

# CONE PENETRATION TEST

CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Oonoonba

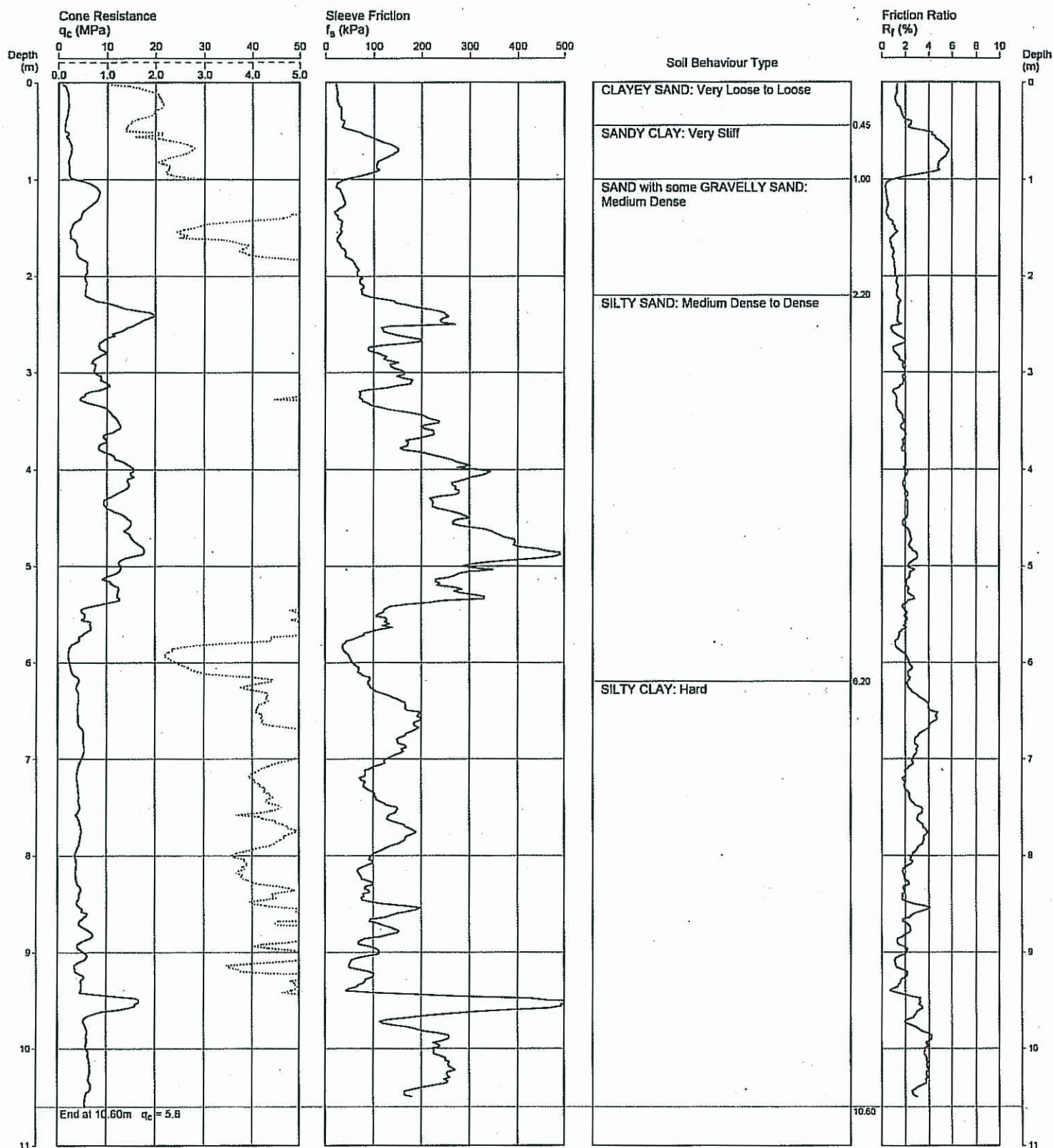
PROJECT No: 50888

1

Page 1 of 1

DATE 15/04/2010

SURFACE RL: 4.5m AHD



REMARKS: Hole cave in at 1.05m - dry. GPS: 480304E, 7865944N

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

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

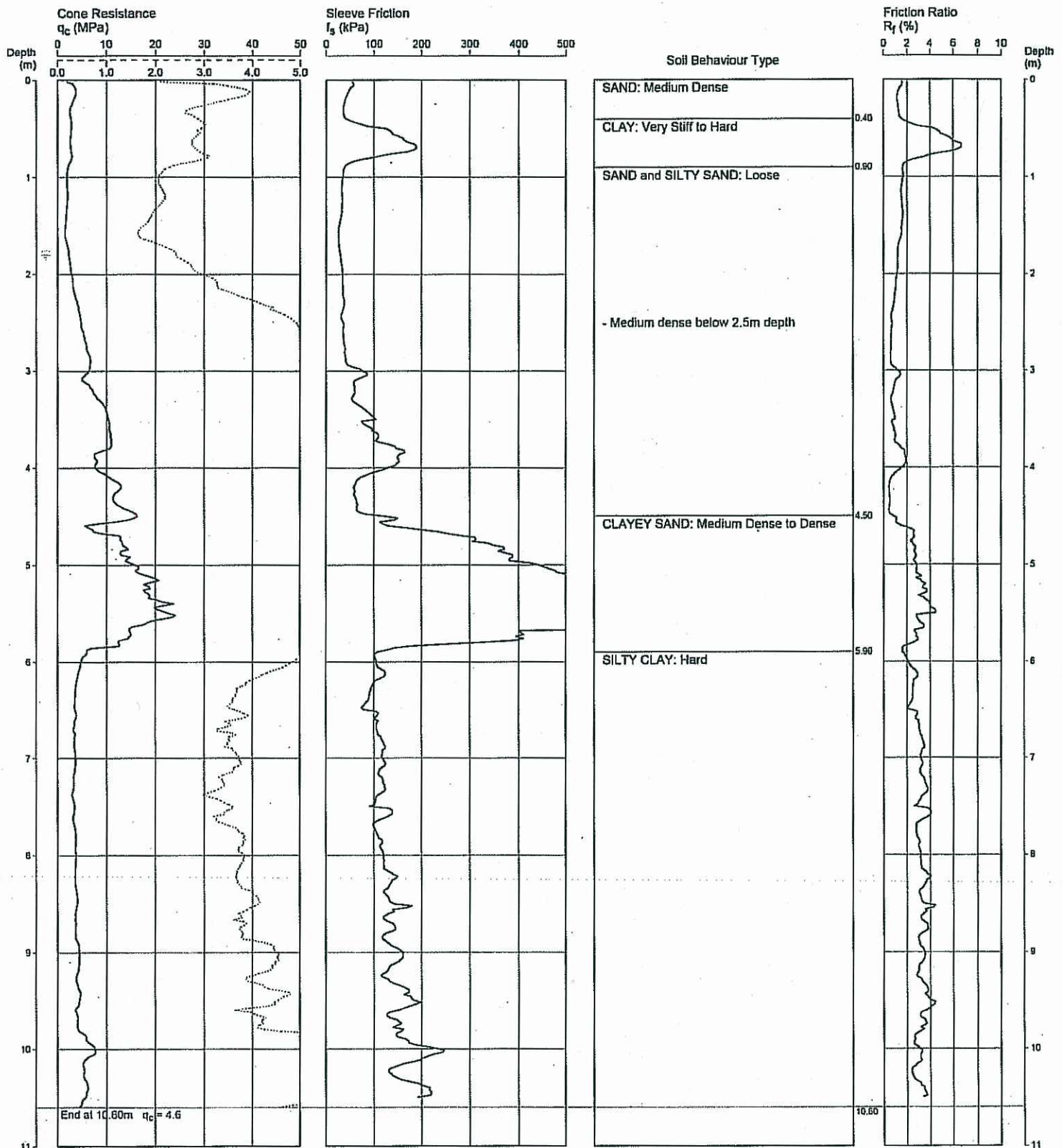
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 5.4m AHD



REMARKS: GPS: 480175E, 7866902N

Date  
Plotted  
Checked

File: P:\50888 - OONONBA, Factual Geotechnical Investigation, DPI SilletGint or CPT logs\50888-0  
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,  
Oonoomba

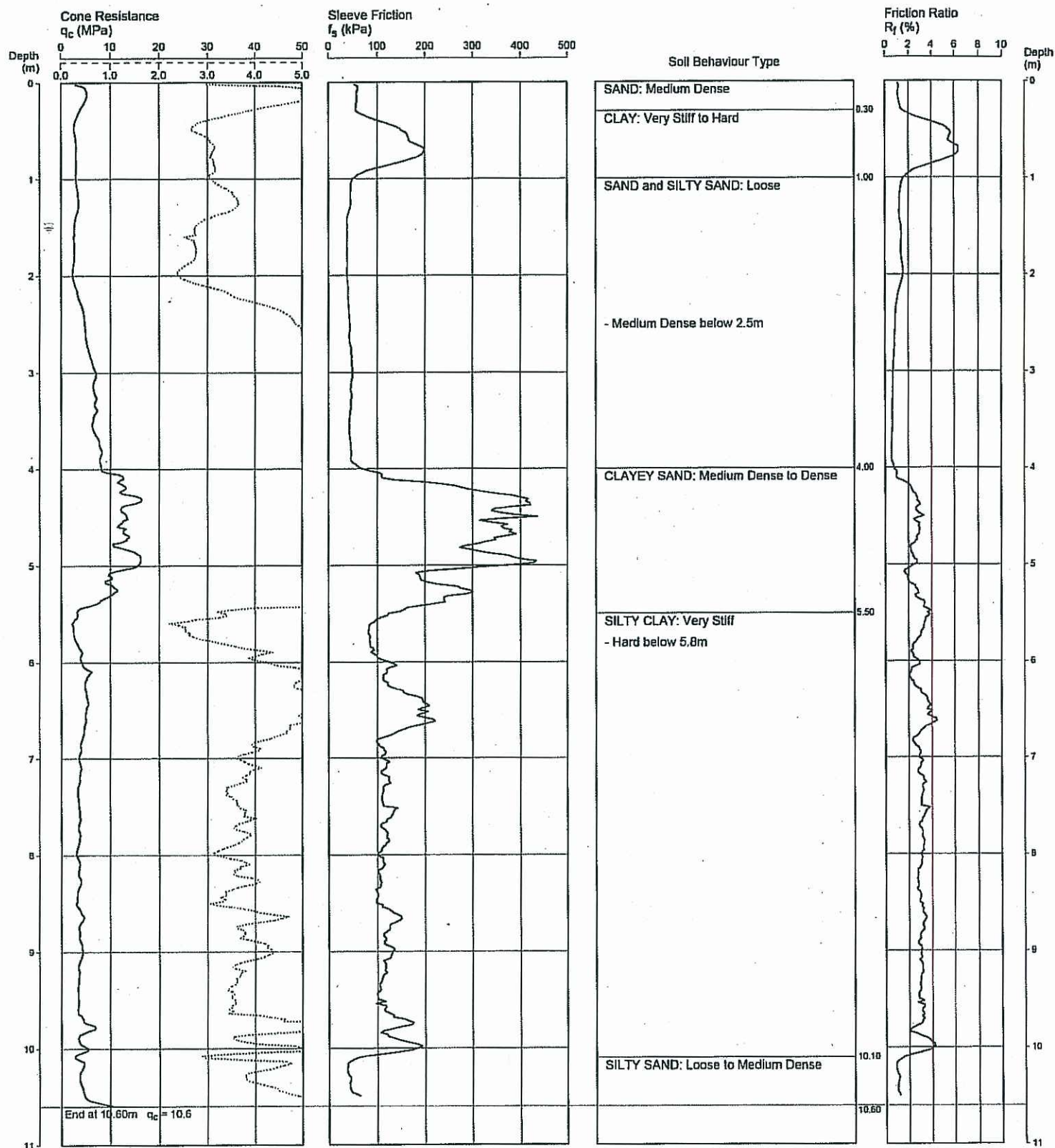
PROJECT No: 50888

**CPT 10**

Page 1 of 1

DATE 15/04/2010

SURFACE RL: 3.75m AHD



REMARKS: GPS: 480315E, 7866805N

Date  
Plotted  
Checked

File: P:\50888 - OONOONBA, 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

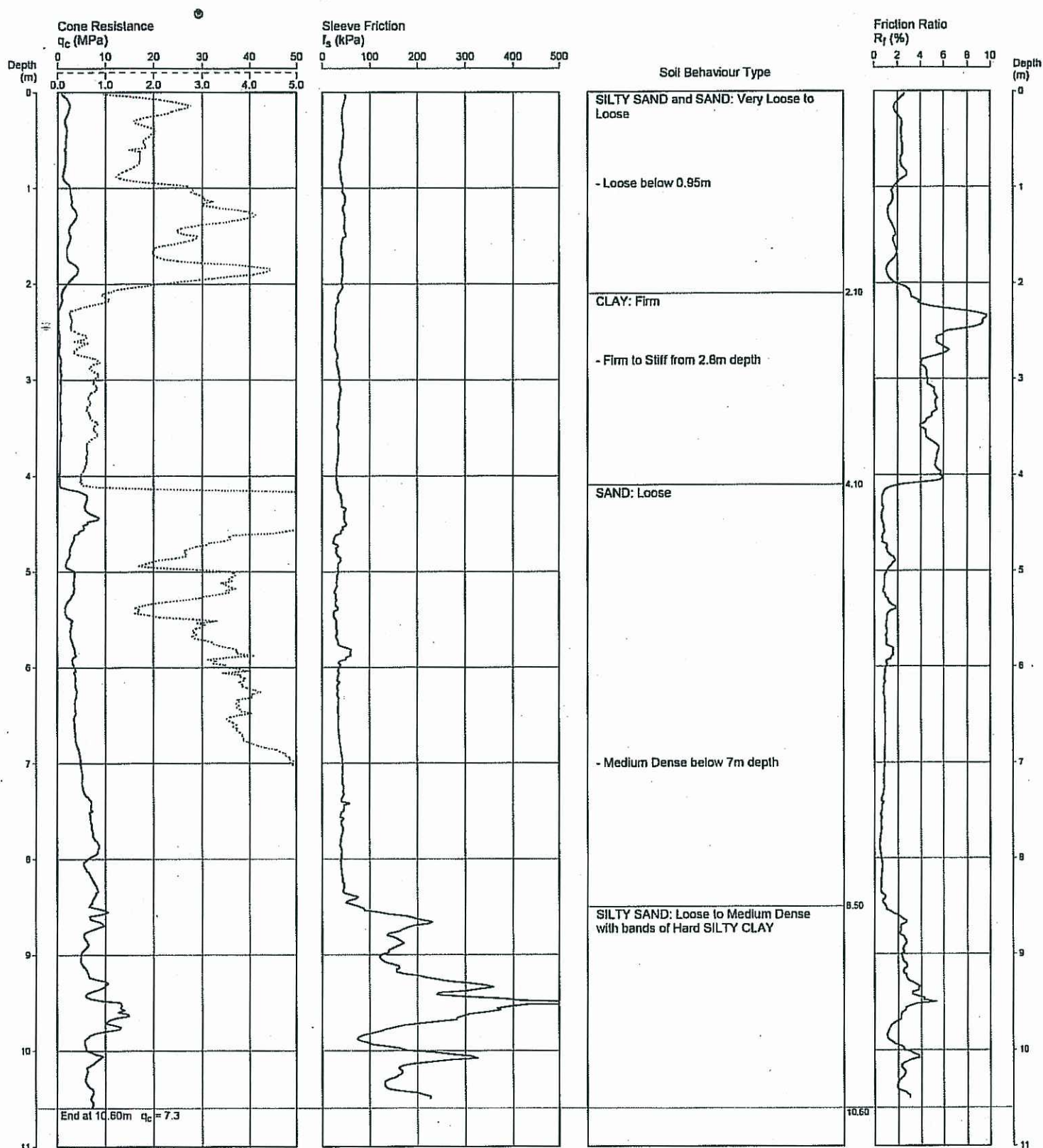
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 4.5m AHD



