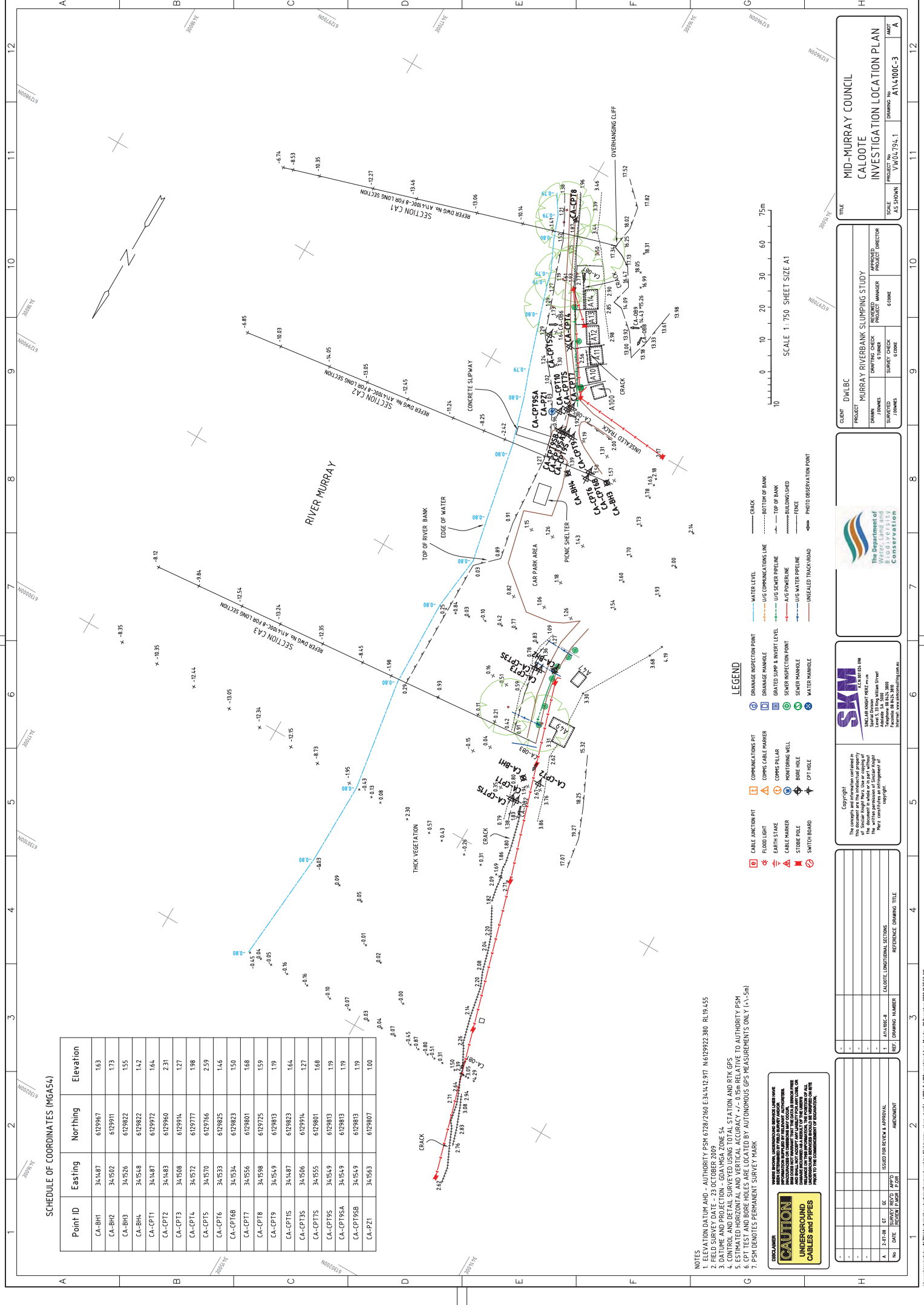




## **Appendix B Caloote In-situ and Laboratory Data**

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SCHEDULE OF COORDINATES (MGAS4)

| Point ID  | Eastings | Northings | Elevation |
|-----------|----------|-----------|-----------|
| CA-BH1    | 341487   | 612967    | 163       |
| CA-BH2    | 341502   | 612911    | 173       |
| CA-BH3    | 341526   | 612822    | 155       |
| CA-BH4    | 341548   | 612822    | 142       |
| CA-CP11   | 341487   | 612972    | 164       |
| CA-CP12   | 341483   | 612960    | 231       |
| CA-CP13   | 341508   | 612914    | 127       |
| CA-CP14   | 341572   | 612977    | 198       |
| CA-CP15   | 341570   | 612976    | 259       |
| CA-CP16   | 341533   | 6129825   | 146       |
| CA-CP16B  | 341534   | 6129823   | 150       |
| CA-CP17   | 341556   | 6129801   | 168       |
| CA-CP18   | 341598   | 6129725   | 159       |
| CA-CP19   | 341549   | 6129813   | 119       |
| CA-CP19S  | 341487   | 6129823   | 164       |
| CA-CP19S  | 341506   | 6129914   | 127       |
| CA-CP19S  | 341555   | 6129801   | 168       |
| CA-CP19S  | 341549   | 6129813   | 119       |
| CA-CP19SA | 341549   | 6129813   | 119       |
| CA-CP19SB | 341549   | 6129813   | 119       |
| CA-PZ1    | 341563   | 6129807   | 100       |

