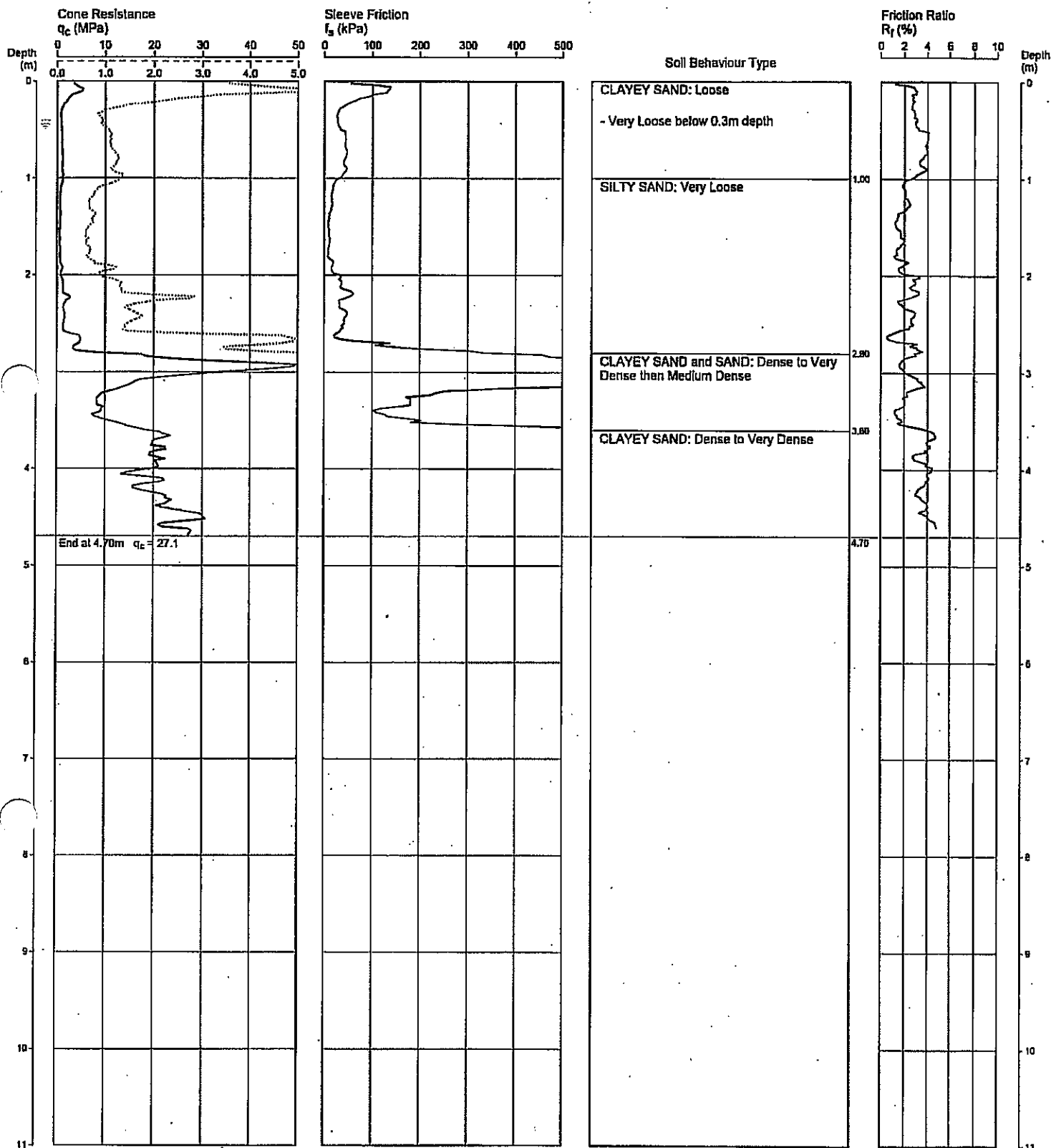
PROJECT No: 50888

28

Page 1 of 1

DATE 15/04/2010

SURFACE RL: 3.4m AHD



REMARKS: GPS: 480020E, 7887222N

Date
Plotted
Checked

File: P:\50888 - OONONBA, Factual Geotechnical Investigation, DPI Site\Gint or CPT logs\50888-2
Cone ID: CONE-152 Type: 2 Standard

ConePlot Version 5.8.1
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CONE PENETRATION TEST

CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Oranooka

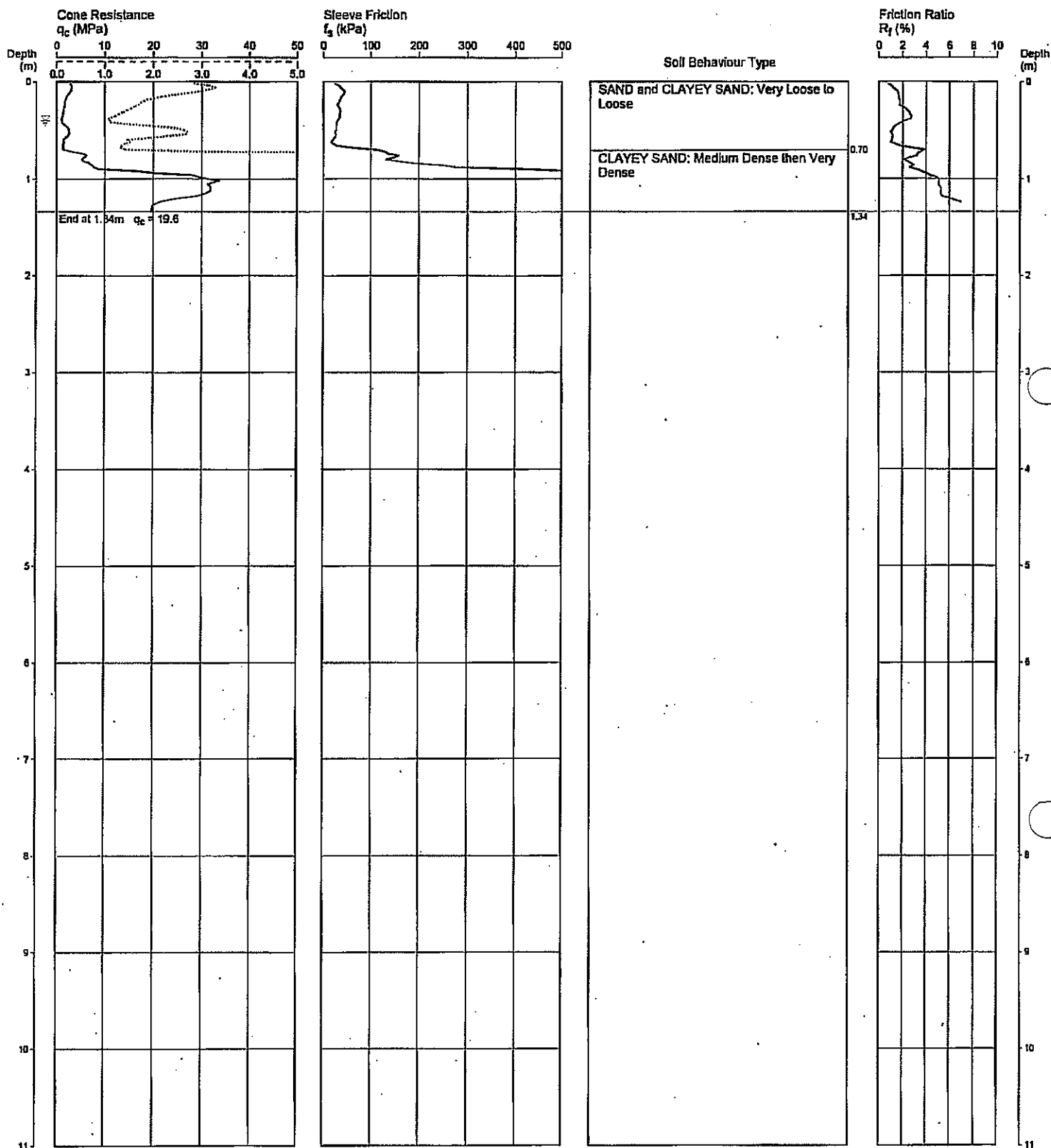
PROJECT No: 50888

29B

Page 1 of 1

DATE 15/04/2010

SURFACE RL: 0.4m AHD



REMARKS: GPS: 479879E, 7667261N

Date
Plotted
Checked

File: P:\50888 - ORANOOKA, Factual Geotechnical Investigation, DPI Site/Gint or CPT logs\50888029
Cone ID: CONE-152 Type: 2 Standard

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CONE PENETRATION TEST

CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Oonoonba

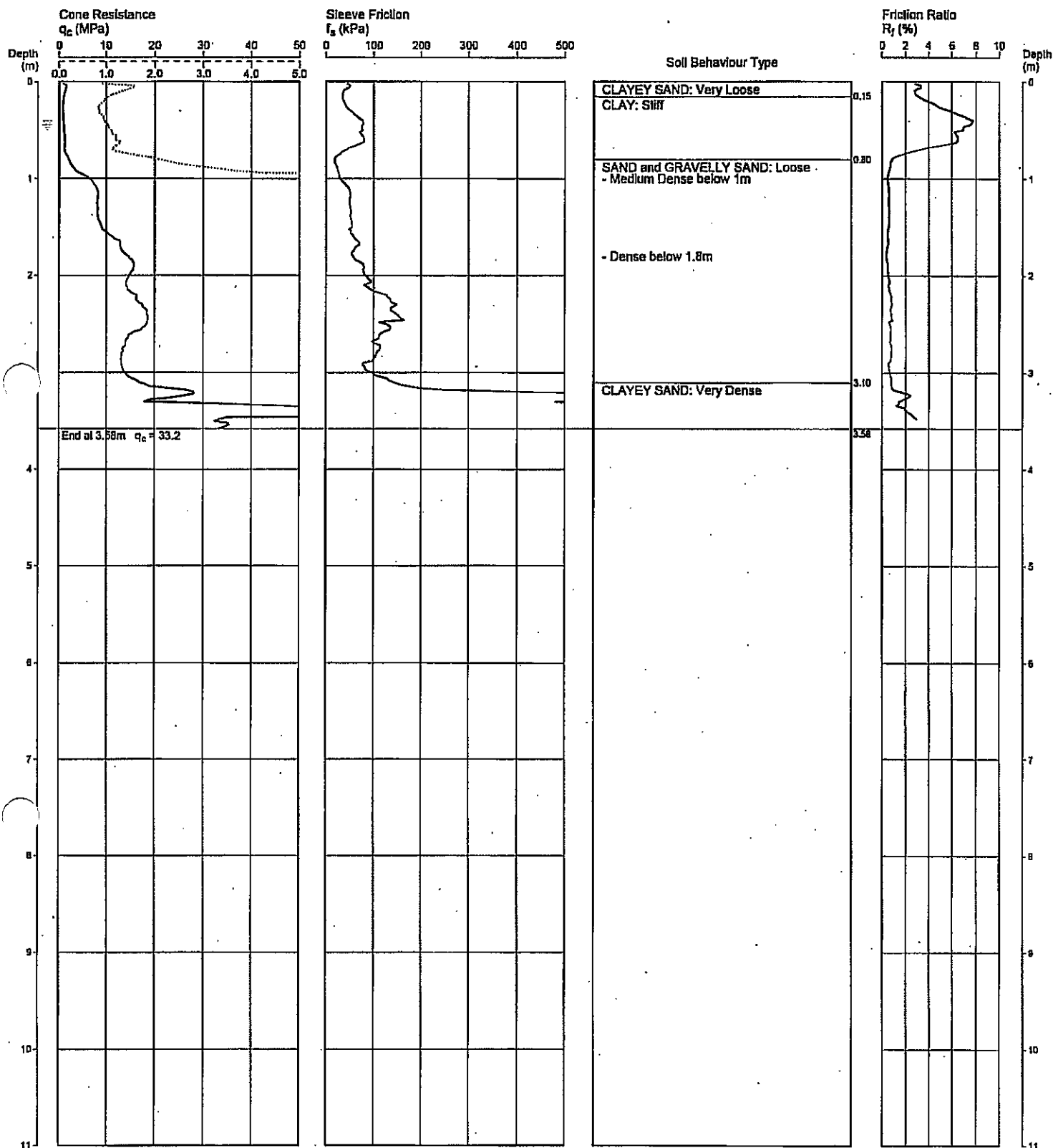
PROJECT No: 50888

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DATE 15/04/2010

SURFACE RL: 4m AHD



REMARKS: GPS: 479987E, 7867350N

Date
Plotted
Checked

File: P\50888 - OONONBA, Factual Geotechnical Investigation, DPI SiteGInt or CPT logs\50888-3
Cone ID: CONE-152 Type: 2 Standard

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CONE PENETRATION TEST

CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Concoona

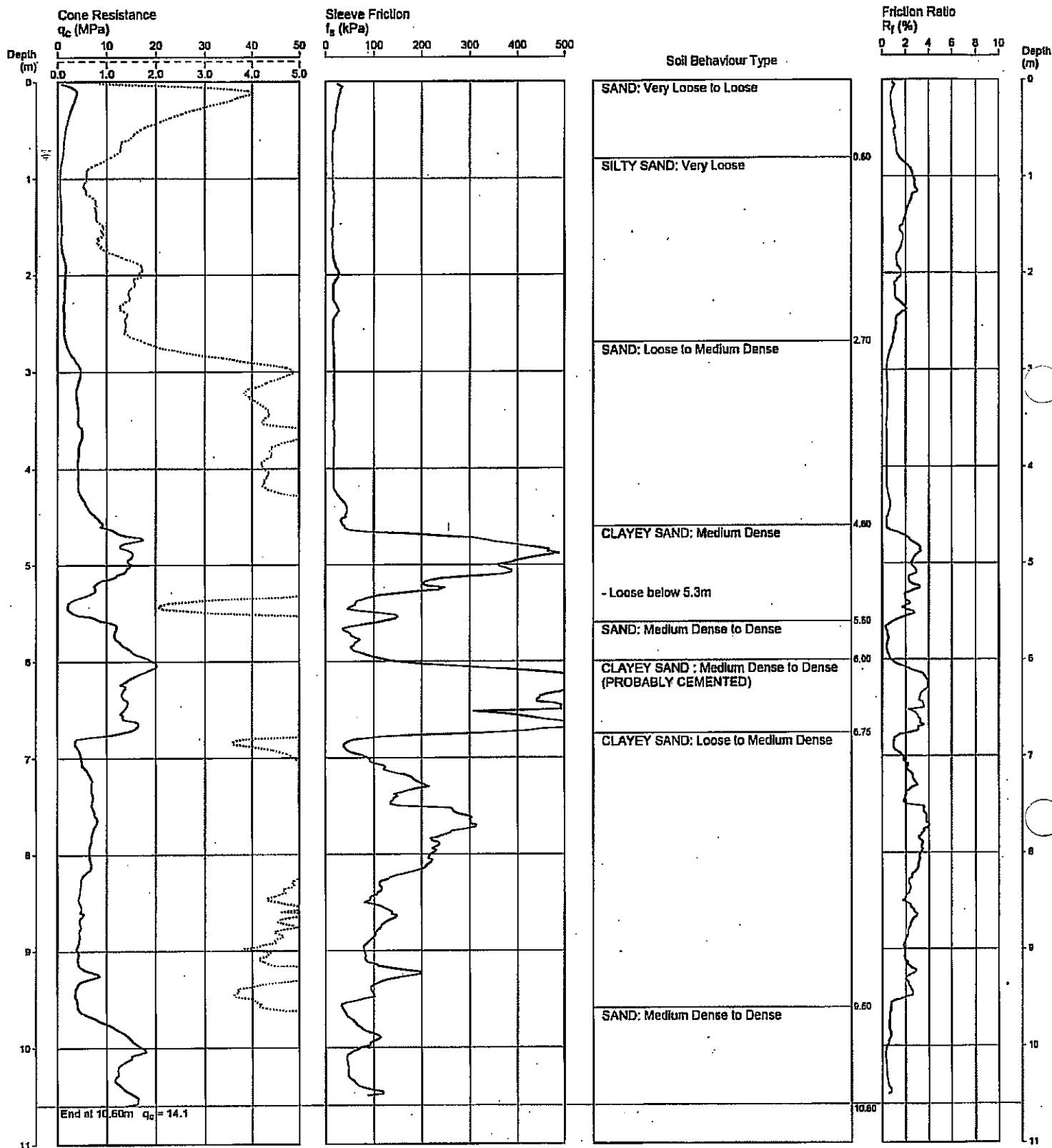
PROJECT No: 50888

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DATE 15/04/2010

SURFACE RL: 5m AHD



REMARKS: GPS: 480122E, 7867366N

Date
Plotted
Checked

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Cone ID: CONE-152 Type: 2 Standard

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CONE PENETRATION TEST

CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Oonoonba

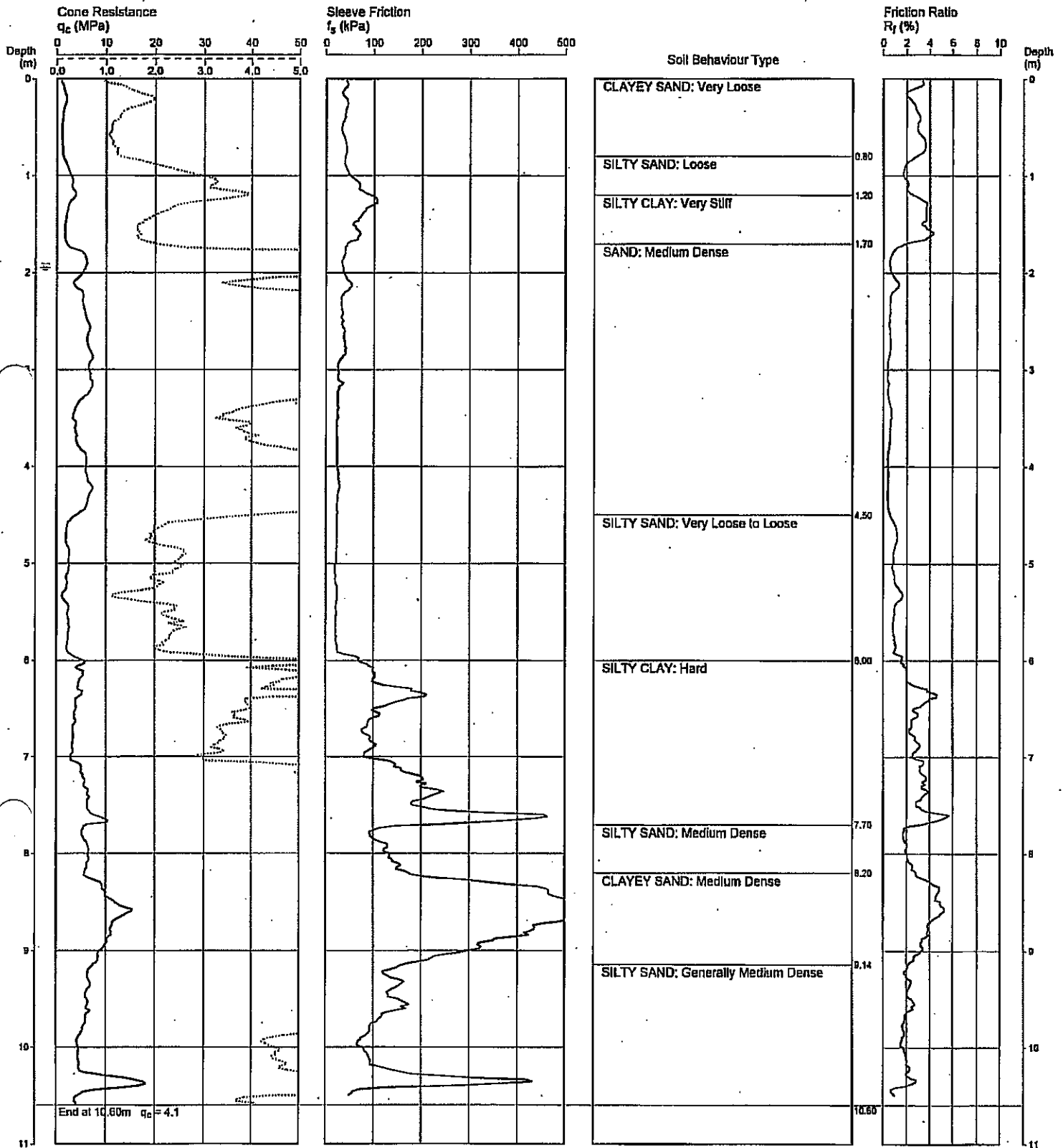
PROJECT No: 50888

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DATE 15/04/2010

SURFACE RL: 3.4m AHD



REMARKS: GPS: 480376E, 7867599N

Date
Plotted
Checked

File: P:\50888 - OONONBA, Factual Geotechnical Investigation, DPI Site\Gint or CPT logs\50888-3
Cone ID: CONE-152 Type: 2 Standard

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CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Conoonba

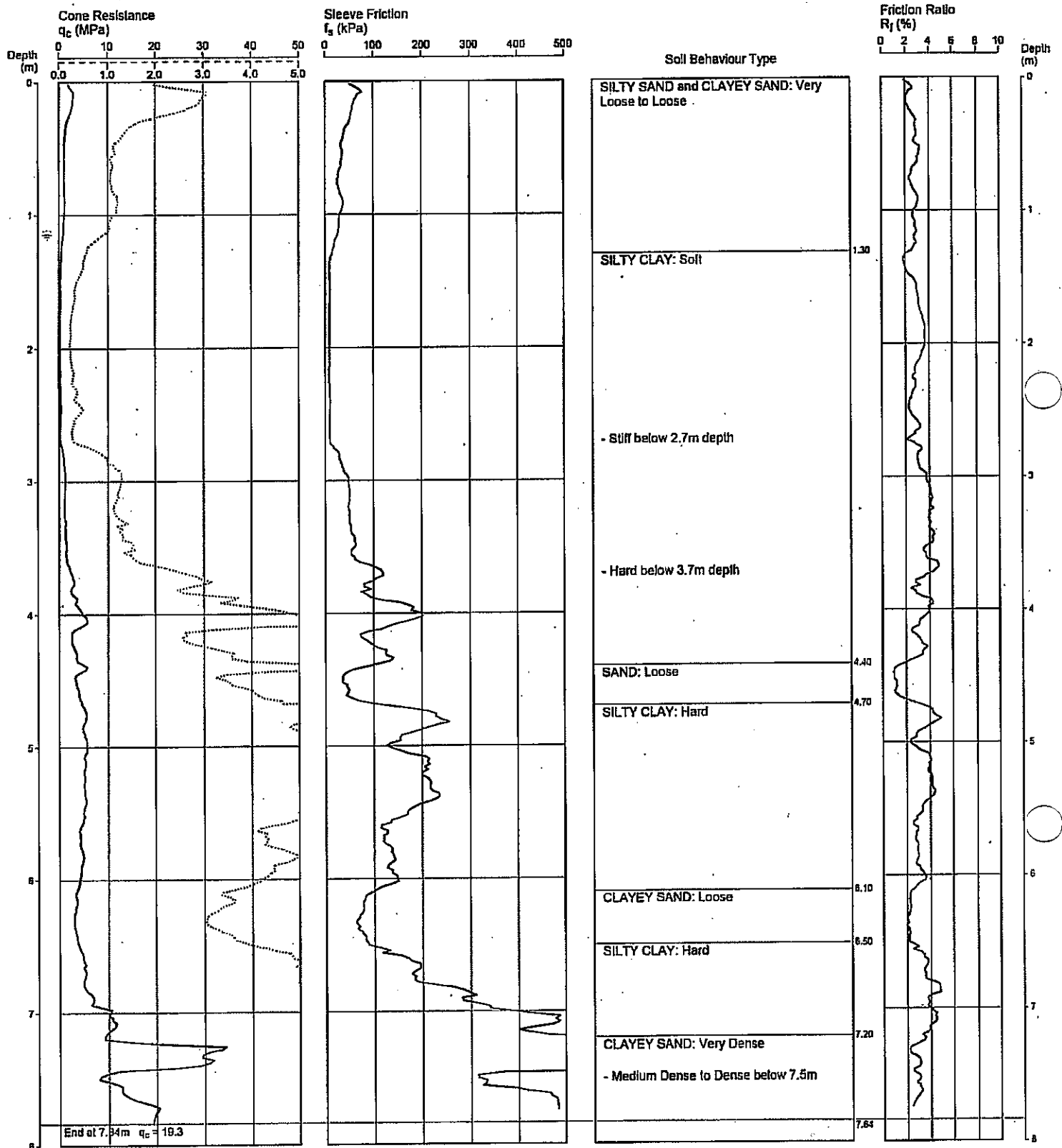
PROJECT No: 50888

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DATE 15/04/2010

SURFACE RL: 2.6m AHD



REMARKS: GPS: 480366E, 7867355N

Date
Plotted
Checked

File: P:\50888 - CONOONBA, Factual Geotechnical Investigation, DPI Site/Gint or CPT logs\50888-3
Cone ID: CONE-152 Type: 2 Standard
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CONE PENETRATION TEST

CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Oronooba

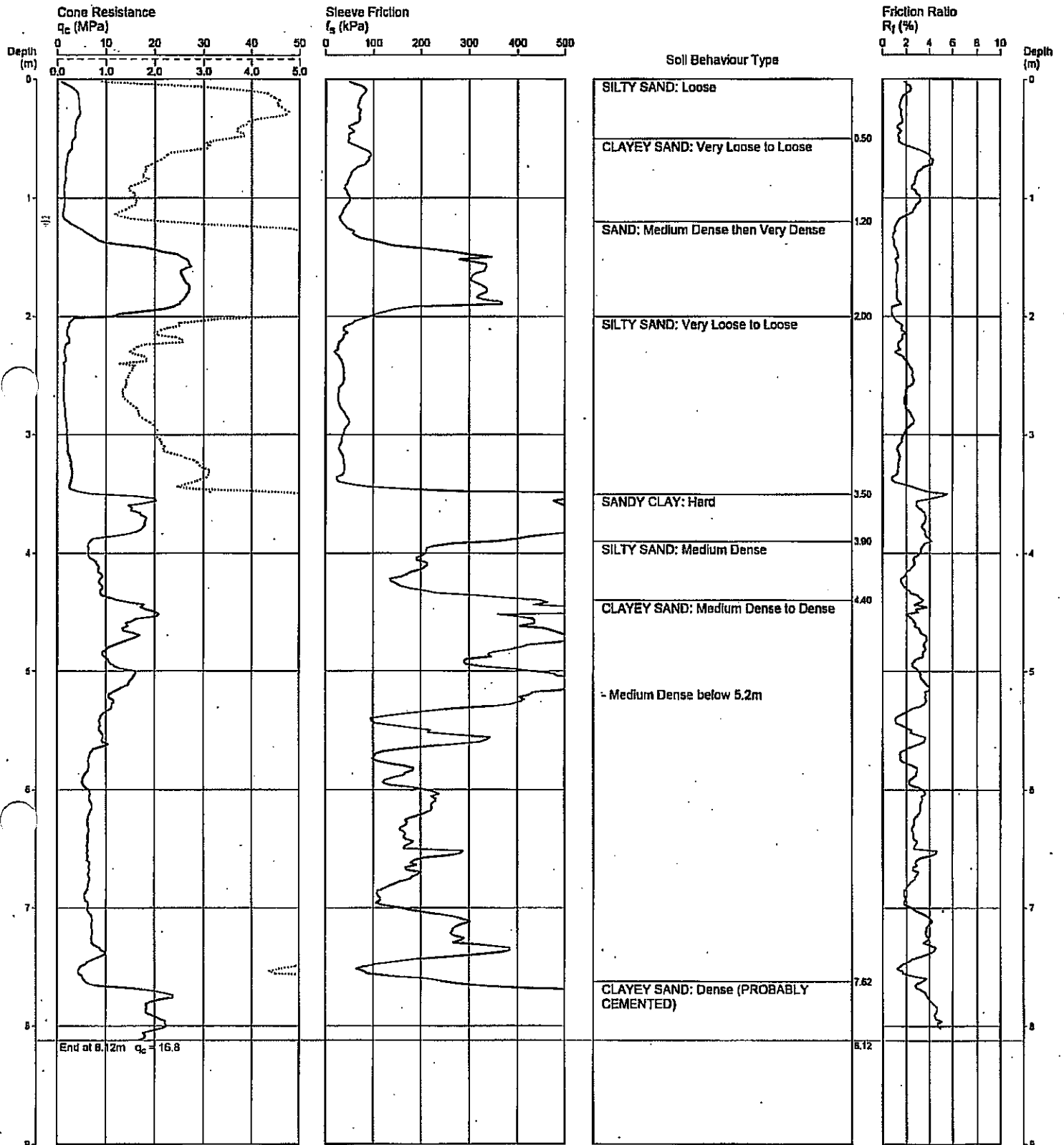
PROJECT No: 50888

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DATE 15/04/2010

SURFACE RL: 3.3m AHD



REMARKS: GPS: 480320E, 7667183N

Date
Plotted
Checked

File: P:50888 - OROONOBA, Factual Geotechnical Investigation, DPI Site/Gint or CPT logs/50888-3
Cone ID: CONE-152 Type: 2 Standard

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CONE PENETRATION TEST

CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Oonoonba

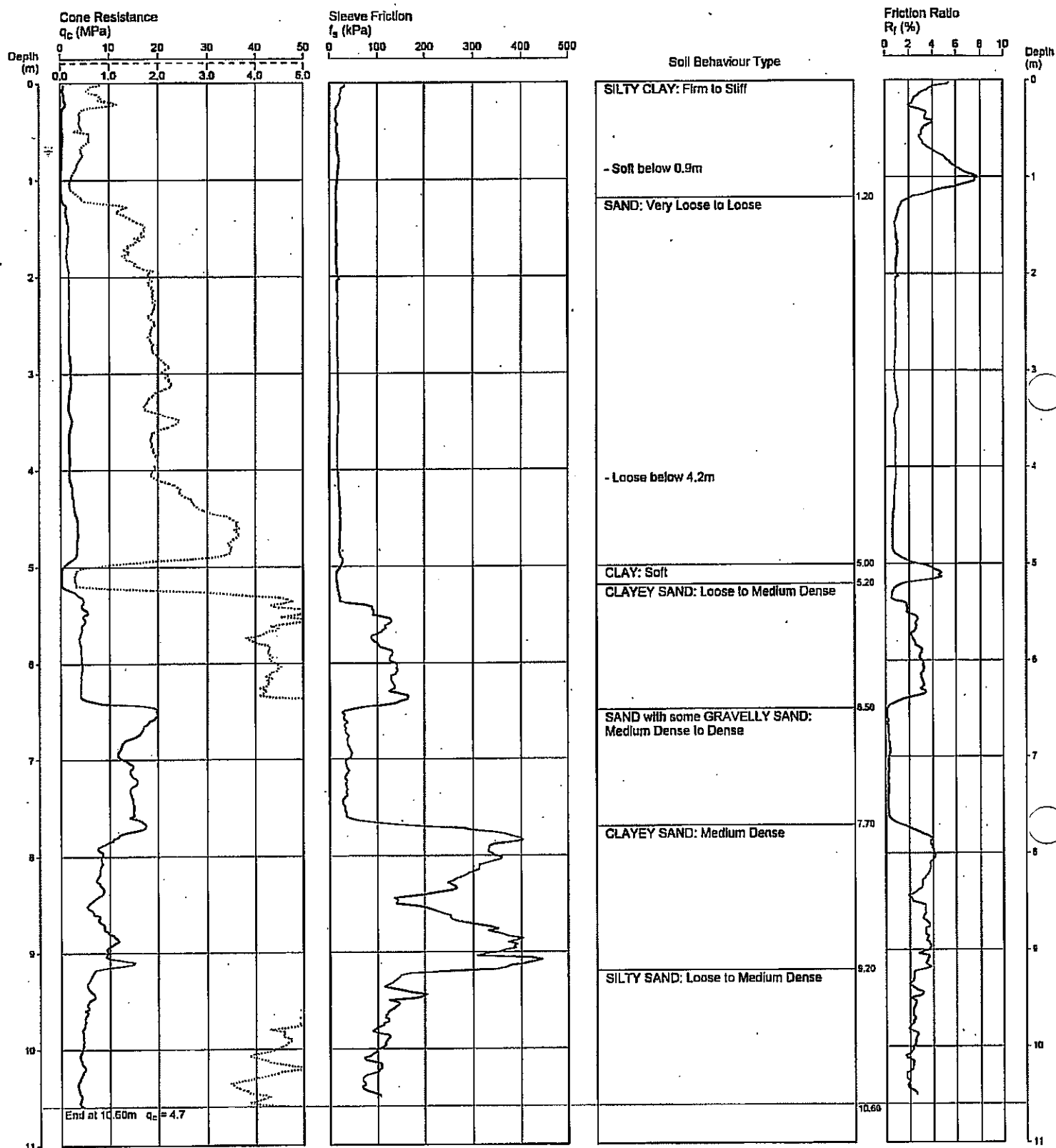
PROJECT No: 50888

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DATE 15/04/2010

SURFACE RL: 2.8m AHD



REMARKS: GPS: 479899E, 7867411N

Date
 Plotted
 Checked

File: P:\50888 - OONONBA, Factual Geotechnical Investigation, DPI Site/Gint or CPT logs\50888-3
 Cone ID: CONE-152 Type: 2 Standard
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TEST PIT LOG