REMARKS: GPS: 479987E, 7866708N

Date  
Plotted  
Checked

File: P:\50888 - OONONBA, Factual Geotechnical Investigation, DPI Site\GInt or CPT logs\50888-1  
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CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Oonoonba

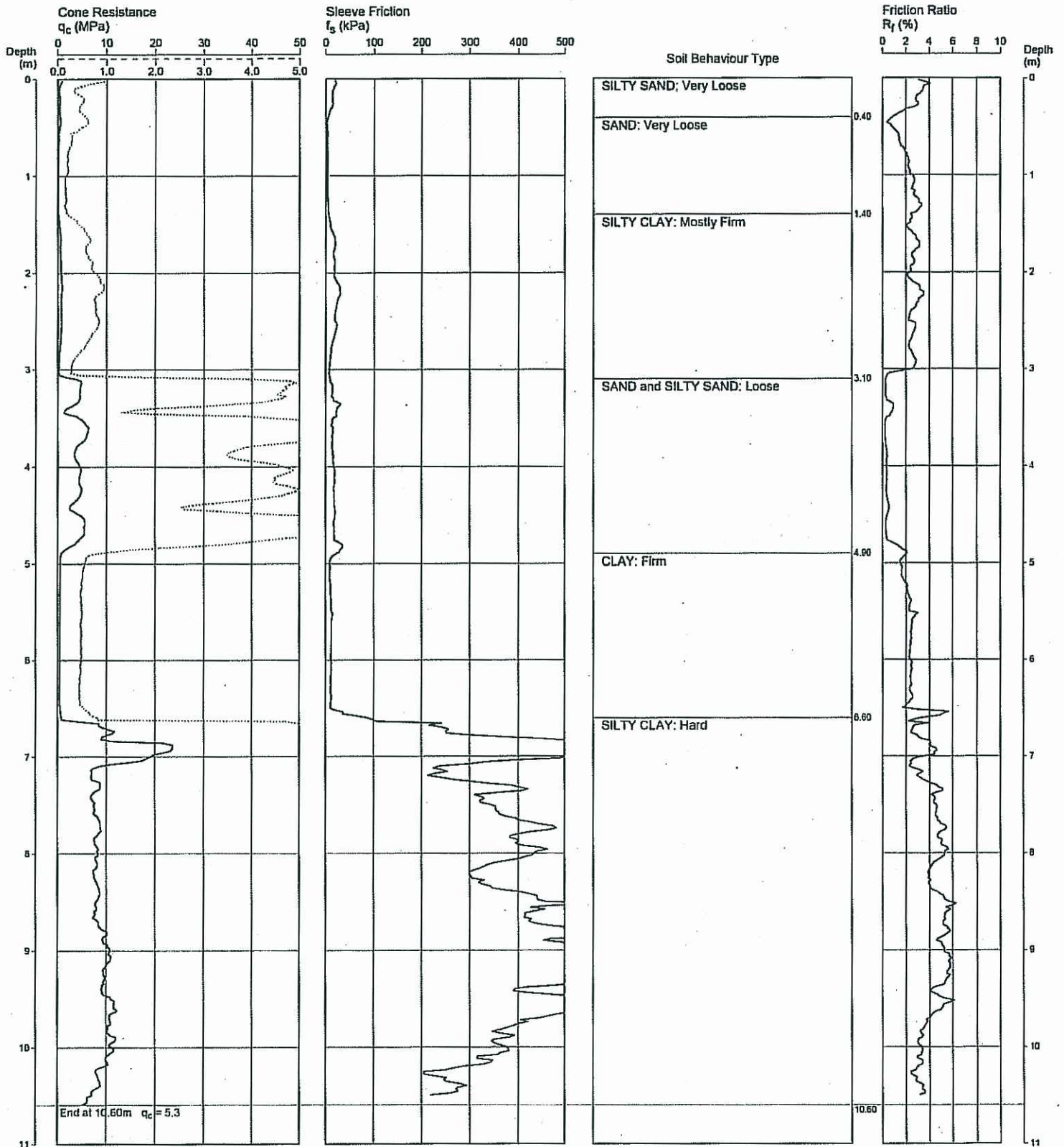
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 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  
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CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Oonoonba

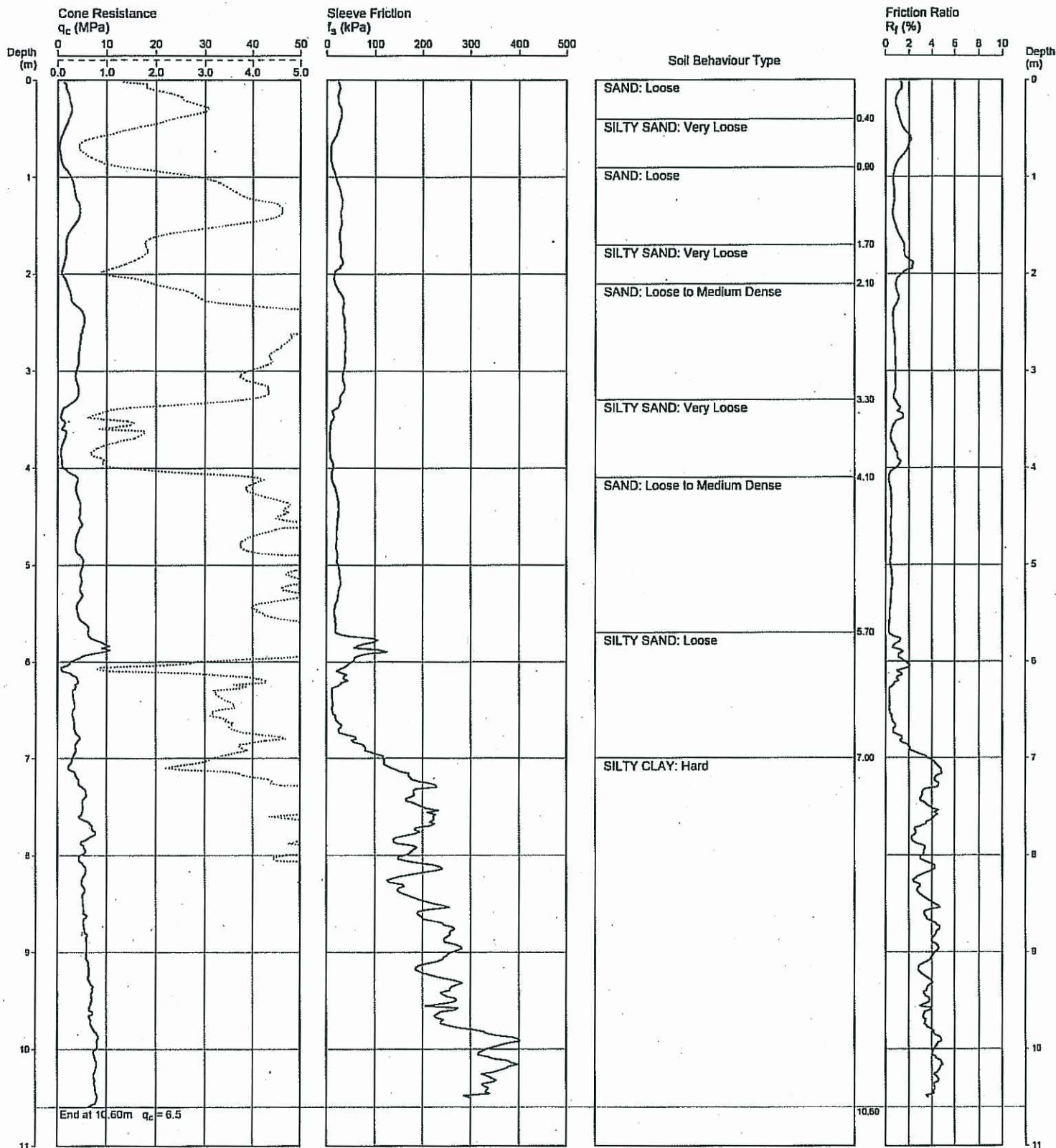
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 5.6mAHD



REMARKS: SWL: Cave in of CPT hole at 2.85m - dry. GPS: 478844E, 7866905N.

Date  
Plotted  
Checked

File: P:50888 - OONONBA, Factual Geotechnical Investigation, DPI Site/Gint or CPT logs/50888-1  
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CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Oonoonba

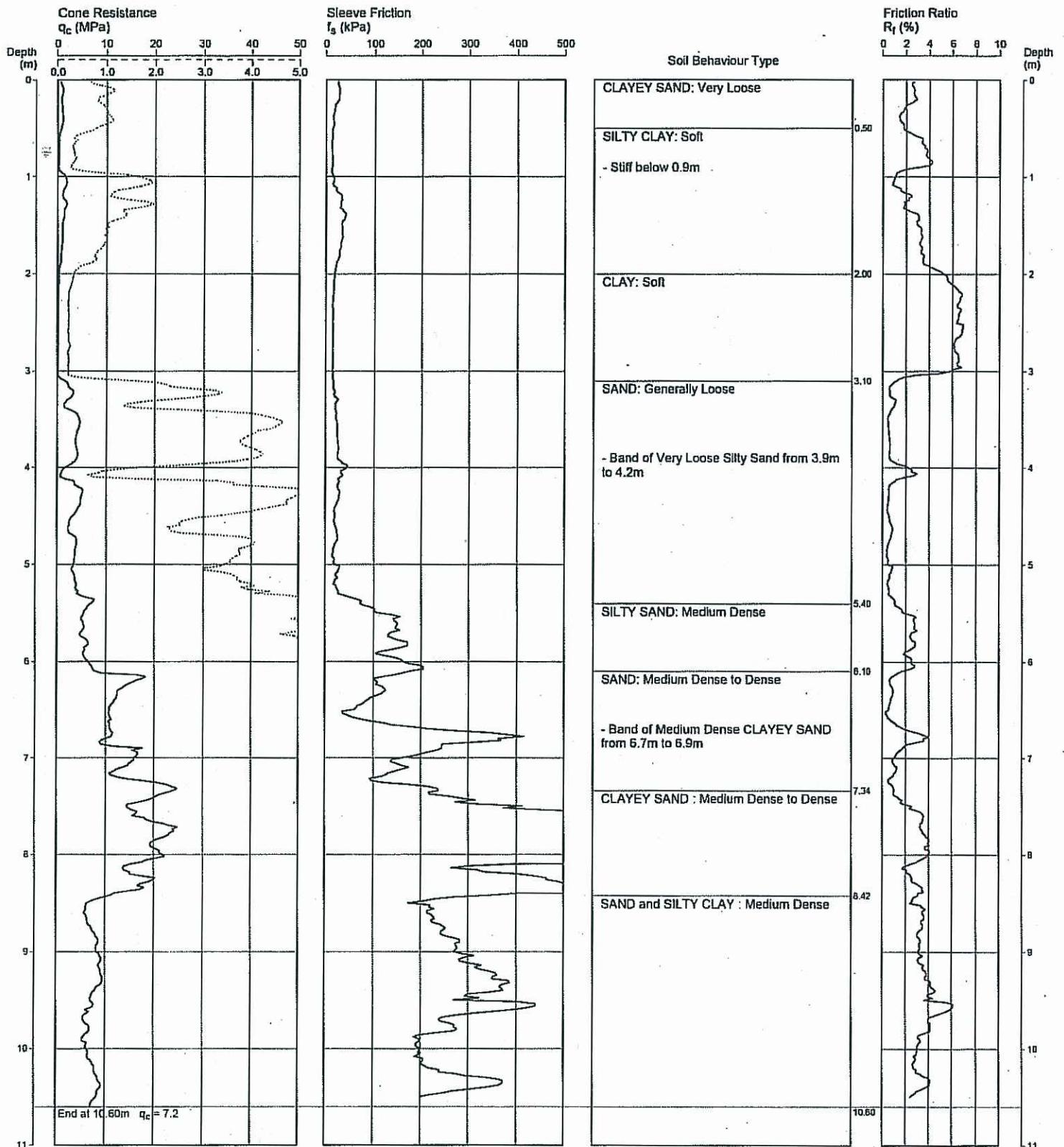
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 2.9m AHD



REMARKS: GPS: 479930E, 7867106N.

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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PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Oonoonba

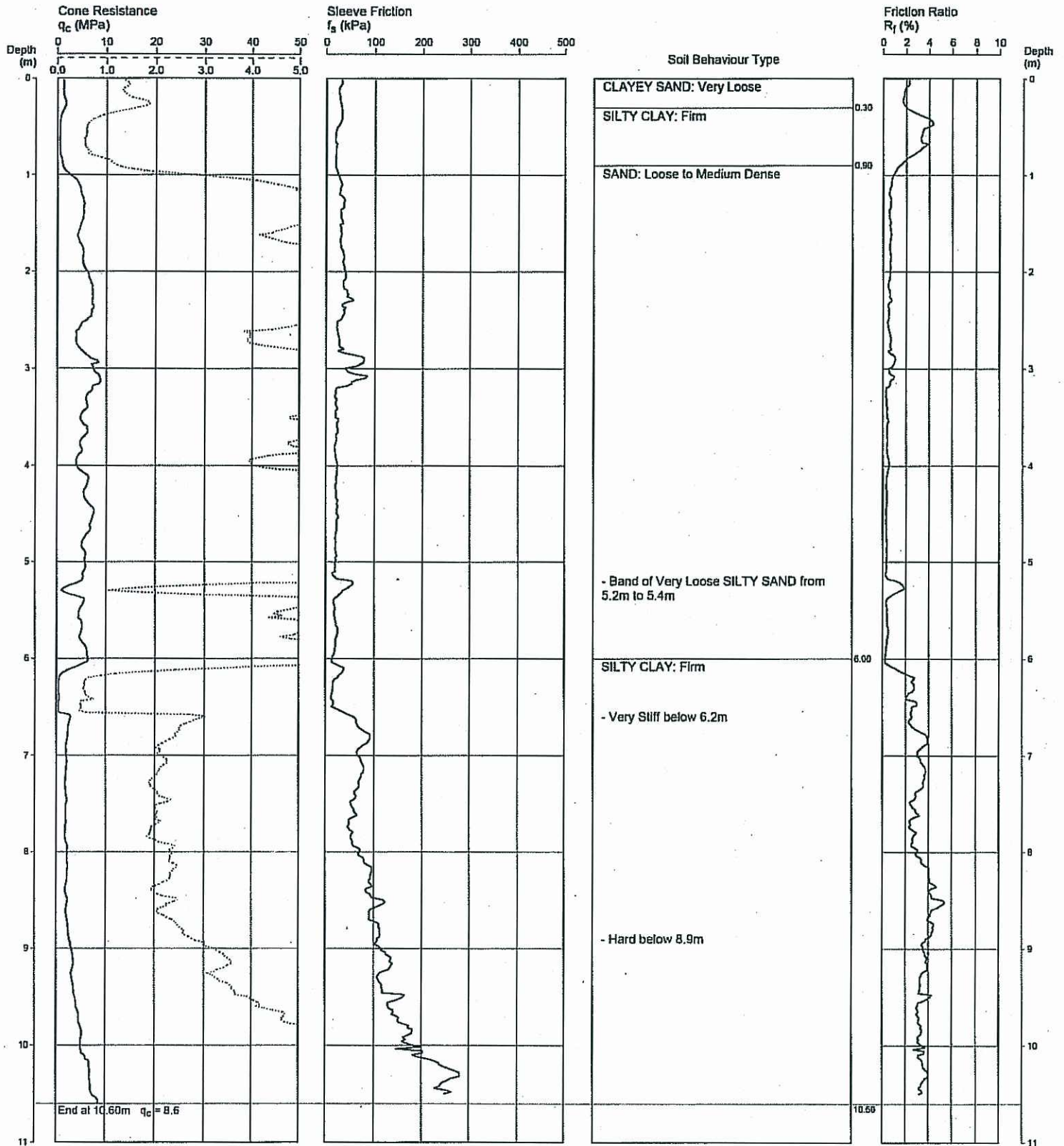
PROJECT No: 50888

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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\Int 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