- NOTES
- ELEVATION DATUM AHD - AUTHORITY PSN 6728/260 E34142.917 N612922.380 RL19.455
  - FIELD SURVEY DATE - 23 OCTOBER 2009
  - PROJECT NO. 6728/260 E34142.917 N612922.380 RL19.455
  - CONTROL AND DETAIL SURVEYED USING TOTAL STATION AND RTK GPS
  - ESTIMATED HORIZONTAL AND VERTICAL ACCURACY +/- 0.5m RELATIVE TO AUTHORITY PSN
  - CPT TEST AND BORE HOLES ARE LOCATED BY AUTONOMOUS GPS MEASUREMENTS ONLY (+/- 5m)
  - PSM DENOTES PERMANENT SURVEY MARK

CAUTION

UNDERGROUND CABLES AND PIPES

WARNING

UNDEVELOPED SURVEY LINE HAVE NOT BEEN VERIFIED BY FIELD SURVEY. INFORMATION PROVIDED IS FOR INFORMATIONAL PURPOSES ONLY. IT IS NOT TO BE USED FOR CONSTRUCTION OR ANY OTHER PURPOSE. THE USER OF THIS INFORMATION SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION. THE USER OF THIS INFORMATION SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION.

| NO. | DATE       | REVIEW | BY | DATE       | REVIEW | BY | DATE       | REVIEW | BY |
|-----|------------|--------|----|------------|--------|----|------------|--------|----|
| 1   | 2010-01-01 | 01     | 01 | 2010-01-01 | 01     | 01 | 2010-01-01 | 01     | 01 |

| NO. | DATE       | REVIEW | BY | DATE       | REVIEW | BY | DATE       | REVIEW | BY |
|-----|------------|--------|----|------------|--------|----|------------|--------|----|
| 1   | 2010-01-01 | 01     | 01 | 2010-01-01 | 01     | 01 | 2010-01-01 | 01     | 01 |

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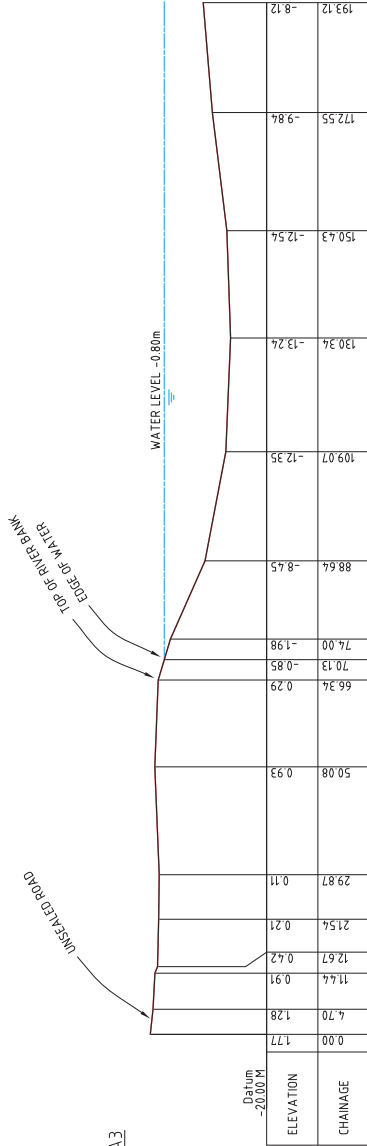


| CLIENT  | DWLC                             |
|---------|----------------------------------|
| PROJECT | MURRAY RIVERBANK SLUMPING STUDY  |
| DESIGN  | DRAWING CHECK<br>PROJECT MANAGER |
| DESIGN  | DRAWING CHECK<br>PROJECT MANAGER |
| DESIGN  | DRAWING CHECK<br>PROJECT MANAGER |
| DESIGN  | DRAWING CHECK<br>PROJECT MANAGER |

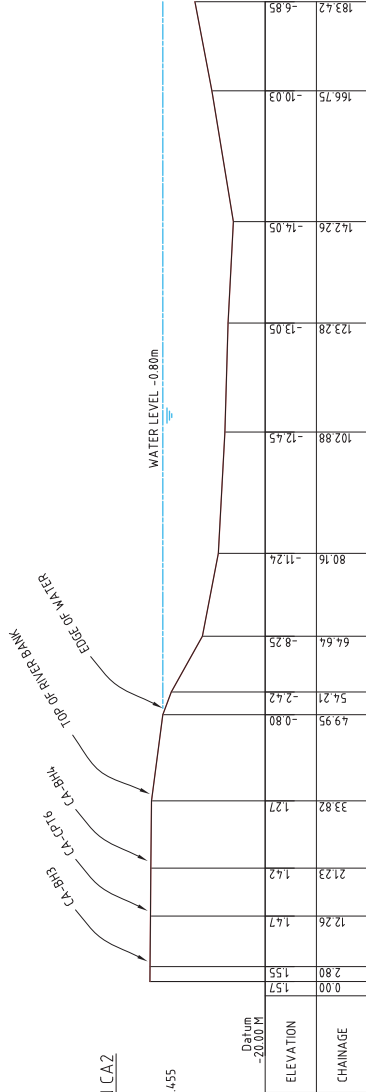
| TITLE       | MID-MURRAY COUNCIL<br>CALOOTE<br>INVESTIGATION LOCATION PLAN |
|-------------|--------------------------------------------------------------|
| SCALE       | AS SHOWN                                                     |
| PROJECT NO. | VW041794.1                                                   |
| DRAWING NO. | AN1400C-3                                                    |
| AUTH        | A                                                            |