CLIENT: AECOM Australia Pty Ltd
PROJECT: Oonoonba DPI
LOCATION: Oonoonba

SURFACE LEVEL: 4 AHD
EASTING: 486410
NORTHING: 7867010
DIP/AZIMUTH: 90°/-

PIT No: 2
PROJECT No: 50888
DATE: 16 Apr 10
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per 150mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
	0.25	FILLING - Light brown silty clay; M<<Wp			0.2		pp 80-120 kPa					
	0.35	SILTY CLAY - Very stiff brown silty clay; M<<Wp										
	0.65	SANDY GRAVELLY SILT - Medium dense dark brown sandy gravelly silt; fine to coarse grained sand fraction; humid			0.4		pp 150-240 kPa					
					0.5		pp 100-220 kPa					
		SILTY CLAY - Stiff to very stiff yellow brown silty clay with some fine grained sand; M<Wp		USD	0.75		pp 200-290 kPa					
					0.95							
	1.2	SILTY CLAY - Very stiff dark brown silty clay with a trace of fine grained sand; M<Wp										
	1.8	CLAYEY SAND - Medium dense grey orange clayey sand; fine to coarse grained sand fraction; damp										
					2.25		pp 140-230 kPa					
				USD								
					2.7							
	3.0	Pit discontinued at 3.0m depth - limit of investigation										

RIG: John Deere 315SJ excavator with 450mm wide toothed bucket

LOGGED: Lynch

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	D	Water seep
		W	Water level

CHECKED
Initials: <i>ML</i>
Date: 17.5.10



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TEST PIT LOG

CLIENT: AECOM Australia Pty Ltd
PROJECT: Oonoonba DPI
LOCATION: Oonoonba

SURFACE LEVEL: 4.5 AHD
EASTING: 486080
NORTHING: 7867077
DIP/AZIMUTH: 90°/-

PIT No: 4
PROJECT No: 50888
DATE: 16 Apr 10
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per 150mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
	0.3	SILTY CLAY - Soft to firm dark brown silty clay with a trace of fine to medium grained sand; M<Wp										
	0.5	SILTY CLAY - Firm dark brown black silty clay with a trace of fine to medium grained sand; M<Wp			0.5		pp 110-150 kPa					
	0.5	SLIGHTLY SANDY CLAY - Stiff to very stiff grey orange fine to medium grained sandy clay; M<Wp		U50	0.95							
	1.3	SAND - Medium dense grey dark brown fine to coarse grained sand;										
	1.5	Pit discontinued at 1.8m depth due to pit wall collapse		D	1.5							
	1.5											
	2.0											
	2.5											
	3.0											

RIG: John Deere 315SJ excavator with 450mm wide toothed bucket

LOGGED: Lynch

WATER OBSERVATIONS: Groundwater seepage at 1.5m depth

☐ Sand Penetrometer AS1289.6.3.3

REMARKS:

☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
UL	Tube sample (x mm dia.)	PL	Point load strength test (kN)
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	W	Water seep
		W	Water level

CHECKED	
Initials:	<i>MA</i>
Date:	17.5.10



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TEST PIT LOG

CLIENT: AECOM Australia Pty Ltd
PROJECT: Oonoonba DPI
LOCATION: Oonoonba

SURFACE LEVEL: 4.5 AHD
EASTING: 480175
NORTHING: 7868897
DIP/AZIMUTH: 90°/-

PIT No: 8
PROJECT No: 50888
DATE: 16 Apr 10
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per 150mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
	0.2	FILLING - Dark brown grey slightly clayey silty fine to medium grained sand; humid										
	0.5	SILTY SAND - Medium dense orange brown silty fine to medium grained sand with some clay; humid			0.3		pp 250-380 kPa					
	0.5	SAND AND SILTY CLAY - Medium dense to dense/very stiff orange brown sand and silty clay; fine to medium grained sand fraction; humid/M<Wp			0.6		pp 320-420 kPa					
-1	1.2	SLIGHTLY SILTY SAND - Medium dense yellow brown fine to medium grained sand; damp		D	1.0		pp 210-270 kPa	-1				
					1.25		No sample retained					
				U50								
					1.7							
-2		- grading to wet below 1.8m depth		D	2.0			-2				
-3	3.0	Pit discontinued at 3.0m depth - limit of investigation		D	3.0							

RIG: John Deere 315SJ excavator with 450mm wide toothed bucket

LOGGED: Lynch

WATER OBSERVATIONS: Groundwater seepage at 1.8m depth

REMARKS:

☐ Sand Penetrometer AS1288.6.3.3
☒ Cone Penetrometer AS1288.6.3.2

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	D	Water seep
		▼	Water level

CHECKED
Initials: <i>MLD</i>
Date: 17.5.10



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TEST PIT LOG

CLIENT: AECOM Australia Pty Ltd
PROJECT: Oonoonba DPI
LOCATION: Oonoonba

SURFACE LEVEL: 4 AHD
EASTING: 480483
NORTHING: 7866695
DIP/AZIMUTH: 90°/-

PIT No: 12
PROJECT No: 50888
DATE: 16 Apr 10
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per 150mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
		FILLING - Dark brown black silt and fine to medium grained sand filling; moist										
	0.25	SILTY CLAY - Soft to firm dark brown black silty clay with some fine to medium grained sand; M=Wp		D	0.25							
					0.5		pp 40-90 kPa					
	0.7	SAND AND SILT - Medium dense orange brown sand and silt; fine to medium grained sand; humid			0.75		pp 40-80 kPa					
				U50	1.0		pp 20-50 kPa					
					1.2							
				D	1.5							
	1.8	SANDY CLAY - Stiff to very stiff grey brown fine to medium grained sandy clay; M>Wp										
	1.8	CLAYEY SAND - Medium dense orange grey brown clayey fine to medium grained sand; damp										
	2.0	SANDY CLAY - Stiff to very stiff grey brown fine to medium grained sandy clay; M>Wp										
				D	2.25							
					2.4		pp 90-110 kPa					
	3.0	Pit discontinued at 3.0m depth - limit of investigation										

RIG: John Deere 315SJ excavator with 450mm wide toothed bucket

LOGGED: Lynch

WATER OBSERVATIONS: Groundwater seepage at 2.6m depth

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3

☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U	Tube sample (x mm dia.)	PL	Point load strength (50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	W	Watersweep
		W	Water level

CHECKED
Initials: <i>MAA</i>
Date: 7.5.10



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TEST PIT LOG

CLIENT: AECOM Australia Pty Ltd
PROJECT: Oonoonba DPI
LOCATION: Oonoonba

SURFACE LEVEL: 3.6 AHD
EASTING: 480112
NORTHING: 7866760
DIP/AZIMUTH: 90°/-

PIT No: 15
PROJECT No: 50888
DATE: 16 Apr 10
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per 150mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
	0.15	SILTY SAND - Very loose to loose dark brown silty fine to medium grained sand; damp										
		SAND - Loose becoming medium dense gray brown fine to coarse grained sand; wet		D	0.75							
	1.4	SANDY CLAY - Stiff gray dark brown fine grained sandy clay; M=Wp										
	1.8	Pit discontinued at 1.8m depth due to pit wall collapse										

RIG: John Deere 315SJ excavator with 450mm wide toothed bucket

LOGGED: Lynch

WATER OBSERVATIONS: Groundwater seepage at 0.5m depth

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U	Tube sample (x mm dia.)	PL	Point load strength ts(50) MPa
W	Water sample	V	Shear Vane (kPa)
G	Cone drilling	D	Water seep
			Water level

CHECKED	
Initials:	<i>ML</i>
Date:	17.5.10



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TEST PIT LOG

CLIENT: AECOM Australia Pty Ltd
PROJECT: Oonoonba DPI
LOCATION: Oonoonba

SURFACE LEVEL: 4.2 AHD
EASTING: 479868
NORTHING: 7868791
DIP/AZIMUTH: 90°/-

PIT No: 17
PROJECT No: 50888
DATE: 16 Apr 10
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per 150mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
	0.15	SILTY SAND - Loose light brown silty fine to medium grained sand; humid										
		SILTY SAND - Loose to medium dense light brown silty fine to medium grained sand; humid										
-1				D	1.0							
-2	1.3	SANDY CLAY - Stiff to very stiff dark brown to black fine grained sandy clay; M<Wp			1.5		pp 180-240 kPa					
				U50								
					1.95							
					2.2		pp 20-50 kPa					
-3				D	2.75							
	3.1	SAND - Medium dense light brown fine to coarse grained sand; damp										
				D	3.3							
	3.5	Pit discontinued at 3.5m depth - limit of investigation										

RIG: John Deere 315SJ excavator with 450mm wide toothed bucket

LOGGED: Lynch

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3

☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U	Tube sample (x mm dia.)	PL	Point load strength (x50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	W	Water seep
		W	Water level

CHECKED	
Initials:	MAO
Date:	17.5.10



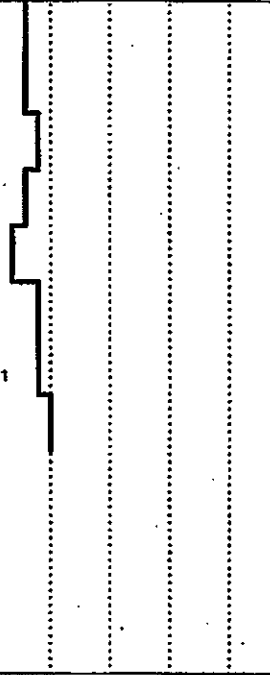
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TEST PIT LOG

CLIENT: AECOM Australia Pty Ltd
PROJECT: Oonoonba DPI
LOCATION: Oonoonba

SURFACE LEVEL: 4.5 AHD
EASTING: 479688
NORTHING: 7867204
DIP/AZIMUTH: 90°/-

PIT No: 25
PROJECT No: 50888
DATE: 16 Apr 10
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per 150mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
		SAND - Loose to medium dense brown fine to coarse grained sand with some gravel; humid		D	0.3							
	0.6	SAND - Medium dense dark brown fine to medium grained sand with some gravel; humid										
	1.8	Pit discontinued at 1.8m depth due to pit wall collapse										

RIG: John Deere 315SJ excavator with 450mm wide toothed bucket

LOGGED: Lynch

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U	Tube sample (x mm dia.)	PL	Point load strength (50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	Δ	Water seep
		⊗	Water level

CHECKED	
Initials:	<i>MD</i>
Date:	17/5/10



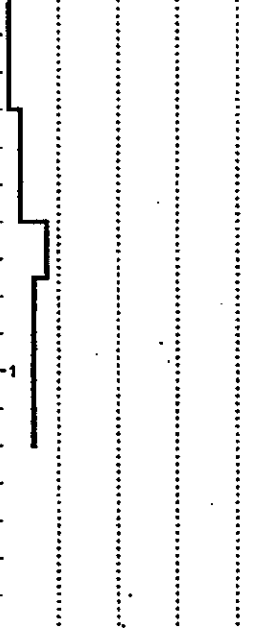
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TEST PIT LOG

CLIENT: AECOM Australia Pty Ltd
PROJECT: Oonoonba DPI
LOCATION: Oonoonba

SURFACE LEVEL: 4.3 AHD
EASTING: 479688
NORTHING: 7867408
DIP/AZIMUTH: 90°/-

PIT No: 26
PROJECT No: 50888
DATE: 16 Apr 10
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per 150mm)				
				Type	Depth	Sample	Results & Comments		5	10	15	20	
	0.4	SAND - Loose light brown fine to coarse grained sand; humid		D	0.6								
		SAND - Loose brown fine to coarse grained sand; humid											
	1.7	Pit discontinued at 1.7m depth due to pit wall collapse											

RIG: John Deere 315SJ excavator with 450mm wide toothed bucket

LOGGED: Lynch

WATER OBSERVATIONS: No free groundwater observed

☐ Sand Penetrometer AS1289.6.3.3

REMARKS:

☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U	Tube sample (x mm dia.)	PL	Point load strength (50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	Δ	Water seep
		W	Water level

CHECKED	
Initials:	<i>MLD</i>
Date:	17.5.10



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APPENDIX B

RESULTS OF LABORATORY TESTING



RESULTS OF MOISTURE CONTENT, PLASTICITY AND LINEAR SHRINKAGE TESTS

Client: AECOM Australia Pty Ltd		Project No: 50888	
Project: Factual Geotechnical Investigation		Report No: T10-298	
Location: Oonoonba DPI Site		Report Date: 13/05/2010	
		Date Sampled: 16/04/2010	
		Date of Test: 10/05/2010	
		Page: 1 of 1	

TEST LOCATION	DEPTH (m)	DESCRIPTION	CODE	W _F %	W _L %	W _P %	PI %	*LS %
Pit 2	0.5-0.95	Dark brown sandy gravelly silt	2,5	23.5	26	21	6	4
Pit 4	0.5-0.95	Grey orange slightly sandy clay	2,5	18.5	40	17	23	8
Pit 4	1.5	Dark brown sand	2,5	20.0	22	NP	NP	0
Pit 8	1.0	Orange brown sand and silty clay	2,5	11.6	33	15	18	10
Pit 8	2.0	Yellow brown slightly silty sand	2,5	16.0	23	NP	NP	1
Pit 12	0.25	Dark brown black silt and sand	2,5	16.6	23	22	1	3

Legend:

W_F Field Moisture Content
W_L Liquid limit
W_P Plastic limit
PI Plasticity Index
LS Linear shrinkage from liquid limit condition (Mould length 250mm)

Test Methods:

Moisture Content: AS 1289 2.1.1
Liquid Limit: AS 1289 3.1.2
Plastic Limit: AS 1289 3.2.1
Plasticity Index: AS 1289 3.3.1
Linear Shrinkage: AS 1289 3.4.1

Code

Sample history for plasticity tests

1. Air dried
2. Low temperature (<50°C) oven dried
3. Oven (105°C) dried
4. Unknown

Method of preparation for plasticity tests

5. Dry sieved
6. Wet sieved
7. Natural

*Specify if sample crumbled CR or curled CU

Sampling Method(s): Sampled by Townsville Engineering Department

Remarks: NP - Nonplastic

Approved Signatory:

Tested: KT
Checked: DP

DPollock
Dean Pollock
Laboratory Manager



NATA Accredited Laboratory Number: 828

This Document is issued in accordance with
NATA's accreditation requirements.
Accredited for compliance with ISO/IEC 17025



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RESULTS OF MOISTURE CONTENT, PLASTICITY AND LINEAR SHRINKAGE TESTS

Client:	AECOM Australia Pty Ltd	Project No:	50888
Project:	Factual Geotechnical Investigation	Report No:	T10-300
Location:	Oonoonba DPI Site	Report Date:	13/05/2010
		Date Sampled:	16/04/2010
		Date of Test:	10/05/2010
		Page:	1 of 1

TEST LOCATION	DEPTH (m)	DESCRIPTION	CODE	W _F %	W _L %	W _P %	PI %	*LS %
Pit 12	0.75-1.2	Orange brown sand and silt	2,5	25.7	23	20	3	3
Pit 17	1.0	Light brown silty sand	2,5	22.3	37	NP	NP	0
Pit 17	1.5-1.95	Dark brown sandy clay	2,5	22.7	28	21	7	5
Pit 25	0.3	Brown sand with some gravel	2,5	3.1	28	NP	NP	0
Pit 26	0.6	Brown sand	2,5	6.3	31	NP	NP	0

Legend:

W_F Field Moisture Content
W_L Liquid limit
W_P Plastic limit
PI Plasticity index
LS Linear shrinkage from liquid limit condition (Mould length 250mm)

Test Methods:

Moisture Content: AS 1289 2.1.1
Liquid Limit: AS 1289 3.1.2
Plastic Limit: AS 1289 3.2.1
Plasticity Index: AS 1289 3.3.1
Linear Shrinkage: AS 1289 3.4.1

Code

Sample history for plasticity tests

1. Air dried
2. Low temperature (<50°C) oven dried
3. Oven (105°C) dried
4. Unknown

Method of preparation for plasticity tests

5. Dry sieved
6. Wet sieved
7. Natural

*Specify if sample crumbled CR or curled CU

Sampling Method(s): Sampled by Townsville Engineering Department

Remarks: NP - Nonplastic

Approved Signatory:

D. Pollock
Dean Pollock
Laboratory Manager



NATA Accredited Laboratory Number: 828

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Tested: KT
Checked: DP



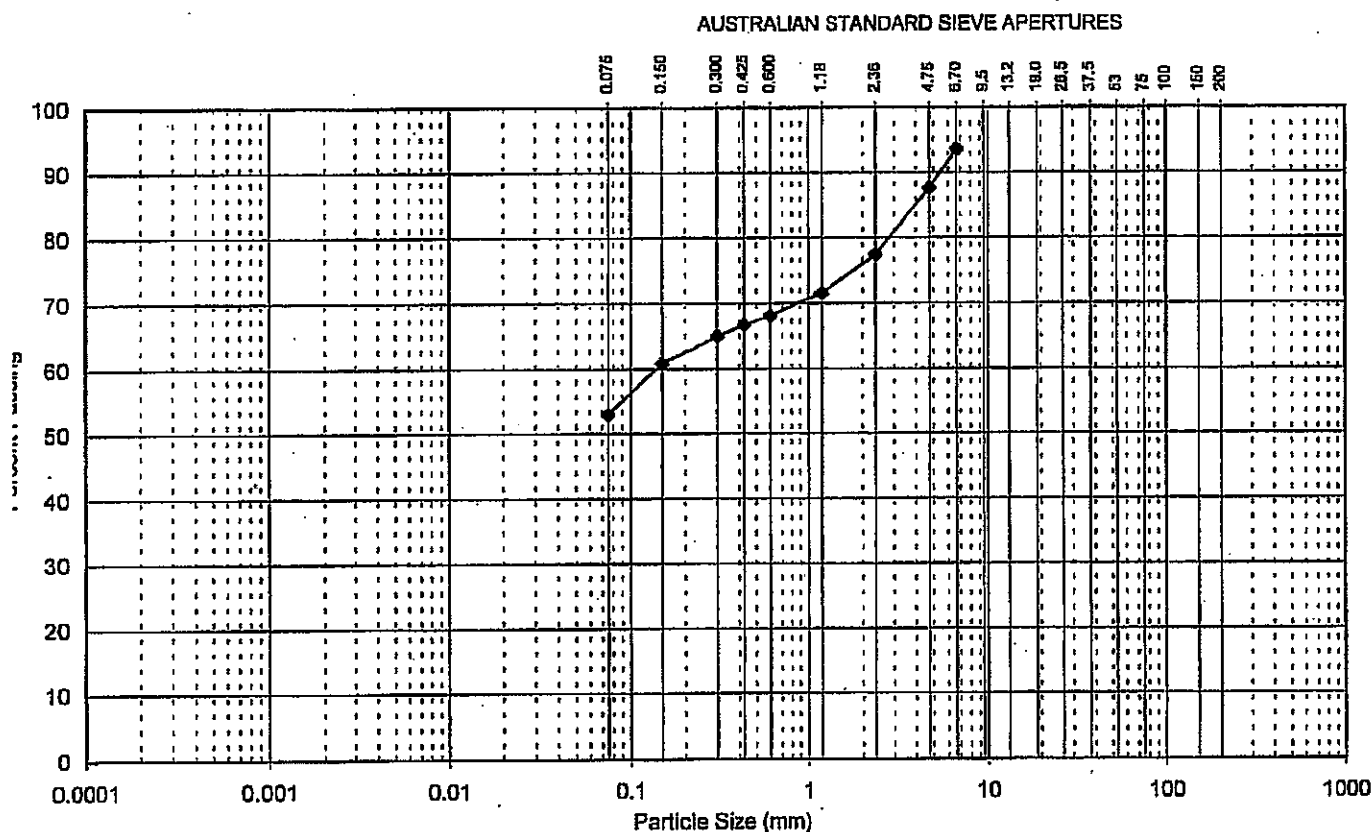
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RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-283
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 2	Date Sampled:	16/04/2010
Depth / Layer :	0.5-0.95m	Date of Test:	12/05/2010
		Page:	1 of 1



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	0.002	0.006	0.02	0.06	0.2	0.6	2.0	6.0	20	60

Description: Dark brown sandy gravelly silt
 Test Method(s): AS 1289.3.6.1
 Sampling Method(s): Sampled by Townsville Engineering Department
 Method of Dispersion: Calgon

Remarks:



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Approved Signatory:

Tested:	KT
Checked:	DP

DPollock
 Dean Pollock
 Laboratory Manager



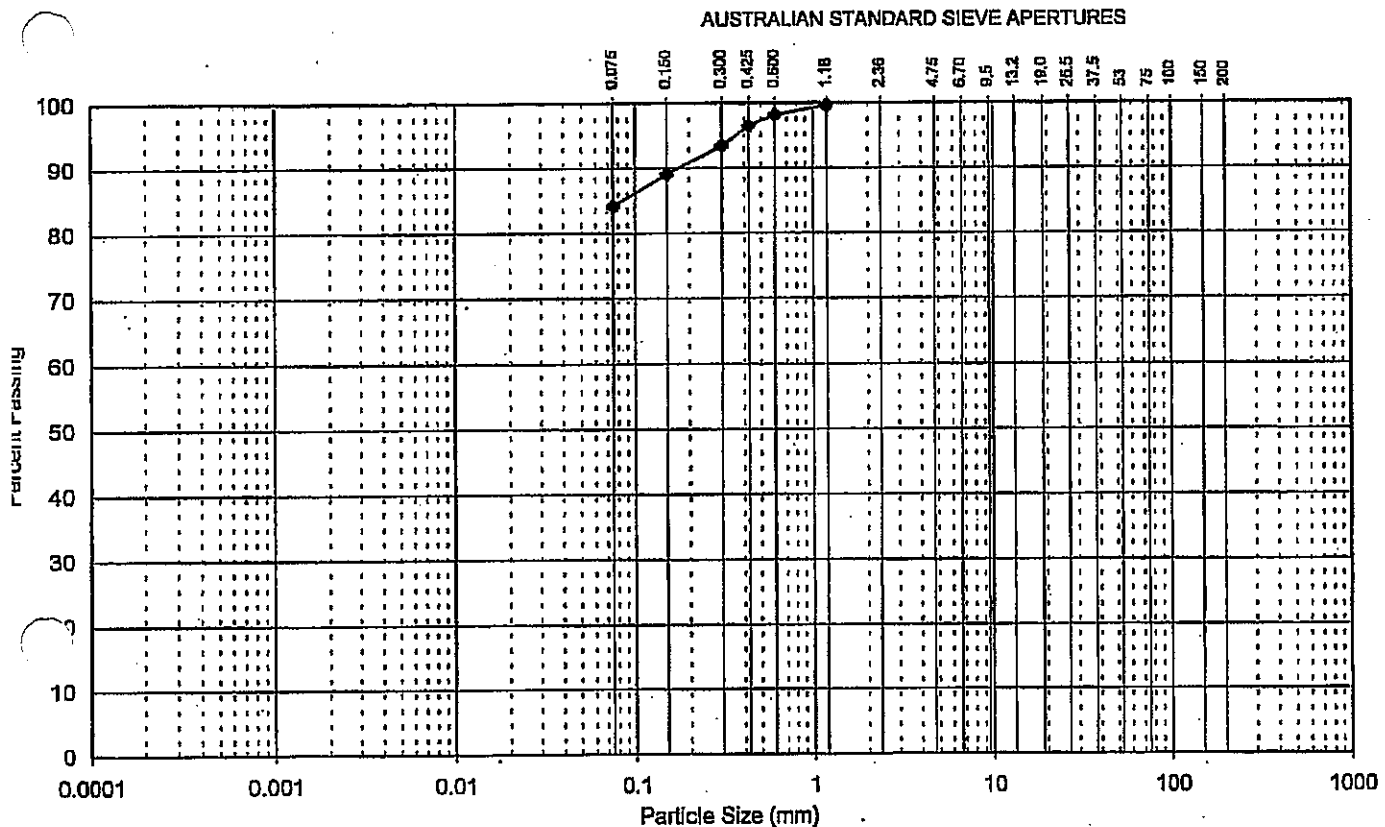
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RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-289
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 4	Date Sampled:	16/04/2010
Depth / Layer :	0.5-0.95m	Date of Test:	12/05/2010
		Page:	1 of 1



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	0.002	0.006	0.02	0.06	0.2	0.6	2.0	6.0	20	60

Description: Grey orange slightly sandy clay

Test Method(s): AS 1289.3.6.1

Sampling Method(s): Sampled by Townsville Engineering Department

Method of Dispersion: Calgon

Remarks:



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Approved Signatory:

Tested: KT
Checked: DP

DPollock
Dean Pollock
Laboratory Manager



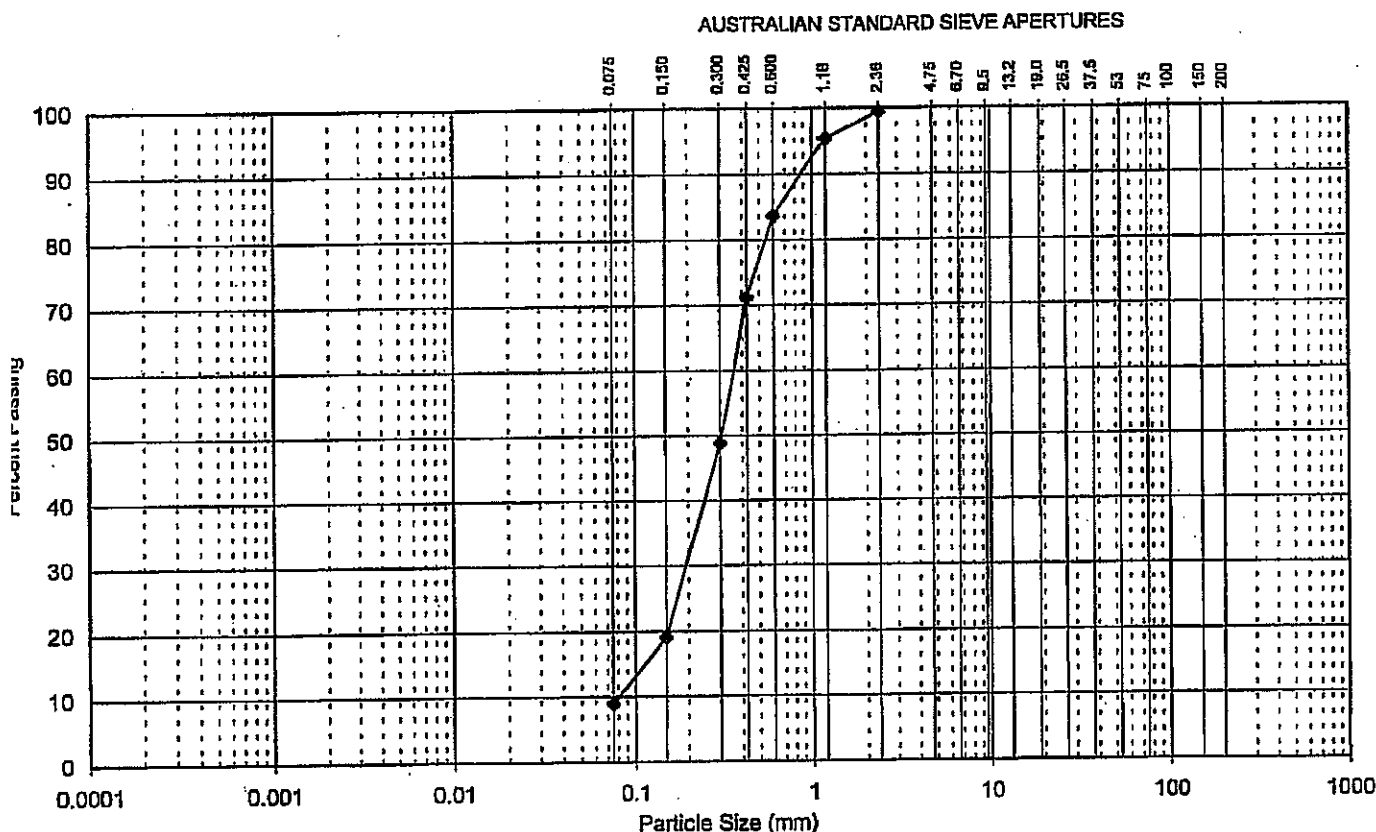
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RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-284
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 4	Date Sampled:	16/04/2010
Depth / Layer :	1.5	Date of Test:	12/05/2010
		Page:	1 of 1



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	0.002	0.006	0.02	0.06	0.2	0.6	2.0	6.0	20	60

Description: Dark brown sand

Test Method(s): AS 1289.3.6.1

Sampling Method(s): Sampled by Townsville Engineering Department

Method of Dispersion: Calgon

Remarks:



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Checked: DP

D. Pollock
Dean Pollock
Laboratory Manager



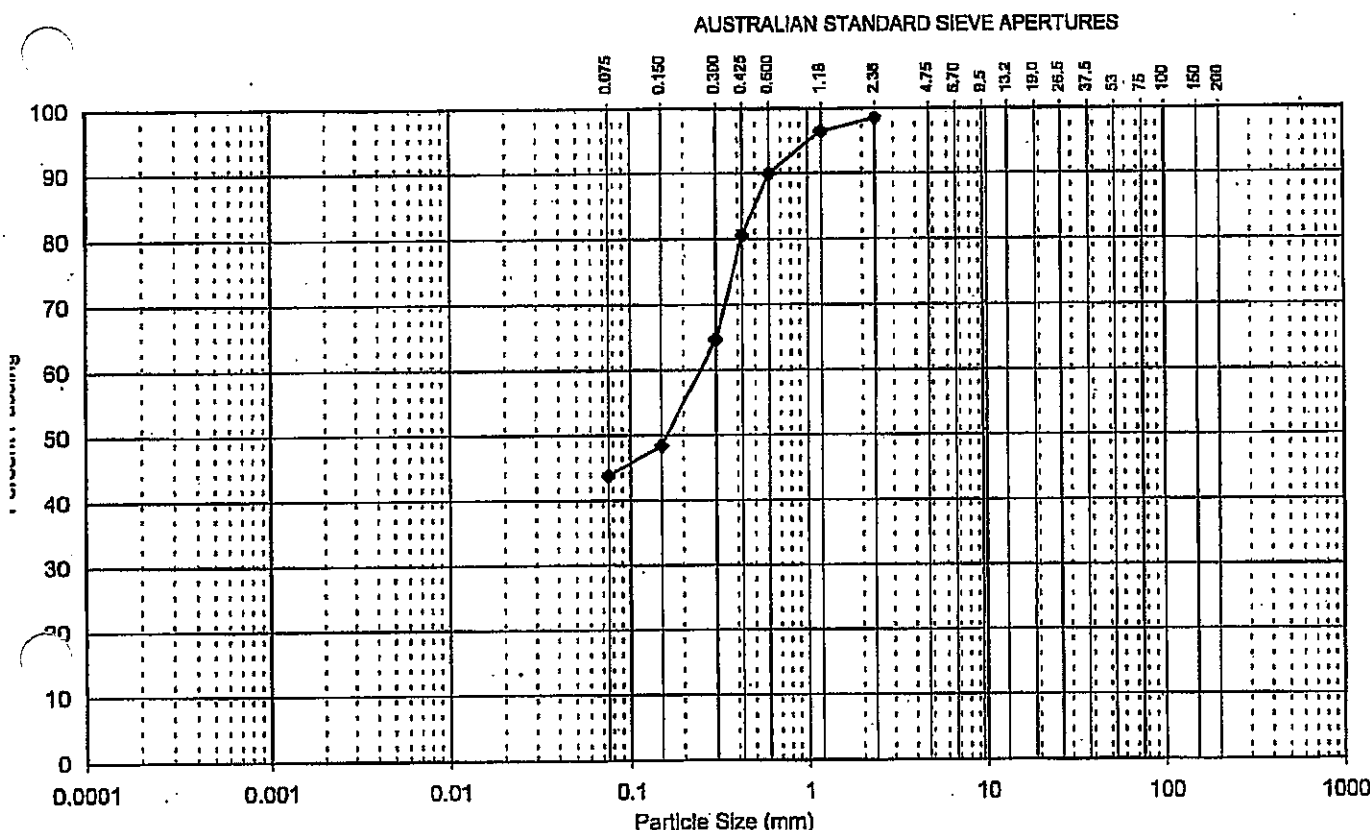
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RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-285
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 8	Date Sampled:	16/04/2010
Depth / Layer :	1.0m	Date of Test:	12/05/2010
		Page:	1 of 1



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	0.002	0.006	0.02	0.08	0.2	0.6	2.0	6.0	20	60

Description: Orange sand and silty clay
Test Method(s): AS 1289.3.6.1
Sampling Method(s): Sampled by Townsville Engineering Department
Method of Dispersion: Calgon

Remarks:



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Approved Signatory:

Tested: KT
 Checked: DP

D. Pollock
 Dean Pollock
 Laboratory Manager



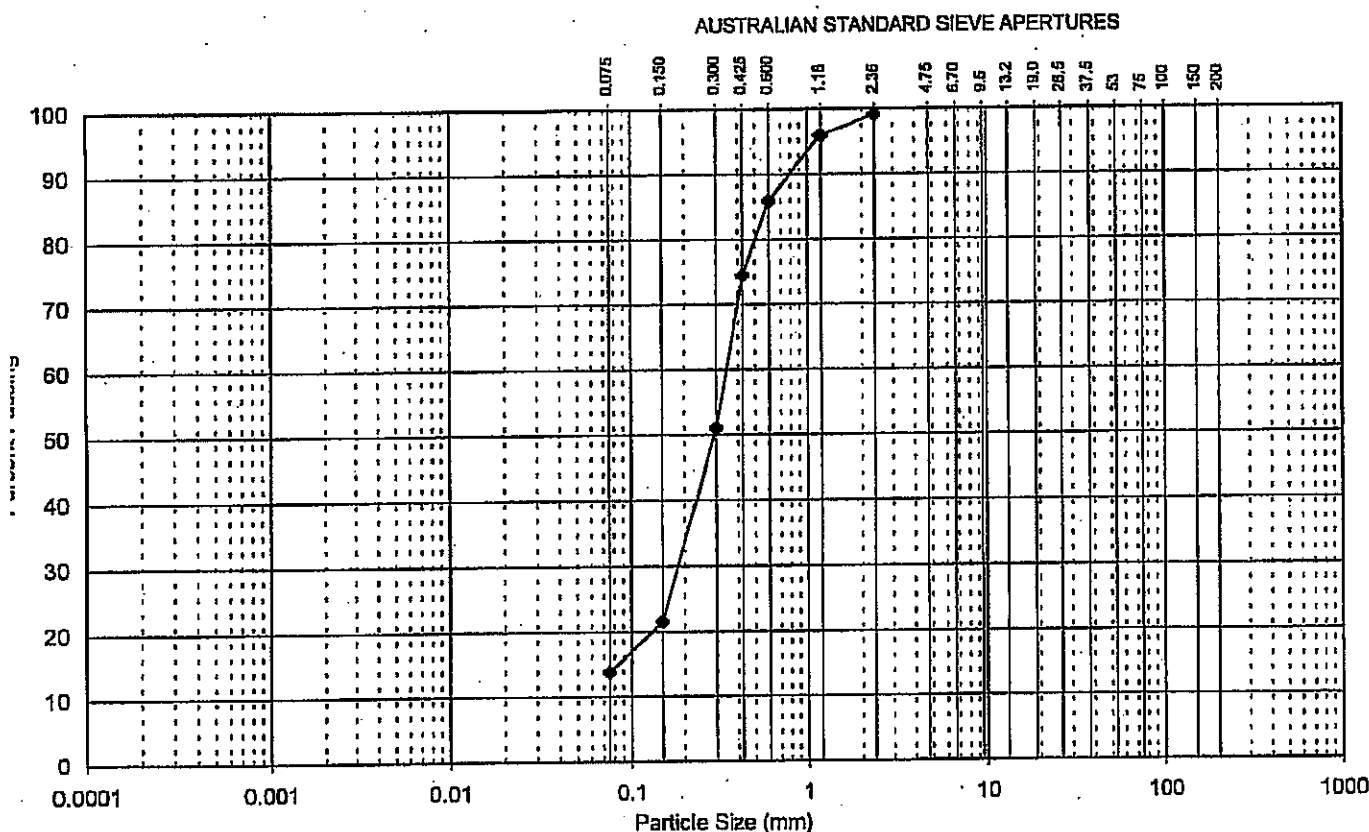
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RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-286
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 8	Date Sampled:	16/04/2010
Depth / Layer :	2.0m	Date of Test:	12/05/2010
		Page:	1 of 1



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	0.002	0.006	0.02	0.06	0.2	0.6	2.0	6.0	20	60

Description: Yellow brown slightly silty sand
Test Method(s): AS 1289.3.6.1
Sampling Method(s): Sampled by Townsville Engineering Department
Method of Dispersion: Calgon

Remarks:



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Tested: KT
 Checked: DP

DPollock
 Dean Pollock
 Laboratory Manager



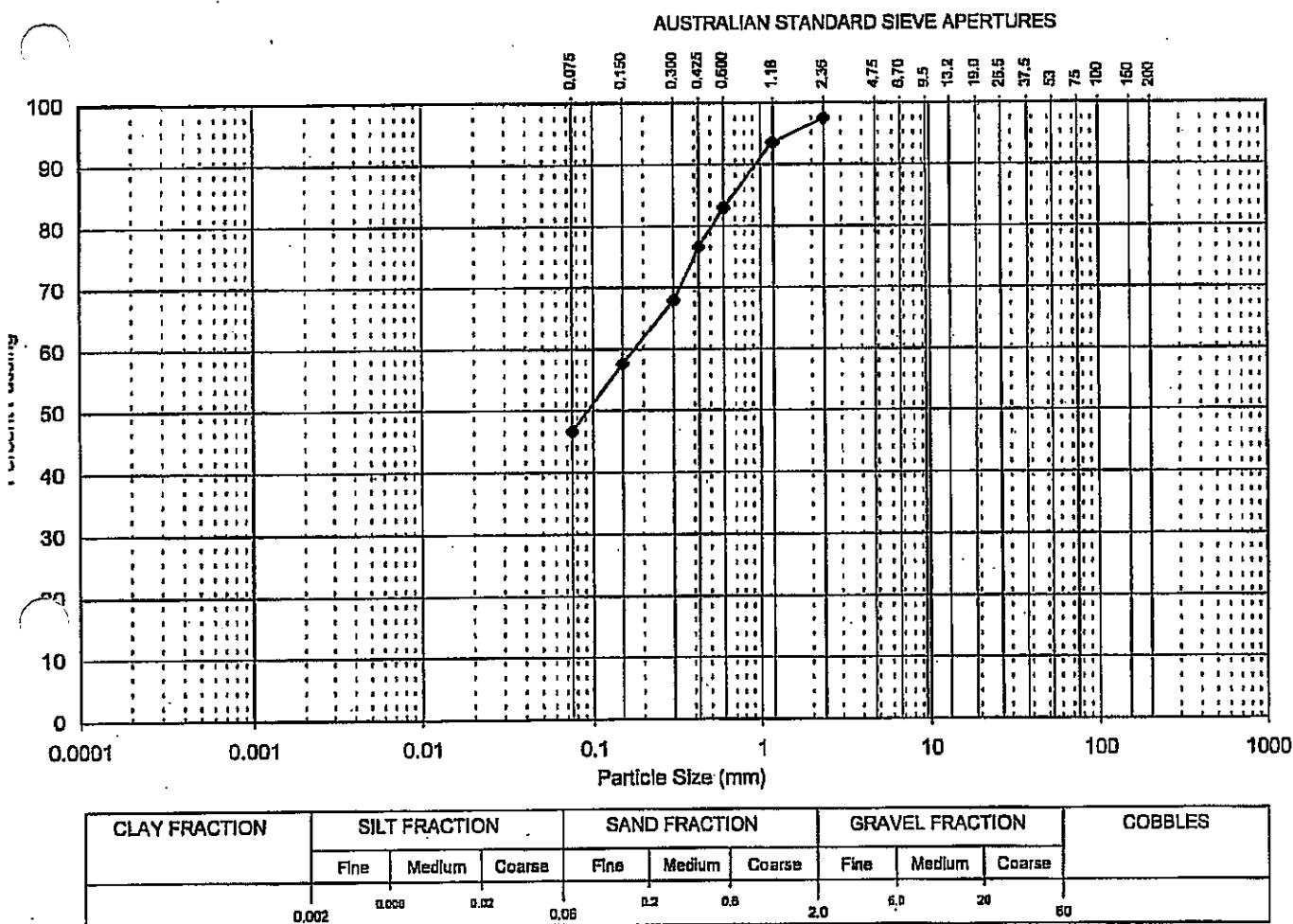
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RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-287
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 12	Date Sampled:	16/04/2010
Depth / Layer :	0.25m	Date of Test:	12/05/2010
		Page:	1 of 1



Description: Dark brown black silt and sand

Test Method(s): AS 1289.3.6.1

Sampling Method(s): Sampled by Townsville Engineering Department

Method of Dispersion: Calgon

Remarks:



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Tested: KT
Checked: DP

D. Pollock
Dean Pollock
Laboratory Manager



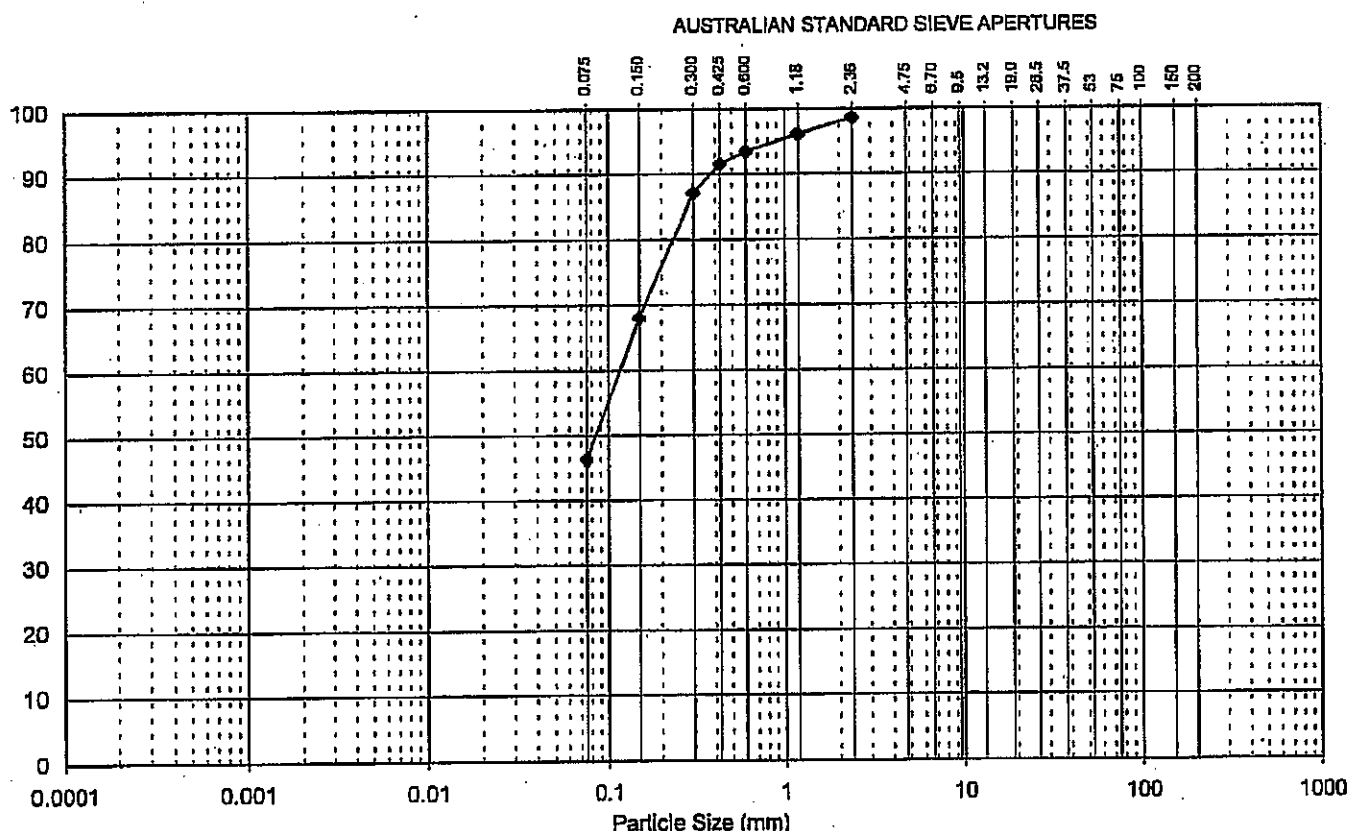
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RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-288
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 12	Date Sampled:	16/04/2010
Depth / Layer :	0.75-1.2m	Date of Test:	12/05/2010
		Page:	1 of 1



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	0.002	0.006	0.02	0.06	0.2	0.8	2.0	6.0	20	60

Description: Orange brown sand and silt

Test Method(s): AS 1289.3.6.1

Sampling Method(s): Sampled by Townsville Engineering Department

Method of Dispersion: Calgon

Remarks:



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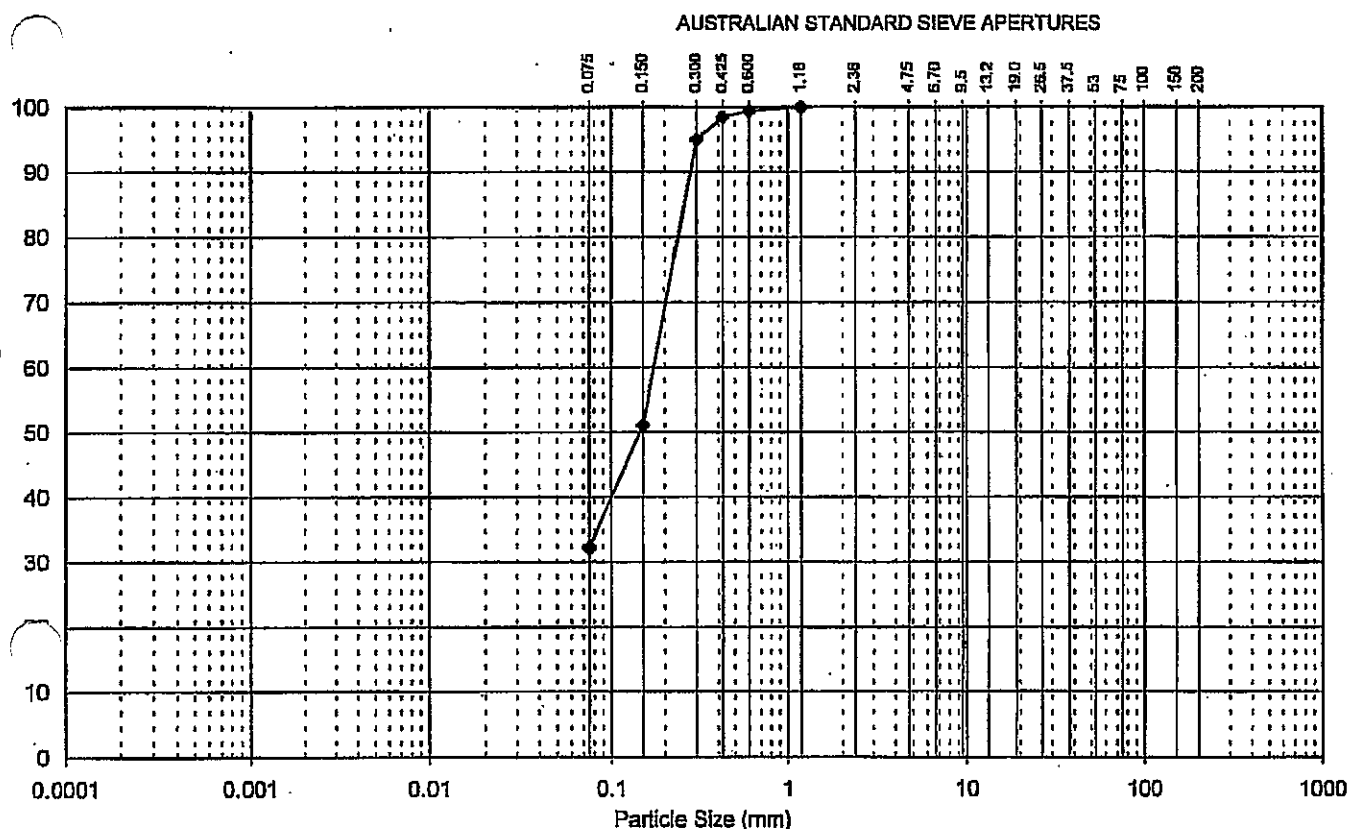
Approved Signatory:

Tested: KT
Checked: DP

Dean Pollock
Dean Pollock
Laboratory Manager

RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-290
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 17	Date Sampled:	16/04/2010
Depth / Layer :	1.0m	Date of Test:	12/05/2010
		Page:	1 of 1



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	0.002	0.006	0.02	0.06	0.2	0.6	2.0	6.0	20	60

Description: Light brown silty sand

Test Method(s): AS 1289.3.6.1

Sampling Method(s): Sampled by Townsville Engineering Department

Method of Dispersion: Calgon

Remarks:



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Approved Signatory:

Tested:	KT
Checked:	DP

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Dean Pollock
Laboratory Manager



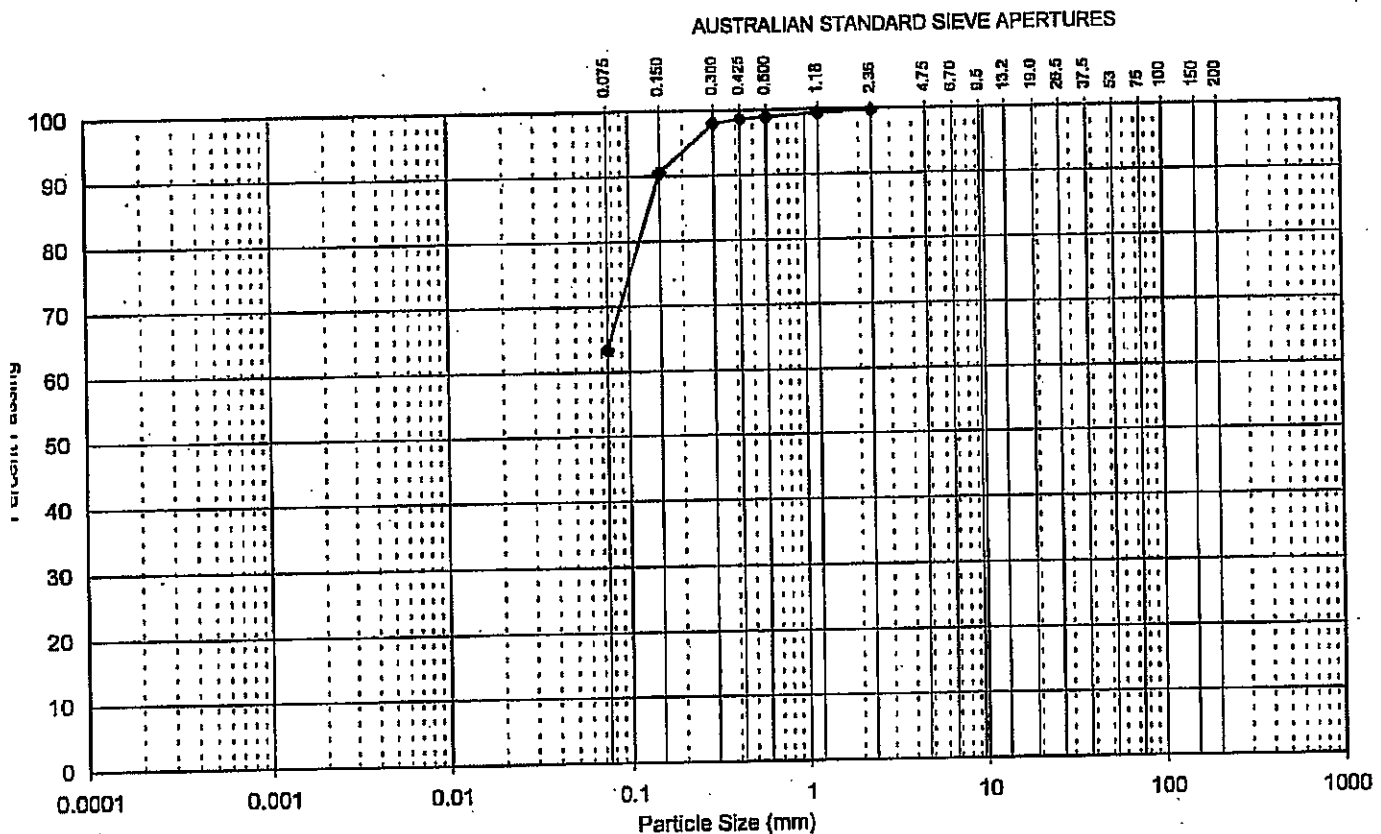
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RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-291
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 17	Date Sampled:	16/04/2010
Depth / Layer :	1.5-1.95m	Date of Test:	12/05/2010
		Page:	1 of 1



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	0.002	0.006	0.02	0.06	0.2	0.6	2.0	6.0	20	60

Description: Dark brown sandy clay
Test Method(s): AS 1289.3.6.1
Sampling Method(s): Sampled by Townsville Engineering Department
Method of Dispersion: Calgon

Remarks:



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Approved Signatory:

Tested: KT
 Checked: DP

DPollock
 Dean Pollock
 Laboratory Manager



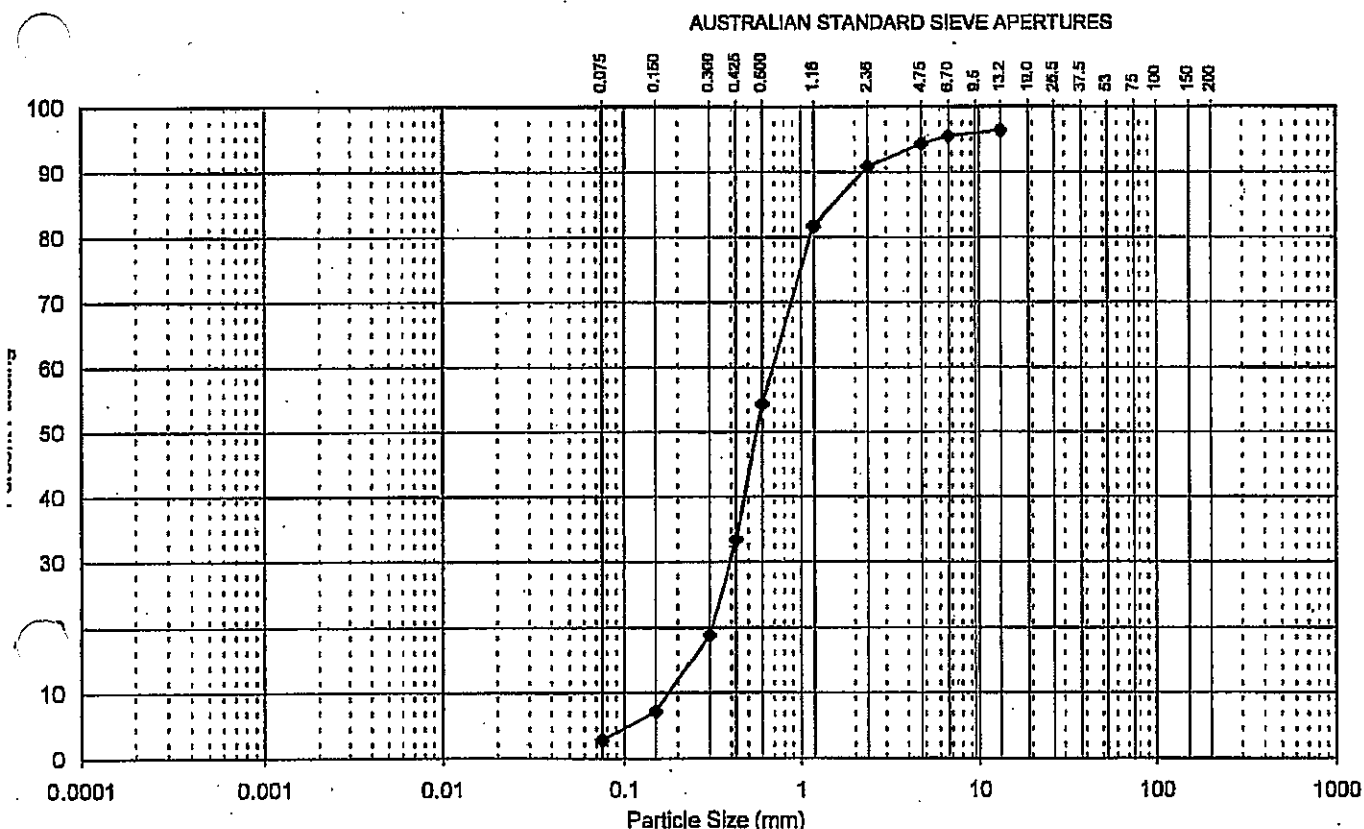
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RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-292
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 25	Date Sampled:	16/04/2010
Depth / Layer :	0.3m	Date of Test:	12/05/2010
		Page:	1 of 1



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	0.002	0.006	0.02	0.06	0.2	0.6	2.0	6.0	20	60

Description: Brown sand with some gravel
Test Method(s): AS 1289.3.6.1
Sampling Method(s): Sampled by Townsville Engineering Department
Method of Dispersion: Calgon

Remarks:



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Approved Signatory:

Tested: KT
 Checked: DP

DPollock
 Dean Pollock
 Laboratory Manager



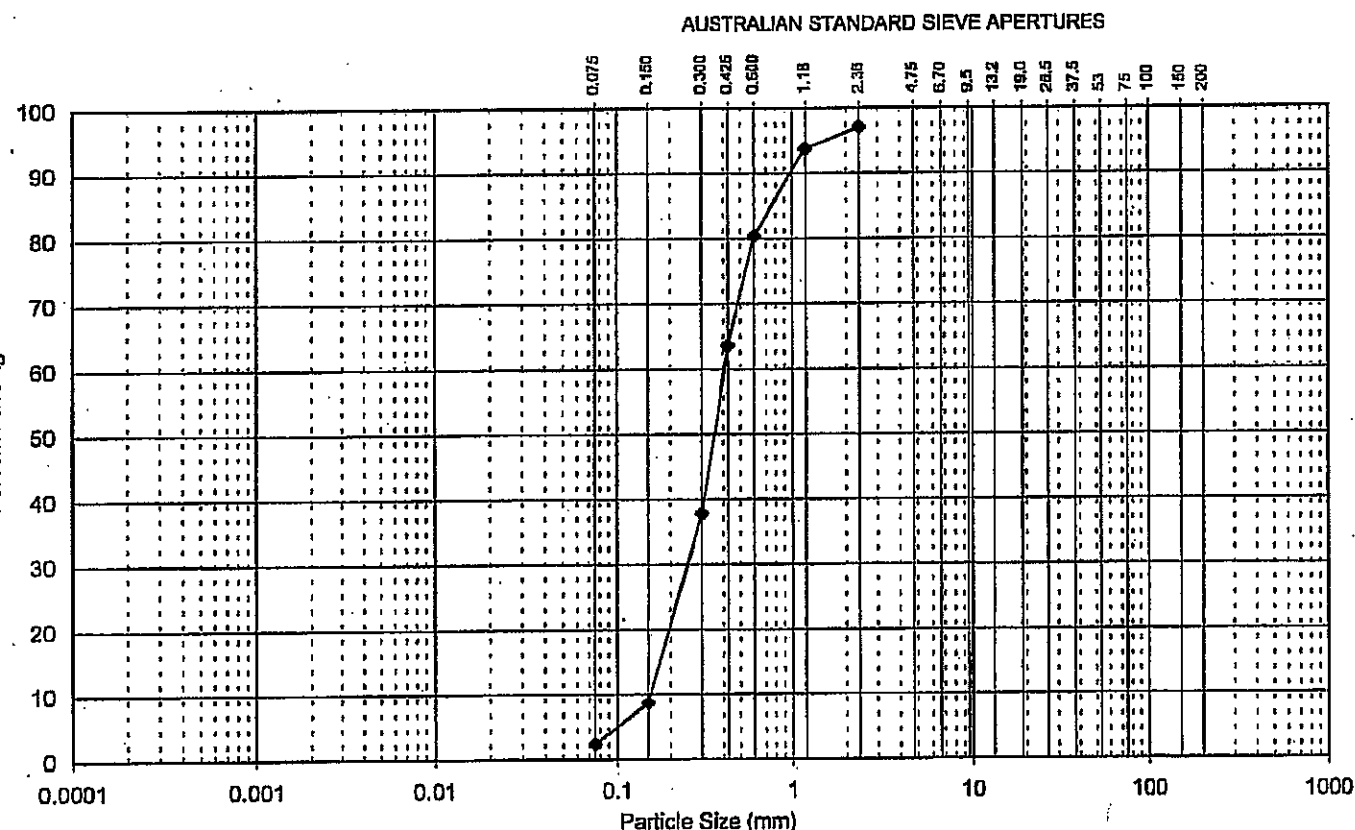
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RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-293
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 26	Date Sampled:	16/04/2010
Depth / Layer :	0.6m	Date of Test:	12/05/2010
		Page:	1 of 1