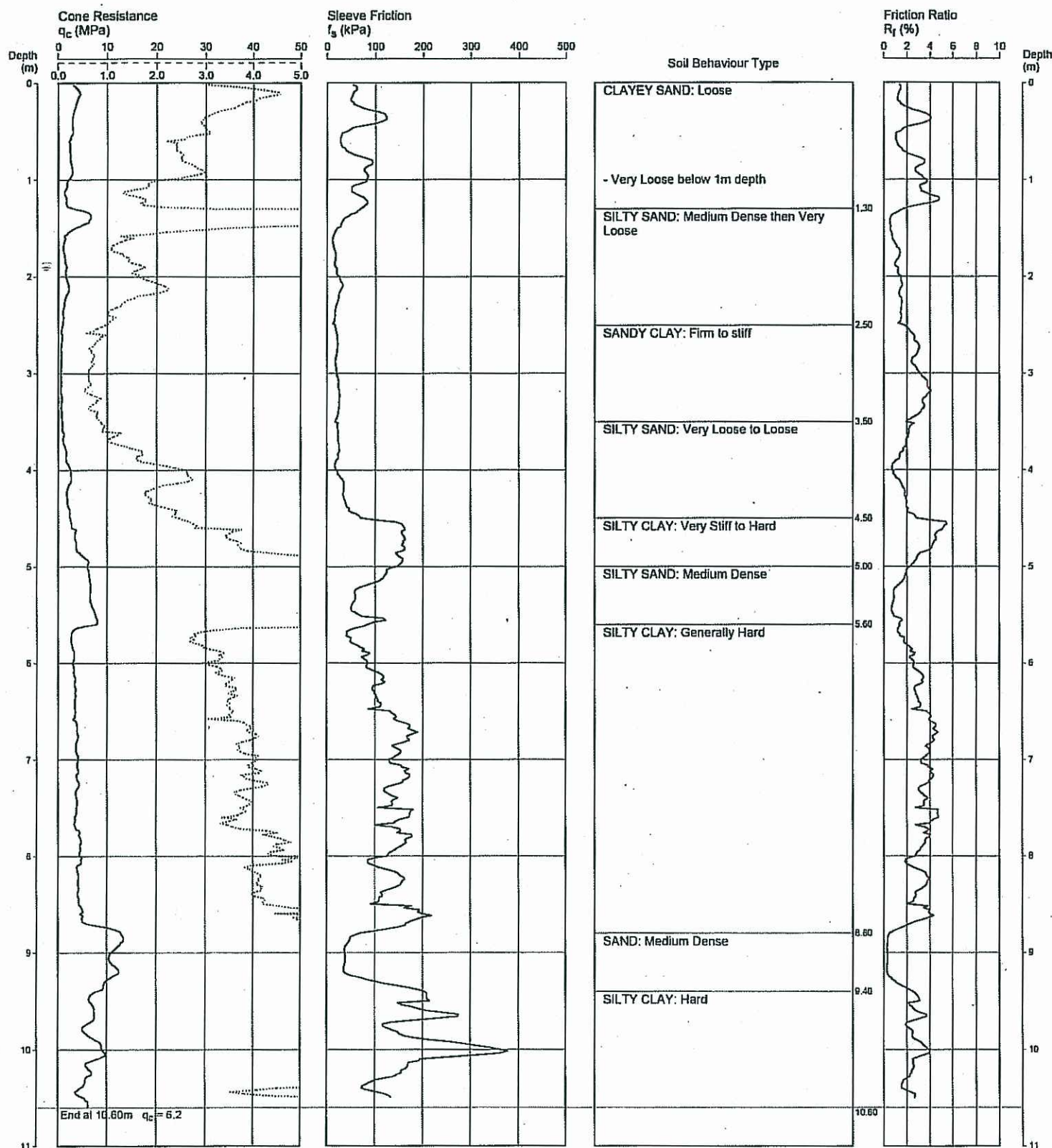
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 4.1m AHD



REMARKS: GPS: 480447E, 7866818N

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, Donoonba

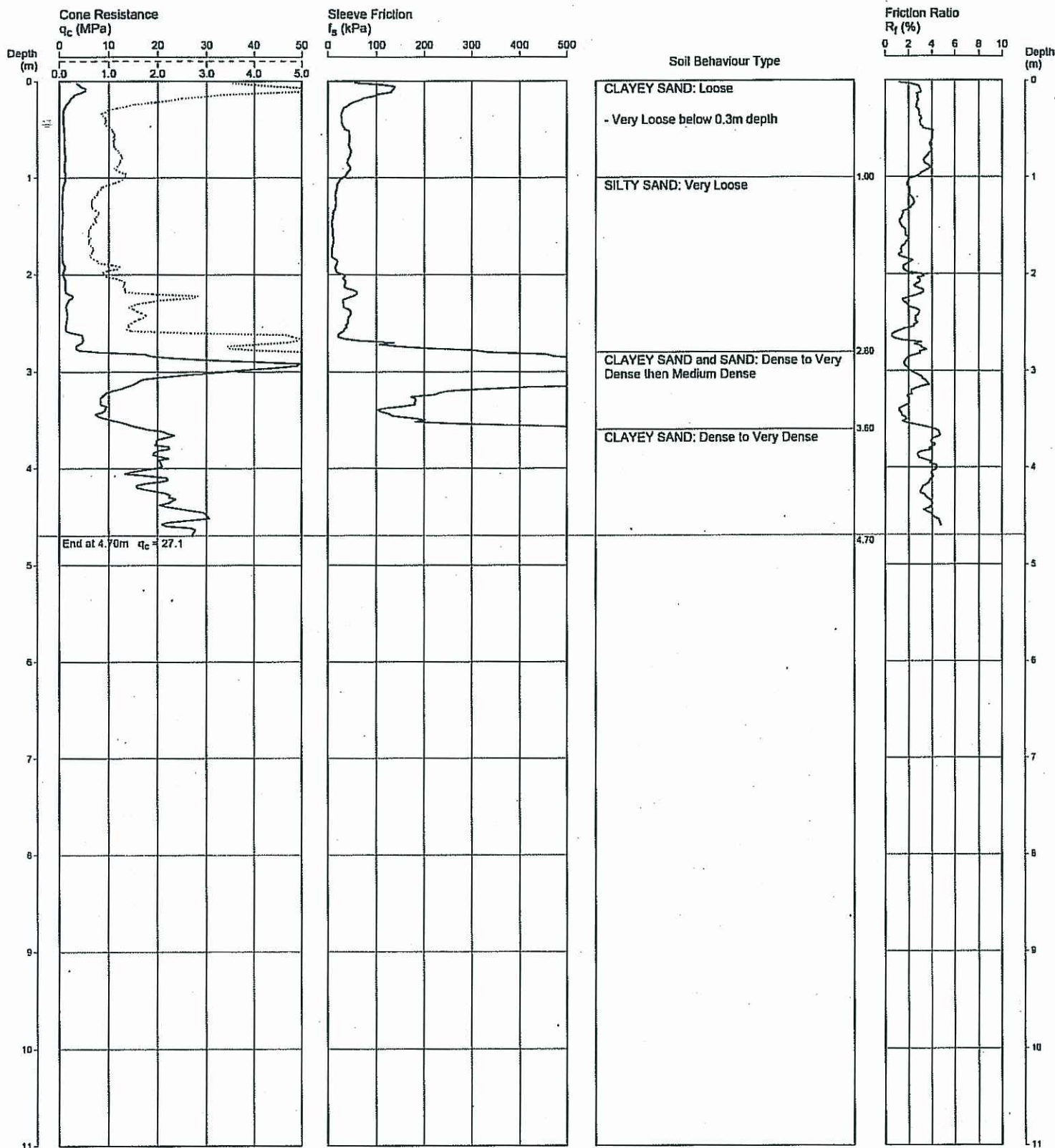
PROJECT No: 50888

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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 - DONOONBA, 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

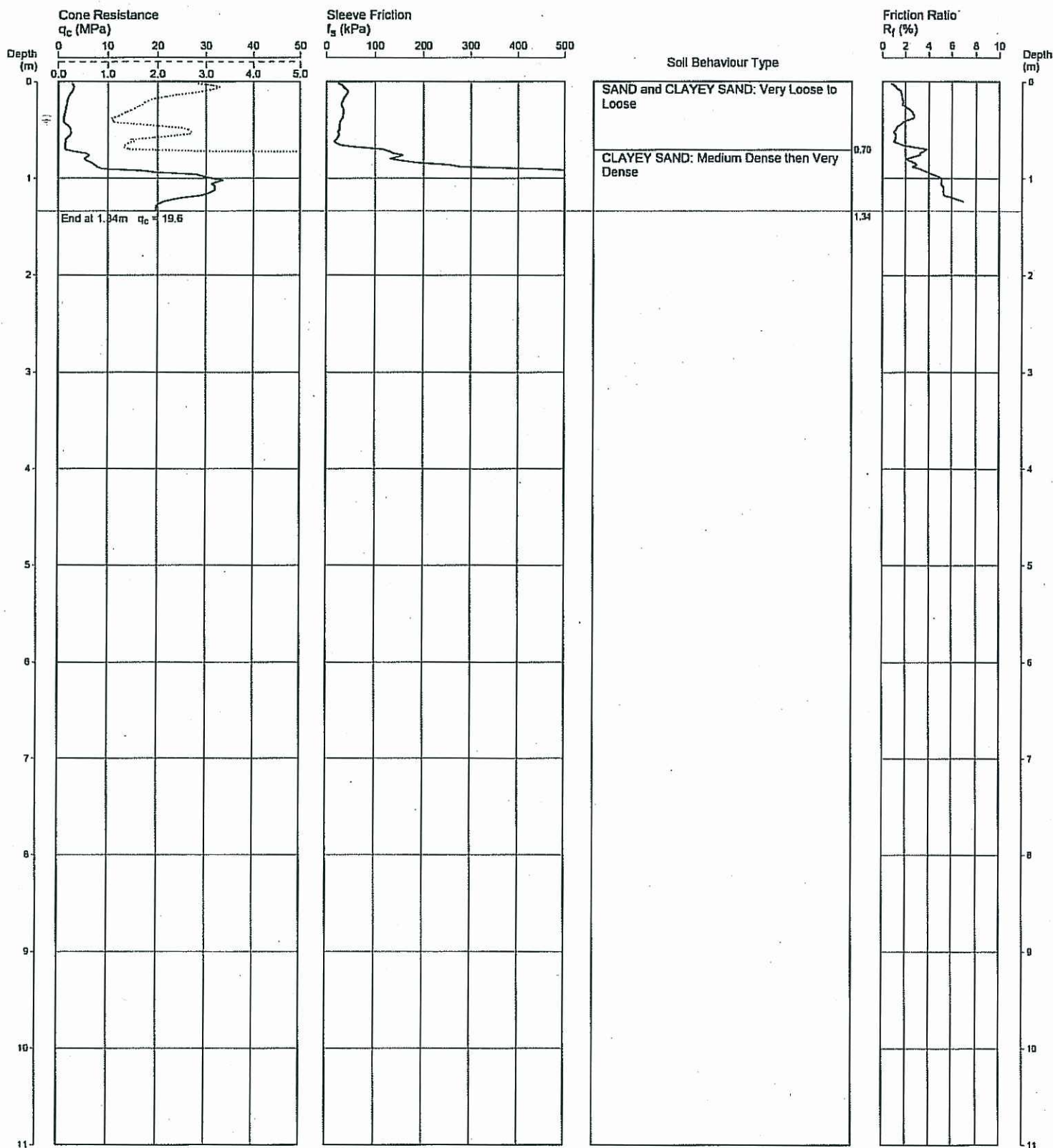
PROJECT No: 50888

29B

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\508882916

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

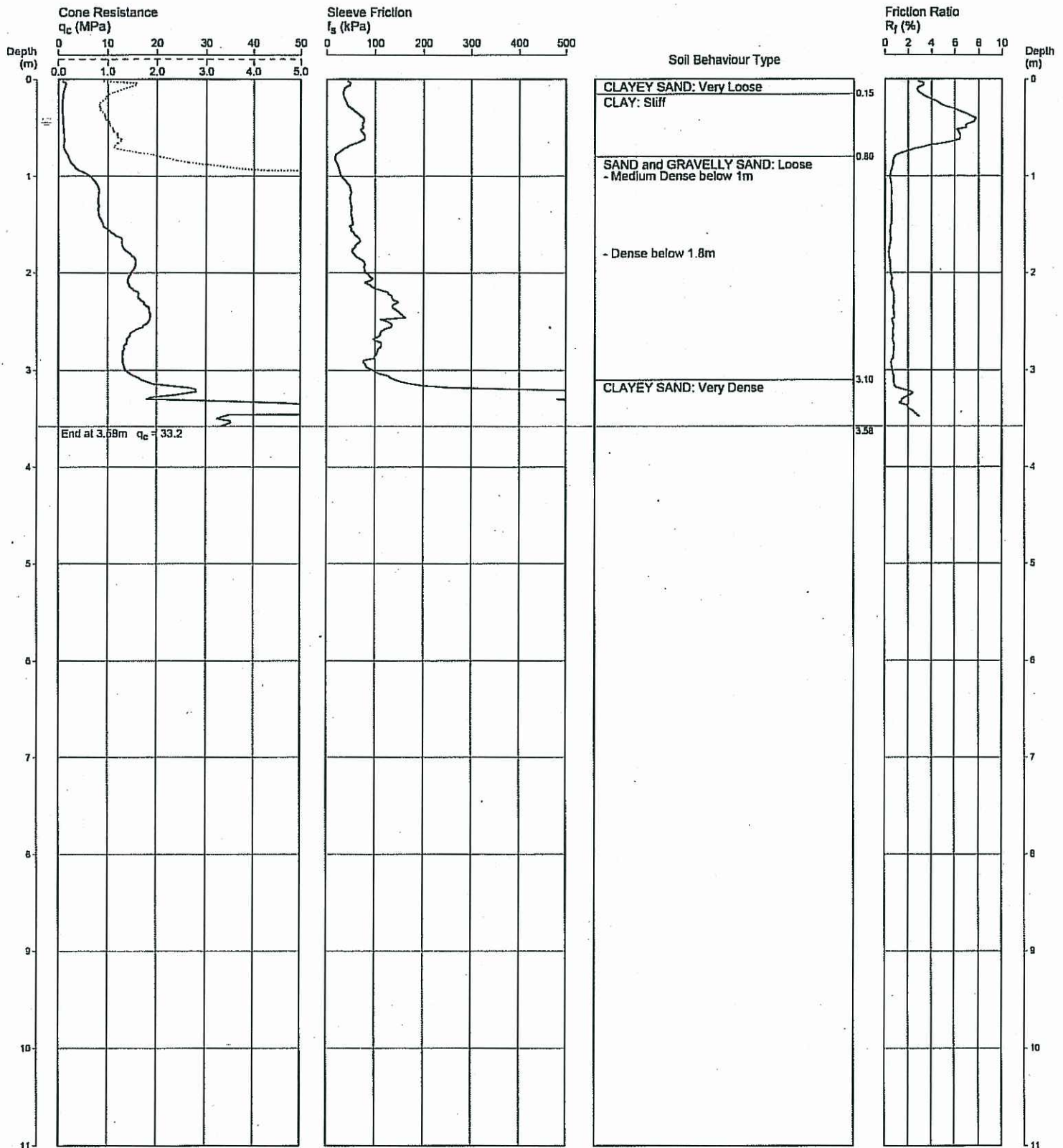
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 4m AHD