# CALOOTE

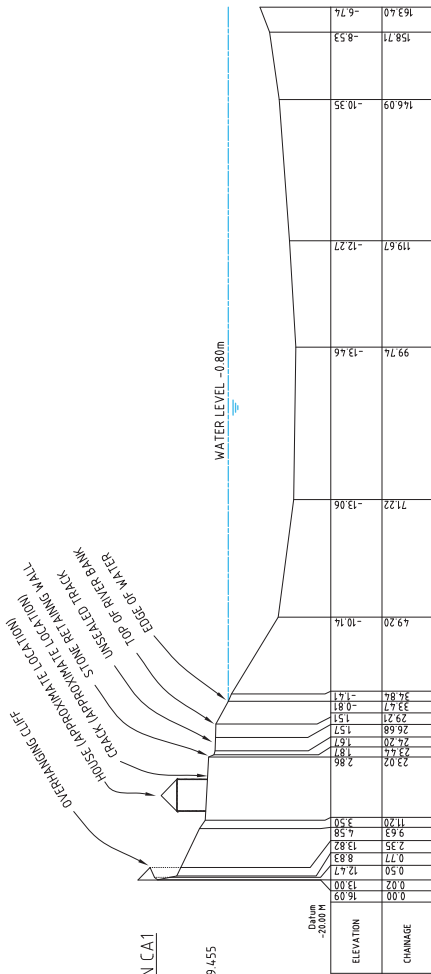
LONGITUDINAL SECTION CA3  
HORIZONTAL SCALE 1:500  
VERTICAL SCALE 1:500  
AUSTRALIAN HEIGHT DATUM  
AUTHORITY PSM 6728/2160 RL19.455



LONGITUDINAL SECTION CA2  
HORIZONTAL SCALE 1:500  
VERTICAL SCALE 1:500  
AUSTRALIAN HEIGHT DATUM  
AUTHORITY PSM 6728/2160 RL19.455



LONGITUDINAL SECTION CA1  
HORIZONTAL SCALE 1:500  
VERTICAL SCALE 1:500  
AUSTRALIAN HEIGHT DATUM  
AUTHORITY PSM 6728/2160 RL19.455



Project: Lwr Murray Riverbank Collapse Client: DWLBC

Driller: Drilling Solution

Northings: 6129958.0mN Logged: MT

Location: Caloote

Start - Finish Date: 23/10 - 23/10/09

Rig: MK5/2 Drill rig

Eastings: 341491.0mE Checked: RT

Job No: VV04794.1

Bore dia: 100mm

Surface Conditions: Dirt road

RL: 1.6mAHN Oriented: -90

| LABORATORY DATA                    |                         |                     |                         |                      |                       | FIELD DATA             |                                                              | SOIL DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                            | SOIL CONDITION          |                       | COMMENTS                                                                       |
|------------------------------------|-------------------------|---------------------|-------------------------|----------------------|-----------------------|------------------------|--------------------------------------------------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------|--------------------------------------------------------------------------------|
| dry density<br>(t/m <sup>3</sup> ) | moisture content<br>(%) | liquid limit<br>(%) | plasticity index<br>(%) | percent fines<br>(%) | design / test<br>data | field & other<br>tests | sample type<br>elevation (mAHN)<br>ground water<br>depth (m) | graphic log      | soil type, unified classification, colour, structure,<br>particle characteristics, minor components                                                                                                                                                                                                                                                        | consistency/<br>density | moisture<br>condition | drilling method, well<br>construction, water<br>and additional<br>observations |
|                                    | 59                      | 63                  | 39                      |                      |                       | (2,2,1)<br>(N=3)       | 1                                                            |                  | FILL: Silty SAND: (SM)<br>grey, grey-brown, fine grained sand, trace of clay,<br>trace of rootlets<br>FILL: Silty GRAVEL: (GM)<br>brown, fine grained gravel, with fine to coarse grained<br>sand<br>Silty CLAY: (CH)<br>dark brown-black, trace of fine to coarse grained<br>sand<br>dark grey, light grey, with roots and leaves, with<br>organic matter | MD                      | D-M<br>M              | Hollow Stem Augering<br>150mm diameter                                         |
|                                    | 41                      | 91                  | 66                      |                      |                       | (0,0,0)<br>(N=0)       | 0                                                            |                  |                                                                                                                                                                                                                                                                                                                                                            | S                       |                       | 100mm of sample<br>recovered                                                   |
|                                    | 54                      | 62                  | 41                      |                      |                       | Suv=3<br>Sur=0         | 3                                                            |                  |                                                                                                                                                                                                                                                                                                                                                            | VS                      |                       | Push tube damaged                                                              |
|                                    |                         |                     |                         |                      |                       |                        | 4                                                            |                  | Borehole terminated at 4.0m, refusal on sandstone                                                                                                                                                                                                                                                                                                          |                         |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | 5                                                            |                  |                                                                                                                                                                                                                                                                                                                                                            |                         |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | 6                                                            |                  |                                                                                                                                                                                                                                                                                                                                                            |                         |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | 7                                                            |                  |                                                                                                                                                                                                                                                                                                                                                            |                         |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | 8                                                            |                  |                                                                                                                                                                                                                                                                                                                                                            |                         |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | 9                                                            |                  |                                                                                                                                                                                                                                                                                                                                                            |                         |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | 10                                                           |                  |                                                                                                                                                                                                                                                                                                                                                            |                         |                       |                                                                                |