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	0.002	0.006	0.02	0.05	0.2	0.6	2.0	6.0	20	60

Description: Brown sand

Test Method(s): AS 1289.3.6.1

Sampling Method(s): Sampled by Townsville Engineering Department

Method of Dispersion: Calgon

Remarks:



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Approved Signatory:

Tested:	KT
Checked:	DP

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Dean Pollock
Laboratory Manager



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DETERMINATION OF EMERSON CLASS NUMBER OF SOIL

Client:	AECOM Australia Pty Ltd		Project No:	50888	
Project:	Factual Geotechnical Investigation		Report No:	T10-301	
			Report Date:	13/05/2010	
Location:	Oonoonba DPI Site		Date of Test:	13/05/2010	
			Page:	1 of 1	
SAMPLE NO	DEPTH (m)	DESCRIPTION	WATER TYPE	WATER TEMP	CLASS NO.
Pit 2	0.5-0.95	Dark brown sandy gravelly silt	Distilled	26	6
Pit 4	0.5-0.95	Grey orange slightly sandy clay	Distilled	26	5
Pit 4	1.5	Dark brown sand	Distilled	26	5
Pit 8	1.0	Orange brown sand and silty clay	Distilled	26	5
Pit 8	2.0	Yellow brown slightly silty sand	Distilled	26	5
Pit 12	0.25	Dark brown silt and sand	Distilled	26	6

Test Method(s): AS 1289 3.8.1

Sampling Method(s): Sampled by Townsville Engineering Department

Remarks:

Approved Signatory:

Tested: KT
Checked: DP

D. Pollock
Dean Pollock
Laboratory Manager



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DETERMINATION OF EMERSON CLASS NUMBER OF SOIL

Client:	AECOM Australia Pty Ltd	Project No:	50888
Project:	Factual Geotechnical Investigation	Report No:	T10-302
		Report Date:	14/05/2010
Location:	Oonoonba DPI Site	Date of Test:	13/05/2010
		Page:	1 of 1

SAMPLE NO	DEPTH (m)	DESCRIPTION	WATER TYPE	WATER TEMP	CLASS NO.
Pit 12	0.75-1.2	Orange brown sand and silt	Distilled	26	6
Pit 17	1.0	Light brown sand	Distilled	26	6
Pit 17	1.5-1.95	Dark brown sandy clay	Distilled	26	6
Pit 25	0.3	Brown sand with some gravel	Distilled	26	6
Pit 26	0.6	Brown sand	Distilled	26	6

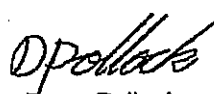
Test Method(s): AS 1289 3.8.1

Sampling Method(s): Sampled by Townsville Engineering Department

Remarks:

Approved Signatory:

Tested: KT
Checked: DP


Dean Pollock
Laboratory Manager



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RESULT OF SHRINK-SWELL INDEX DETERMINATION

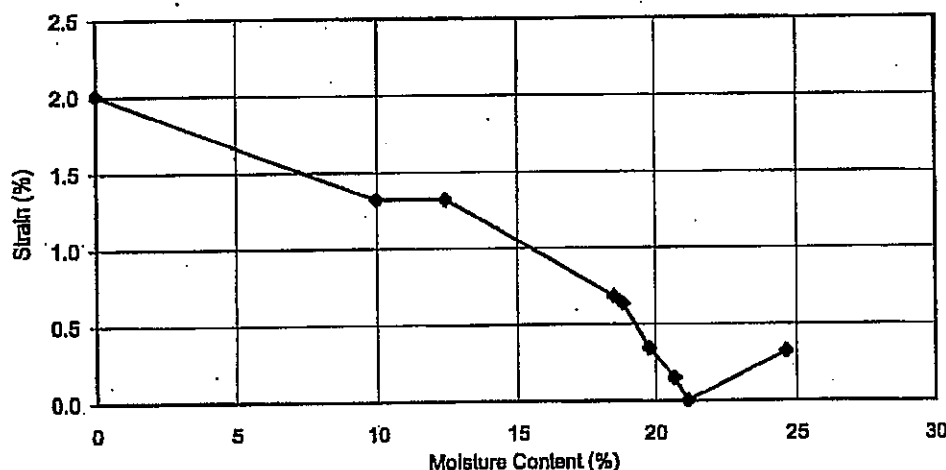
Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-294
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Plt 2	Date Sampled :	16/04/2010
Depth / Layer :	0.5-0.95m	Date of Test:	6/05/2010
		Page:	1 of 1

CORE SHRINKAGE TEST

Shrinkage - air dried	1.3 %
Shrinkage - oven dried	2.0 %
Significant inert inclusions	0.0 %
Extent of cracking	HC
Extent of soil crumbling	0.0 %
Moisture content of core	21.2 %

SWELL TEST

Pocket penetrometer reading at Initial moisture content	200 kPa
Pocket penetrometer reading at final moisture content	160 kPa
Initial Moisture Content	23.5 %
Final Moisture Content	24.6 %
Swell under 25kPa	-0.3 %



SHRINK-SWELL INDEX 1.1% per ΔpF

Description:	Dark brown sandy gravelly silt
Test Method(s):	AS 1289.7.1.1 - 2003, AS 1289.2.1.1 - 2005
Sampling Method(s):	AS 1289.1.3.1-1999
Extent of Cracking:	UC - Uncracked SC - Slightly cracked MC - Moderately cracked
Remarks:	HC - Highly cracked FR - Fractured

Note that NATA accreditation does not cover the performance of pocket penetrometer readings



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Approved Signatory:

Tested: KT
Checked: DP

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Dean Pollock
Laboratory Manager



RESULT OF SHRINK-SWELL INDEX DETERMINATION

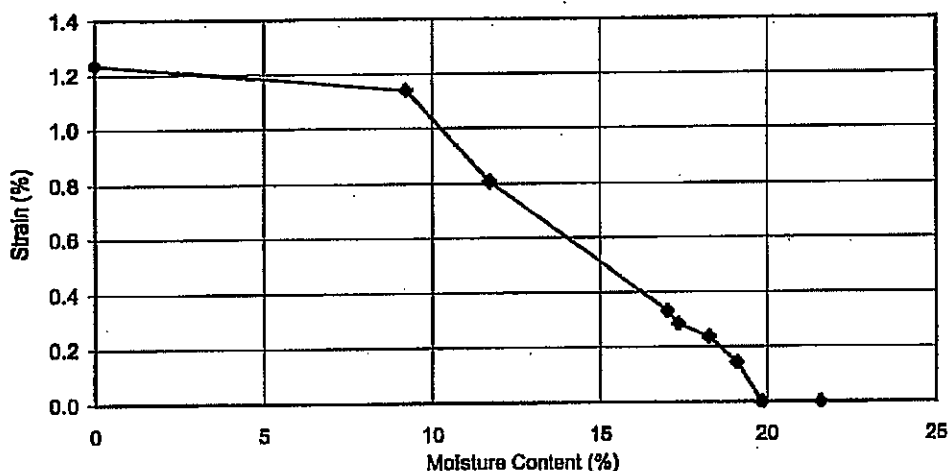
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Project :	Factual Geotechnical Investigation	Report No. :	T10-296
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 4	Date Sampled :	16/04/2010
Depth / Layer :	0.5-0.95m	Date of Test:	6/05/2010
		Page:	1 of 1

CORE SHRINKAGE TEST

Shrinkage - air dried	1.1 %
Shrinkage - oven dried	1.2 %
Significant inert inclusions	0.0 %
Extent of cracking	
Extent of soil crumbling	0.0 %
Moisture content of core	19.8 %

SWELL TEST

Pocket penetrometer reading at initial moisture content	140 kPa
Pocket penetrometer reading at final moisture content	110 kPa
Initial Moisture Content	18.5 %
Final Moisture Content	21.6 %
Swell under 25kPa	0.0 %



SHRINK-SWELL INDEX is 0.7% per Δ pF

Description:	Grey orange slightly sandy clay
Test Method(s):	AS 1289.7.1.1 - 2003, AS 1289.2.1.1 - 2005
Sampling Method(s):	AS 1289.1.3.1-1999
Extent of Cracking:	UC - Uncracked SC - Slightly cracked MC - Moderately cracked HC - Highly cracked FR - Fractured
Remarks:	

Note that NATA accreditation does not cover the performance of pocket penetrometer readings



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Approved/ Signatory:

Tested:	KT
Checked:	DP

DPollock
Dean Pollock
Laboratory Manager



RESULT OF SHRINK-SWELL INDEX DETERMINATION

Client : AECOM Australia Pty Ltd

Project No. : 50888

Project : Factual Geotechnical Investigation

Report No. : T10-295

Location : Oonoonba DPI Site

Report Date : 13/05/2010

Test Location : Plt 12

Date Sampled : 16/04/2010

Depth / Layer : 0.75-1.2m

Date of Test: 6/05/2010

Page: 1 of 1

CORE SHRINKAGE TEST

Shrinkage - air dried 0.6 %

Shrinkage - oven dried 0.7 %

Significant inert inclusions 0.0 %

Extent of cracking

Extent of soil crumbling 0.0 %

Moisture content of core 26.4 %

SWELL TEST

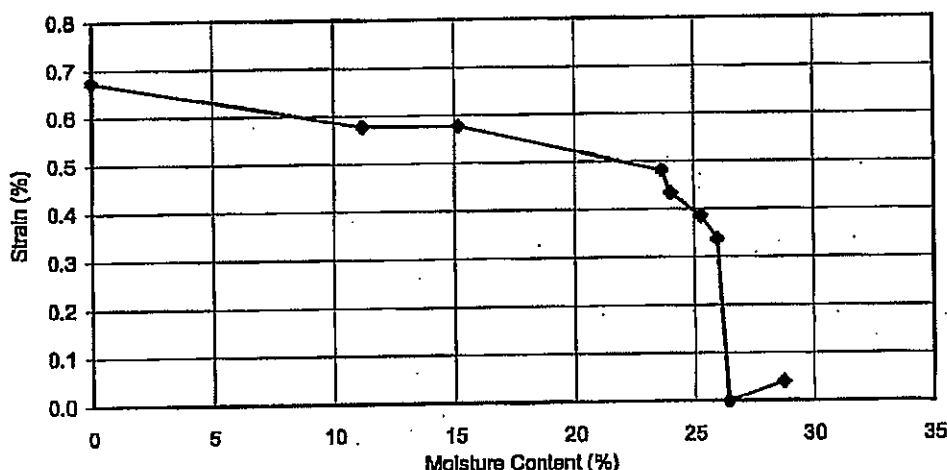
Pocket penetrometer reading at initial moisture content 170 kPa

Pocket penetrometer reading at final moisture content 110 kPa

Initial Moisture Content 25.7 %

Final Moisture Content 28.8 %

Swell under 25kPa 0.0 %



SHRINK-SWELL INDEX Iss 0.4% per Δ pF

Description: Orange brown sand and silt

Test Method(s): AS 1289.7.1.1 - 2003, AS 1289.2.1.1 - 2005

Sampling Method(s): AS 1289.1.3.1-1999

Extent of Cracking: UC - Uncracked

SC - Slightly cracked

HC - Highly cracked

FR - Fractured

Remarks: MC - Moderately cracked

Note that NATA accreditation does not cover the performance of pocket penetrometer readings



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Approved Signatory:

Tested:	KT
Checked:	DP

DPollock
Dean Pollock
Laboratory Manager



RESULT OF SHRINK-SWELL INDEX DETERMINATION

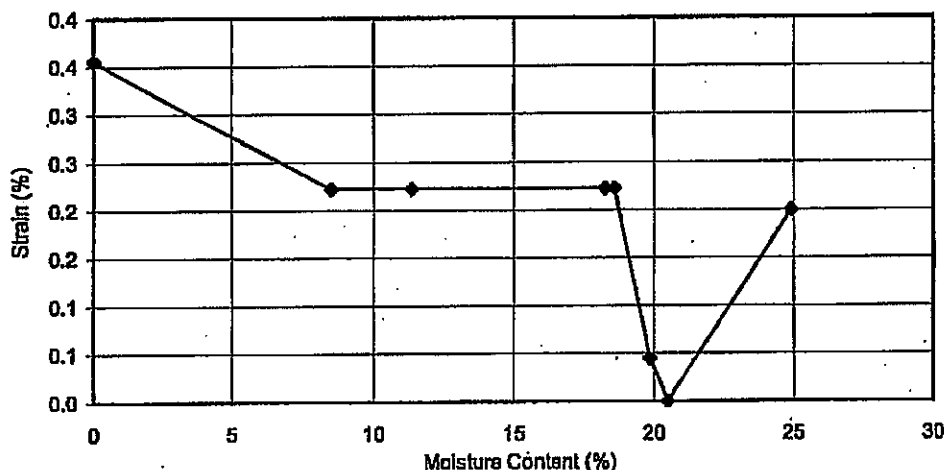
Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-297
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Plt 17	Date Sampled :	16/04/2010
Depth / Layer :	1.5-1.95m	Date of Test:	6/05/2010
		Page:	1 of 1

CORE SHRINKAGE TEST

Shrinkage - air dried	0.2 %
Shrinkage - oven dried	0.4 %
Significant inert inclusions	0.0 %
Extent of cracking	
Extent of soil crumbling	0.0 %
Moisture content of core	20.5 %

SWELL TEST

Pocket penetrometer reading at initial moisture content	100 kPa
Pocket penetrometer reading at final moisture content	100 kPa
Initial Moisture Content	22.7 %
Final Moisture Content	24.9 %
Swell under 25kPa	-0.2 %



SHRINK-SWELL INDEX I_{ss} 0.2% per ΔpF

Description:	Dark brown sandy clay
Test Method(s):	AS 1289.7.1.1 - 2003, AS 1289.2.1.1 - 2005
Sampling Method(s):	AS 1289.1.3.1-1999
Extent of Cracking:	UC - Uncracked SC - Slightly cracked MC - Moderately cracked
Remarks:	HC - Highly cracked FR - Fractured

Note that NATA accreditation does not cover the performance of pocket penetrometer readings



NATA Accredited Laboratory Number: 828
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Approved Signatory:

Tested:	KT
Checked:	DP

DPollock
Dean Pollock
Laboratory Manager

CONE PENETRATION TEST

CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Oonoonba

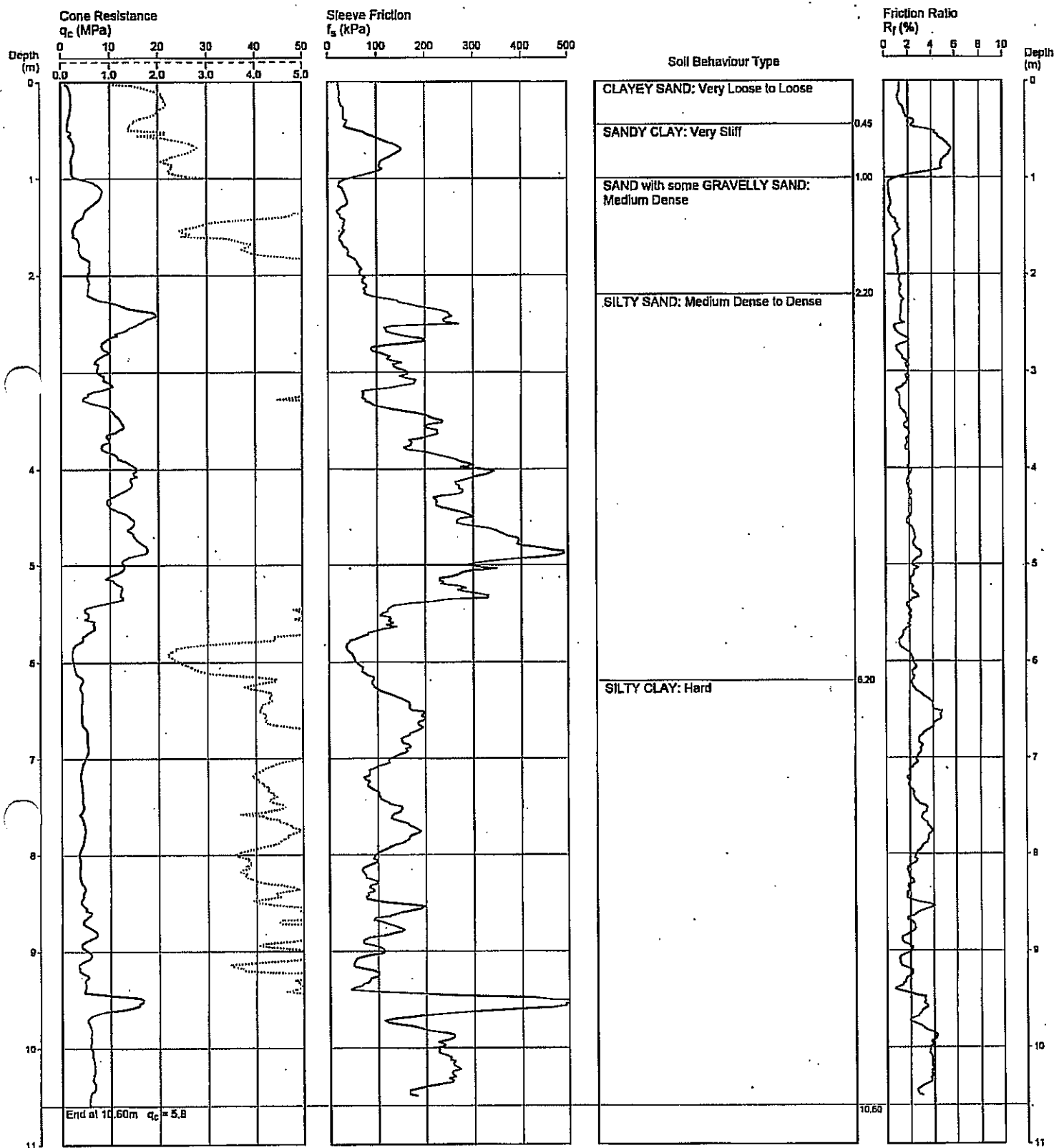
PROJECT No: 50888

1

Page 1 of 1

DATE 15/04/2010

SURFACE RL: 4.5m AHD



REMARKS: Hole cave in at 1.05m - dry. GPS: 480304E, 7855944N

Date
Plotted
Checked

File: P:50888 - OONONBA, Factual Geotechnical Investigation, DPI Site/Gint or CPT logs\50888-1
Cone ID: CONE-162 Type: 2 Standard

ConePlot Version 5.8.1
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CONE PENETRATION TEST

CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Oonoonba

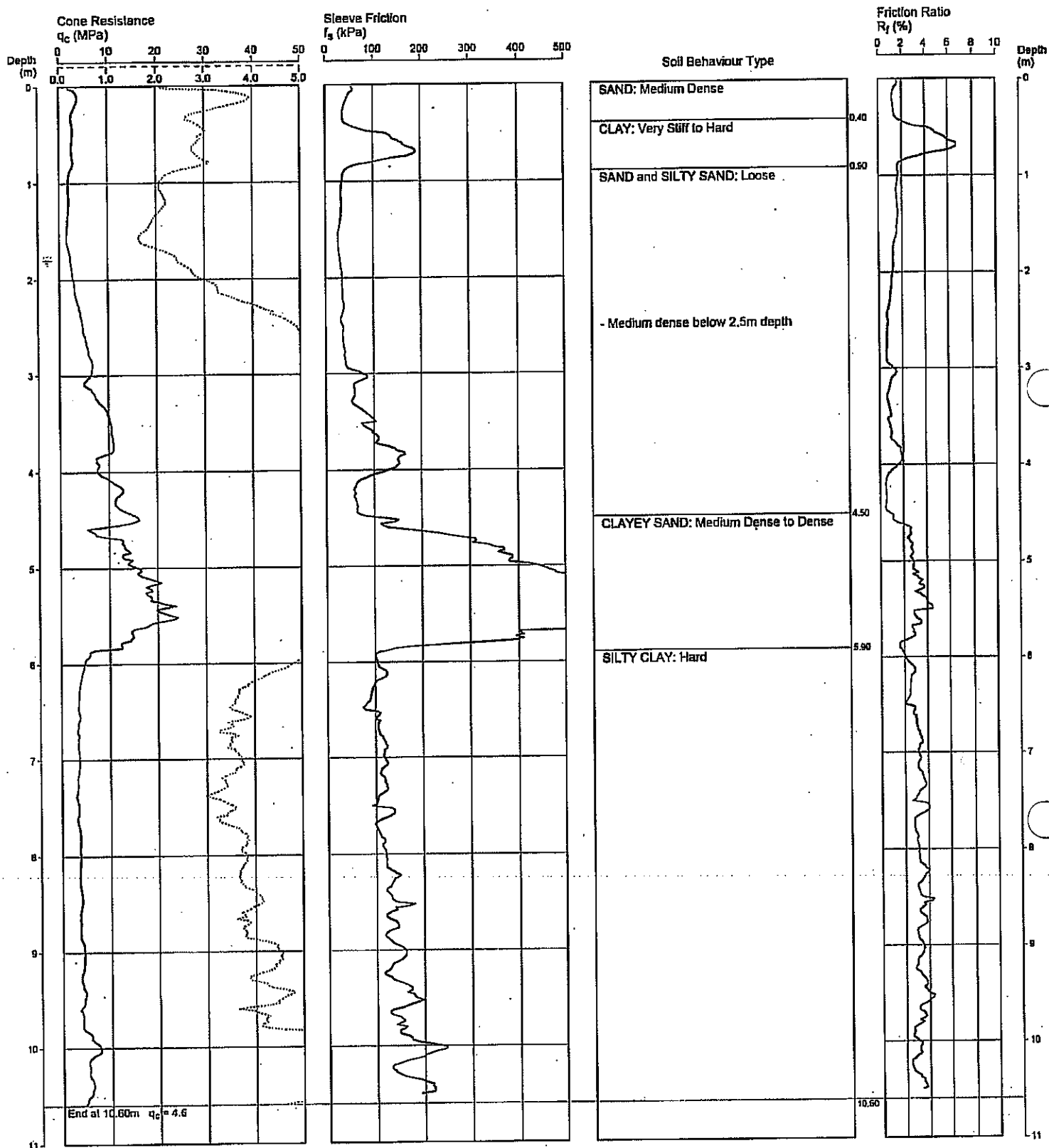
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 5.4m AHD



REMARKS: GPS: 460175E, 7866902N

Date
Plotted
Checked

File: P:\50888 - OONONBA, Factual Geotechnical Investigation, DPI Sila\Gint or CPT logs\50888-0
Cone ID: CONE-152 Type: 2 Standard

ConePlot Version 5.8.1
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CONE PENETRATION TEST

CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: Off Abbott Street,
Oonoonba

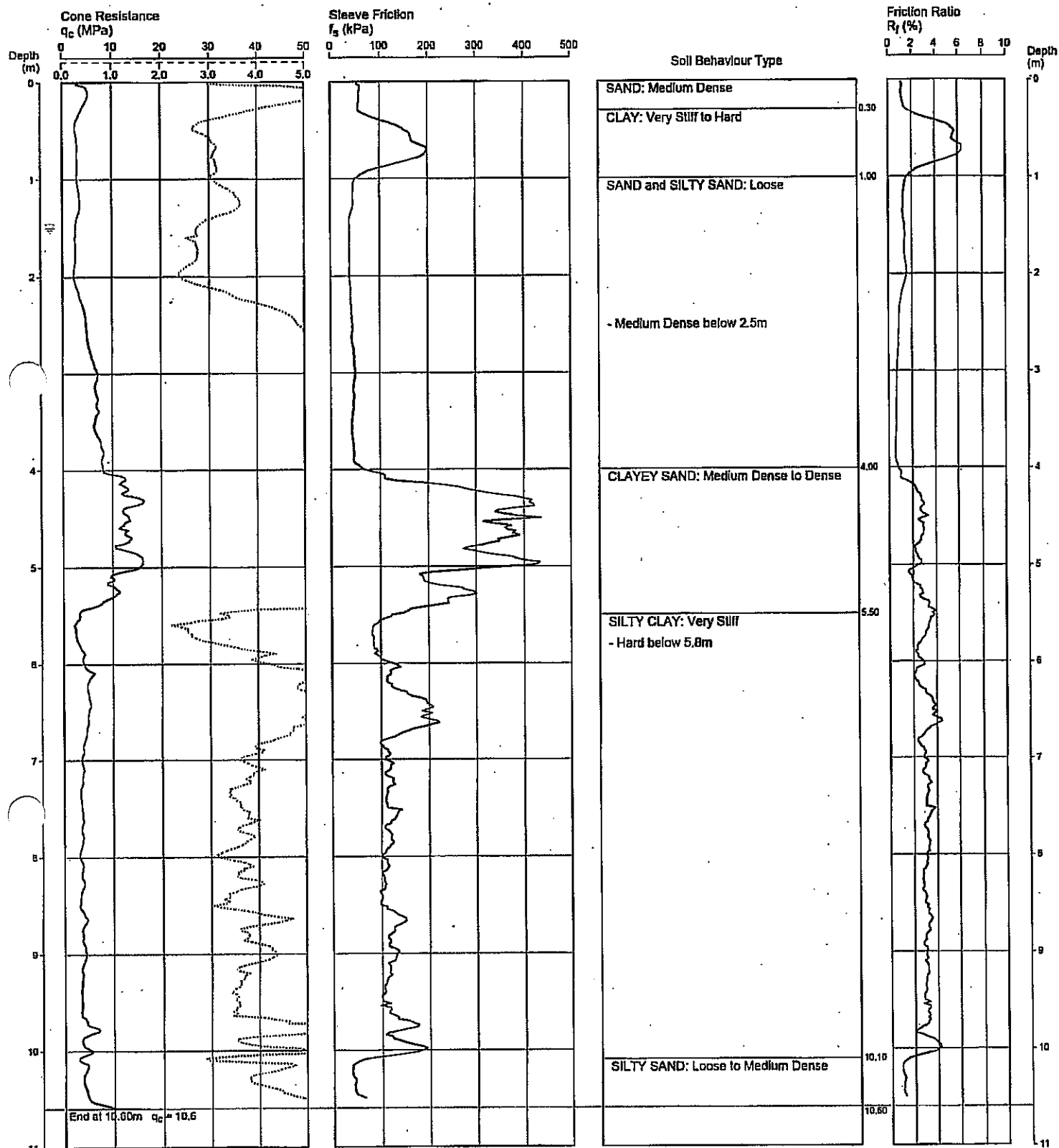
PROJECT No: 50888

CPT 10

Page 1 of 1

DATE 15/04/2010

SURFACE RL: 3.75m AHD



REMARKS: GPS: 480315E, 7856805N

Date
Plotted
Checked

File: P:\50888 - OONONBA, Factual Geotechnical Investigation, DPI Site\Gint or CPT logs\50888-1
Cone ID: CONE-152 Type: 2 Standard
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CONE PENETRATION TEST

CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbots Street, Oonoonba

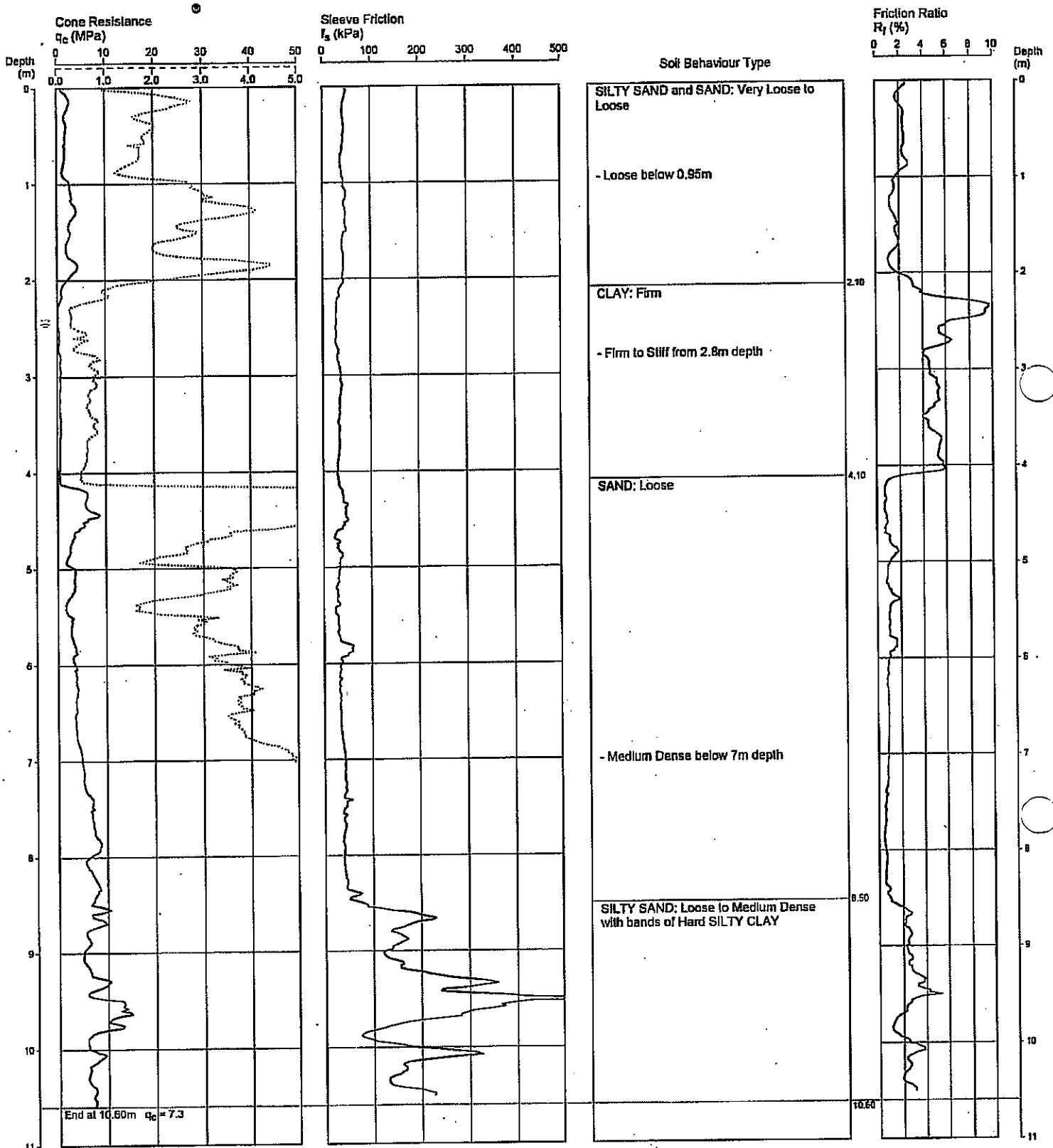
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 4.5m AHD



REMARKS: GPS: 479987E, 7865708N

Date
Plotted
Checked

File: P:\50888 - OONONBA, Factual Geotechnical Investigation, DPI Site\Gint or CPT logs\50888-1
Cone ID: CONE-152 Type: 2 Standard
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CONE PENETRATION TEST

CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Oonoonba

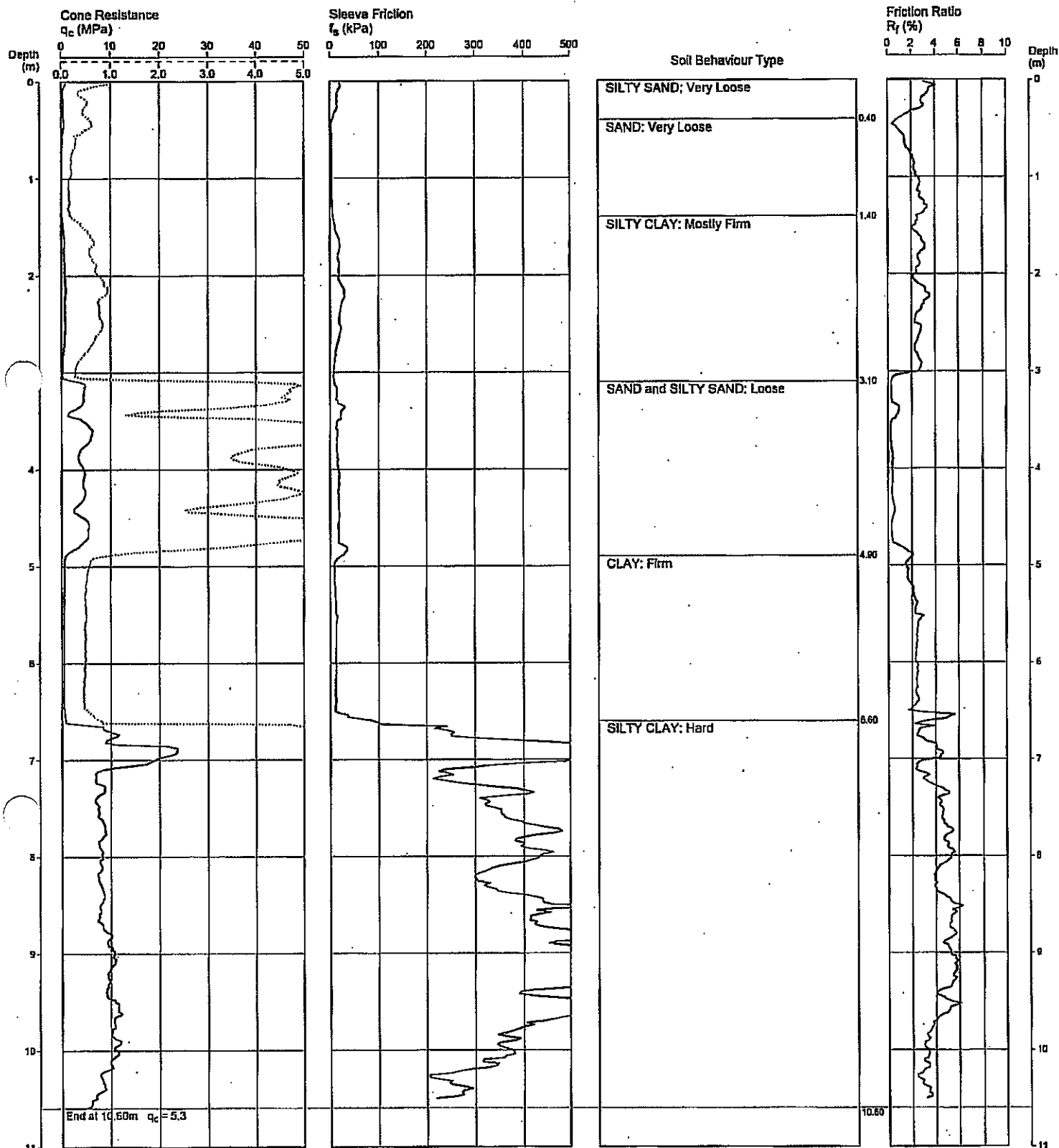
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 3.6m AHD



REMARKS: Test pit excavated at site following cpt and prior to groundwater measurement. GPS: 480115E, 7866764N.