REMARKS: GPS: 479987E, 7867360N

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, Oonoonba

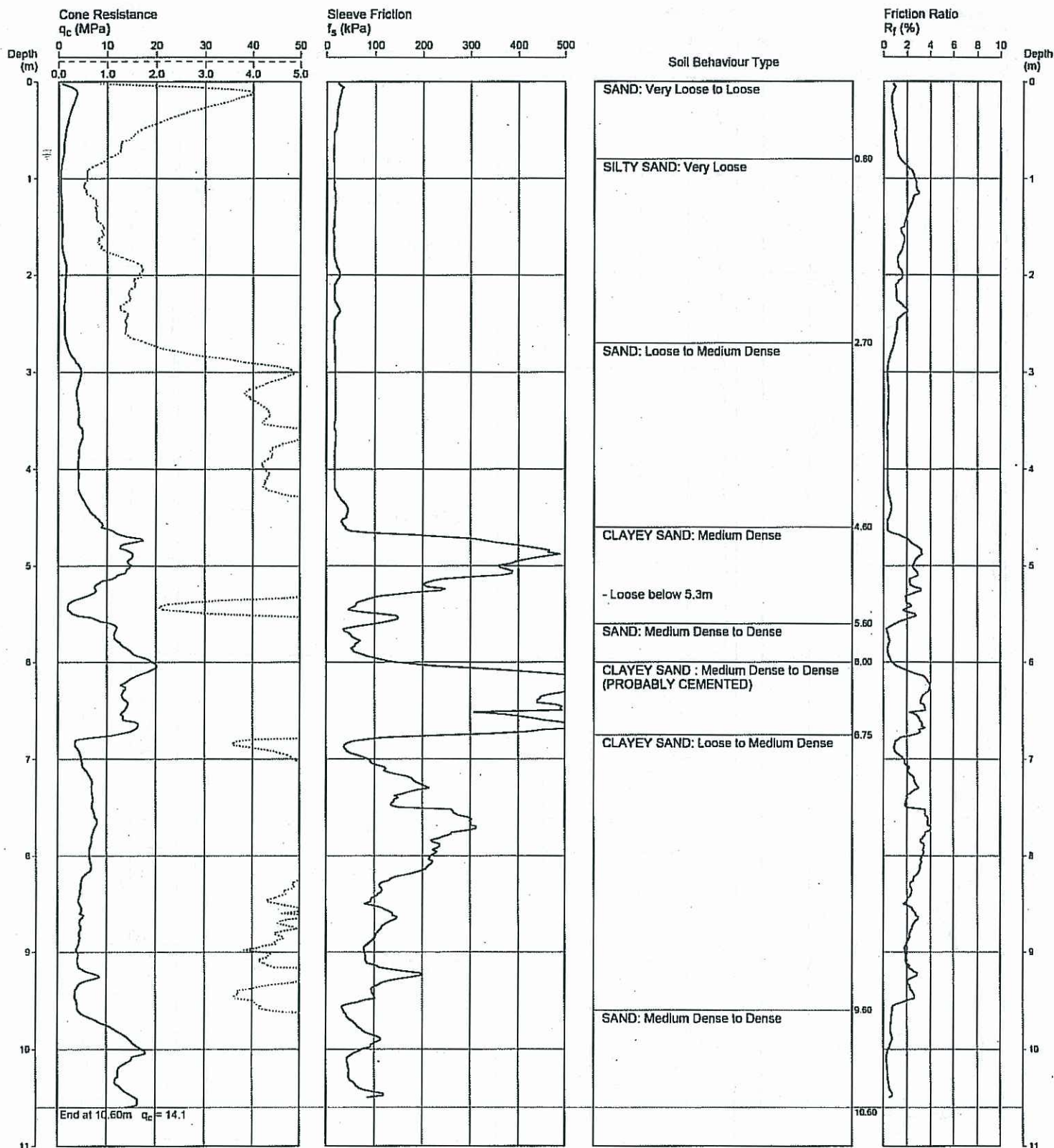
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 5m AHD



REMARKS: GPS: 480122E, 7867386N

Date  
Plotted  
Checked

File: P:50888 - OONONBA, Factual Geotechnical Investigation, DPI Site/Gint or CPT logs\50888-3  
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CLIENT: AECOM Australia Pty Ltd

PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Oonoonba

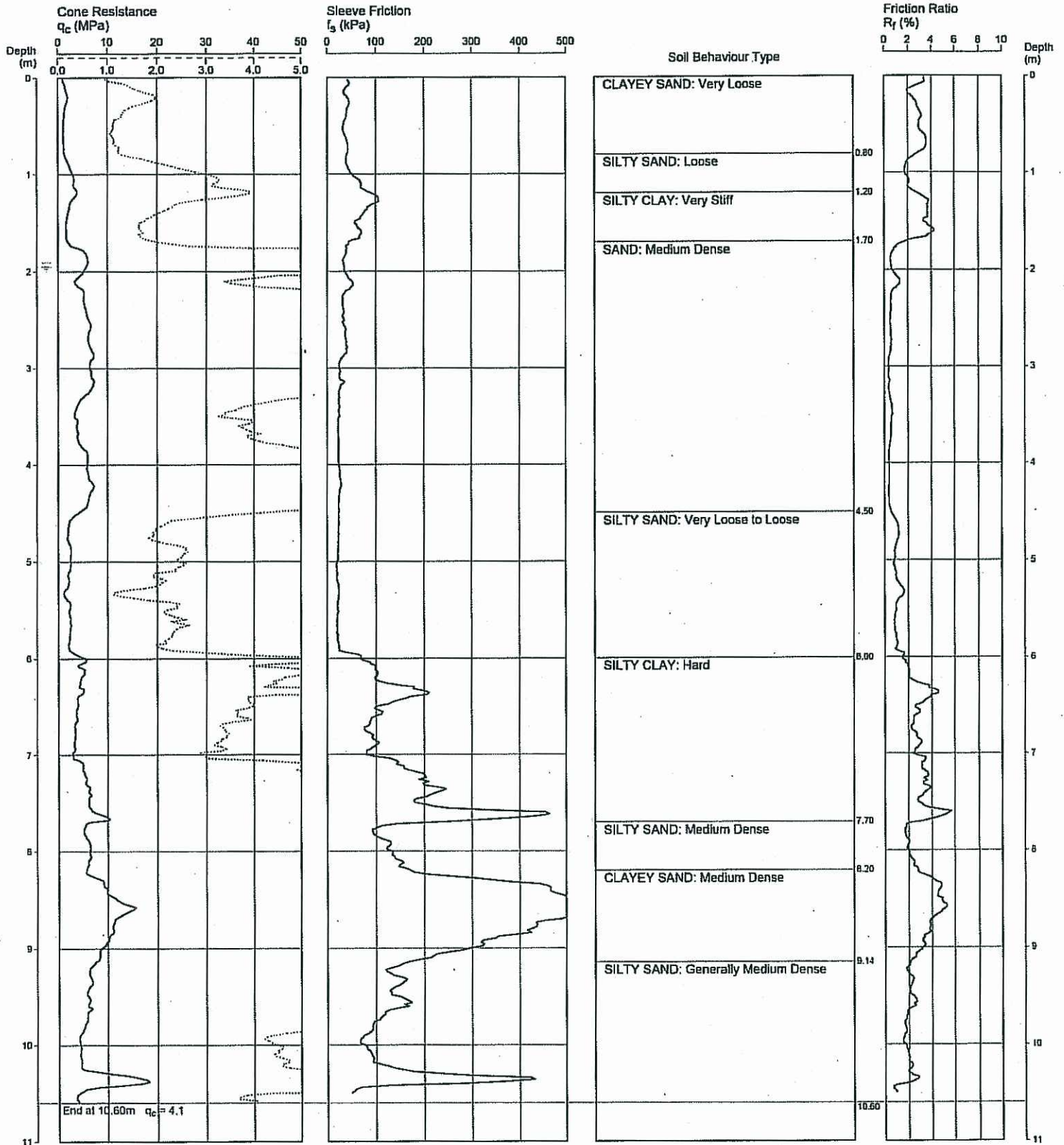
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 3.4m AHD



REMARKS: GPS: 480375E, 7867599N

Date  
Plotted  
Checked

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

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PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Oonoonba

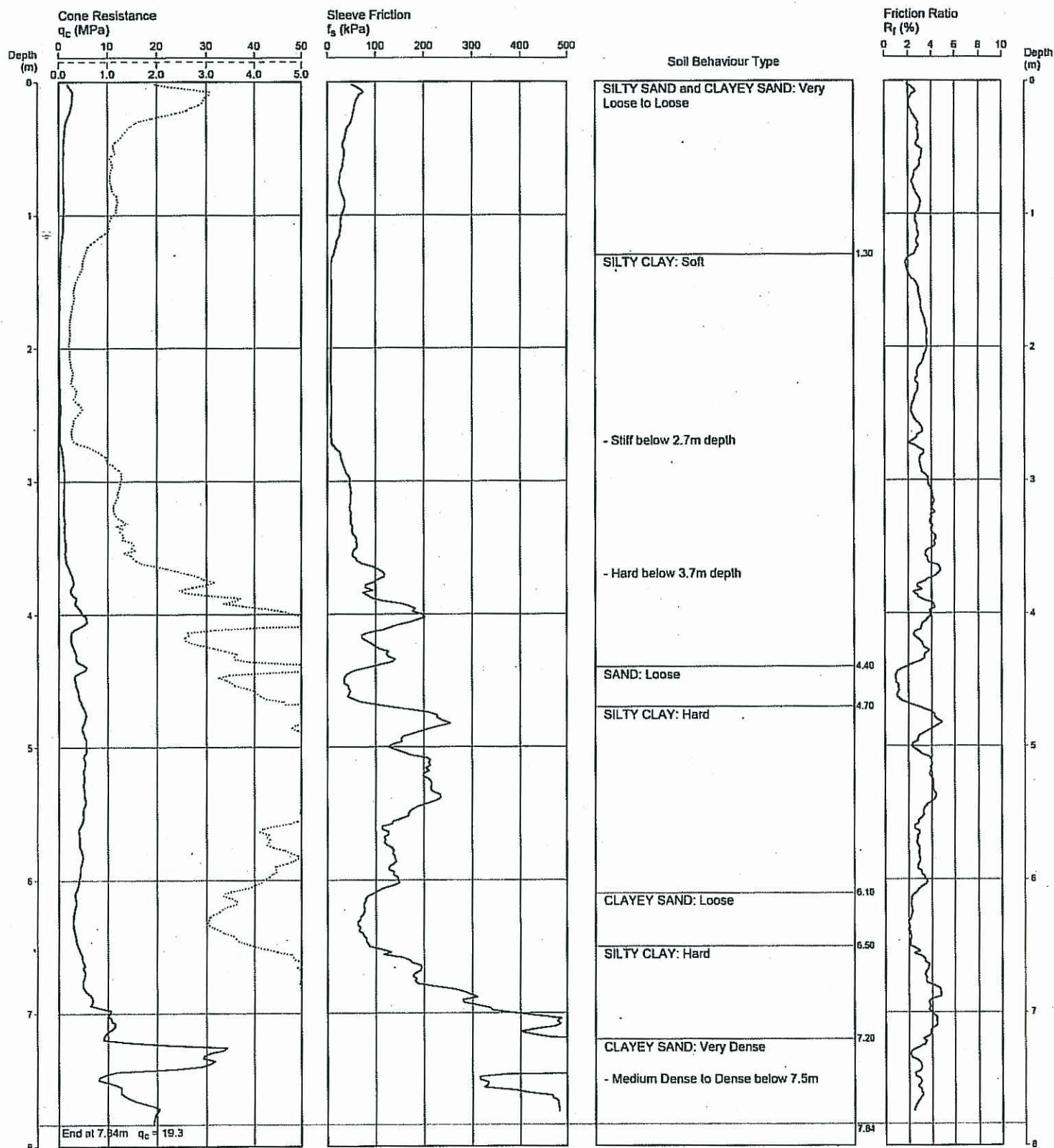
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 2.6m AHD



REMARKS: GPS: 480366E, 7867355N

Date:  
Plotted  
Checked

File: P:\50888 - OONONBA, Factual Geotechnical Investigation, DPI Site\Gint or CPT logs\50888-3

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PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Oonoonba

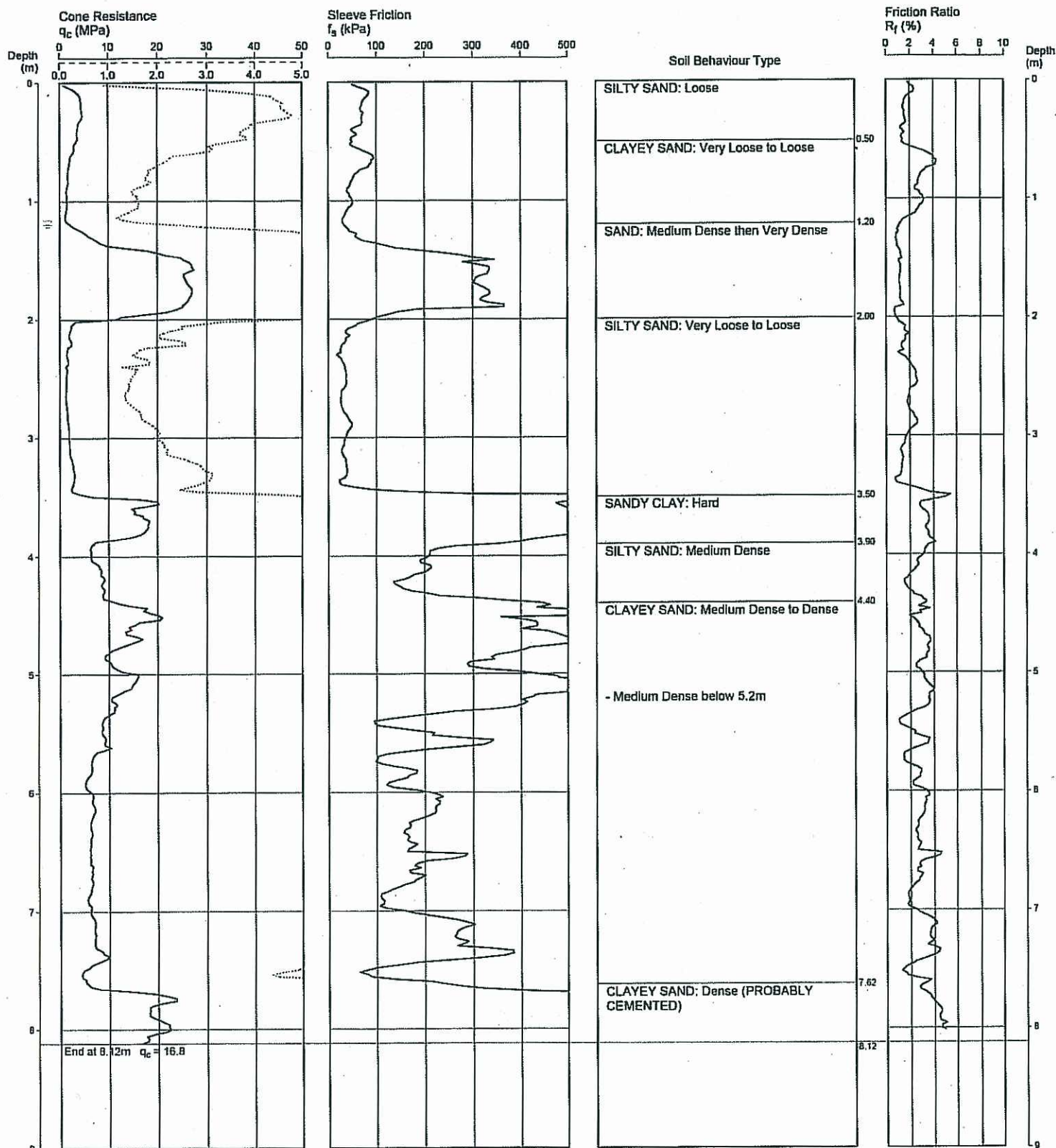
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 3.3m AHD