| LABORATORY DATA |                                                         | FIELD DATA ABBREVIATIONS |                                 | FIELD DATA SYMBOLS |                                                                 | DENSITY (N-value)  |                        | CONSISTENCY (Su) |                        |
|-----------------|---------------------------------------------------------|--------------------------|---------------------------------|--------------------|-----------------------------------------------------------------|--------------------|------------------------|------------------|------------------------|
| UQN             | Unconfined Comp. (Natural)                              | Suv                      | = Uncorrected vane shear (kPa)  | ×                  | = Shear vane test                                               | VL                 | (very loose) 0 - 4     | VS               | (very soft) < 12 kPa   |
| UQC             | Unconfined Comp. (Compacted)                            | Sup                      | = Pocket penetrometer (kPa)     | ⊥                  | = Pocket Penetrometer test                                      | L                  | (loose) 4 - 10         | S                | (soft) 12 - 25         |
| TQN             | Uncons. Undrained Triax. (Natural)                      | N                        | = SPT blows per 300mm           | ▽                  | = Standard Penetration Test<br>(SPT top = start of N blowcount) | MD                 | (medium dense) 10 - 30 | F                | (firm) 25 - 50         |
| TQC             | Uncons. Undrained Triax. (Compacted)                    | FPM                      | = Field permeability            | ▼                  | = SPT Spoon Sample (Pushed)                                     | D                  | (dense) 30 - 50        | St               | (stiff) 50 - 100       |
| TRX             | Consolidated Undrained Triaxial<br>with pwp measurement |                          |                                 | ■                  | = Undisturbed Tube Sample                                       | VD                 | (very dense) 50 - 100  | VSt              | (very stiff) 100 - 200 |
| PSA             | Particle Size Analysis                                  | ▼                        | = Water level (static)          | ●                  | = Disturbed Sample                                              | CO                 | (compact) >50/150mm    | H                | (hard) > 200 kPa       |
| CS              | 1D oedometer Test                                       | ≡                        | = Water level (during drilling) |                    |                                                                 | MOISTURE CONDITION |                        |                  |                        |
| LPM             | Laboratory Permeability                                 |                          |                                 |                    |                                                                 |                    |                        |                  |                        |

Project: Lwr Murray Riverbank Collapse Client: DWLBC

Driller: Drilling Solution

Northings: 6129911.0mN Logged: TL

Location: Caloote

Start - Finish Date: 22/10 - 22/10/09

Rig: Warman Scout 250

Eastings: 341502.0mE Checked: MT

Job No: VV04794.1

Bore dia: 100mm

Surface Conditions: Dirt road

RL: 1.7mAHD Oriented: -90

| LABORATORY DATA                    |                         |                     |                         |                      |                       | FIELD DATA             |                                                              | SOIL DESCRIPTION |                                                                                                                                 | SOIL CONDITION          |                       | COMMENTS                                                                       |
|------------------------------------|-------------------------|---------------------|-------------------------|----------------------|-----------------------|------------------------|--------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------|--------------------------------------------------------------------------------|
| dry density<br>(t/m <sup>3</sup> ) | moisture content<br>(%) | liquid limit<br>(%) | plasticity index<br>(%) | percent fines<br>(%) | design / test<br>data | field & other<br>tests | sample type<br>elevation (mAHD)<br>ground water<br>depth (m) | graphic log      | soil type, unified classification, colour, structure,<br>particle characteristics, minor components                             | consistency/<br>density | moisture<br>condition | drilling method, well<br>construction, water<br>and additional<br>observations |
| 0.93                               | 21                      | 32                  | 12                      | 36                   |                       | (2,3,3)<br>(N=6)       | 1                                                            |                  | FILL: Silty SAND: (SM)<br>grey-brown, fine to coarse grained sand, with fine to coarse grained, rounded gravels, with some mica | MD                      | D-M                   | Hollow Stem Augering<br>150mm diameter                                         |
|                                    | 62                      |                     |                         |                      |                       |                        | 0                                                            |                  | FILL: Clayey SAND: (SC)<br>grey, grey-brown, brown, fine grained sand, trace of clay, trace of rootlets, with organic matter    | L                       | M                     |                                                                                |
|                                    | 81                      |                     |                         |                      |                       | (0,0,0)<br>(N=0)       | 1                                                            |                  | Silty CLAY: (CH)<br>grey-dark grey, trace of rootlets, with organic matter                                                      | VS                      |                       |                                                                                |
|                                    | 72                      |                     |                         |                      |                       | Suv=5<br>Sur=2         | 2                                                            |                  |                                                                                                                                 |                         |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       | (0,0,0)<br>(N=0)       | 3                                                            |                  |                                                                                                                                 |                         |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       | Suv=17<br>Sur=5        | 4                                                            |                  |                                                                                                                                 |                         |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       | Suv=17<br>Sur=5        | 5                                                            |                  | trace of shells                                                                                                                 |                         |                       |                                                                                |
|                                    |                         | 62                  | 65                      | 40                   | 72                    | Suv=11<br>Sur=5        | 6                                                            |                  |                                                                                                                                 |                         |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       | Suv=17<br>Sur=5        | 7                                                            |                  | increase in sand content, with a 1-2mm lense of pale grey, fine grained sand                                                    |                         |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       | Suv=28<br>Sur=5        | 8                                                            |                  |                                                                                                                                 |                         |                       |                                                                                |
|                                    | 43                      |                     |                         | 34                   |                       | (3,0,1)<br>(N=1)       | 9                                                            |                  | Clayey SAND: (SC)<br>grey, fine grained sand, high plasticity fines                                                             | VL                      |                       | SPT sunk under self weight                                                     |
|                                    |                         |                     |                         |                      |                       | Suv=39<br>Sur=11       | 10                                                           |                  | Sandy CLAY: (CH) / Clayey SAND: (SC)<br>grey-dark grey, trace of fine grained sand                                              | VS / VL                 |                       |                                                                                |
|                                    | 51                      | 39                  | 18                      |                      |                       | Suv=11<br>Sur=2        | 11                                                           |                  | Clayey SAND: (SC)<br>grey-dark grey, grey-brown, fine to coarse grained sand, trace of fine grained gravel                      | VL                      |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       | (0,1,1)<br>(N=2)       | 12                                                           |                  | brown-orange, fine to medium grained sand, trace of fine grained gravels                                                        |                         |                       |                                                                                |