Date
Plotted
Checked

File: P:50888 - OONONBA, Factual Geotechnical Investigation, DPI Site/Gint or CPT logs/50888-1
Cone ID: CONE-152 Type: 2 Standard
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CONE PENETRATION TEST

CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Conoonba

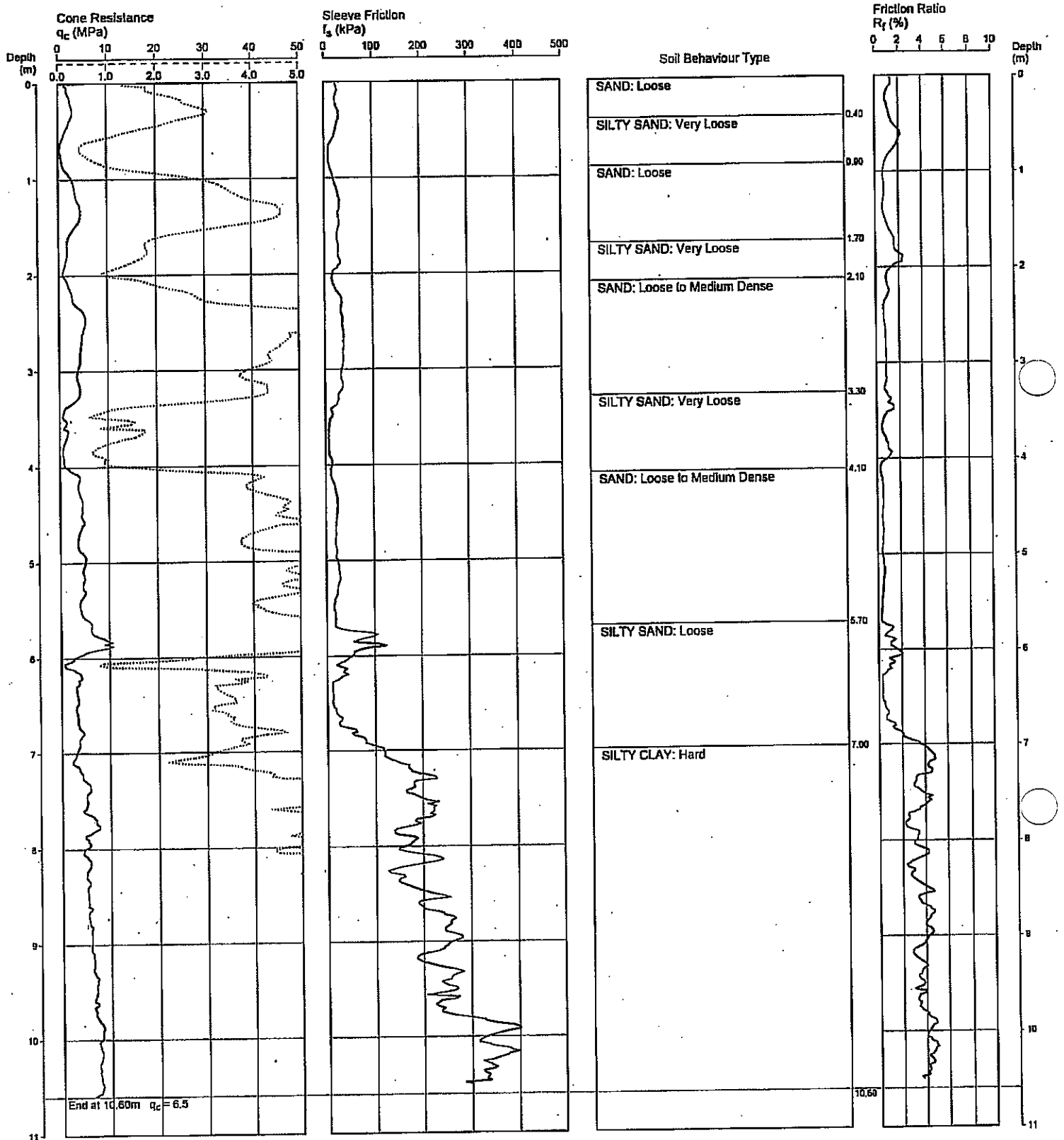
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 5.6m AHD



REMARKS: SWL: Cave in of CPT hole at 2.85m - dry. GPS: 478644E, 7865905N.

Date
Plotted
Checked

File: P:50888 - CONOONBA, Factual Geotechnical Investigation, DPI SiteGint or CPT logs\50888-1
Cone ID: CONE-152 Type: 2 Standard
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CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Conoonba

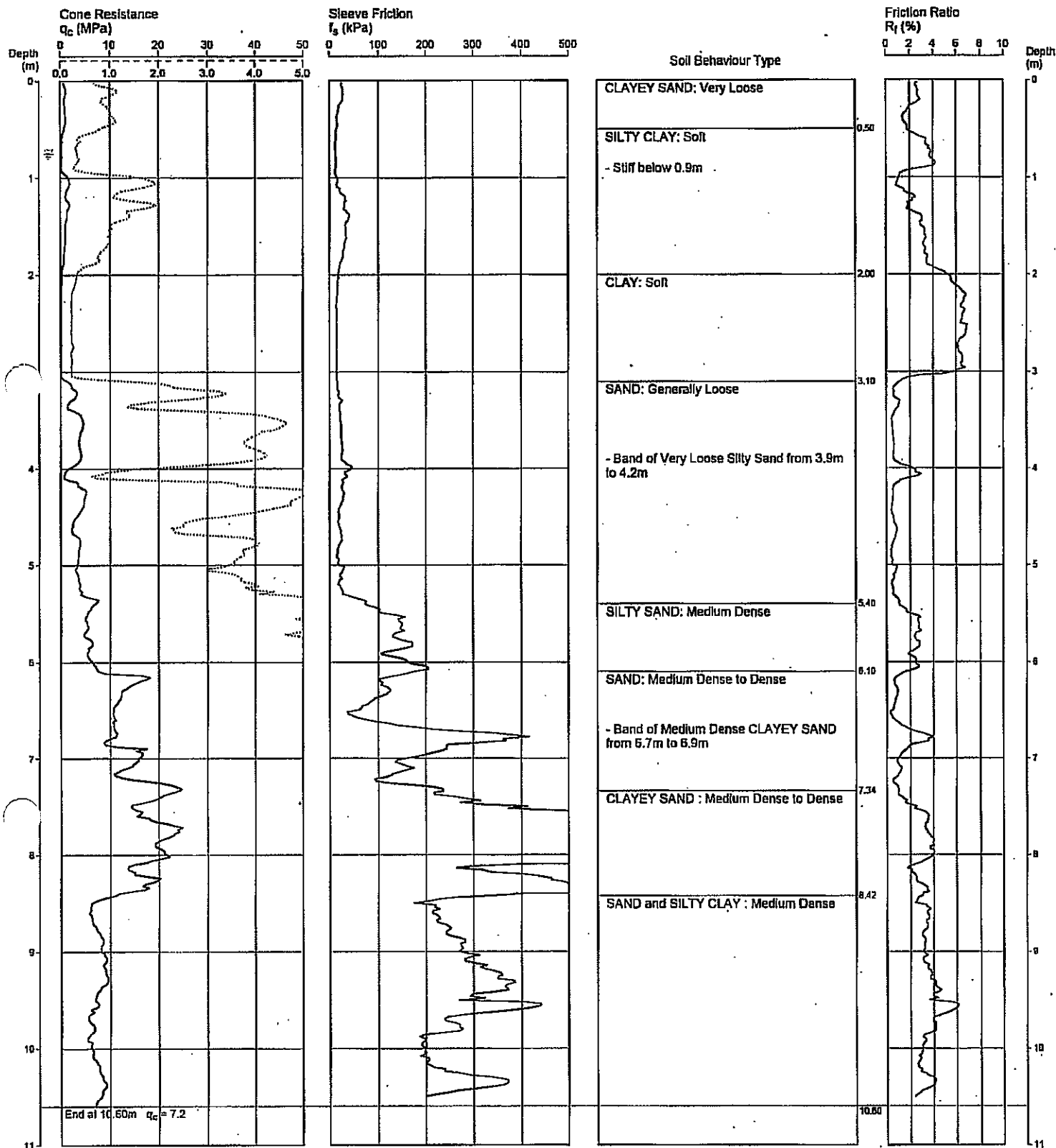
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 2.9m AHD



REMARKS: GPS: 478930E, 7667108N.

Date
Plotted
Checked

File: P:\50888 - CONOONBA, Factual Geotechnical Investigation, DPI Site\Gint or CPT logs\50888-2
Cone ID: CONE-182 Type: 2 Standard

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CONE PENETRATION TEST

CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Oonoonba

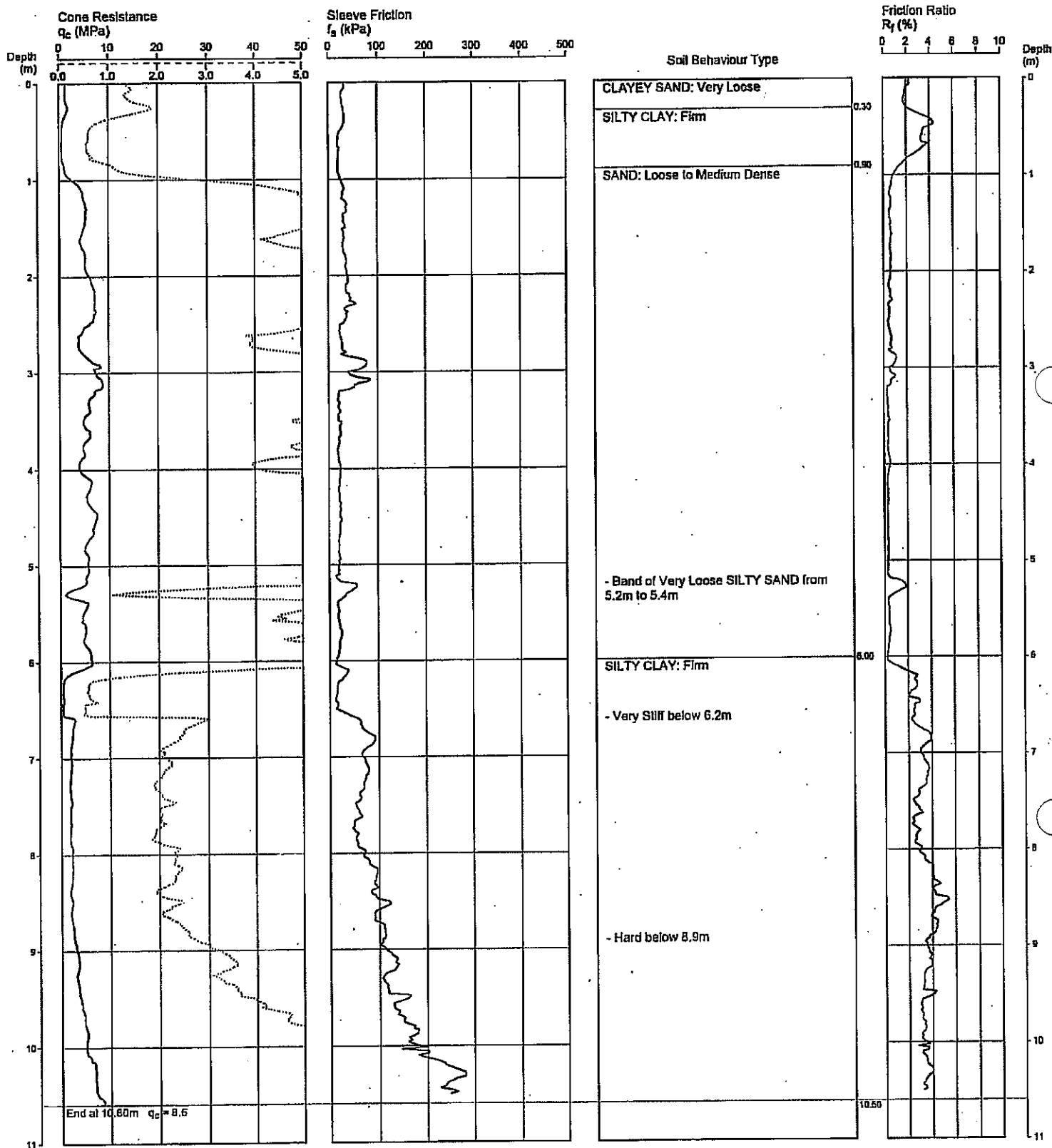
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 4.4m AHD



REMARKS: SWL - Cave in of CPT hole at 3.2m - dry. GPS: 479991E, 7866904N

Date
Plotted
Checked

File: P\50888 - OONONBA, Factual Geotechnical Investigation, DPI Site/Gint or CPT logs\50888-2
 Cone ID: CONE-152 Type: 2 Standard

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CONE PENETRATION TEST

CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Onoonba

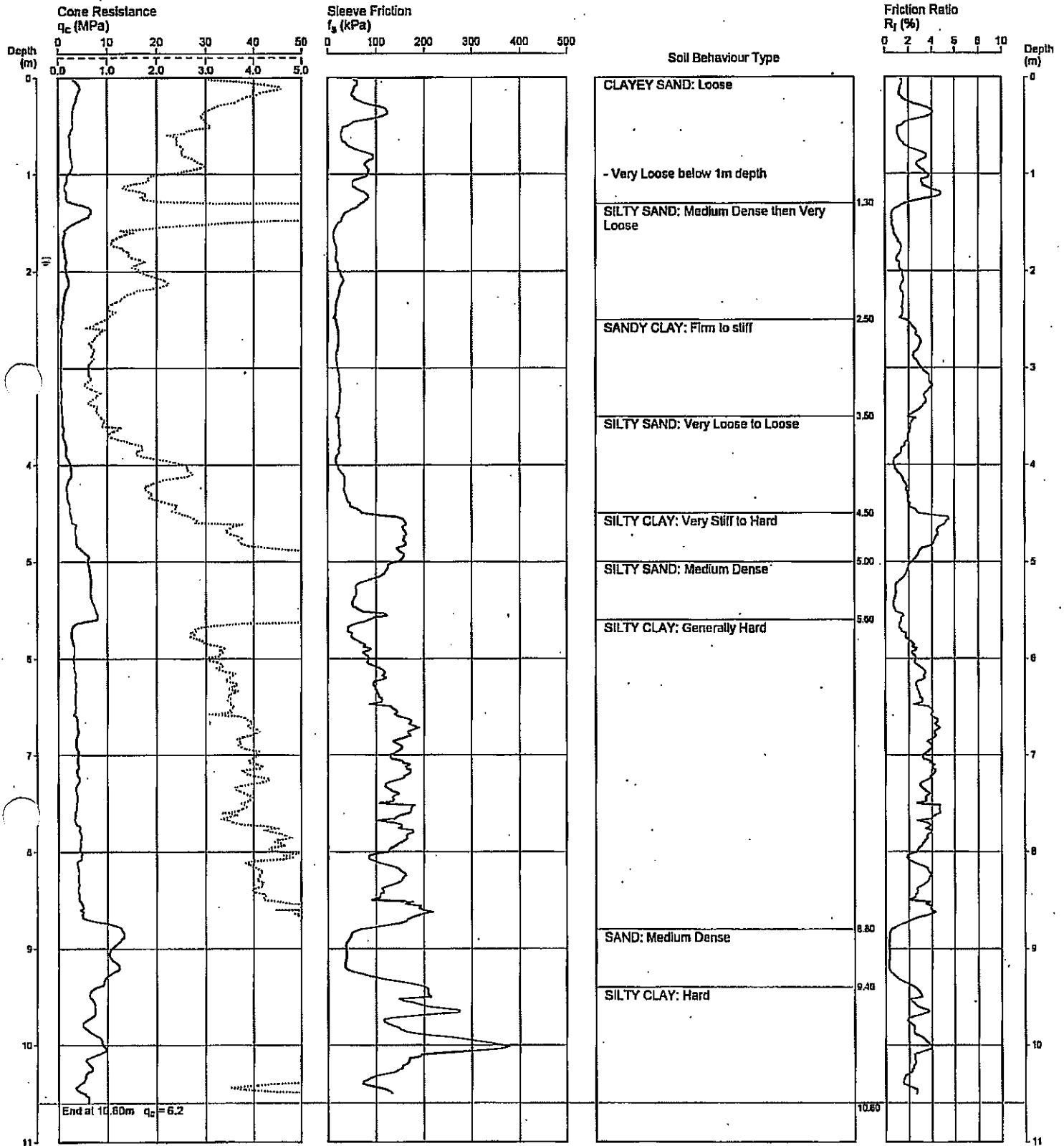
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 4.1m AHD



REMARKS: GPS: 480447E, 7665818N

Date
Plotted
Checked

File: P:\50888 - ONOONBA, Factual Geotechnical Investigation, DPI Site/Gint or CPT logs\50888-2
Cone ID: CONE-152 Type: 2 Standard

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CONE PENETRATION TEST

CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Dondonba

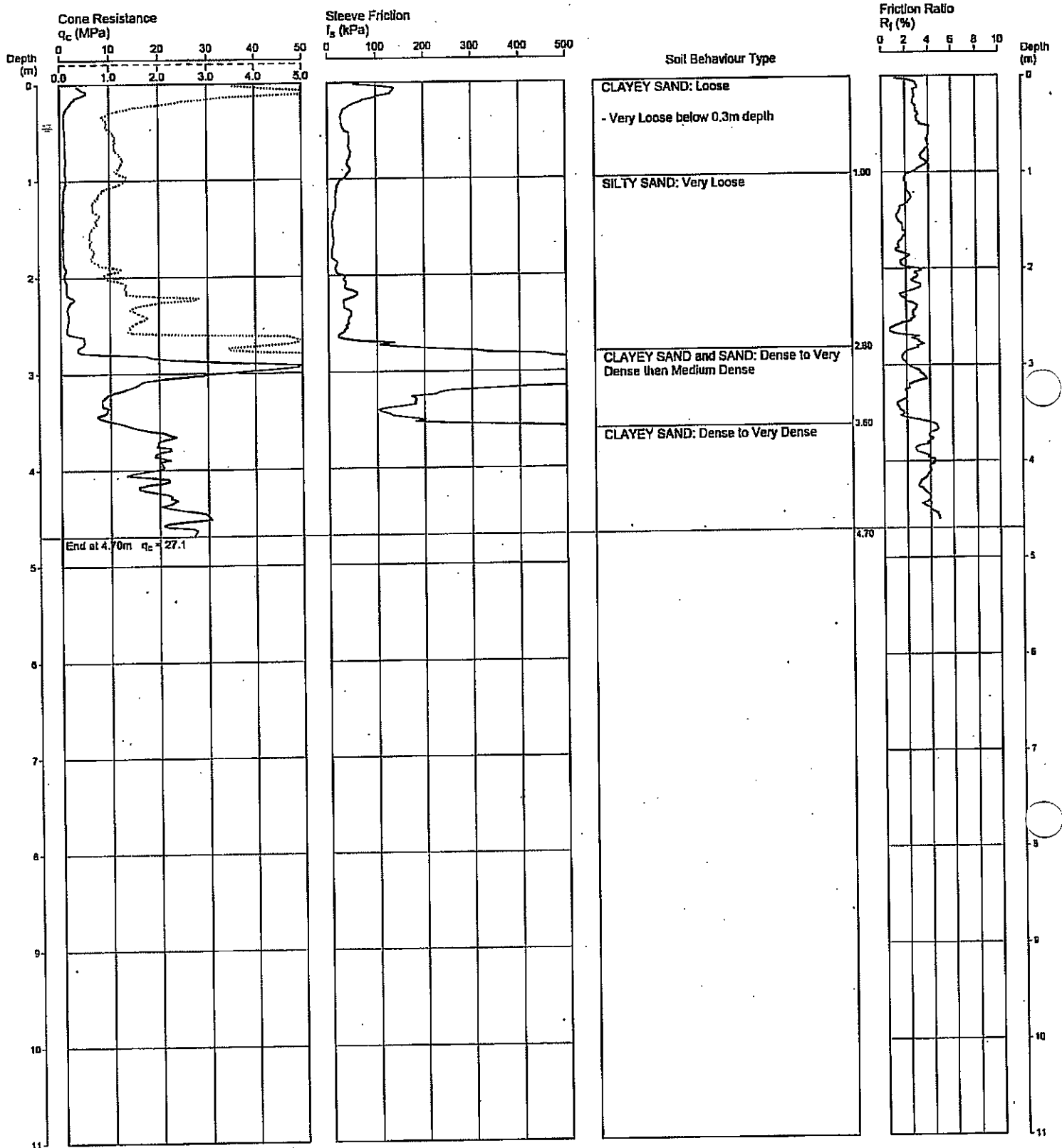
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 3.4m AHD



REMARKS: GPS: 480020E, 7867222N

Date
Plotted
Checked

File: P:\50888 - DONDONBA, Factual Geotechnical Investigation, DPI Site\Gint or CPT logs\50888-2
Cone ID: CONE-152 Type: 2 Standard

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CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Oonoonba

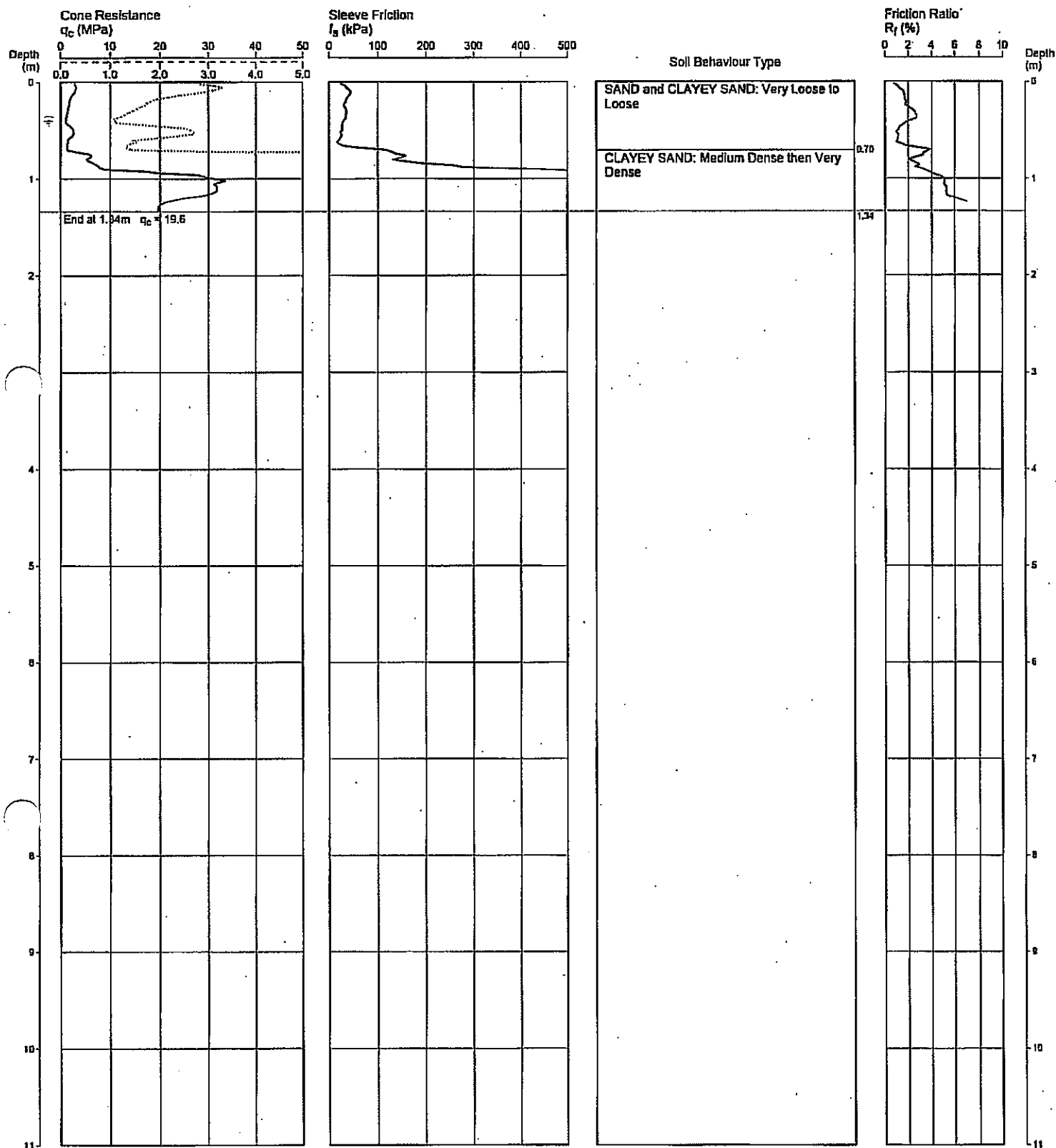
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 0.4m AHD



REMARKS: GPS: 479879E, 7867281N

Date
Plotted
Checked

File: P:\50888 - OONONBA, Factual Geotechnical Investigation, DPI Site\Gint or CPT logs\5088829
 Cone ID: CONE-152 Type: 2 Standard

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CONE PENETRATION TEST

CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Oonoonba

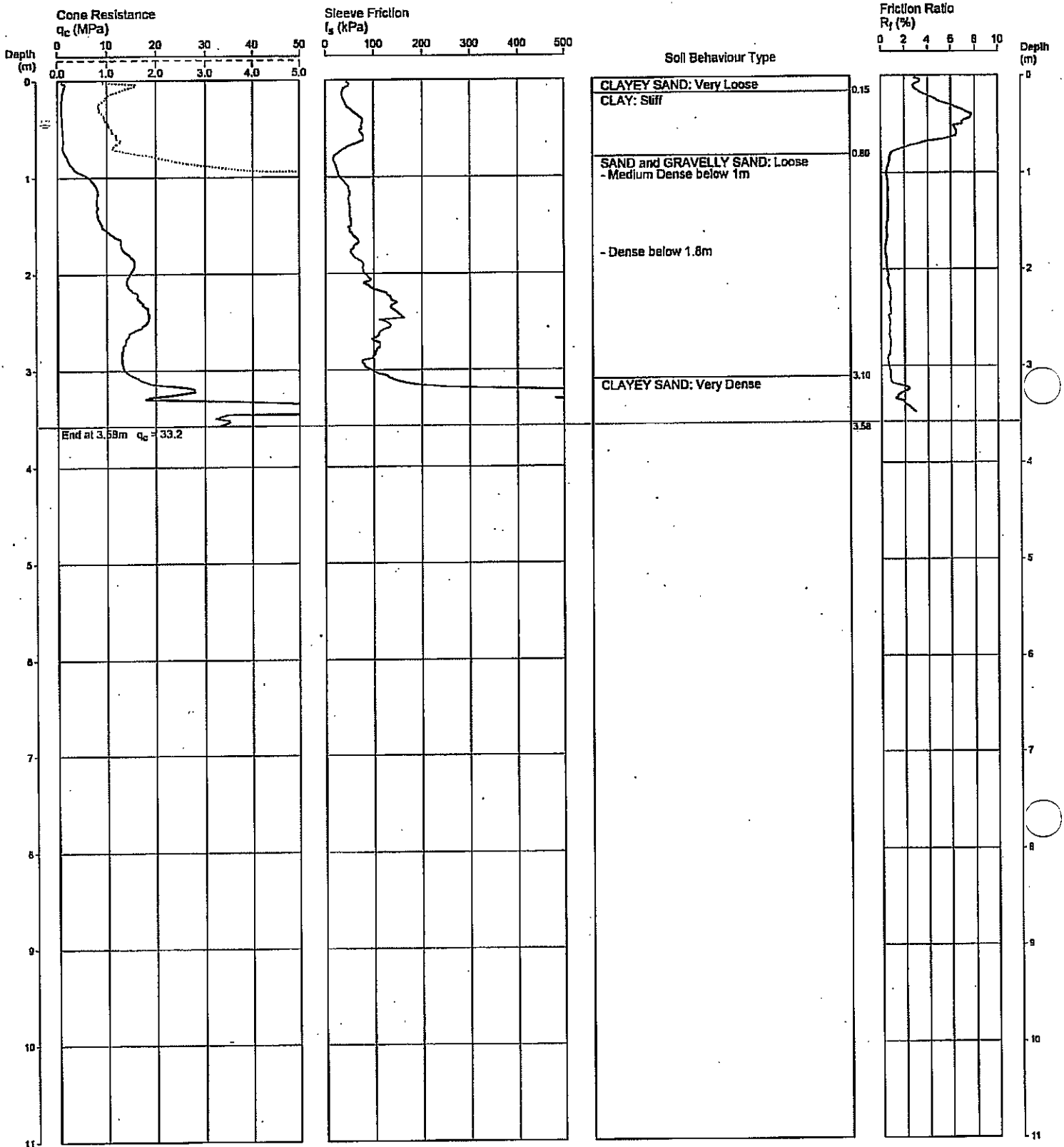
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 4m AHD