REMARKS: GPS: 480320E, 7867183N

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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PROJECT: Department of Primary Industries

LOCATION: off Abbott Street, Oonoonba

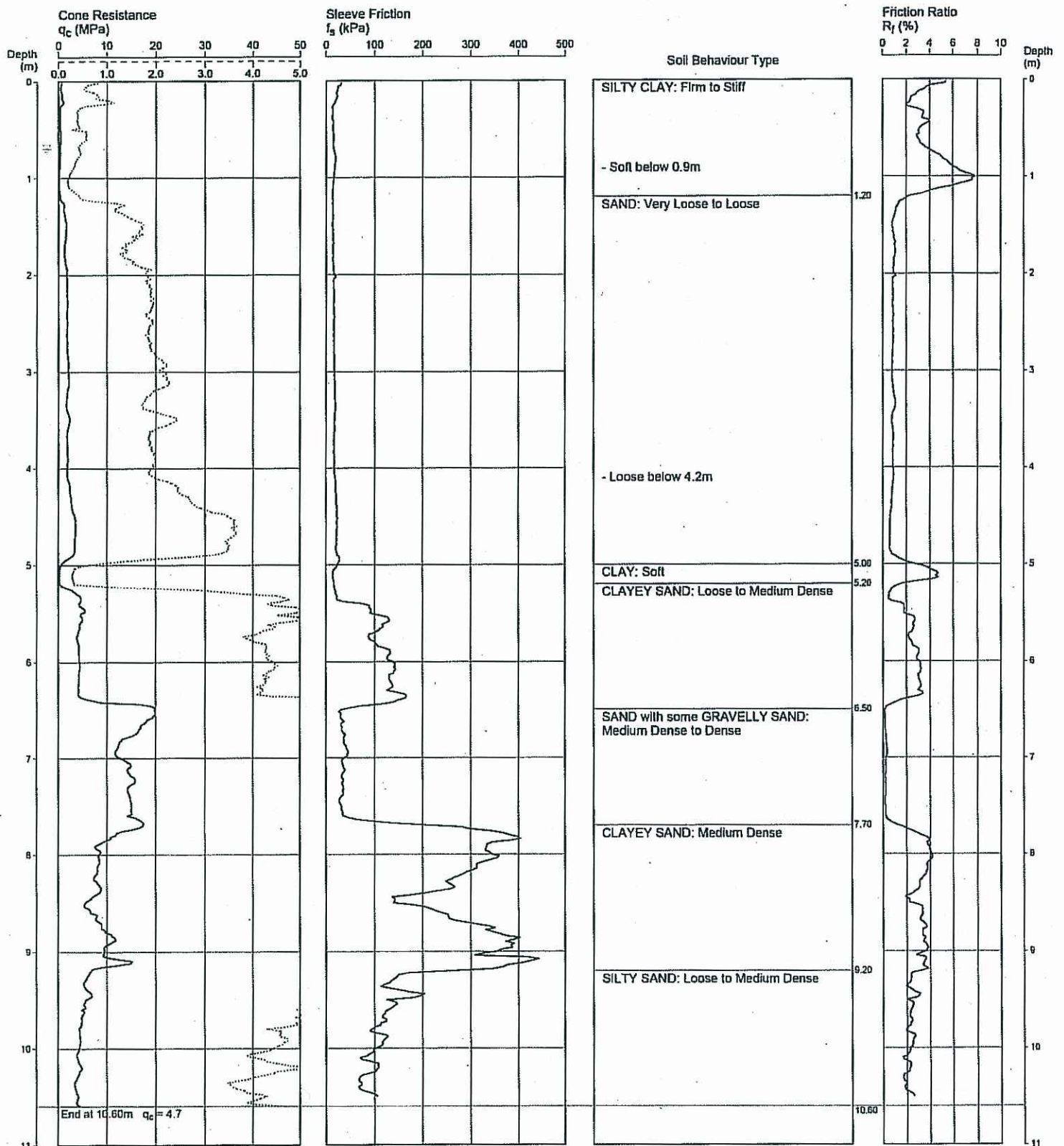
PROJECT No: 50888

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Page 1 of 1

DATE 15/04/2010

SURFACE RL: 2.8m AHD



REMARKS: GPS: 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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Garbutt QLD 4814

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

## RESULTS OF MOISTURE CONTENT, PLASTICITY AND LINEAR SHRINKAGE TESTS

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

| TEST LOCATION | DEPTH (m) | DESCRIPTION                      | CODE | W <sub>F</sub> % | W <sub>L</sub> % | W <sub>P</sub> % | 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<sub>F</sub> Field Moisture Content  
W<sub>L</sub> Liquid limit  
W<sub>P</sub> 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

*D. Pollock*

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



## RESULTS OF MOISTURE CONTENT, PLASTICITY AND LINEAR SHRINKAGE TESTS

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

| <b>TEST LOCATION</b> | <b>DEPTH (m)</b> | <b>DESCRIPTION</b>          | <b>CODE</b> | <b>W<sub>F</sub> %</b> | <b>W<sub>L</sub> %</b> | <b>W<sub>P</sub> %</b> | <b>PI %</b> | <b>*LS %</b> |
|----------------------|------------------|-----------------------------|-------------|------------------------|------------------------|------------------------|-------------|--------------|
| 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<sub>F</sub> Field Moisture Content  
W<sub>L</sub> Liquid limit  
W<sub>P</sub> 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

*D. Pollock*  
Dean Pollock  
Laboratory Manager



NATA Accredited Laboratory Number: 828

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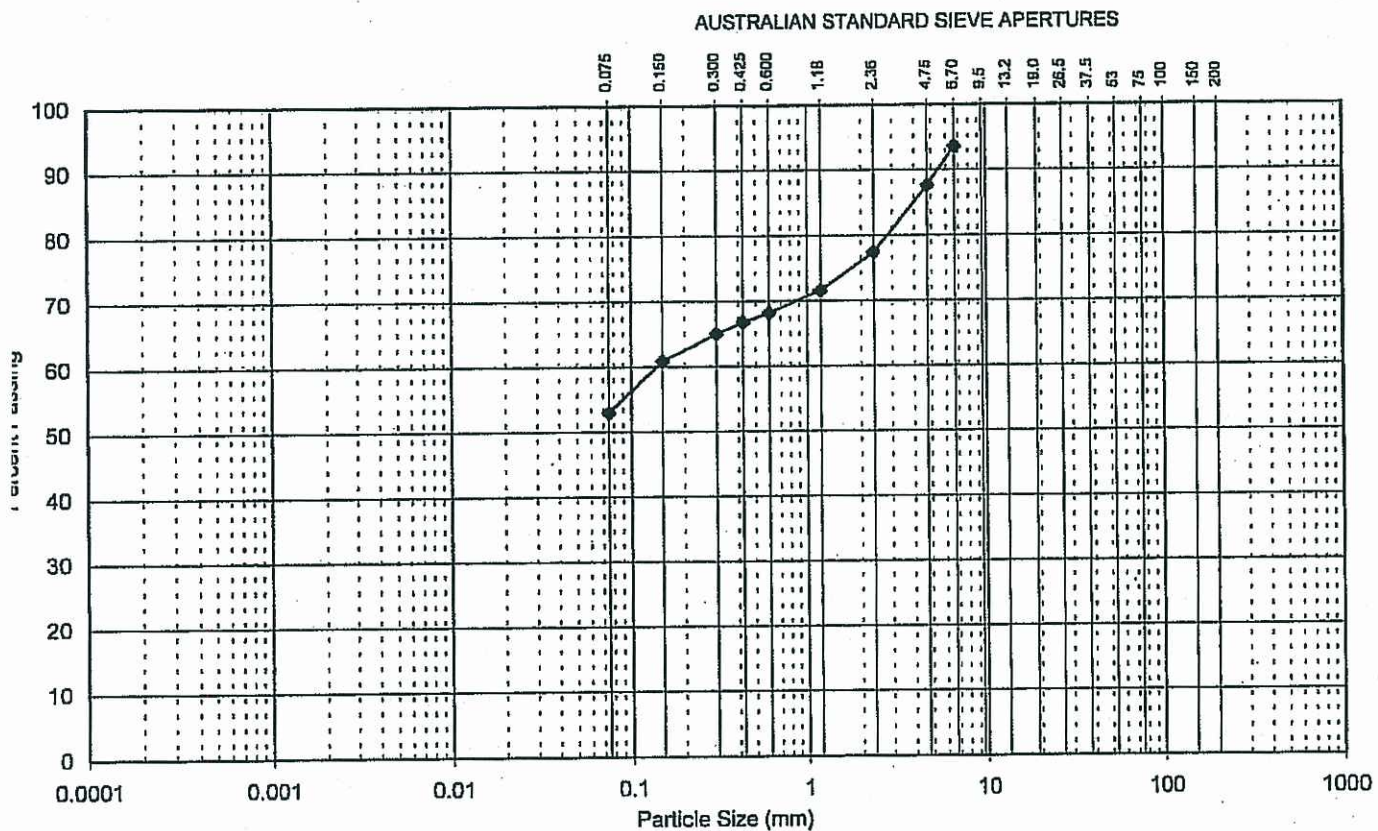
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Douglas Partners Pty Ltd  
ABN 75 053 980 117

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

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

|          |    |
|----------|----|
| Tested:  | KT |
| Checked: | DP |

*Opollack*  
Dean Pollock  
Laboratory Manager



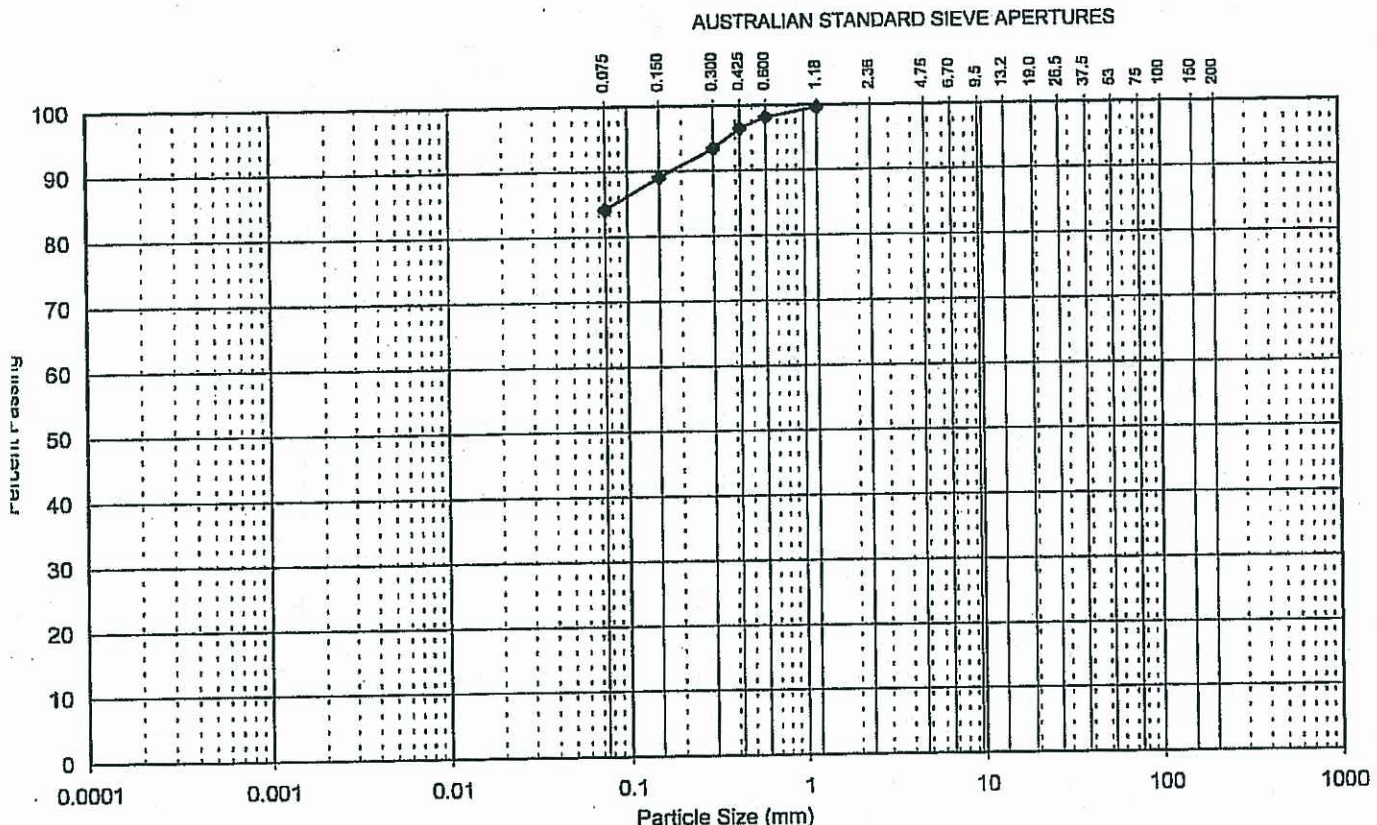
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Douglas Partners Pty Ltd  
ABN 75 053 980 117