| LABORATORY DATA |                                                      | FIELD DATA ABBREVIATIONS |                                | FIELD DATA SYMBOLS              |                                                              | DENSITY (N-value)         |                        | CONSISTENCY (Su) |                        |
|-----------------|------------------------------------------------------|--------------------------|--------------------------------|---------------------------------|--------------------------------------------------------------|---------------------------|------------------------|------------------|------------------------|
| UQN             | Unconfined Comp. (Natural)                           | Suv                      | = Uncorrected vane shear (kPa) | ×                               | = Shear vane test                                            | VL                        | (very loose) 0 - 4     | VS               | (very soft) < 12 kPa   |
| UQC             | Unconfined Comp. (Compacted)                         | Sup                      | = Pocket penetrometer (kPa)    | ⬇                               | = Pocket Penetrometer test                                   | L                         | (loose) 4 - 10         | S                | (soft) 12 - 25         |
| TQN             | Uncons. Undrained Triax. (Natural)                   | N                        | = SPT blows per 300mm          | ▽                               | = Standard Penetration Test (SPT top = start of N blowcount) | MD                        | (medium dense) 10 - 30 | F                | (firm) 25 - 50         |
| TQC             | Uncons. Undrained Triax. (Compacted)                 | FPM                      | = Field permeability           | ▼                               | = SPT Spoon Sample (Pushed)                                  | D                         | (dense) 30 - 50        | St               | (stiff) 50 - 100       |
| TRX             | Consolidated Undrained Triaxial with pwp measurement |                          |                                | ■                               | = Undisturbed Tube Sample                                    | VD                        | (very dense) 50 - 100  | VSt              | (very stiff) 100 - 200 |
| PSA             | Particle Size Analysis                               |                          | GROUNDWATER SYMBOLS            |                                 |                                                              | CO                        | (compact) >50/150mm    | H                | (hard) > 200 kPa       |
| CS              | 1D oedometer Test                                    |                          | ⬇                              | = Water level (static)          | ●                                                            | MOISTURE CONDITION        |                        |                  |                        |
| LPM             | Laboratory Permeability                              |                          | ⬇                              | = Water level (during drilling) | ○                                                            | D = Dry M = Moist W = Wet |                        |                  |                        |
|                 |                                                      |                          | ⬇                              | = Outflow / Inflow              | ○                                                            |                           |                        |                  |                        |

| LABORATORY DATA                                             | FIELD DATA ABBREVIATIONS           | FIELD DATA SYMBOLS                                                | DENSITY (N-value)         | CONSISTENCY (Su)           |
|-------------------------------------------------------------|------------------------------------|-------------------------------------------------------------------|---------------------------|----------------------------|
| UQN Unconfined Comp. (Natural)                              | Suv = Uncorrected vane shear (kPa) | × = Shear vane test                                               | VL (very loose) 0 - 4     | VS (very soft) < 12 kPa    |
| UQC Unconfined Comp. (Compacted)                            | Sup = Pocket penetrometer (kPa)    | ⊥ = Pocket Penetrometer test                                      | L (loose) 4 - 10          | S (soft) 12 - 25           |
| TQN Uncons. Undrained Triax. (Natural)                      | N = SPT blows per 300mm            | ▽ = Standard Penetration Test<br>(SPT top = start of N blowcount) | MD (medium dense) 10 - 30 | F (firm) 25 - 50           |
| TQC Uncons. Undrained Triax. (Compacted)                    | FPM = Field permeability           | ▼ = SPT Spoon Sample (Pushed)                                     | D (dense) 30 - 50         | St (stiff) 50 - 100        |
| TRX Consolidated Undrained Triaxial<br>with pwp measurement |                                    | ■ = Undisturbed Tube Sample                                       | VD (very dense) 50 - 100  | VSt (very stiff) 100 - 200 |
| PSA Particle Size Analysis                                  | GROUNDWATER SYMBOLS                | ● = Disturbed Sample                                              | CO (compact) >50/150mm    | H (hard) > 200 kPa         |
| CS 1D oedometer Test                                        | ▼ = Water level (static)           | ○ = Environmental Sample                                          |                           |                            |
| LPM Laboratory Permeability                                 | ▽ = Water level (during drilling)  |                                                                   |                           |                            |
|                                                             | → = Outflow / Inflow               |                                                                   |                           |                            |
|                                                             |                                    |                                                                   | MOISTURE CONDITION        |                            |
|                                                             |                                    |                                                                   | D = Dry M = Moist W = Wet |                            |