REMARKS: GPS: 479987E, 7667360N

Date
Plotted
Checked

File: P:\50888 - OONONBA, Factual Geotechnical Investigation, DPI SiteGht or CPT logs\50888-3
Cone ID: CONE-152 Type: 2 Standard

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CONE PENETRATION TEST

CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Conoonba

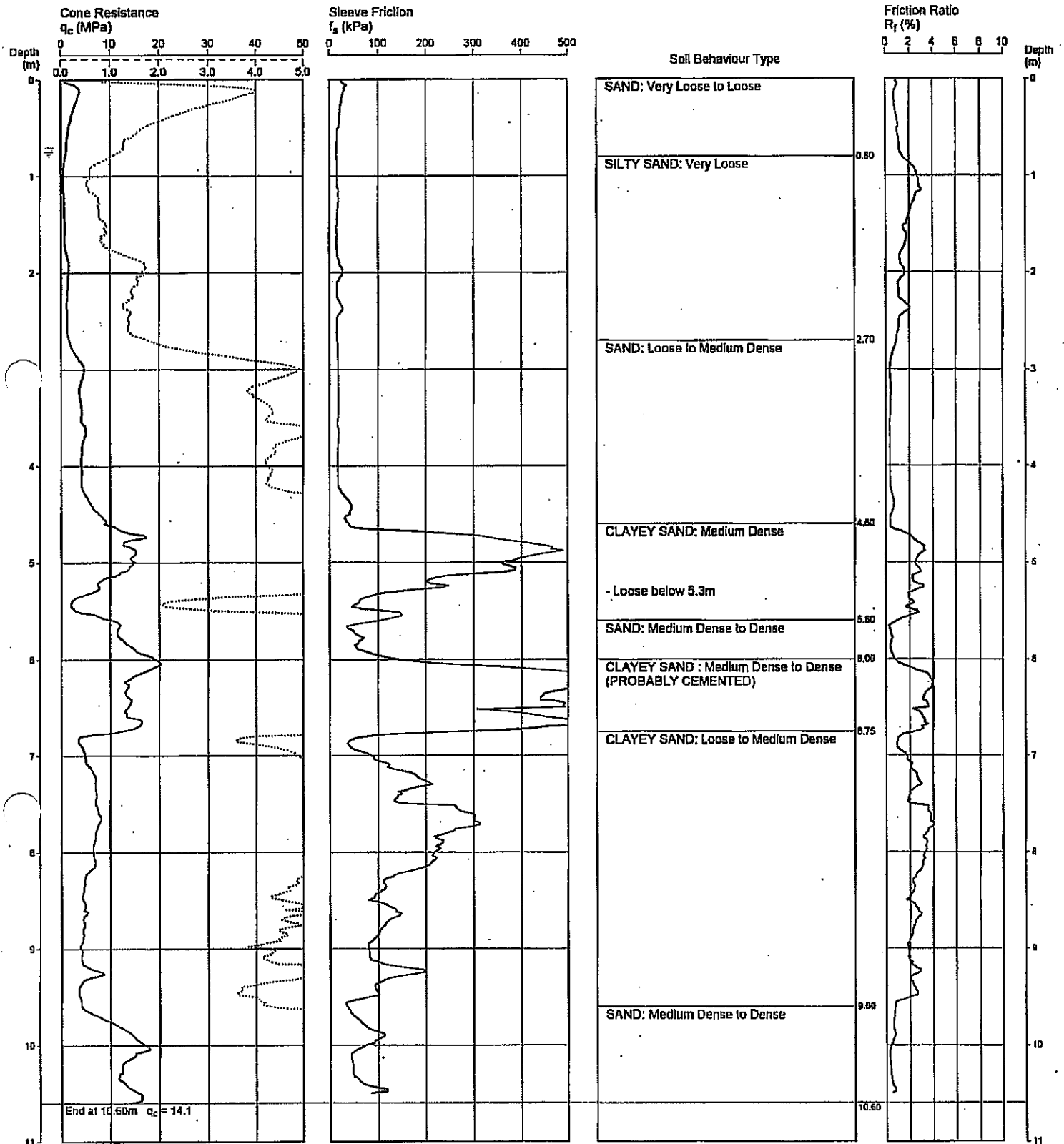
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 6m AHD



REMARKS: GPS: 480122E, 7867386N

Date
Plotted
Checked

File: P:50888 - ODOONBA, Factual Geotechnical Investigation, DPI Site/Gint or CPT logs/50888-3
Cone ID: CONE-152 Type: 2 Standard

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CONE PENETRATION TEST

CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Conoonba

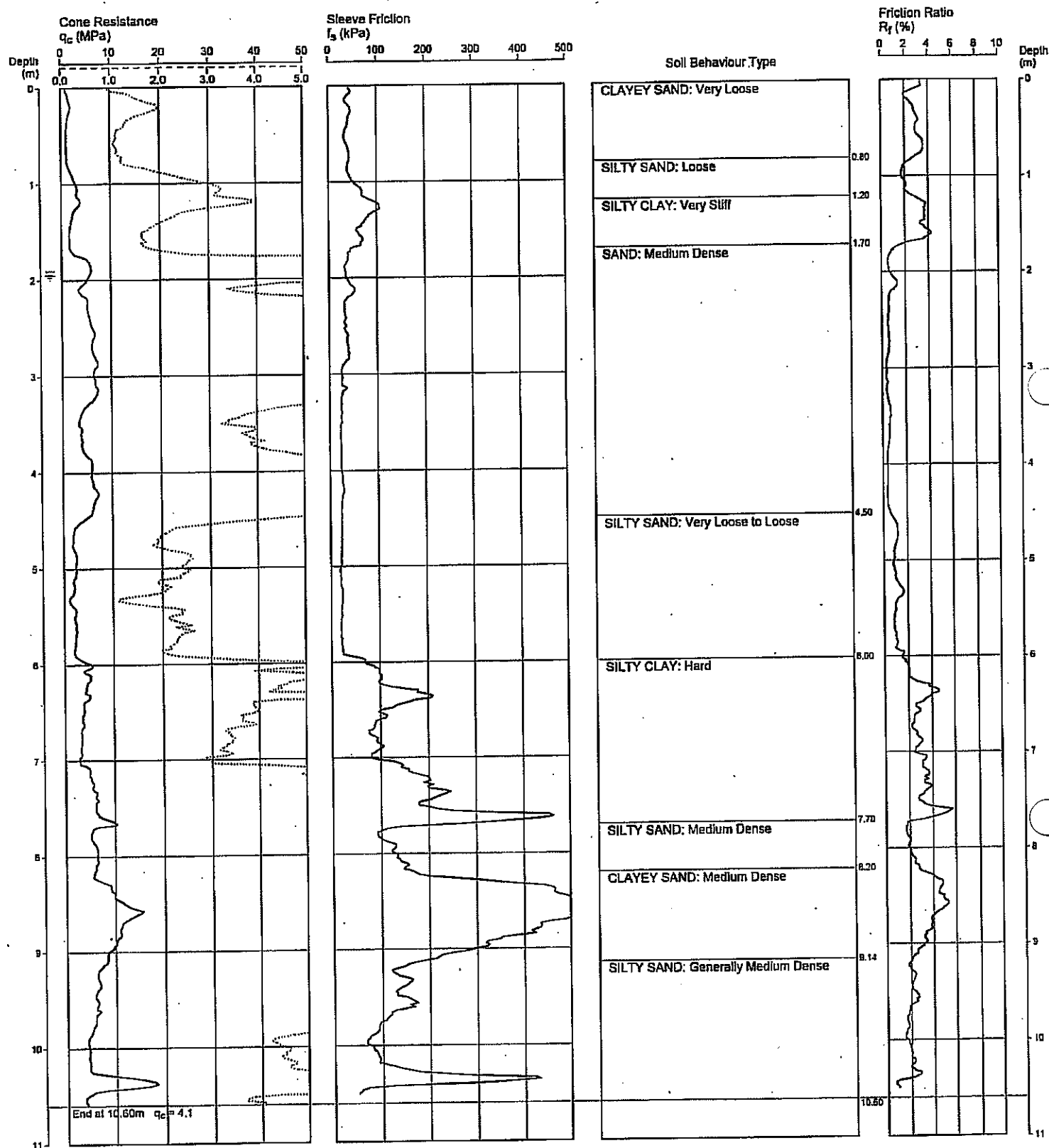
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 3.4m AHD



REMARKS: GPS: 480375E, 7667599N

Date
Plotted
Checked

File: P:\50888 - CONOONBA, Facultal Geotechnical Investigation, DPI Site/GInt or CPT logs\50888-3
Cone ID: CONE-152 Type: 2 Standard
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CONE PENETRATION TEST

CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Denoonba

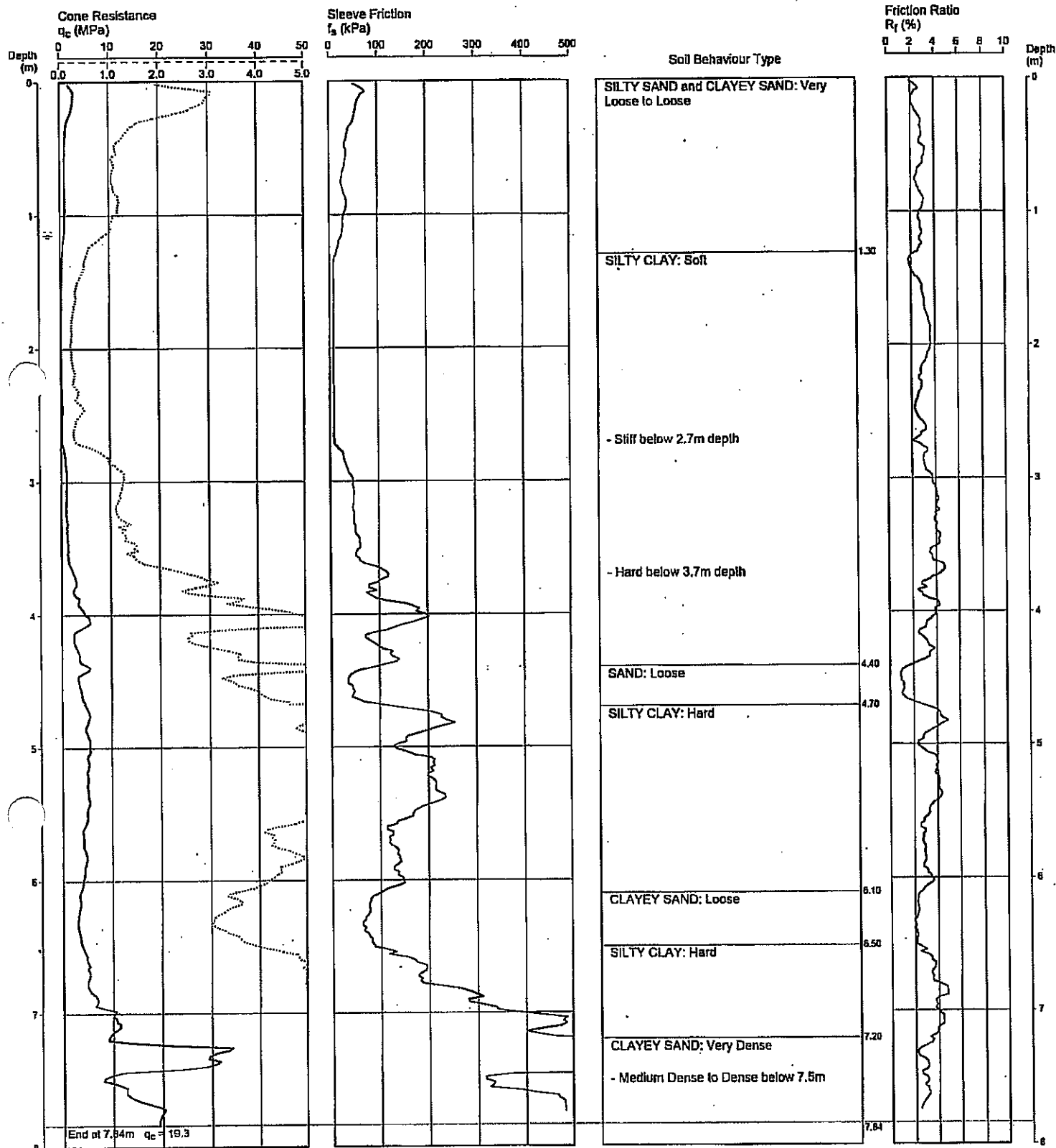
PROJECT No: 50888

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DATE 15/04/2010

SURFACE RL: 2.6m AHD



REMARKS: GPS: 480366E, 7867355N

Date:
Plotted
Checked

File: P:\50888 - OONONBA, Factual Geotechnical Investigation, DPI SilaGint or CPT logs\50888-3
Cone ID: CONE-152 Type: 2 Standard

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CONE PENETRATION TEST

CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Oonoonba

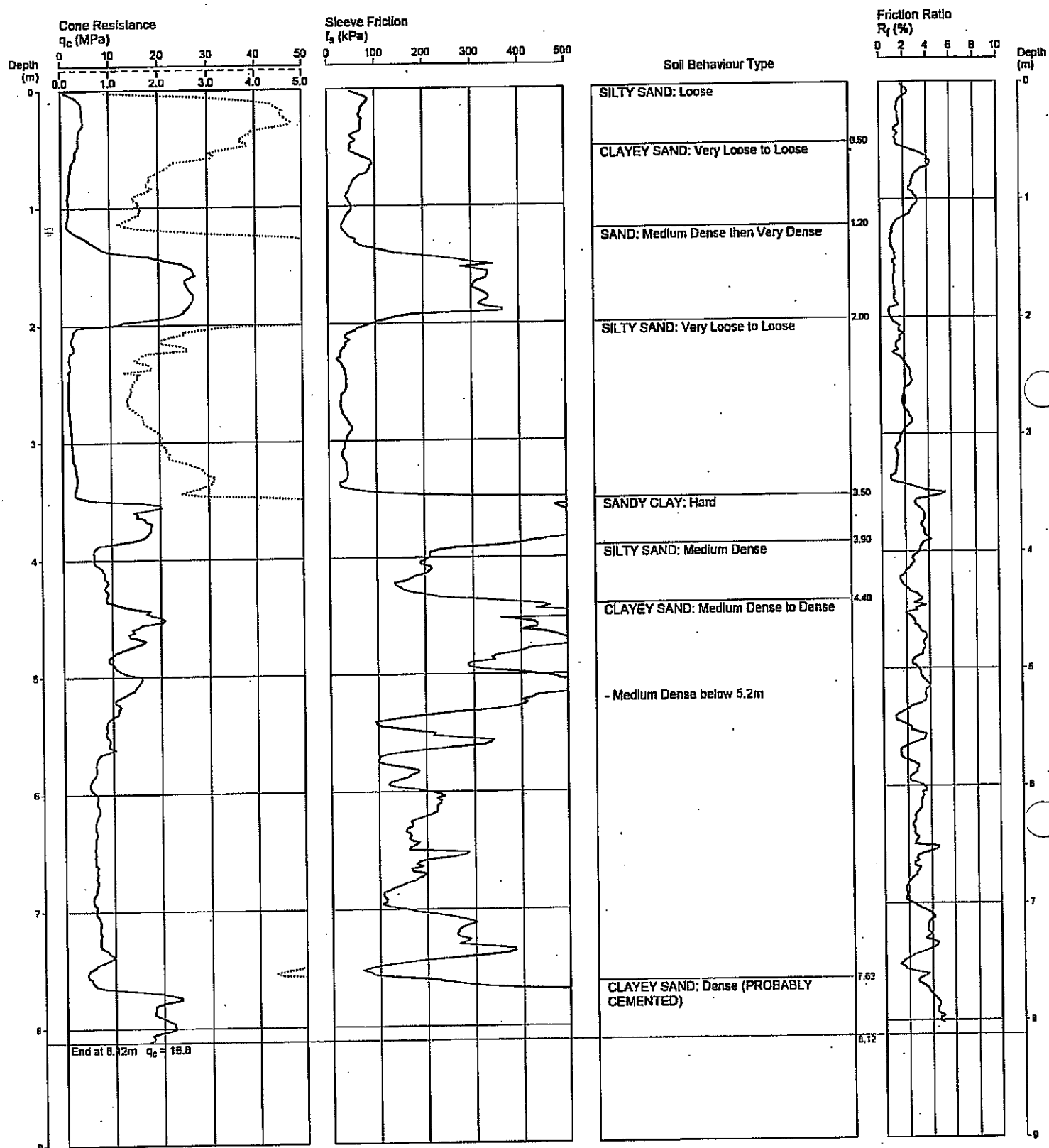
PROJECT No: 50888

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DATE 15/04/2010

SURFACE RL: 3.3m AHD



REMARKS: GPS: 480320E, 7667183N

Date
Plotted
Checked

File: P150888 - OONONBA, Factual Geotechnical Investigation, DPI Site/Gint or CPT logs\50888-3
Cone ID: CONE-152 Type: 2 Standard
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CONE PENETRATION TEST

CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Oonoonba

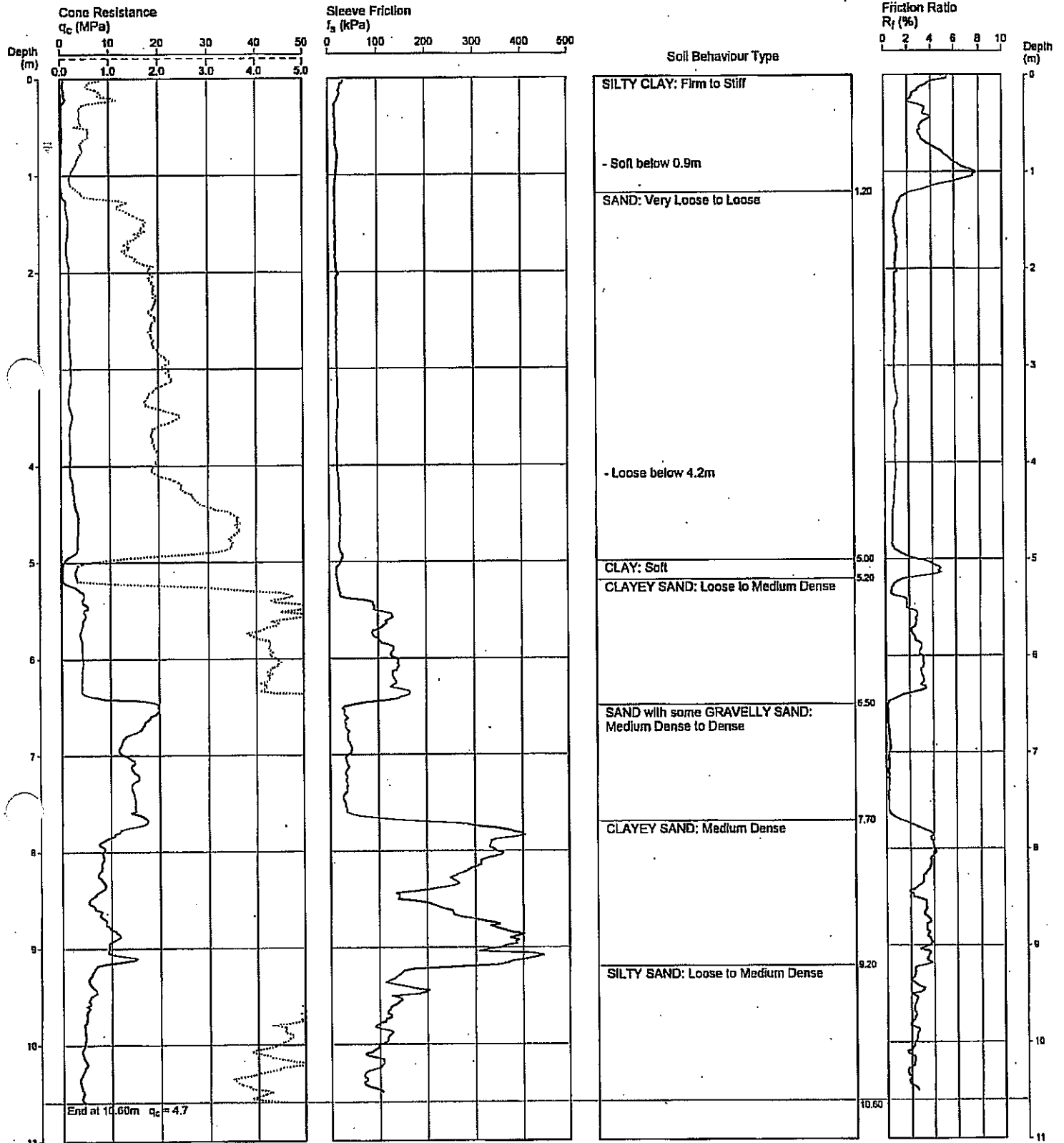
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 2.8m AHD



REMARKS: GPS: 479895E, 7857411N

Date
Plotted
Checked

File: P:50888 - OONONBA, Factual Geotechnical Investigation, DPI Site/Gint or CPT logs\50888-3
Cone ID: CONE-152 Type: 2 Standard
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RESULTS OF MOISTURE CONTENT, PLASTICITY AND LINEAR SHRINKAGE TESTS

Client: AECOM Australia Pty Ltd		Project No: 50888	
Project: Factual Geotechnical Investigation		Report No: T10-298	
Location: Oonoonba DPI Site		Report Date: 13/05/2010	
		Date Sampled: 16/04/2010	
		Date of Test: 10/05/2010	
		Page: 1 of 1	

TEST LOCATION	DEPTH (m)	DESCRIPTION	CODE	W _F %	W _L %	W _P %	PI %	*LS %
Pit 2	0.5-0.95	Dark brown sandy gravelly silt	2,5	23.5	26	21	6	4
Pit 4	0.5-0.95	Grey orange slightly sandy clay	2,5	18.5	40	17	23	8
Pit 4	1.5	Dark brown sand	2,5	20.0	22	NP	NP	0
Pit 8	1.0	Orange brown sand and silty clay	2,5	11.6	33	15	18	10
Pit 8	2.0	Yellow brown slightly silty sand	2,5	16.0	23	NP	NP	1
Pit 12	0.25	Dark brown black silt and sand	2,5	16.6	23	22	1	3

Legend:

W_F Field Moisture Content
W_L Liquid limit
W_P Plastic limit
PI Plasticity Index
LS Linear shrinkage from liquid limit condition (Mould length 250mm)

Test Methods:

Moisture Content: AS 1289 2.1.1
Liquid Limit: AS 1289 3.1.2
Plastic Limit: AS 1289 3.2.1
Plasticity Index: AS 1289 3.3.1
Linear Shrinkage: AS 1289 3.4.1

Code

Sample history for plasticity tests

1. Air dried
2. Low temperature (<50°C) oven dried
3. Oven (105°C) dried
4. Unknown

Method of preparation for plasticity tests

5. Dry sieved
6. Wet sieved
7. Natural

*Specify if sample crumbled CR or curled CU

Sampling Method(s): Sampled by Townsville Engineering Department

Remarks: NP - Nonplastic

Approved Signatory:

D. Pollock

Dean Pollock
Laboratory Manager



NATA Accredited Laboratory Number: 828

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Tested: KT
Checked: DP



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Douglas Partners Pty Ltd
ABN 75 053 980 117

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Phone (07) 4779 9866
Fax: (07) 4725 1224
townsville@douglaspartners.com.au

RESULTS OF MOISTURE CONTENT, PLASTICITY AND LINEAR SHRINKAGE TESTS

Client:	AECOM Australia Pty Ltd			Project No:	50888			
Project:	Factual Geotechnical Investigation			Report No:	T10-300			
				Report Date:	13/05/2010			
Location:	Oonoonba DPI Site			Date Sampled:	16/04/2010			
				Date of Test:	10/05/2010			
				Page:	1 of 1			

TEST LOCATION	DEPTH (m)	DESCRIPTION	CODE	W _F %	W _L %	W _P %	PI %	*LS %
Pit 12	0.75-1.2	Orange brown sand and silt	2,5	25.7	23	20	3	3
Pit 17	1.0	Light brown silty sand	2,5	22.3	37	NP	NP	0
Pit 17	1.5-1.95	Dark brown sandy clay	2,5	22.7	28	21	7	5
Pit 25	0.3	Brown sand with some gravel	2,5	3.1	28	NP	NP	0
Pit 26	0.6	Brown sand	2,5	6.3	31	NP	NP	0

Legend:

W_F Field Moisture Content
W_L Liquid limit
W_P Plastic limit
PI Plasticity index
LS Linear shrinkage from liquid limit condition (Mould length 250mm)

Test Methods:

Moisture Content: AS 1289 2.1.1
Liquid Limit: AS 1289 3.1.2
Plastic Limit: AS 1289 3.2.1
Plasticity Index: AS 1289 3.3.1
Linear Shrinkage: AS 1289 3.4.1

Code

Sample history for plasticity tests

1. Air dried
2. Low temperature (<50°C) oven dried
3. Oven (105°C) dried
4. Unknown

Method of preparation for plasticity tests

5. Dry sieved
6. Wet sieved
7. Natural

*Specify if sample crumbled CR or curled CU

Sampling Method(s): Sampled by Townsville Engineering Department

Remarks: NP - Nonplastic

Approved Signatory:



NATA Accredited Laboratory Number: 828

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Tested: KT
Checked: DP

D. Pollock
Dean Pollock
Laboratory Manager



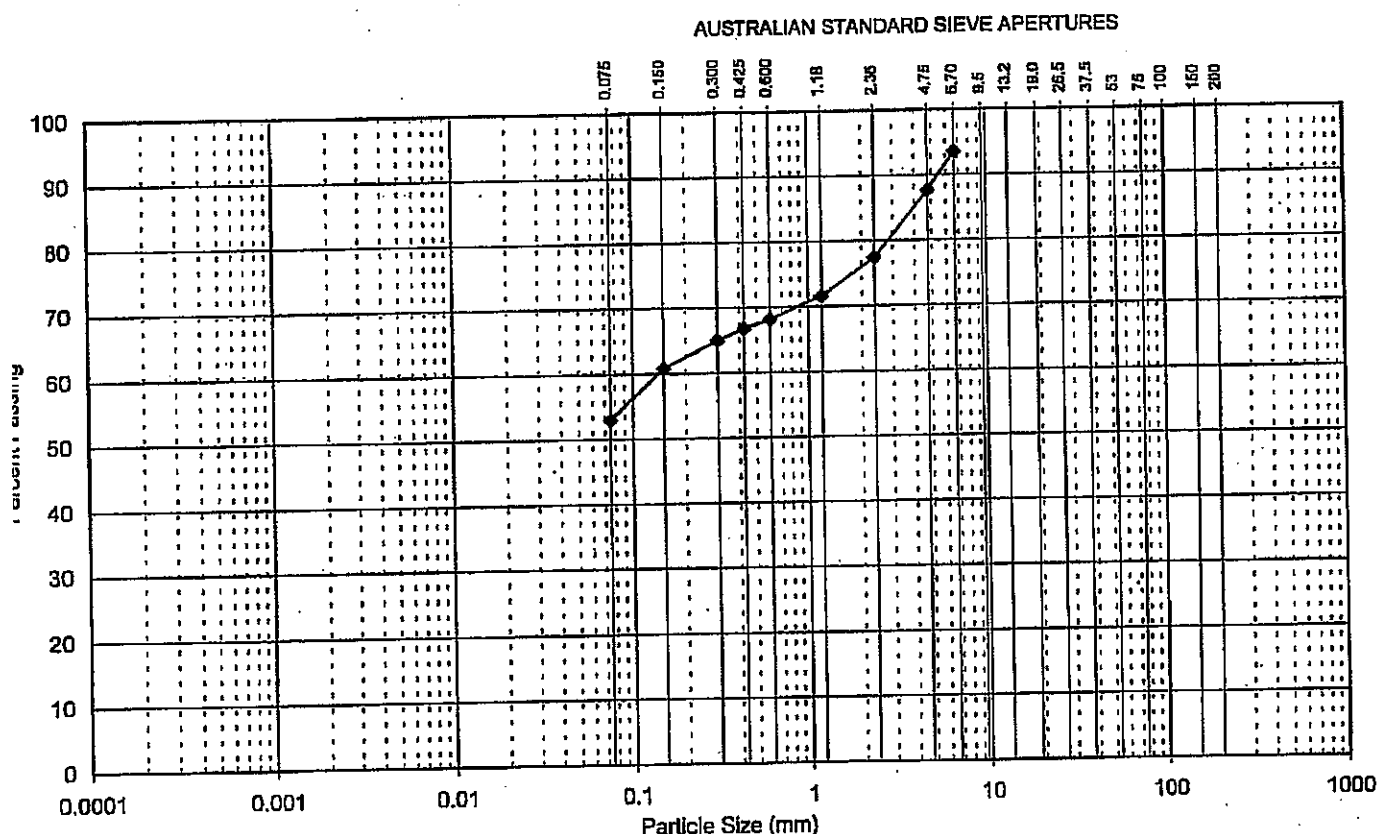
Douglas Partners
Geotechnics - Environment - Groundwater

Douglas Partners Pty Ltd
ABN 75 053 980 117

2/56 Pilkington Street
Garbutt QLD 4814
Phone 07 4779 9866
Fax: 07 4725 1224
townsville@douglaspartners.com.au

RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-283
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 2	Date Sampled:	16/04/2010
Depth / Layer :	0.5-0.95m	Date of Test:	12/05/2010
		Page:	1 of 1



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	0.002	0.006	0.02	0.06	0.2	0.6	2.0	6.0	20	60

Description: Dark brown sandy gravelly silt

Test Method(s): AS 1289.3.6.1

Sampling Method(s): Sampled by Townsville Engineering Department

Method of Dispersion: Calgon

Remarks:



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Approved Signatory:

Tested:	KT
Checked:	DP

D. Pollock

Dean Pollock
Laboratory Manager



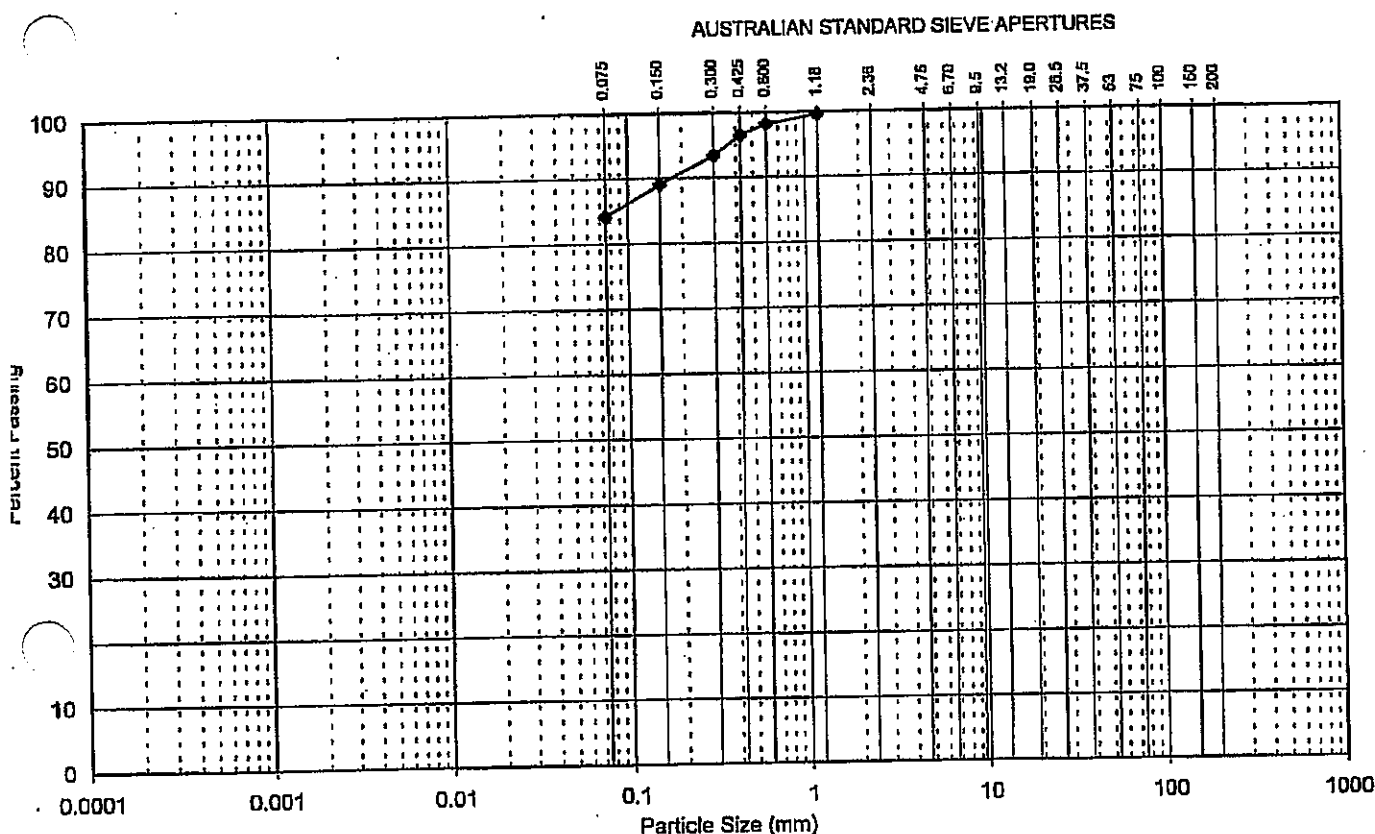
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Phone 07 4779 9866
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RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-289
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 4	Date Sampled:	16/04/2010
Depth / Layer :	0.5-0.95m	Date of Test:	12/05/2010
		Page:	1 of 1



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	0.002	0.006	0.02	0.06	0.2	0.6	2.0	6.0	20	60

Description: Grey orange slightly sandy clay

Test Method(s): AS 1289.3.6.1

Sampling Method(s): Sampled by Townsville Engineering Department

Method of Dispersion: Calgon

Remarks:



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Checked:	DP

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Dean Pollock
Laboratory Manager



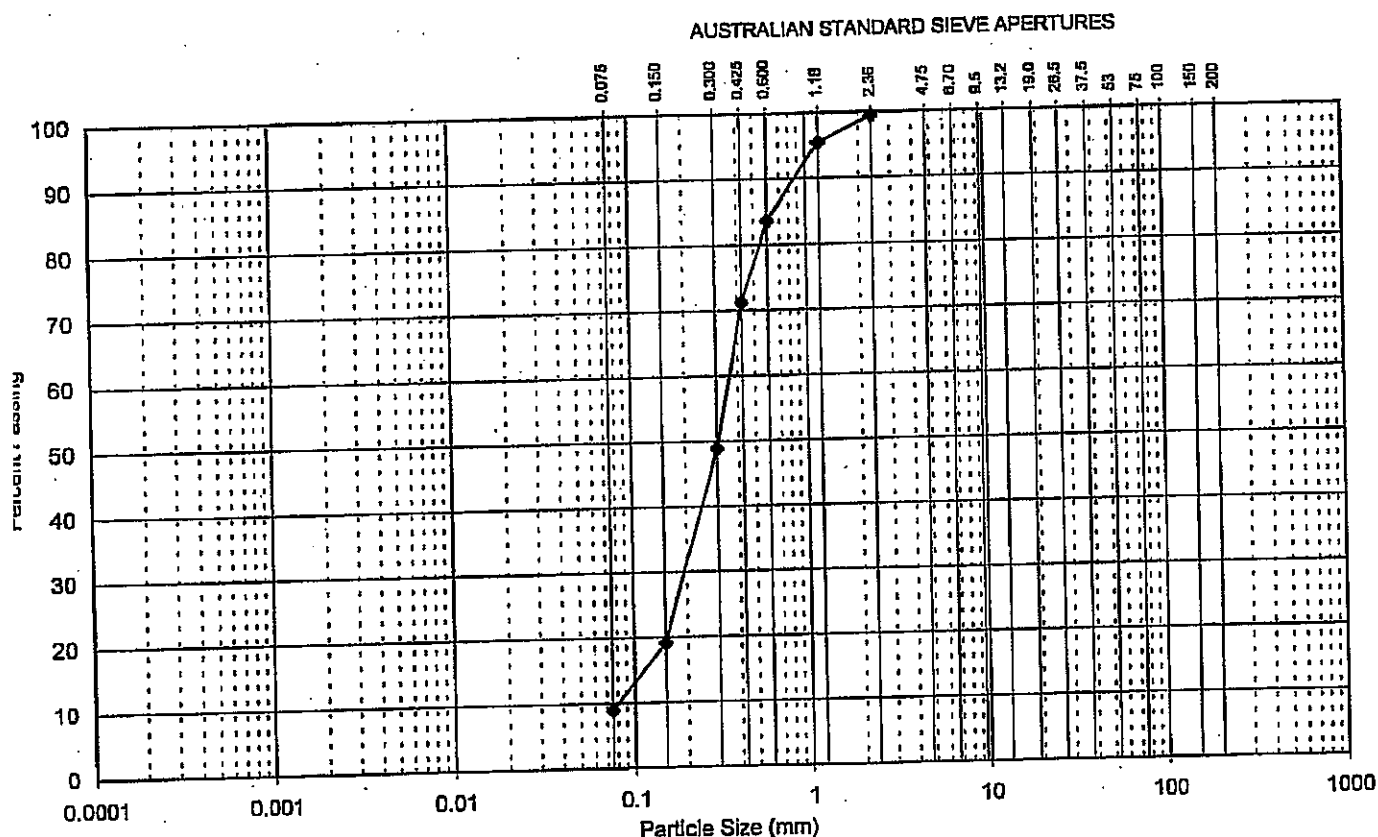
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RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-284
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 4	Date Sampled:	16/04/2010
Depth / Layer :	1.5	Date of Test:	12/05/2010
		Page:	1 of 1



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	0.002	0.006	0.02	0.06	0.2	0.6	2.0	6.0	20	60

Description: Dark brown sand
Test Method(s): AS 1289.3.6.1
Sampling Method(s): Sampled by Townsville Engineering Department
Method of Dispersion: Calgon

Remarks:



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Approved Signatory:

Tested:	KT
Checked:	DP

D. Pollock
 Dean Pollock
 Laboratory Manager



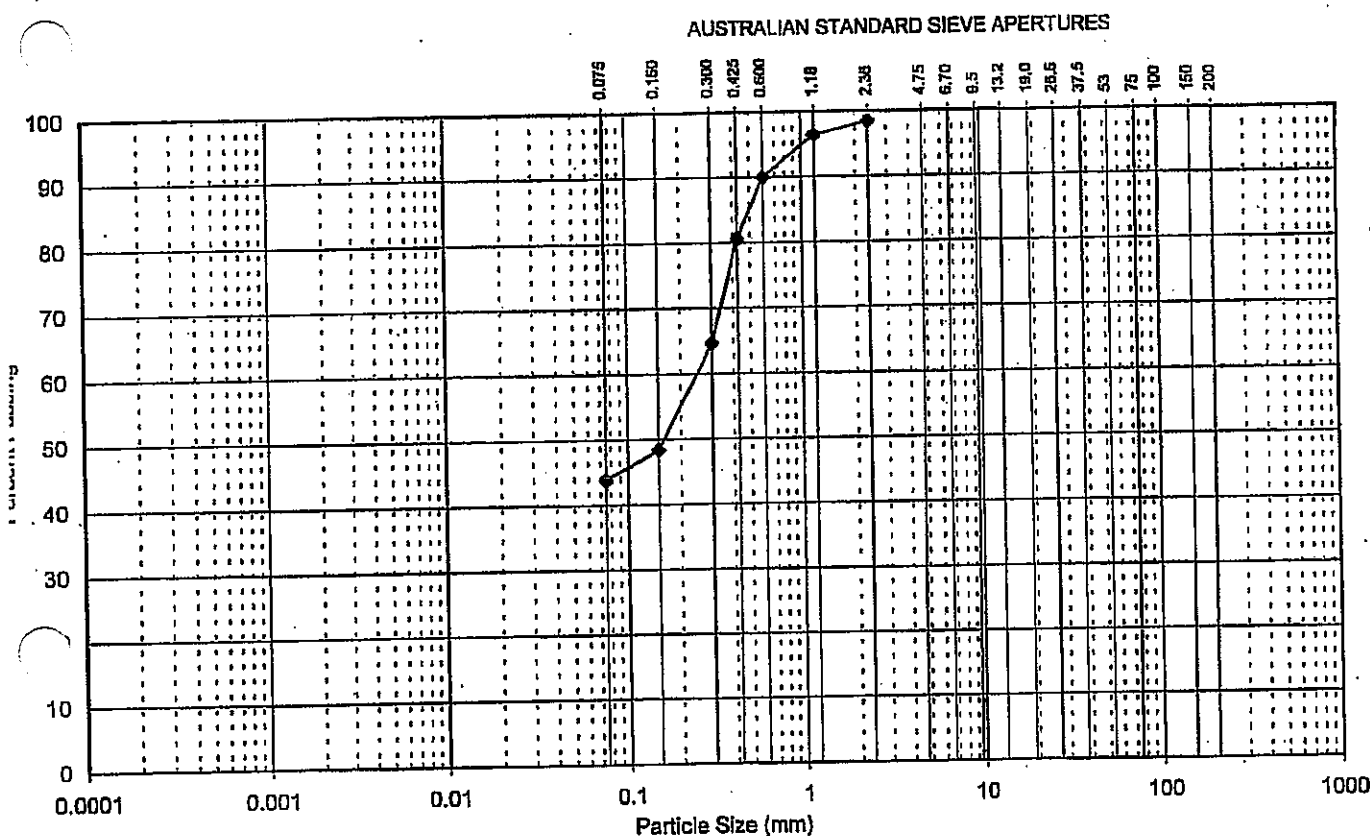
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RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-285
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 8	Date Sampled:	16/04/2010
Depth / Layer :	1.0m	Date of Test:	12/05/2010
		Page:	1 of 1



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	0.002	0.006	0.02	0.06	0.2	0.6	2.0	6.0	20	60

Description: Orange sand and silty clay
Test Method(s): AS 1289.3.6.1
Sampling Method(s): Sampled by Townsville Engineering Department
Method of Dispersion: Calgon

Remarks:



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Approved Signatory:

Tested:	KT
Checked:	DP

DPollock
Dean Pollock
Laboratory Manager



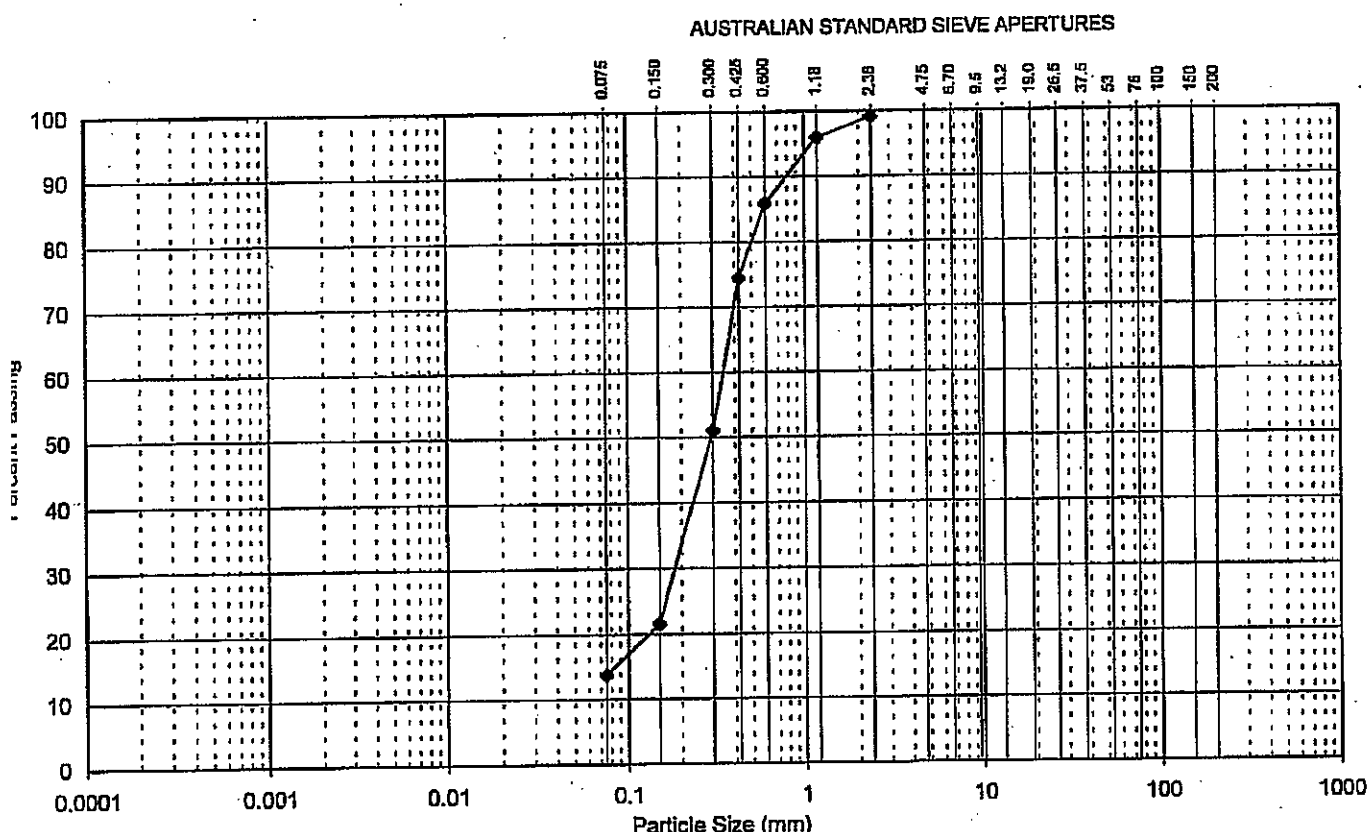
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RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-286
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	PK 8	Date Sampled:	16/04/2010
Depth / Layer :	2.0m	Date of Test:	12/05/2010
		Page:	1 of 1



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	0.002	0.005	0.02	0.06	0.2	0.6	2.0	6.0	20	60

Description: Yellow brown slightly silty sand
Test Method(s): AS 1289.3.6.1
Sampling Method(s): Sampled by Townsville Engineering Department
Method of Dispersion: Calgon

Remarks:



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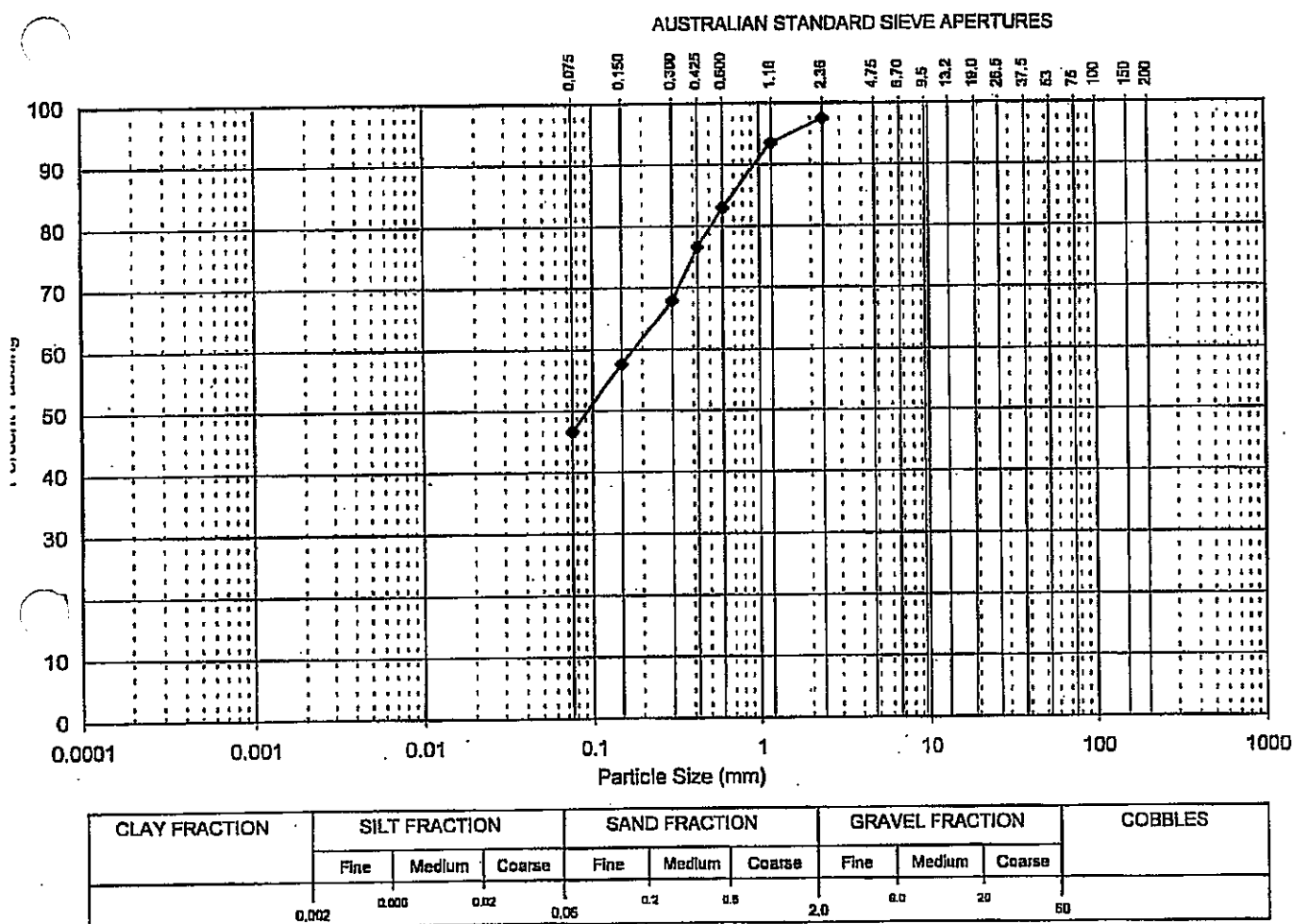
Approved Signatory:

Tasted: KT
 Checked: DP

Opollack
 Dean Pollock
 Laboratory Manager

RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-287
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 12	Date Sampled:	16/04/2010
Depth / Layer :	0.25m	Date of Test:	12/05/2010
		Page:	1 of 1



Description: Dark brown black silt and sand

Test Method(s): AS 1289.3.6.1

Sampling Method(s): Sampled by Townsville Engineering Department

Method of Dispersion: Calgon

Remarks:



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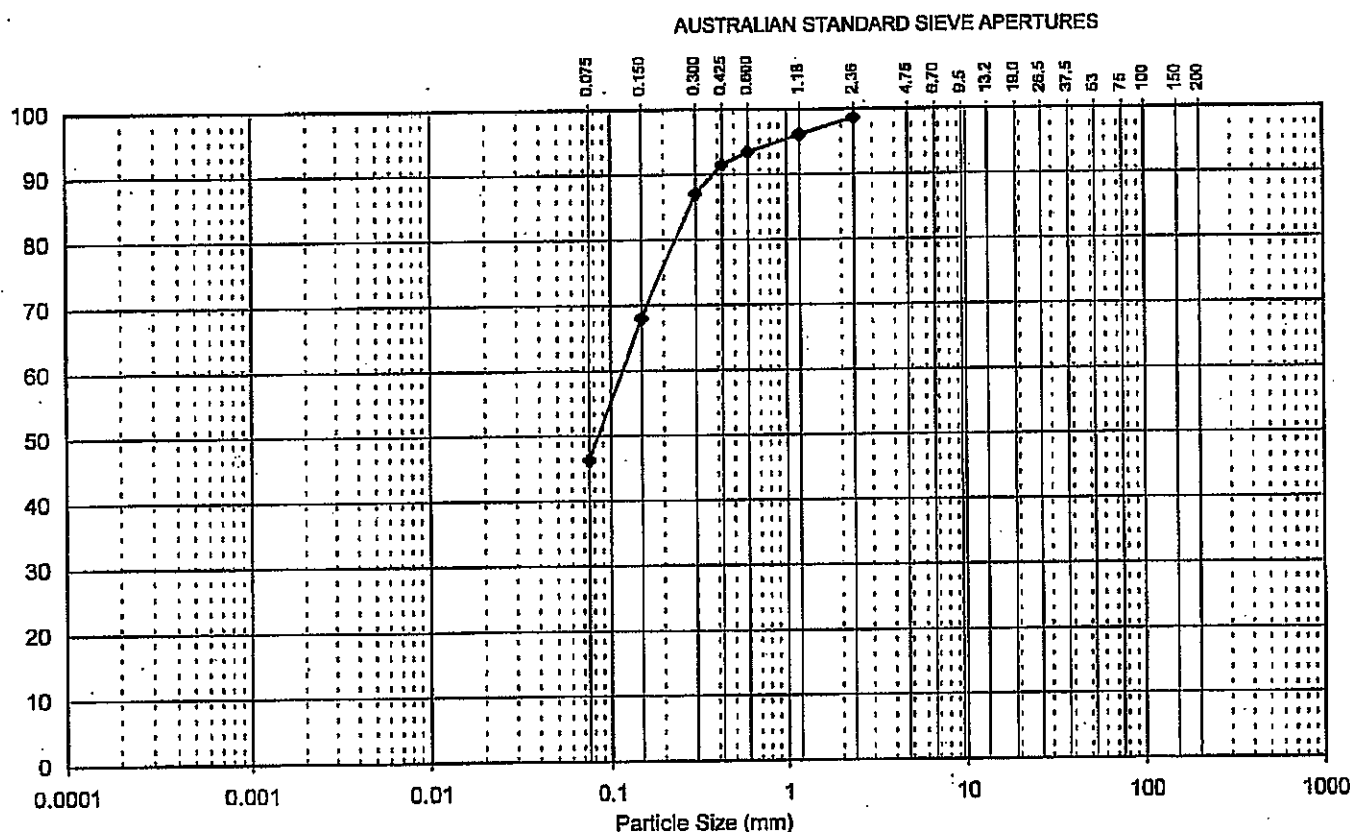
Approved Signatory:

Tested: KT
Checked: DP

DPollock
Dean Pollock
Laboratory Manager

RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-288
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 12	Date Sampled:	16/04/2010
Depth / Layer :	0.75-1.2m	Date of Test:	12/05/2010
		Page:	1 of 1



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	0.002	0.005	0.02	0.06	0.2	0.6	2.0	6.0	20	60

Description: Orange brown sand and silt

Test Method(s): AS 1289.3.6.1

Sampling Method(s): Sampled by Townsville Engineering Department

Method of Dispersion: Calgon

Remarks:



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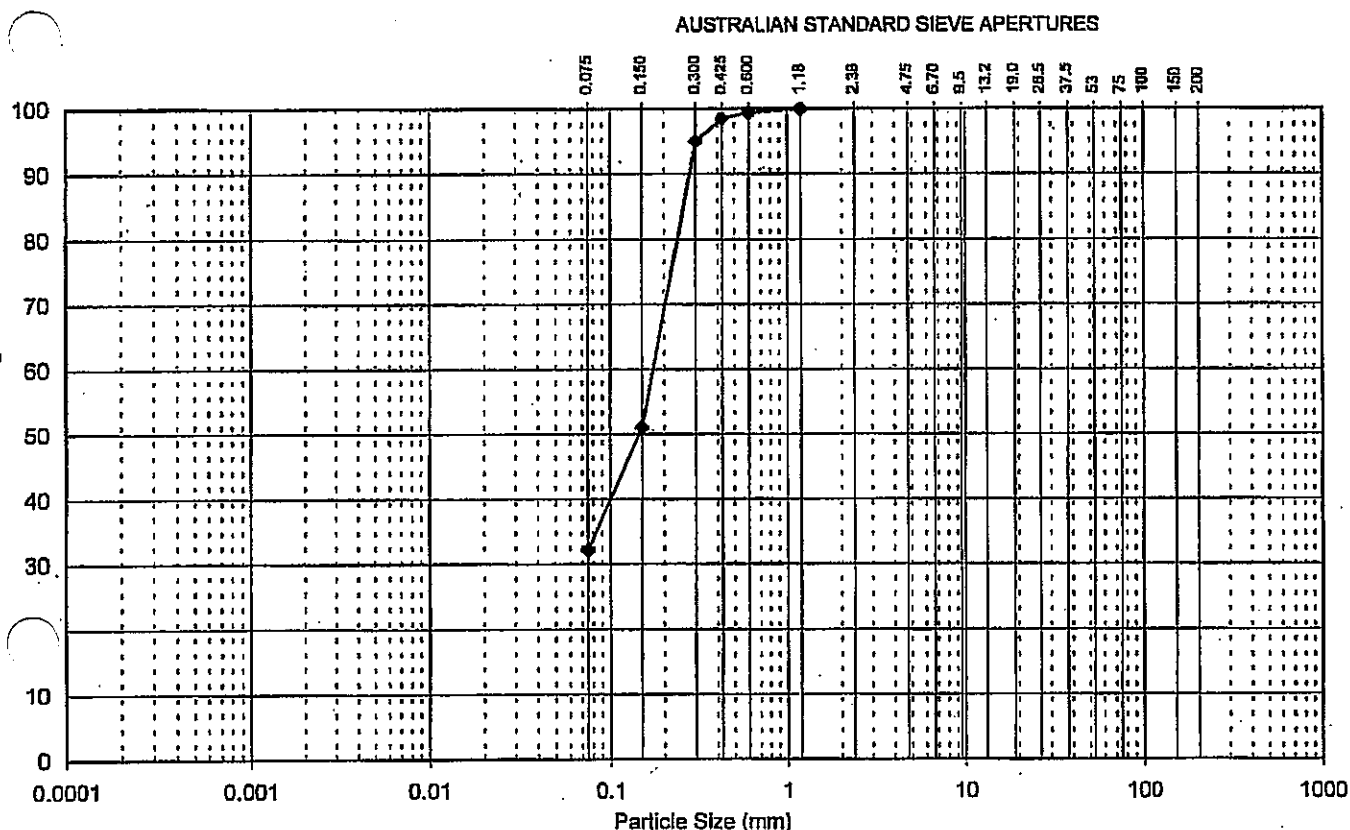
Approved Signatory:

Tested:	KT
Checked:	DP

DPollock
Dean Pollock
Laboratory Manager

RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-290
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 17	Date Sampled:	16/04/2010
Depth / Layer :	1.0m	Date of Test:	12/05/2010
		Page:	1 of 1



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	0.002	0.006	0.02	0.06	0.2	0.6	2.0	6.0	20	60

Description: Light brown silty sand

Test Method(s): AS 1289.3.6.1

Sampling Method(s): Sampled by Townsville Engineering Department

Method of Dispersion: Calgon

Remarks:



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Approved Signatory:

Tested:	KT
Checked:	DP

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Dean Pollock
Laboratory Manager



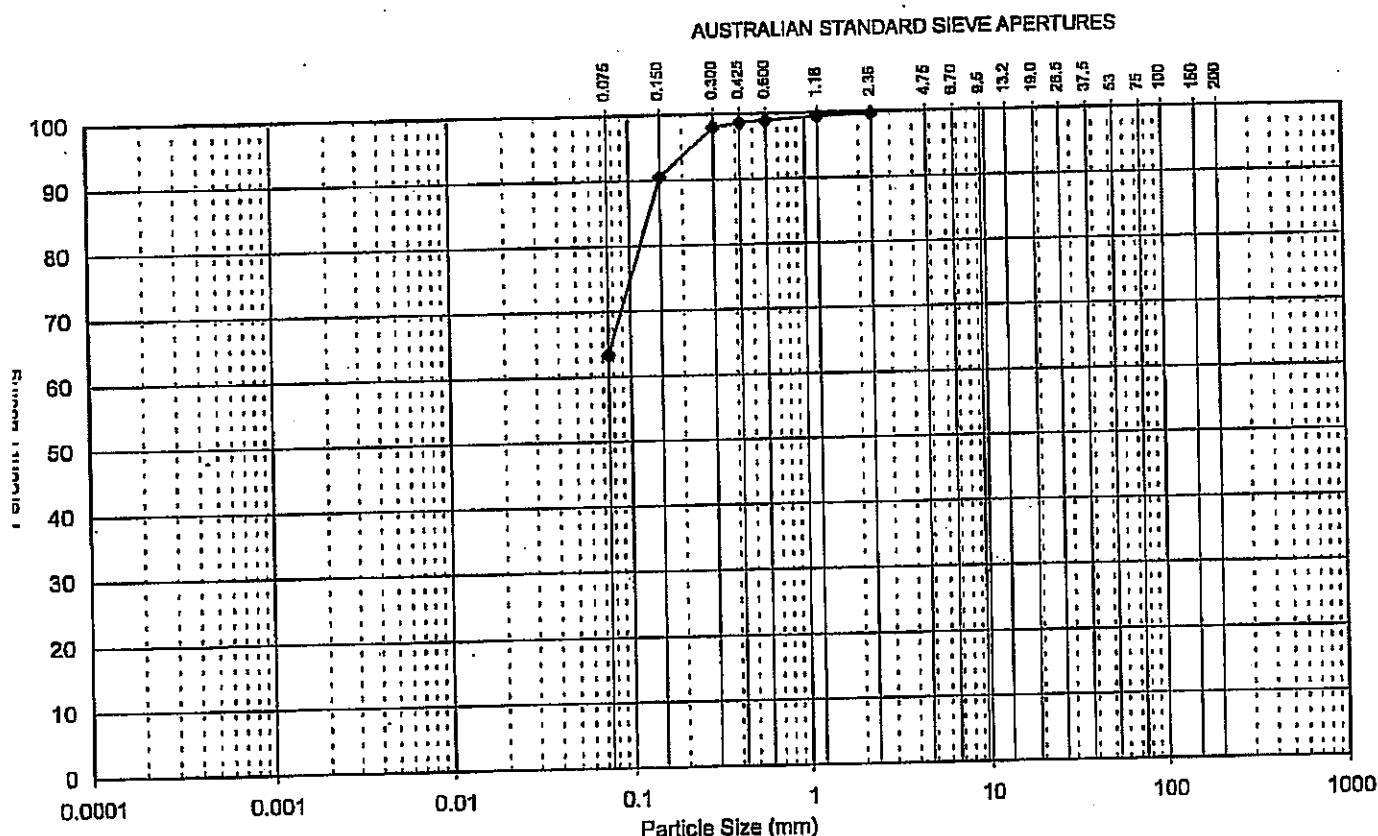
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RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-291
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 17	Date Sampled:	16/04/2010
Depth / Layer :	1.5-1.95m	Date of Test:	12/05/2010
		Page:	1 of 1