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

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

*D. Pollock*  
Dean Pollock  
Laboratory Manager



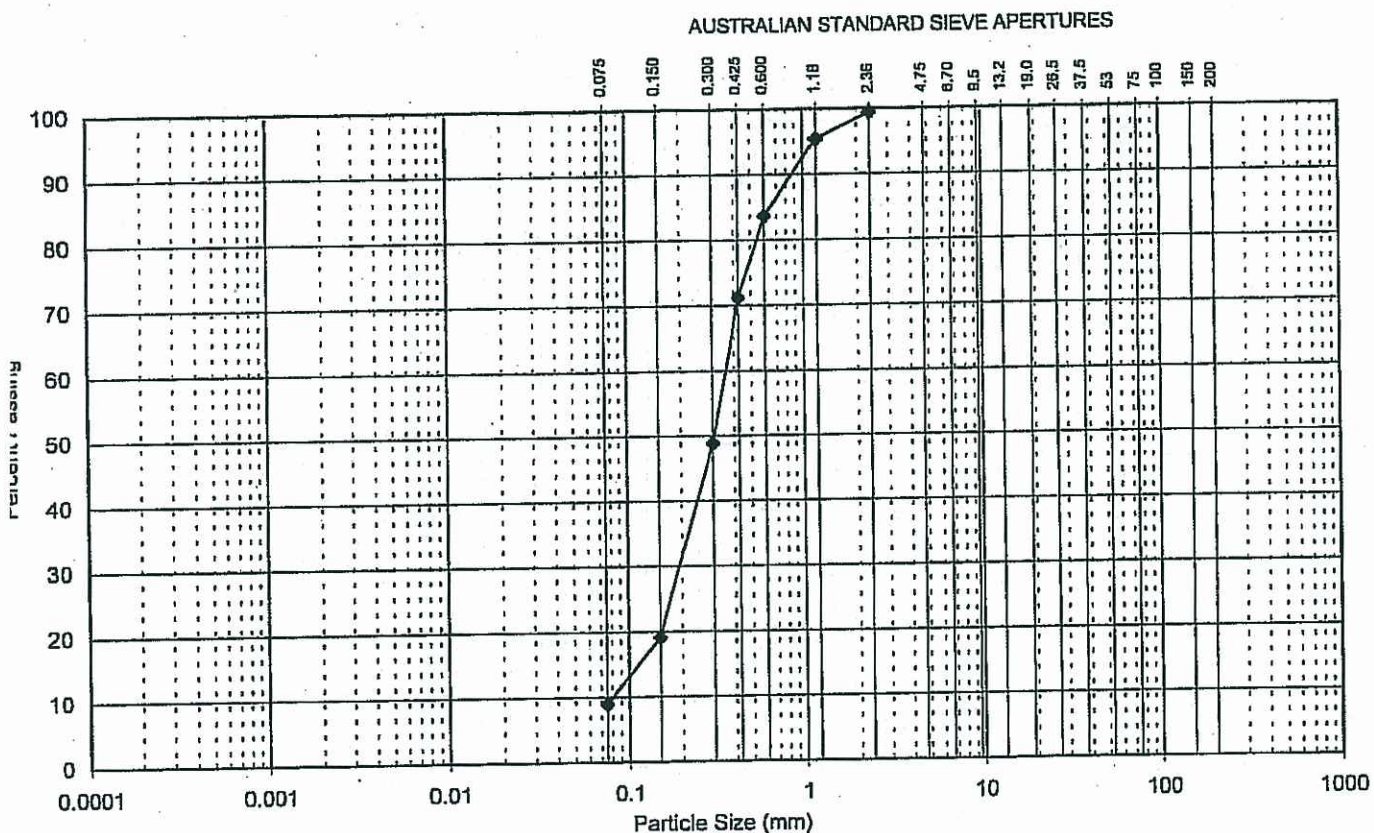
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Garbutt QLD 4814  
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Fax: 07 4725 1224  
townsville@douglaspartners.com.au

## RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

|                        |                                    |                      |            |
|------------------------|------------------------------------|----------------------|------------|
| <b>Client :</b>        | AECOM Australia Pty Ltd            | <b>Project No. :</b> | 50888      |
| <b>Project :</b>       | Factual Geotechnical Investigation | <b>Report No. :</b>  | T10-284    |
| <b>Location :</b>      | Oonoonba DPI Site                  | <b>Report Date :</b> | 13/05/2010 |
| <b>Test Location :</b> | Pit 4                              | <b>Date Sampled:</b> | 16/04/2010 |
| <b>Depth / Layer :</b> | 1.5                                | <b>Date of Test:</b> | 12/05/2010 |
|                        |                                    | <b>Page:</b>         | 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    | 0.5    | 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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|          |    |
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| Checked: | DP |

*DPollock*  
 Dean Pollock  
 Laboratory Manager



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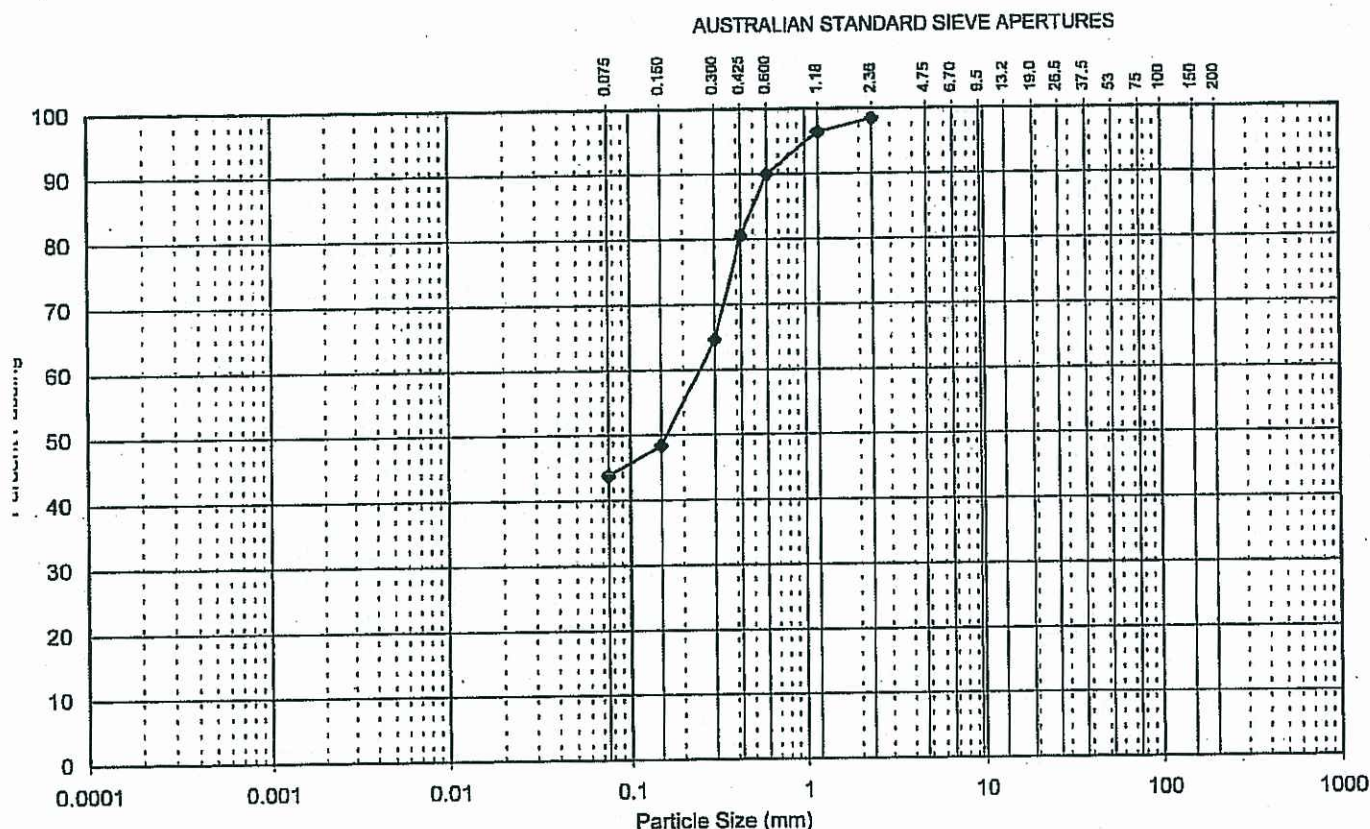
Phone 07 4779 9866

Fax: 07 4725 1224

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## RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

|                        |                                    |                      |            |
|------------------------|------------------------------------|----------------------|------------|
| <b>Client :</b>        | AECOM Australia Pty Ltd            | <b>Project No. :</b> | 50888      |
| <b>Project :</b>       | Factual Geotechnical Investigation | <b>Report No. :</b>  | T10-285    |
| <b>Location :</b>      | Oonoonba DPI Site                  | <b>Report Date :</b> | 13/05/2010 |
| <b>Test Location :</b> | Pit 8                              | <b>Date Sampled:</b> | 16/04/2010 |
| <b>Depth / Layer :</b> | 1.0m                               | <b>Date of Test:</b> | 12/05/2010 |
|                        |                                    | <b>Page:</b>         | 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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|          |    |
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*DPollock*  
Dean Pollock  
Laboratory Manager



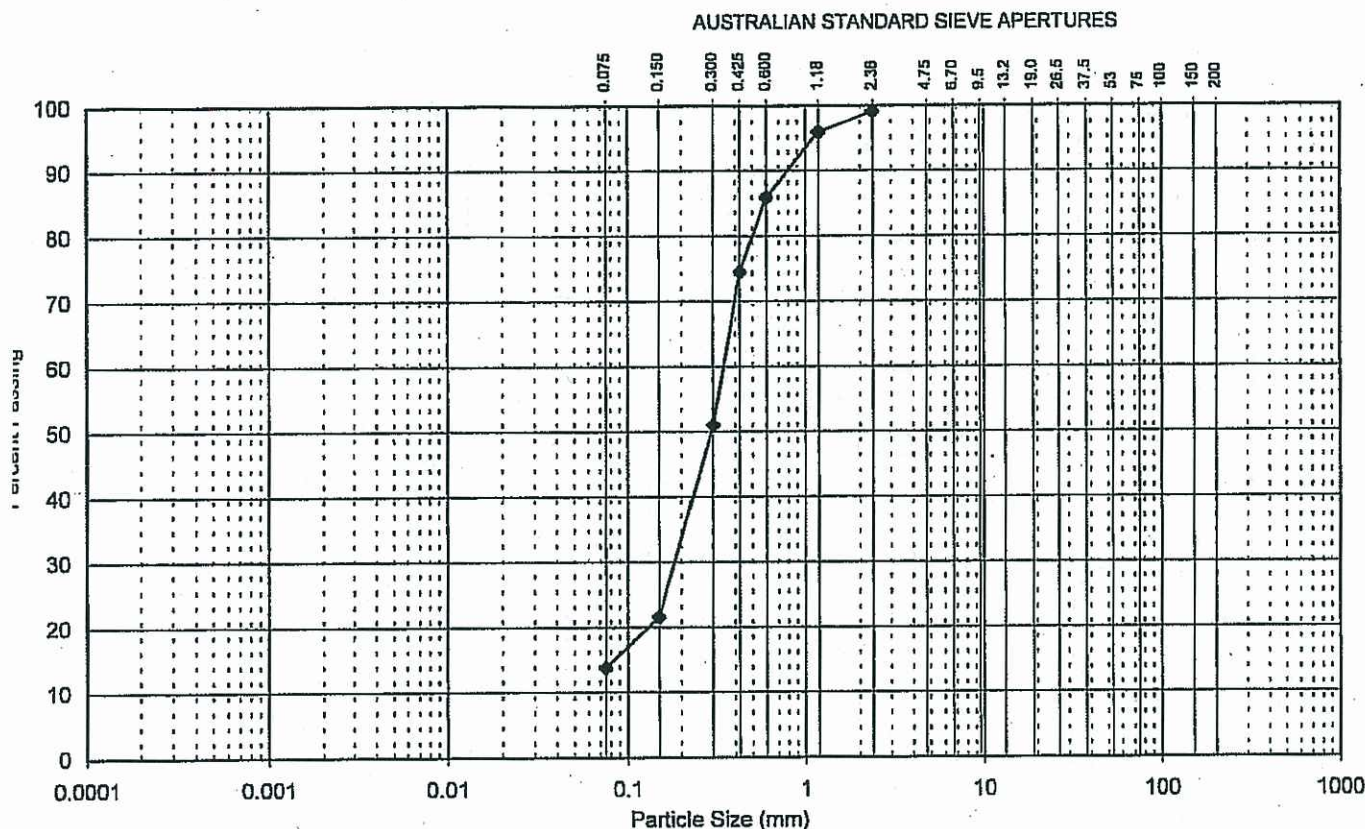
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## RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

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

|          |    |
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| Tested:  | KT |
| Checked: | DP |

*DPollock*  
Dean Pollock  
Laboratory Manager



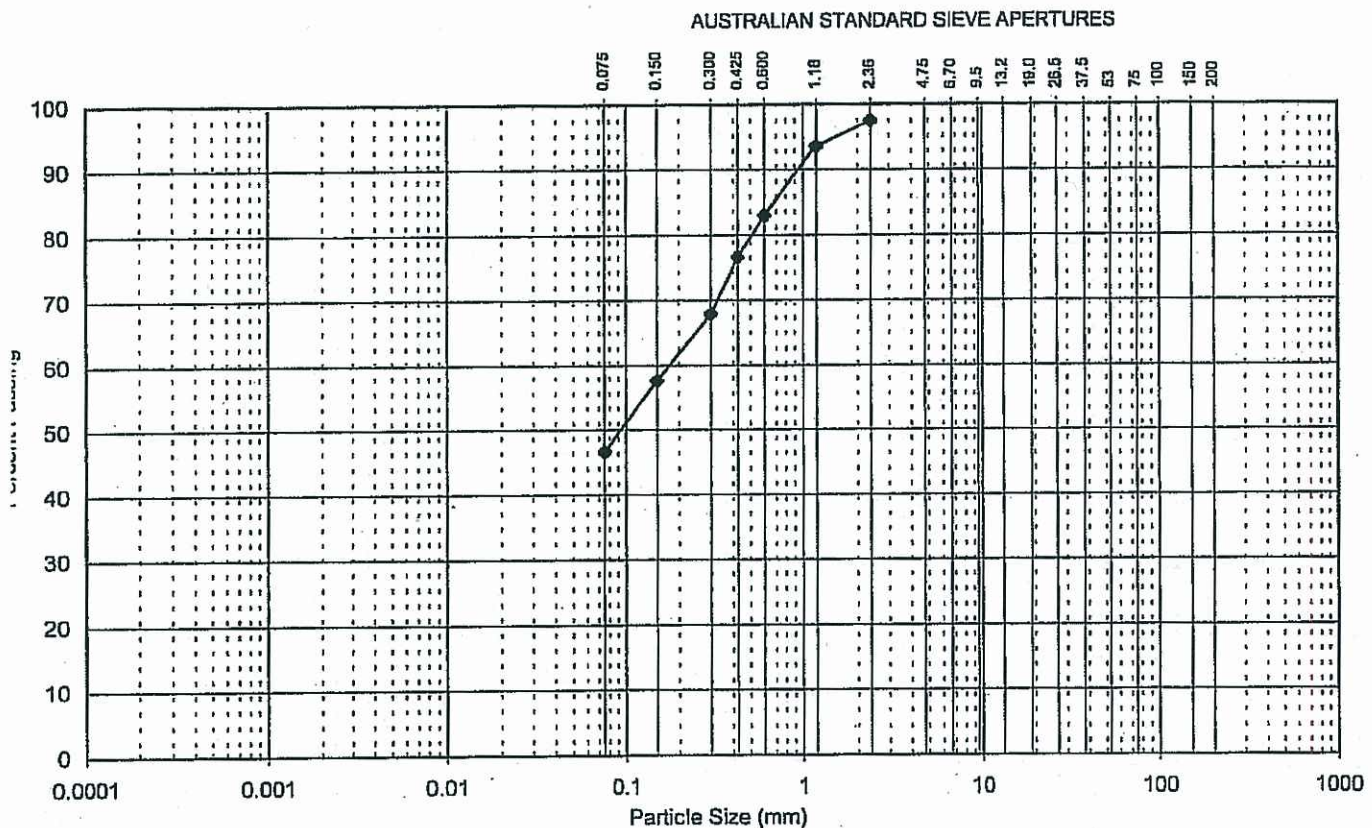
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## RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

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

|          |    |
|----------|----|
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| Checked: | DP |