SKM 001 SOIL ELV - MC0 LOWER MURRAY.GPJ SKM\_001\_2008 05 07\_DS.GDT 14/12/09

Project: Lwr Murray Riverbank Collapse Client: DWLBC

Location: Caloote

Job No: VV04794.1

Start - Finish Date: 22/10 - 22/10/09

Bore dia: 100mm

Driller: Drilling Solution

Rig: Warman Scout 250

Surface Conditions: Dirt road

Northings: 6129911.0mN

Eastings: 341502.0mE

RL: 1.7mAHD

Logged: TL

Checked: MT

Oriented: -90

| LABORATORY DATA                    |                         |                     |                         |                      |                       | FIELD DATA                          |                                                              | SOIL DESCRIPTION |                                                                                                                                                                                                | SOIL CONDITION          |                       | COMMENTS                                                                       |
|------------------------------------|-------------------------|---------------------|-------------------------|----------------------|-----------------------|-------------------------------------|--------------------------------------------------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------|--------------------------------------------------------------------------------|
| dry density<br>(t/m <sup>3</sup> ) | moisture content<br>(%) | liquid limit<br>(%) | plasticity index<br>(%) | percent fines<br>(%) | design / test<br>data | field & other<br>tests              | sample type<br>elevation (mAHD)<br>ground water<br>depth (m) | graphic log      | soil type, unified classification, colour, structure,<br>particle characteristics, minor components                                                                                            | consistency/<br>density | moisture<br>condition | drilling method, well<br>construction, water<br>and additional<br>observations |
|                                    |                         |                     |                         | 34                   |                       | (25,23,10+<br>for 110mm)<br>(N=33+) |                                                              |                  | Clayey SAND: (SC)<br>grey-dark grey, grey-brown, fine to coarse grained<br>sand, trace of fine grained gravel ( <i>continued</i> )<br><br>with some fine to coarse grained sub-angular gravels | D-VD                    | W                     |                                                                                |
|                                    |                         |                     |                         |                      |                       |                                     |                                                              |                  | Borehole terminated at 11.2m                                                                                                                                                                   |                         |                       |                                                                                |

| LABORATORY DATA |                                                         | FIELD DATA ABBREVIATIONS |                                 | FIELD DATA SYMBOLS        |                                                                 | DENSITY (N-value) |                        | CONSISTENCY (Su) |                        |
|-----------------|---------------------------------------------------------|--------------------------|---------------------------------|---------------------------|-----------------------------------------------------------------|-------------------|------------------------|------------------|------------------------|
| UQN             | Unconfined Comp. (Natural)                              | Suv                      | = Uncorrected vane shear (kPa)  | ×                         | = Shear vane test                                               | VL                | (very loose) 0 - 4     | VS               | (very soft) < 12 kPa   |
| UQC             | Unconfined Comp. (Compacted)                            | Sup                      | = Pocket penetrometer (kPa)     | ⊥                         | = Pocket Penetrometer test                                      | L                 | (loose) 4 - 10         | S                | (soft) 12 - 25         |
| TQN             | Uncons. Undrained Triax. (Natural)                      | N                        | = SPT blows per 300mm           | ▽                         | = Standard Penetration Test<br>(SPT top = start of N blowcount) | MD                | (medium dense) 10 - 30 | F                | (firm) 25 - 50         |
| TQC             | Uncons. Undrained Triax. (Compacted)                    | FPM                      | = Field permeability            | ▼                         | = SPT Spoon Sample (Pushed)                                     | D                 | (dense) 30 - 50        | St               | (stiff) 50 - 100       |
| TRX             | Consolidated Undrained Triaxial<br>with pwp measurement |                          |                                 | ■                         | = Undisturbed Tube Sample                                       | VD                | (very dense) 50 - 100  | VSt              | (very stiff) 100 - 200 |
| PSA             | Particle Size Analysis                                  |                          |                                 | ●                         | = Disturbed Sample                                              | CO                | (compact) >50/150mm    | H                | (hard) > 200 kPa       |
| CS              | 1D oedometer Test                                       |                          |                                 | ○                         | = Environmental Sample                                          |                   |                        |                  |                        |
| LPM             | Laboratory Permeability                                 |                          |                                 |                           |                                                                 |                   |                        |                  |                        |
|                 |                                                         | GROUNDWATER SYMBOLS      |                                 | MOISTURE CONDITION        |                                                                 |                   |                        |                  |                        |
|                 |                                                         | ▼                        | = Water level (static)          | D = Dry M = Moist W = Wet |                                                                 |                   |                        |                  |                        |
|                 |                                                         | ▽                        | = Water level (during drilling) |                           |                                                                 |                   |                        |                  |                        |
|                 |                                                         | →                        | = Outflow / Inflow              |                           |                                                                 |                   |                        |                  |                        |