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	0.002	0.006	0.02	0.06	0.2	0.6	2.0	6.0	20	60

Description: Dark brown sandy clay
Test Method(s): AS 1289.3.6.1
Sampling Method(s): Sampled by Townsville Engineering Department
Method of Dispersion: Calgon

Remarks:



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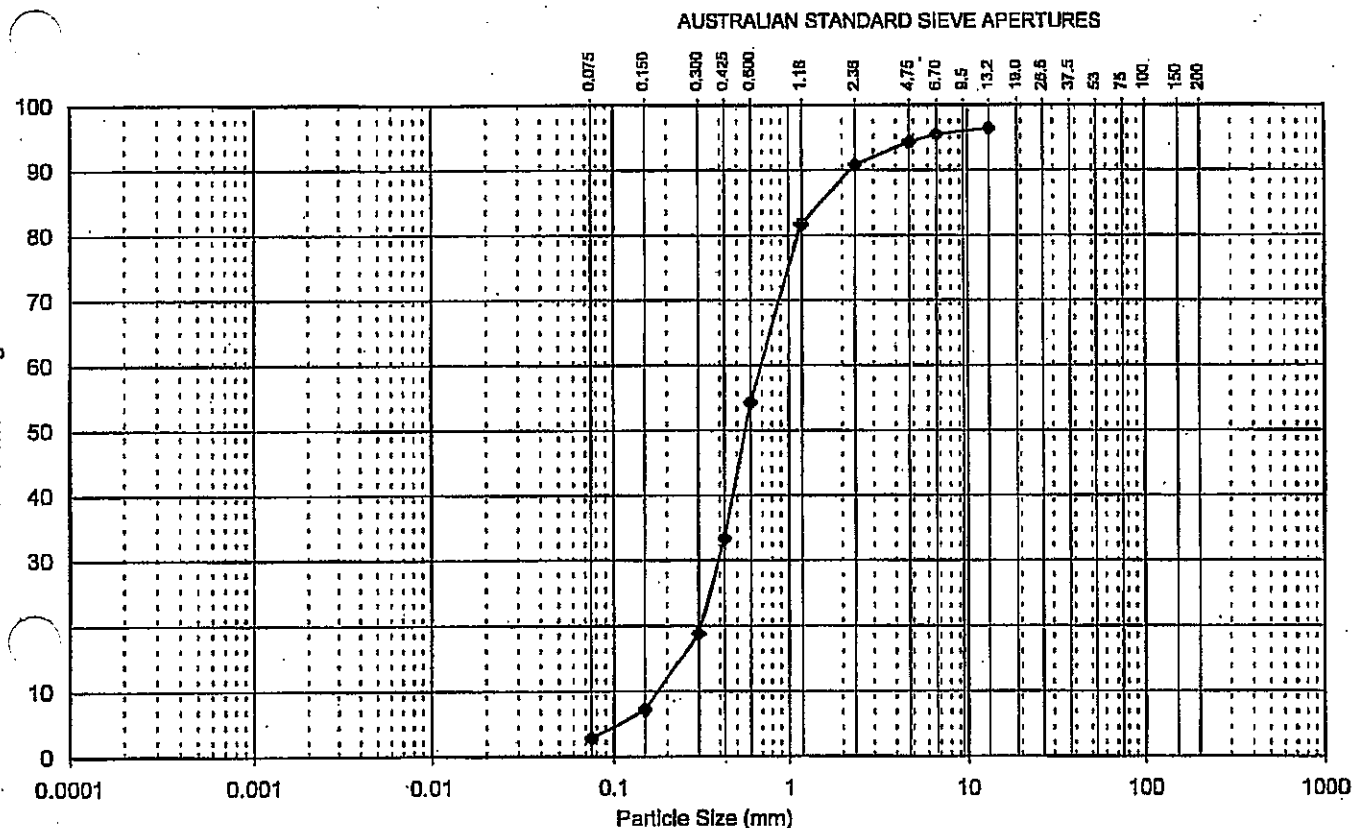
Approved Signatory:

Tested: KT
 Checked: DP

D. Pollock
 Dean Pollock
 Laboratory Manager

RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-292
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 25	Date Sampled:	16/04/2010
Depth / Layer :	0.3m	Date of Test:	12/05/2010
		Page:	1 of 1



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	0.002	0.006	0.02	0.06	0.2	0.6	2.0	6.0	20	60

Description: Brown sand with some gravel

Test Method(s): AS 1289.3.6.1

Sampling Method(s): Sampled by Townsville Engineering Department

Method of Dispersion: Calgon

Remarks:



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Approved Signatory:

Tested:	KT
Checked:	DP

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Dean Pollock
Laboratory Manager



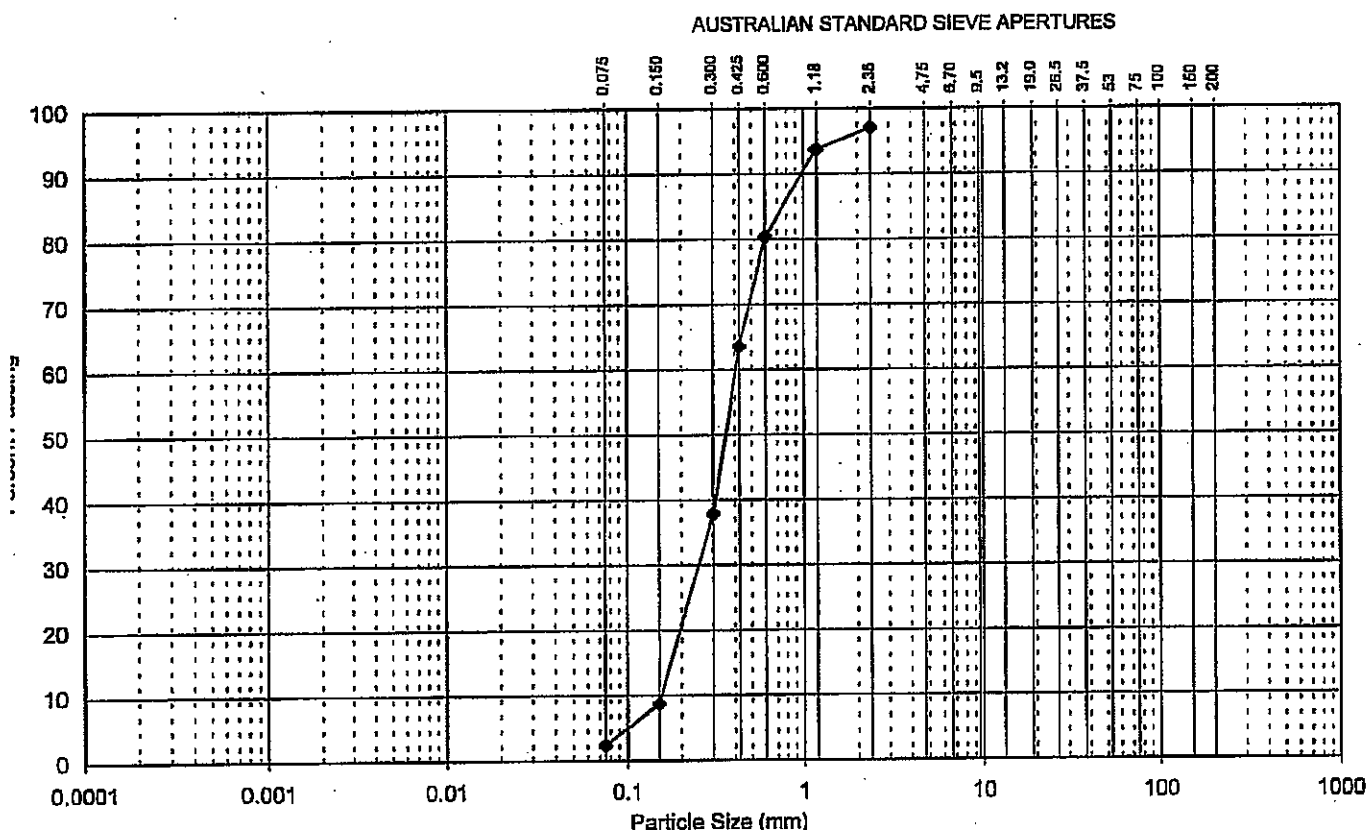
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RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-293
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 26	Date Sampled:	16/04/2010
Depth / Layer :	0.6m	Date of Test:	12/05/2010
		Page:	1 of 1



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	0.002	0.006	0.02	0.06	0.2	0.6	2.0	8.0	20	50

Description: Brown sand
Test Method(s): AS 1289.3.6.1
Sampling Method(s): Sampled by Townsville Engineering Department
Method of Dispersion: Calgon

Remarks:



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Approved Signatory:

Tested: KT
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 Laboratory Manager



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DETERMINATION OF EMERSON CLASS NUMBER OF SOIL

Client:	AECOM Australia Pty Ltd	Project No:	50888
Project:	Factual Geotechnical Investigation	Report No:	T10-301
		Report Date:	13/05/2010
Location:	Oonoonba DPI Site	Date of Test:	13/05/2010
		Page:	1 of 1

SAMPLE NO	DEPTH (m)	DESCRIPTION	WATER TYPE	WATER TEMP	CLASS NO.
Pit 2	0.5-0.95	Dark brown sandy gravelly silt	Distilled	26	6
Pit 4	0.5-0.95	Grey orange slightly sandy clay	Distilled	26	5
Pit 4	1.5	Dark brown sand	Distilled	26	5
Pit 8	1.0	Orange brown sand and silty clay	Distilled	26	5
Pit 8	2.0	Yellow brown slightly silty sand	Distilled	26	5
Pit 12	0.25	Dark brown silt and sand	Distilled	26	6

Test Method(s): AS 1289 3.8.1

Sampling Method(s): Sampled by Townsville Engineering Department

Remarks:

Approved Signatory:

Tested: KT
Checked: DP

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Dean Pollock
Laboratory Manager



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DETERMINATION OF EMERSON CLASS NUMBER OF SOIL

Client:	AECOM Australia Pty Ltd	Project No:	50888
Project:	Factual Geotechnical Investigation	Report No:	T10-302
		Report Date:	14/05/2010
Location:	Oonoonba DPI Site	Date of Test:	13/05/2010
		Page:	1 of 1

SAMPLE NO	DEPTH (m)	DESCRIPTION	WATER TYPE	WATER TEMP	CLASS NO.
Pit 12	0.75-1.2	Orange brown sand and silt	Distilled	26	6
Pit 17	1.0	Light brown sand	Distilled	26	6
Pit 17	1.5-1.95	Dark brown sandy clay	Distilled	26	6
Pit 25	0.3	Brown sand with some gravel	Distilled	26	6
Pit 26	0.6	Brown sand	Distilled	26	6

Test Method(s): AS 1289 3.8.1

Sampling Method(s): Sampled by Townsville Engineering Department

Remarks:

Approved Signatory:

Tested: KT
Checked: DP

Dean Pollock
Laboratory Manager



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RESULT OF SHRINK-SWELL INDEX DETERMINATION

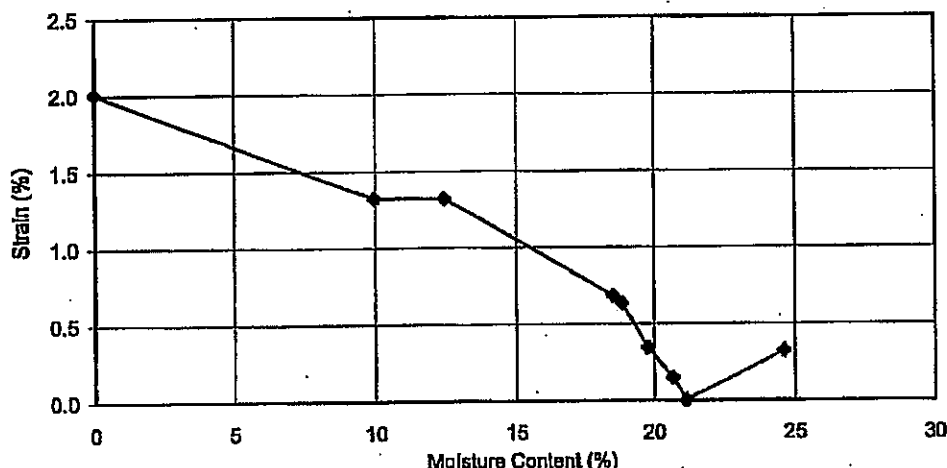
Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-294
Location :	Oonoomba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 2	Date Sampled :	16/04/2010
Depth / Layer :	0.5-0.95m	Date of Test:	6/05/2010
		Page:	1 of 1

CORE SHRINKAGE TEST

Shrinkage - air dried	1.3 %
Shrinkage - oven dried	2.0 %
Significant Inert Inclusions	0.0 %
Extent of cracking	HC
Extent of soil crumbling	0.0 %
Moisture content of core	21.2 %

SWELL TEST

Pocket penetrometer reading at initial moisture content	200 kPa
Pocket penetrometer reading at final moisture content	160 kPa
Initial Moisture Content	23.5 %
Final Moisture Content	24.6 %
Swell under 25kPa	-0.3 %



SHRINK-SWELL INDEX 1.1% per ΔpF

Description:	Dark brown sandy gravelly silt
Test Method(s):	AS 1289.7.1.1 - 2003, AS 1289.2.1.1 - 2005
Sampling Method(s):	AS 1289.1.3.1-1999
Extent of Cracking:	UC - Uncracked SC - Slightly cracked MC - Moderately cracked
Remarks:	HC - Highly cracked FR - Fractured

Note that NATA accreditation does not cover the performance of pocket penetrometer readings



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Approved Signatory:

Tested:	KT
Checked:	DP

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Dean Pollock
Laboratory Manager



RESULT OF SHRINK-SWELL INDEX DETERMINATION

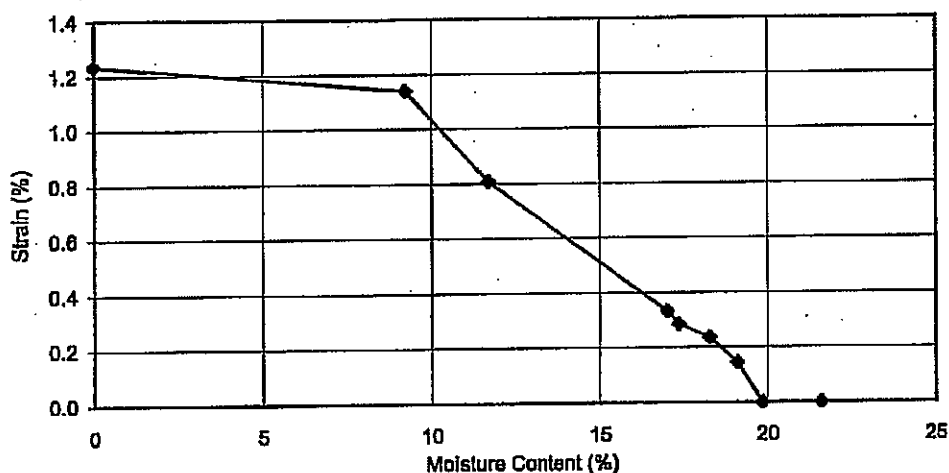
Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-296
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 4	Date Sampled :	16/04/2010
Depth / Layer :	0.5-0.95m	Date of Test:	6/05/2010
		Page:	1 of 1

CORE SHRINKAGE TEST

Shrinkage - air dried	1.1 %
Shrinkage - oven dried	1.2 %
Significant inert inclusions	0.0 %
Extent of cracking	
Extent of soil crumbling	0.0 %
Moisture content of core	19.8 %

SWELL TEST

Pocket penetrometer reading at initial moisture content	140 kPa
Pocket penetrometer reading at final moisture content	110 kPa
Initial Moisture Content	18.5 %
Final Moisture Content	21.6 %
Swell under 25kPa	0.0 %



SHRINK-SWELL INDEX I_{ss} 0.7% per ΔpF

Description:	Grey orange slightly sandy clay
Test Method(s):	AS 1289.7.1.1 - 2003, AS 1289.2.1.1 - 2005
Sampling Method(s):	AS 1289.1.3.1-1999
Extent of Cracking:	UC - Uncracked SC - Slightly cracked MC - Moderately cracked
Remarks:	HC - Highly cracked FR - Fractured

Note that NATA accreditation does not cover the performance of pocket penetrometer readings

Approved Signatory:

Tested:	KT
Checked:	DP

DPollock
Dean Pollock
Laboratory Manager



RESULT OF SHRINK-SWELL INDEX DETERMINATION

Client : AECOM Australia Pty Ltd

Project No. : 50888

Project : Factual Geotechnical Investigation

Report No. : T10-295

Location : Oonoonba DPI Site

Report Date : 13/05/2010

Test Location : Pit 12

Date Sampled : 16/04/2010

Depth / Layer : 0.75-1.2m

Date of Test: 6/05/2010

Page: 1 of 1

CORE SHRINKAGE TEST

Shrinkage - air dried 0.6 %

Shrinkage - oven dried 0.7 %

Significant inert inclusions 0.0 %

Extent of cracking

Extent of soil crumbling 0.0 %

Moisture content of core 26.4 %

SWELL TEST

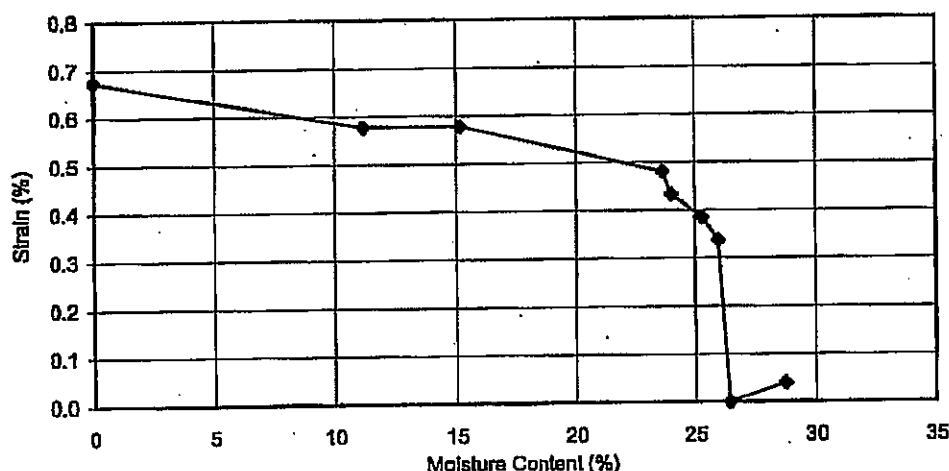
Pocket penetrometer reading at initial moisture content 170 kPa

Pocket penetrometer reading at final moisture content 110 kPa

Initial Moisture Content 25.7 %

Final Moisture Content 28.8 %

Swell under 25kPa 0.0 %



SHRINK-SWELL INDEX Iss 0.4% per Δ pF

Description: Orange brown sand and silt

Test Method(s): AS 1289.7.1.1 - 2003, AS 1289.2.1.1 - 2005

Sampling Method(s): AS 1289.1.3.1-1999

Extent of Cracking: UC - Uncracked

HC - Highly cracked

SC - Slightly cracked

FR - Fractured

Remarks: MC - Moderately cracked

Note that NATA accreditation does not cover the performance of pocket penetrometer readings



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Approved Signatory:

Tested: KT
Checked: DP

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Dean Pollock
Laboratory Manager



RESULT OF SHRINK-SWELL INDEX DETERMINATION

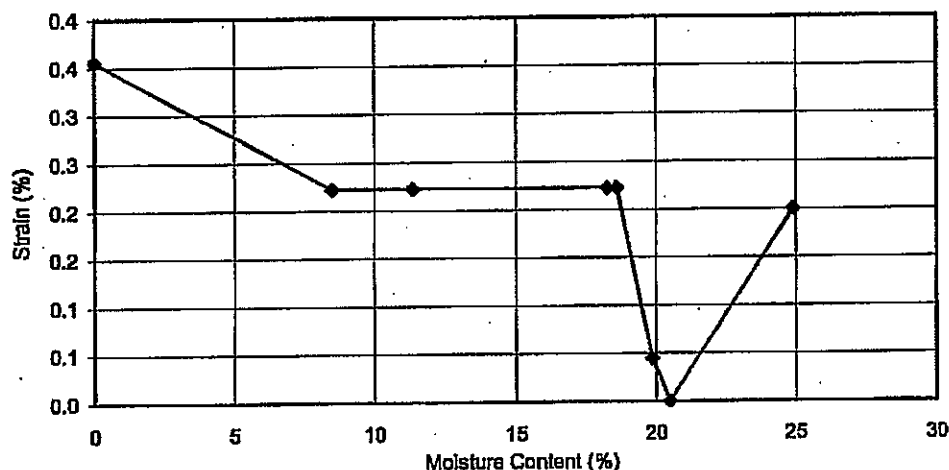
Client :	AECOM Australia Pty Ltd	Project No. :	50888
Project :	Factual Geotechnical Investigation	Report No. :	T10-297
Location :	Oonoonba DPI Site	Report Date :	13/05/2010
Test Location :	Pit 17	Date Sampled :	16/04/2010
Depth / Layer :	1.5-1.95m	Date of Test:	6/05/2010
		Page:	1 of 1

CORE SHRINKAGE TEST

Shrinkage - air dried	0.2 %
Shrinkage - oven dried	0.4 %
Significant inert inclusions	0.0 %
Extent of cracking	
Extent of soil crumbling	0.0 %
Moisture content of core	20.5 %

SWELL TEST

Pocket penetrometer reading at initial moisture content	100 kPa
Pocket penetrometer reading at final moisture content	100 kPa
Initial Moisture Content	22.7 %
Final Moisture Content	24.9 %
Swell under 25kPa	-0.2 %



SHRINK-SWELL INDEX is 0.2% per Δ pF

Description:	Dark brown sandy clay
Test Method(s):	AS 1289.7.1.1 - 2003, AS 1289.2.1.1 - 2005
Sampling Method(s):	AS 1289.1.3.1-1999
Extent of Cracking:	UC - Uncracked SC - Slightly cracked MC - Moderately cracked
Remarks:	HC - Highly cracked FR - Fractured

Note that NATA accreditation does not cover the performance of pocket penetrometer readings



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Approved Signatory:

Tested:	KT
Checked:	DP

DPollock
Dean Pollock
Laboratory Manager

TEST PIT LOG

CLIENT: AECOM Australia Pty Ltd
PROJECT: Oonoonba DPI
LOCATION: Oonoonba

SURFACE LEVEL: 4 AHD
EASTING: 486410
NORTHING: 7867010
DIP/AZIMUTH: 90°/-

PIT No: 2
PROJECT No: 50888
DATE: 16 Apr 10
SHEET 1 OF 1

Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per 150mm)			
			Type	Depth	Sample	Results & Comments		5	10	15	20
0.25	FILLING - Light brown silty clay; M<<Wp			0.2		pp 80-120 kPa					
0.35	SILTY CLAY - Very stiff brown silty clay; M<<Wp										
0.65	SANDY GRAVELLY SILT - Medium dense dark brown sandy gravelly silt; fine to coarse grained sand fraction; humid			0.4		pp 150-240 kPa					
				0.5		pp 100-220 kPa					
			U50	0.75		pp 200-290 kPa					
1.2	SILTY CLAY - Stiff to very stiff yellow brown silty clay with some fine grained sand; M<Wp			0.95							
1.9	SILTY CLAY - Very stiff dark brown silty clay with a trace of fine grained sand; M<Wp										
2.25	CLAYEY SAND - Medium dense grey orange clayey sand; fine to coarse grained sand fraction; damp			2.25		pp 140-230 kPa					
2.7			U50	2.7							
3.0	Pit discontinued at 3.0m depth - limit of investigation										

RIG: John Deere 315SJ excavator with 450mm wide toothed bucket

LOGGED: Lynch

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

- ☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND			
A Auger sample	pp Pocket penetrometer (kPa)		
D Disturbed sample	PID Photo ionisation detector		
B Bulk sample	S Standard penetration test		
U Tube sample (x mm dia.)	PL Point load strength Is(50) MPa		
W Water sample	V Shear Vane (kPa)		
C Core drilling	D Water seep	Y Water level	

CHECKED
Initials: <i>ML</i>
Date: 17.5.10



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6. 2

PIT No: 4
PROJECT No: 50888
DATE: 16 Apr 10
SHEET 1 OF 1

[illegible]☒ Cone Penetrometer AS1289.6.3.2

CHECKED
Initials: <i>WJ</i>
Date: <i>17.5.10</i>



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TEST PIT LOG

CLIENT: AECOM Australia Pty Ltd
PROJECT: Oonoonba DPI
LOCATION: Oonoonba

SURFACE LEVEL: 4.5 AHD
EASTING: 480175
NORTHING: 7866897
DIP/AZIMUTH: 90°/-

PIT No: 8
PROJECT No: 50888
DATE: 16 Apr 10
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per 150mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
	0.2	FILLING - Dark brown grey slightly clayey silty fine to medium grained sand; humid										
	0.3	SILTY SAND - Medium dense orange brown silty fine to medium grained sand with some clay; humid			0.3		pp 250-380 kPa					
	0.5	SAND AND SILTY CLAY - Medium dense to dense/very stiff orange brown sand and silty clay; fine to medium grained sand fraction; humid/M<Wp			0.8		pp 320-420 kPa					
	1.0			D	1.0		pp 210-270 kPa					
	1.2	SLIGHTLY SILTY SAND - Medium dense yellow brown fine to medium grained sand; damp			1.25		No sample retained					
				U50	1.7							
		- grading to wet below 1.8m depth										
	2.0			D	2.0							
	3.0	Pit discontinued at 3.0m depth - limit of investigation		D	3.0							

RIG: John Deere 315SJ excavator with 450mm wide toothed bucket

LOGGED: Lynch

WATER OBSERVATIONS: Groundwater seepage at 1.8m depth

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U	Tube sample (x mm dia.)	PL	Point load strength (60) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	D	Water seep
			Water level

CHECKED
Initials: <i>MA</i>
Date: 17.5.10



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TEST PIT LOG

CLIENT: AECOM Australia Pty Ltd
PROJECT: Oonoonba DPI
LOCATION: Oonoonba

SURFACE LEVEL: 4 AHD
EASTING: 480483
NORTHING: 7866695
DIP/AZIMUTH: 90°/-

PIT No: 12
PROJECT No: 50888
DATE: 16 Apr 10
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per 150mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
	0.25	FILLING - Dark brown black silt and fine to medium grained sand filling; moist		D	0.25							
		SILTY CLAY - Soft to firm dark brown black silty clay with some fine to medium grained sand; M=Wp			0.5		pp 40-90 kPa					
	0.7	SAND AND SILT - Medium dense orange brown sand and silt; fine to medium grained sand; humid			0.75		pp 40-80 kPa					
				U60	1.0		pp 20-50 kPa					
					1.2							
	1.5	SANDY CLAY - Stiff to very stiff grey brown fine to medium grained sandy clay; M>Wp		D	1.5							
	1.8	CLAYEY SAND - Medium dense orange grey brown clayey fine to medium grained sand; damp										
	2.0	SANDY CLAY - Stiff to very stiff grey brown fine to medium grained sandy clay; M>Wp		D	2.25							
					2.4		pp 90-110 kPa					
	3.0	Pit discontinued at 3.0m depth - limit of investigation										

RIG: John Deere 315SJ excavator with 450mm wide toothed bucket

LOGGED: Lynch

WATER OBSERVATIONS: Groundwater seepage at 2.6m depth

REMARKS:

- ☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U	Tube sample (x mm dia.)	PL	Point load strength 1s(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	D	Water seep
		W	Water level

CHECKED	
Initials:	<i>MA</i>
Date:	7.5.10



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TEST PIT LOG

CLIENT: AECOM Australia Pty Ltd
PROJECT: Oonoonba DPI
LOCATION: Oonoonba

SURFACE LEVEL: 3.6 AHD
EASTING: 480112
NORTHING: 7866760
DIP/AZIMUTH: 90°/-

PIT No: 15
PROJECT No: 50888
DATE: 16 Apr 10
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per 150mm)
				Type	Depth	Sample	Results & Comments		
	0.15	SILTY SAND - Very loose to loose dark brown silty fine to medium grained sand; damp		D	0.75				
		SAND - Loose becoming medium dense grey brown fine to coarse grained sand; wet							
	1.4	SANDY CLAY - Stiff grey dark brown fine grained sandy clay; M=Wp							
	1.8	Pit discontinued at 1.8m depth due to pit wall collapse							

RIG: John Deere 315SJ excavator with 450mm wide toothed bucket

LOGGED: Lynch

WATER OBSERVATIONS: Groundwater seepage at 0.5m depth

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
G	Core drilling	D	Water seep
			Water level

CHECKED	
Initials:	
Date:	17.5.10



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TEST PIT LOG

CLIENT: AECOM Australia Pty Ltd
PROJECT: Oonoonba DPI
LOCATION: Oonoonba

SURFACE LEVEL: 4.2 AHD
EASTING: 479868
NORTHING: 7866791
DIP/AZIMUTH: 90°/-

PIT No: 17
PROJECT No: 50888
DATE: 16 Apr 10
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per 150mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
	0.15	SILTY SAND - Loose light brown silty fine to medium grained sand; humid										
		SILTY SAND - Loose to medium dense light brown silty fine to medium grained sand; humid										
	1.0			D	1.0							
	1.3	SANDY CLAY - Stiff to very stiff dark brown to black fine grained sandy clay; M<Wp										
					1.5		pp 180-240 kPa					
				U50								
					1.95							
					2.2		pp 20-60 kPa					
				D	2.75							
	3.1	SAND - Medium dense light brown fine to coarse grained sand; damp										
				D	3.3							
	3.5	Pit discontinued at 3.5m depth - limit of investigation										

RIG: John Deere 315SJ excavator with 450mm wide toothed bucket

LOGGED: Lynch

WATER OBSERVATIONS: No free groundwater observed

☐ Sand Penetrometer AS1289.6.3.3

REMARKS:

☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U	Tube sample (x mm dia.)	PL	Point load strength ts(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	D	Water seep
		W	Water level

CHECKED
Initials: <i>ML</i>
Date: 17.5.10



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TEST PIT LOG

CLIENT: AECOM Australia Pty Ltd
PROJECT: Oonoonba DPI
LOCATION: Oonoonba

SURFACE LEVEL: 4.5 AHD
EASTING: 479688
NORTHING: 7867204
DIP/AZIMUTH: 90°/-

PIT No: 25
PROJECT No: 50888
DATE: 16 Apr 10
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per 150mm)				
				Type	Depth	Sample	Results & Comments		5	10	15	20	
		SAND - Loose to medium dense brown fine to coarse grained sand with some gravel; humid		D	0.3								
	0.6	SAND - Medium dense dark brown fine to medium grained sand with some gravel; humid											
	1.8	Pit discontinued at 1.8m depth due to pit wall collapse											

RIG: John Deere 315SJ excavator with 450mm wide toothed bucket

LOGGED: Lynch

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	pp	Packet penetrometer (kPa)
D	Disturbed sample	PIB	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U	Tube sample (x mm dia.)	PL	Point load strength ts(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Cone drilling	Δ	Water seep
		▽	Water level

CHECKED
Initials: <i>MD</i>
Date: 17.5.10



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71 41 68

PIT No: 26
PROJECT No: 50888
DATE: 16 Apr 10
SHEET 1 OF 1

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