*DPollock*  
Dean Pollock  
Laboratory Manager



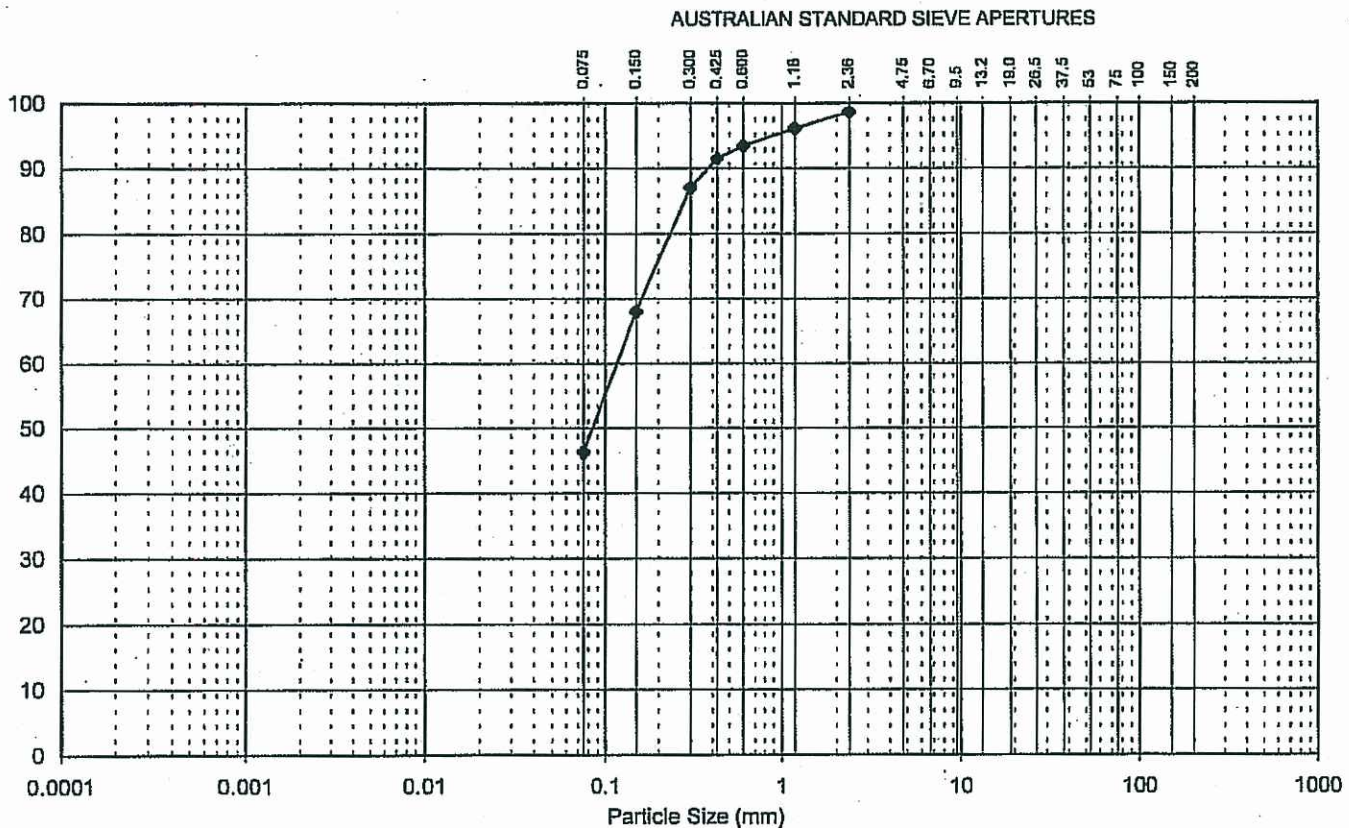
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## RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

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

|          |    |
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| Checked: | DP |

*DPollock*  
Dean Pollock  
Laboratory Manager



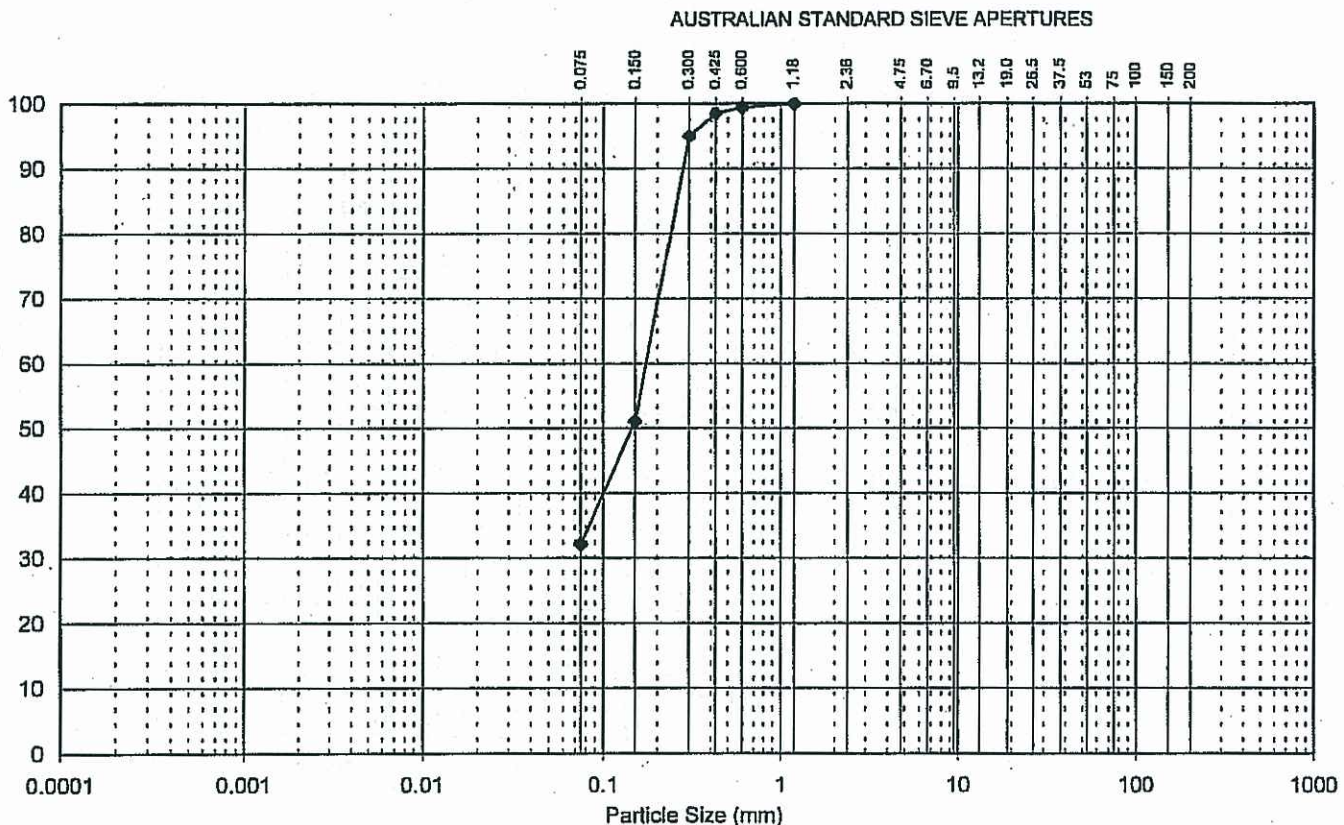
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## RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

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

*DPollack*  
Dean Pollock  
Laboratory Manager



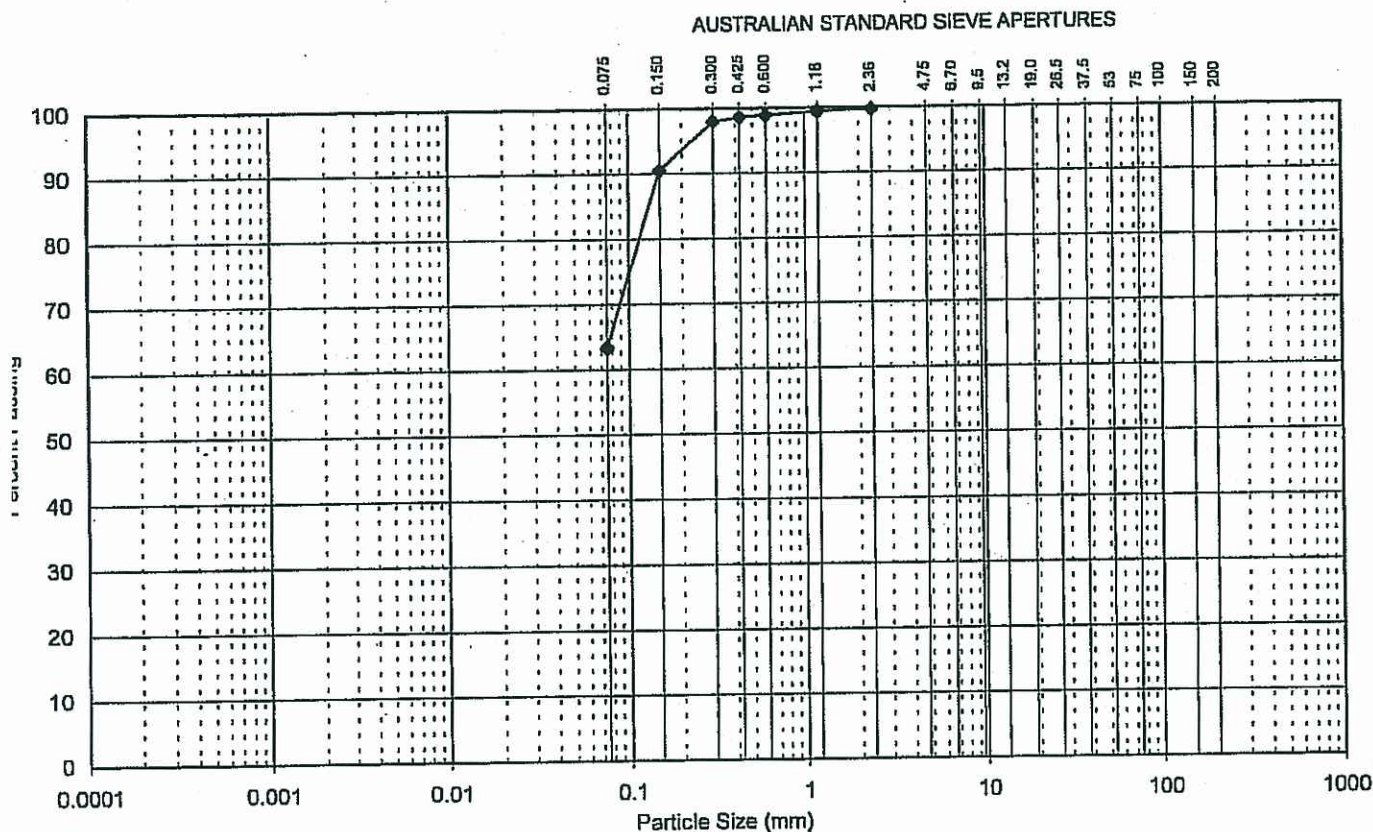
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## RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

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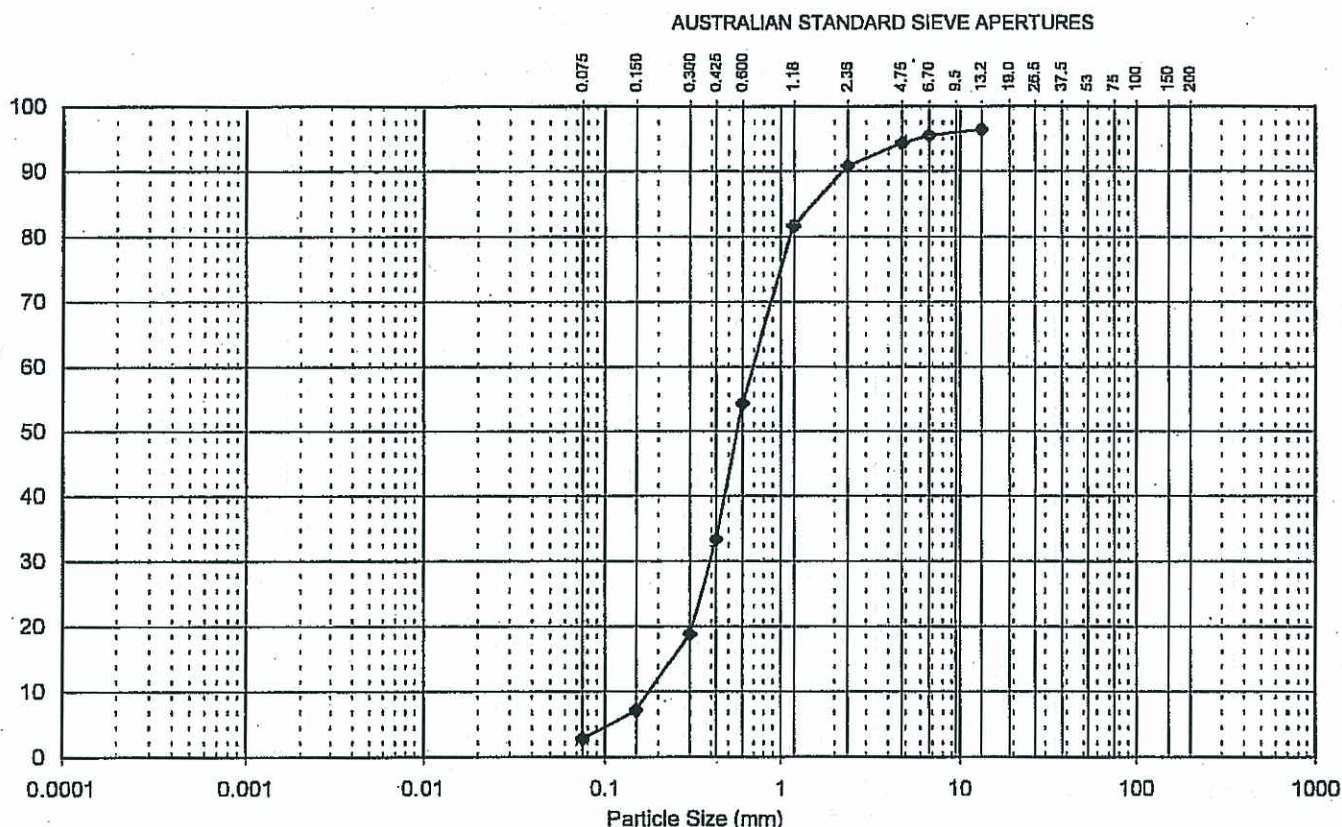
Approved Signatory:

Tested: KT  
Checked: DP

*DPollock*  
Dean Pollock  
Laboratory Manager

## RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

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

*DPollock*  
Dean Pollock  
Laboratory Manager



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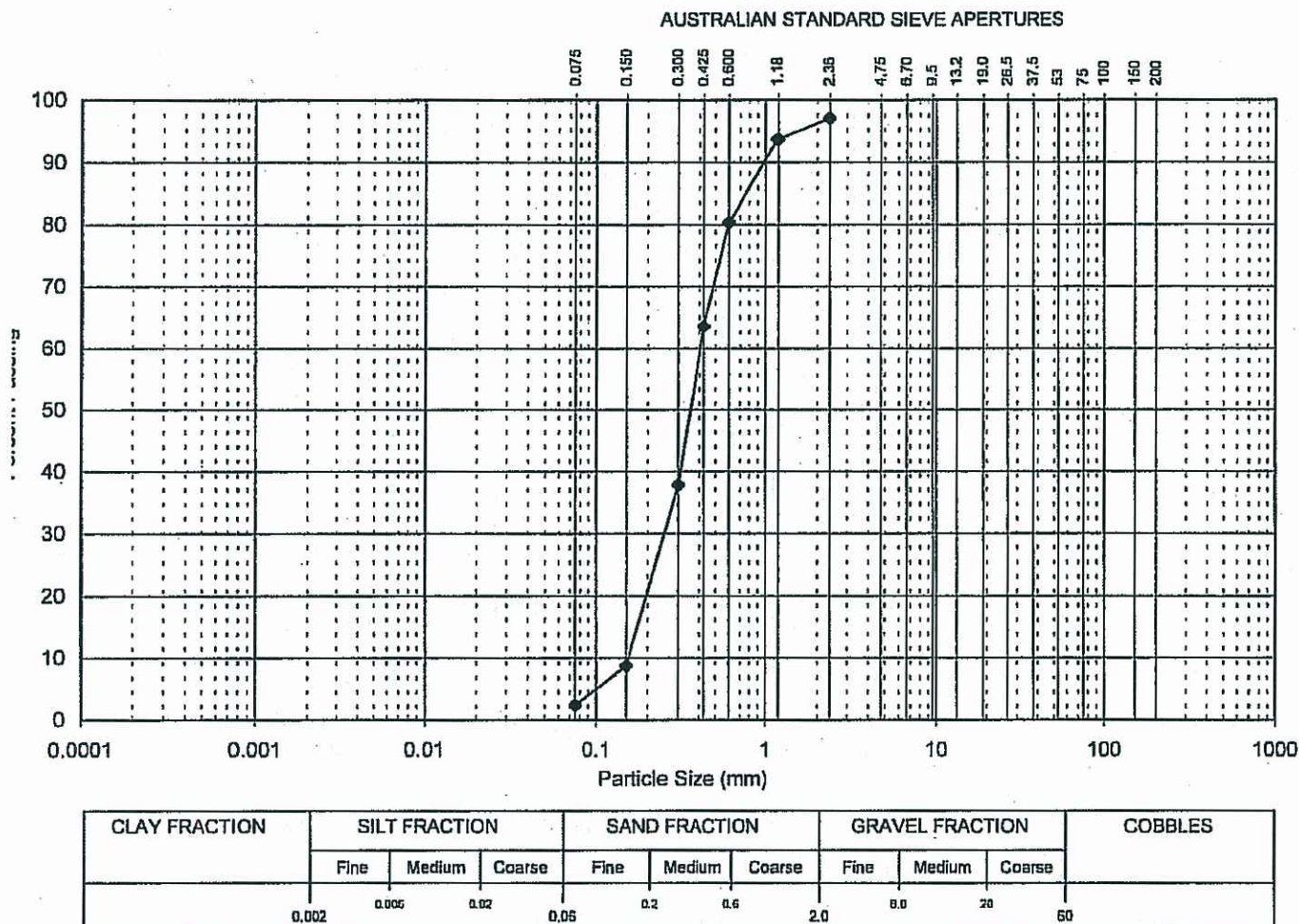
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## RESULTS OF PARTICLE SIZE DISTRIBUTION TEST

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



**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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|          |    |
|----------|----|
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| Checked: | DP |

*Opollack*  
Dean Pollock  
Laboratory Manager



## DETERMINATION OF EMERSON CLASS NUMBER OF SOIL

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

| <b>SAMPLE NO</b> | <b>DEPTH (m)</b> | <b>DESCRIPTION</b>               | <b>WATER TYPE</b> | <b>WATER TEMP</b> | <b>CLASS NO.</b> |
|------------------|------------------|----------------------------------|-------------------|-------------------|------------------|
| 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

  
Dean Pollock  
Laboratory Manager



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## DETERMINATION OF EMERSON CLASS NUMBER OF SOIL

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

| 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

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Laboratory Manager



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## RESULT OF SHRINK-SWELL INDEX DETERMINATION

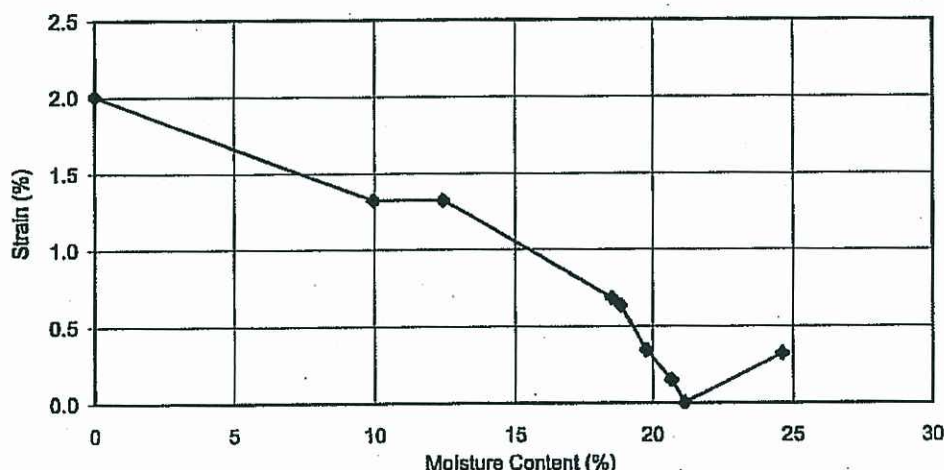
|                        |                                    |                       |            |
|------------------------|------------------------------------|-----------------------|------------|
| <b>Client :</b>        | AECOM Australia Pty Ltd            | <b>Project No. :</b>  | 50888      |
| <b>Project :</b>       | Factual Geotechnical Investigation | <b>Report No. :</b>   | T10-294    |
| <b>Location :</b>      | Oonoonba DPI Site                  | <b>Report Date :</b>  | 13/05/2010 |
| <b>Test Location :</b> | Pit 2                              | <b>Date Sampled :</b> | 16/04/2010 |
| <b>Depth / Layer :</b> | 0.5-0.95m                          | <b>Date of Test:</b>  | 6/05/2010  |
|                        |                                    | <b>Page:</b>          | 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**  $I_{ss}$  1.1% per  $\Delta pF$

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



## RESULT OF SHRINK-SWELL INDEX DETERMINATION

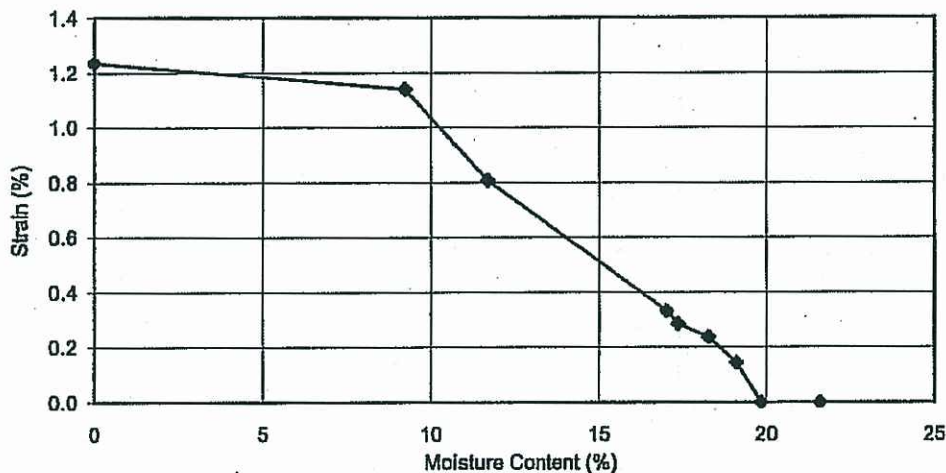
|                        |                                    |                       |            |
|------------------------|------------------------------------|-----------------------|------------|
| <b>Client :</b>        | AECOM Australia Pty Ltd            | <b>Project No. :</b>  | 50888      |
| <b>Project :</b>       | Factual Geotechnical Investigation | <b>Report No. :</b>   | T10-296    |
| <b>Location :</b>      | Oonoonba DPI Site                  | <b>Report Date :</b>  | 13/05/2010 |
| <b>Test Location :</b> | Pit 4                              | <b>Date Sampled :</b> | 16/04/2010 |
| <b>Depth / Layer :</b> | 0.5-0.95m                          | <b>Date of Test:</b>  | 6/05/2010  |
|                        |                                    | <b>Page:</b>          | 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**  $18.5 \text{ to } 21.6 \text{ \%}$   $140 \text{ to } 110 \text{ kPa}$   $0.7\% \text{ per } \Delta pF$

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

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



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|----------|----|
| Tested:  | KT |
| Checked: | DP |

*DPollock*  
Dean Pollock  
Laboratory Manager



## RESULT OF SHRINK-SWELL INDEX DETERMINATION

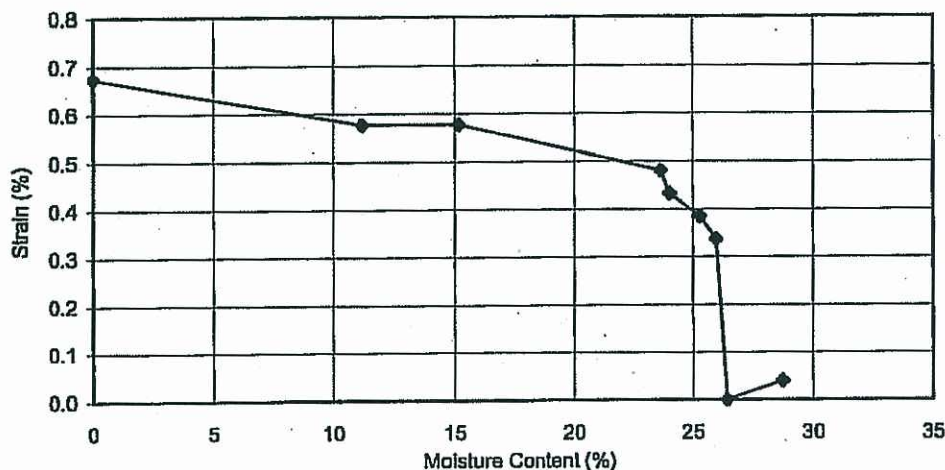
|                        |                                    |                       |            |
|------------------------|------------------------------------|-----------------------|------------|
| <b>Client :</b>        | AECOM Australia Pty Ltd            | <b>Project No. :</b>  | 50888      |
| <b>Project :</b>       | Factual Geotechnical Investigation | <b>Report No. :</b>   | T10-295    |
| <b>Location :</b>      | Oonoonba DPI Site                  | <b>Report Date :</b>  | 13/05/2010 |
| <b>Test Location :</b> | Pit 12                             | <b>Date Sampled :</b> | 16/04/2010 |
| <b>Depth / Layer :</b> | 0.75-1.2m                          | <b>Date of Test:</b>  | 6/05/2010  |
|                        |                                    | <b>Page:</b>          | 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**  $I_{ss}$  0.4% per  $\Delta pF$

|                            |                                                                                                             |
|----------------------------|-------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>        | Orange brown sand and silt                                                                                  |
| <b>Test Method(s):</b>     | AS 1289.7.1.1 - 2003, AS 1289.2.1.1 - 2005                                                                  |
| <b>Sampling Method(s):</b> | AS 1289.1.3.1-1999                                                                                          |
| <b>Extent of Cracking:</b> | UC - Uncracked<br>SC - Slightly cracked<br>MC - Moderately cracked<br>HC - Highly cracked<br>FR - Fractured |
| <b>Remarks:</b>            |                                                                                                             |

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

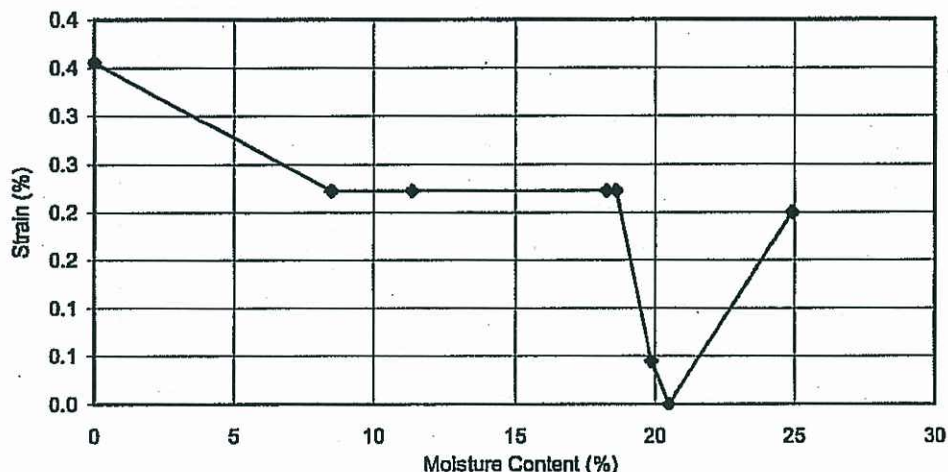
|                        |                                    |                       |            |
|------------------------|------------------------------------|-----------------------|------------|
| <b>Client :</b>        | AECOM Australia Pty Ltd            | <b>Project No. :</b>  | 50888      |
| <b>Project :</b>       | Factual Geotechnical Investigation | <b>Report No. :</b>   | T10-297    |
| <b>Location :</b>      | Ooonooba DPI Site                  | <b>Report Date :</b>  | 13/05/2010 |
| <b>Test Location :</b> | Pit 17                             | <b>Date Sampled :</b> | 16/04/2010 |
| <b>Depth / Layer :</b> | 1.5-1.95m                          | <b>Date of Test:</b>  | 6/05/2010  |
|                        |                                    | <b>Page:</b>          | 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** Iss 0.2% per  $\Delta$  pF

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

*Opollock*  
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**

| 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 - Light brown silty clay; M<<Wp                                                                        |             |                            |       |        |                    |       |                                             |    |    |    |
|    | 0.25      | SILTY CLAY - Very stiff brown silty clay; M<<Wp                                                                |             |                            | 0.2   |        | pp 80-120 kPa      |       |                                             |    |    |    |
|    | 0.35      | 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     |       |                                             |    |    |    |
|    | 0.65      | SILTY CLAY - Stiff to very stiff yellow brown silty clay with some fine grained sand; M<Wp                     |             | U50                        | 0.75  |        | pp 200-290 kPa     |       |                                             |    |    |    |
|    |           |                                                                                                                |             |                            | 0.95  |        |                    |       |                                             |    |    |    |
| -1 | 1.2       | SILTY CLAY - Very stiff dark brown silty clay with a trace of fine grained sand; M<Wp                          |             |                            |       |        |                    |       |                                             |    |    |    |
| -2 | 1.9       | CLAYEY SAND - Medium dense grey orange clayey sand; fine to coarse grained sand fraction; damp                 |             |                            |       |        |                    |       |                                             |    |    |    |
|    |           |                                                                                                                |             |                            | 2.25  |        | pp 140-230 kPa     |       |                                             |    |    |    |
|    |           |                                                                                                                |             | U50                        |       |        |                    |       |                                             |    |    |    |
|    |           |                                                                                                                |             |                            | 2.7   |        |                    |       |                                             |    |    |    |
| -3 | 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 Ia(50) MPa |
| W                                 | Water sample            | V   | Shear Vane (kPa)               |
| C                                 | Core drilling           | D   | Water seep                     |
|                                   |                         | W   | Water level                    |

|                      |
|----------------------|
| CHECKED              |
| Initials: <i>MLA</i> |
| Date: 17-5-10        |



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 Geotechnics • Environment • Groundwater