SKM 001 SOIL ELV - MC0 LOWER MURRAY.GPJ SKM\_001\_2008 05 07\_DS.GDT 14/12/09

Project: Lwr Murray Riverbank Collapse Client: DWLBC

Location: Caloote

Job No: VV04794.1

Start - Finish Date: 22/10 - 22/10/09

Bore dia: 100mm

Driller: Drilling Solution

Rig: Warman Scout 250

Surface Conditions: Dirt road

Northings: 6129822.0mN

Eastings: 341526.0mE

RL: 1.6mAH

Logged: TL

Checked: MT

Oriented: -90

| LABORATORY DATA                 |                      |                  |                      |                   |                    | FIELD DATA          |                                                    | SOIL DESCRIPTION |                                                                                                                        | SOIL CONDITION       |                    | COMMENTS                                                              |
|---------------------------------|----------------------|------------------|----------------------|-------------------|--------------------|---------------------|----------------------------------------------------|------------------|------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------|-----------------------------------------------------------------------|
| dry density (t/m <sup>3</sup> ) | moisture content (%) | liquid limit (%) | plasticity index (%) | percent fines (%) | design / test data | field & other tests | sample type elevation (mAH) ground water depth (m) | graphic log      | soil type, unified classification, colour, structure, particle characteristics, minor components                       | consistency/ density | moisture condition | drilling method, well construction, water and additional observations |
|                                 | 31                   |                  |                      |                   |                    |                     |                                                    |                  | FILL: SAND: (SP)<br>grey-brown, fine grained sand, trace of clay, trace of mica, trace of fine grained, rounded gravel | MD                   | M                  | Hollow Stem Augering 150mm diameter                                   |
|                                 | 60                   |                  |                      |                   |                    | (0,1,2) (N=3)       | 1                                                  |                  | Silty CLAY: (CH) / Clayey Silt: (MH)<br>dark grey, trace of sand                                                       | VS                   |                    | SPT sunk first 75mm from self weight                                  |
|                                 | 71                   |                  |                      |                   |                    | (0,1,1) (N=2)       | 0                                                  |                  | Silty CLAY: (CH)<br>dark grey, with sand, trace of decomposed leaves, with organic matter                              | VS                   |                    | SPT sunk first 75mm from self weight                                  |
|                                 | 89                   | 96               | 70                   |                   |                    | (0,0,1) (N=1)       | 1                                                  |                  | with pale grey                                                                                                         |                      | W                  |                                                                       |
|                                 |                      |                  |                      |                   |                    | Suv=5 Sur=2         | 2                                                  |                  |                                                                                                                        |                      |                    |                                                                       |
|                                 |                      |                  |                      |                   |                    | (0,0,0) (N=0)       | 3                                                  |                  |                                                                                                                        |                      |                    | SPT sunk under self weight                                            |
|                                 |                      |                  |                      |                   |                    | Suv=17 Sur=11       | 4                                                  |                  |                                                                                                                        |                      |                    |                                                                       |
|                                 |                      |                  |                      |                   |                    | (0,0,0) (N=0)       | 5                                                  |                  |                                                                                                                        |                      |                    |                                                                       |
|                                 |                      |                  |                      |                   |                    | Suv=17 Sur=2        | 6                                                  |                  |                                                                                                                        |                      |                    |                                                                       |
|                                 |                      |                  |                      |                   |                    | (0,0,0) (N=0)       | 7                                                  |                  |                                                                                                                        |                      |                    |                                                                       |
|                                 |                      |                  |                      |                   |                    | Suv=11 Sur=2        | 8                                                  |                  |                                                                                                                        |                      |                    |                                                                       |
|                                 |                      |                  |                      |                   |                    | Suv=28 Sur=2        | 9                                                  |                  | with a shell 10mm in size                                                                                              |                      |                    |                                                                       |
|                                 | 72                   |                  |                      |                   |                    |                     | 10                                                 |                  |                                                                                                                        |                      |                    |                                                                       |

LABORATORY DATA  
 UQN Unconfined Comp. (Natural)  
 UQC Unconfined Comp. (Compacted)  
 TQN Uncons. Undrained Triax. (Natural)  
 TQC Uncons. Undrained Triax. (Compacted)  
 TRX Consolidated Undrained Triaxial with pwp measurement  
 PSA Particle Size Analysis  
 CS 1D oedometer Test  
 LPM Laboratory Permeability

FIELD DATA ABBREVIATIONS  
 Suv = Uncorrected vane shear (kPa)  
 Sup = Pocket penetrometer (kPa)  
 N = SPT blows per 300mm  
 FPM = Field permeability  
 GROUNDWATER SYMBOLS  
 ▼ = Water level (static)  
 ▼ = Water level (during drilling)  
 → = Outflow / Inflow

FIELD DATA SYMBOLS  
 X = Shear vane test  
 ▴ = Pocket Penetrometer test  
 ▽ = Standard Penetration Test (SPT top = start of N blowcount)  
 ▴ = SPT Spoon Sample (Pushed)  
 ▣ = Undisturbed Tube Sample  
 ● = Disturbed Sample  
 ○ = Environmental Sample

DENSITY (N-value)  
 VL (very loose) 0 - 4  
 L (loose) 4 - 10  
 MD (medium dense) 10 - 30  
 D (dense) 30 - 50  
 VD (very dense) 50 - 100  
 CO (compact) >50/150mm  
 MOISTURE CONDITION  
 D = Dry M = Moist W = Wet

CONSISTENCY (Su)  
 VS (very soft) < 12 kPa  
 S (soft) 12 - 25  
 F (firm) 25 - 50  
 St (stiff) 50 - 100  
 VSt (very stiff) 100 - 200  
 H (hard) > 200 kPa

SKM 001 SOIL ELV - MC0 LOWER MURRAY.GPJ SKM\_001\_2008 05 07\_DS.GDT 14/12/09

Project: Lwr Murray Riverbank Collapse Client: DWLBC

Location: Caloote

Job No: VV04794.1

Start - Finish Date: 22/10 - 22/10/09

Bore dia: 100mm

Driller: Drilling Solution

Rig: Warman Scout 250

Surface Conditions: Dirt road

Northings: 6129822.0mN

Eastings: 341526.0mE

RL: 1.6mAH

Logged: TL

Checked: MT

Oriented: -90

| LABORATORY DATA                 |                      |                  |                      |                   |                    | FIELD DATA                          |                                                    | SOIL DESCRIPTION |                                                                                                                                                                    | SOIL CONDITION       |                    | COMMENTS                                                              |
|---------------------------------|----------------------|------------------|----------------------|-------------------|--------------------|-------------------------------------|----------------------------------------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------|-----------------------------------------------------------------------|
| dry density (t/m <sup>3</sup> ) | moisture content (%) | liquid limit (%) | plasticity index (%) | percent fines (%) | design / test data | field & other tests                 | sample type elevation (mAH) ground water depth (m) | graphic log      | soil type, unified classification, colour, structure, particle characteristics, minor components                                                                   | consistency/ density | moisture condition | drilling method, well construction, water and additional observations |
|                                 | 76                   | 93               | 62                   | 88                |                    | Suv=17<br>Sur=2                     |                                                    |                  | Silty CLAY: (CH)<br>dark grey, with sand, trace of decomposed leaves, with organic matter (continued)                                                              | VS                   | W                  |                                                                       |
|                                 | 116                  | 56               | 9                    | 35                |                    |                                     | -9                                                 |                  | Clayey SAND: (SC)<br>dark grey, black, fine to coarse grained sand, with some fine to coarse grained gravel, with clay lenses                                      | L                    |                    | Possible sand lense blocking hole at 10.5m, hole washed with water    |
|                                 |                      |                  |                      |                   |                    | (1,8,26)<br>(N=34)                  | -10                                                |                  | Silty SAND: (SM) / Silty GRAVEL: (GM)<br>grey-brown, fine to medium grained sand, medium to coarse grained sub-angular gravels, with clay                          | MD-D                 |                    |                                                                       |
|                                 | 26                   |                  |                      | 24                |                    |                                     | -11                                                |                  | Sandy CLAY: (CH)<br>grey, fine to medium grained sand, trace of shells                                                                                             | VS                   |                    |                                                                       |
|                                 |                      |                  |                      |                   |                    | (1,0,0)<br>(N=0)                    | -12                                                |                  |                                                                                                                                                                    |                      |                    |                                                                       |
|                                 |                      |                  |                      |                   |                    | (0,0,0)<br>(N=0)                    | -13                                                |                  |                                                                                                                                                                    |                      |                    | SPT sunk under self weight, no sample recovered                       |
|                                 |                      |                  |                      |                   |                    | Suv=13<br>Sur=2                     | -14                                                |                  | Clayey SAND: (SC)<br>grey, fine to medium grained sand, with some silt, with some white shells                                                                     | VL                   |                    |                                                                       |
|                                 | 31                   | 37               | 20                   | 48                |                    | (1,2,1)<br>(N=2)                    | -15                                                |                  | Clayey SAND: (SC) / Sandy CLAY: (CH)<br>grey, fine to medium grained sand, with some white shells<br>with a lump of cemented sands, with shells up to 50mm in size | VL / VS              |                    |                                                                       |
|                                 |                      |                  |                      |                   |                    |                                     | -16                                                |                  | orange-brown, grey, grey-brown, with fine to coarse grained gravels, trace of decomposed roots, trace of shells, with organic matter                               |                      |                    |                                                                       |
|                                 |                      |                  |                      |                   |                    | (3,6,11)<br>(N=17)                  | -17                                                |                  | Clayey SAND: (SC)<br>yellow brown, fine to medium grained coarse grained sand, with fine to coarse grained, angular gravels, with cemented pieces                  | D                    |                    |                                                                       |
|                                 | 28                   |                  |                      | 32                |                    | (34,28,21+)<br>for 100mm<br>(N=50+) | -18                                                |                  |                                                                                                                                                                    |                      |                    |                                                                       |
|                                 |                      |                  |                      |                   |                    |                                     | -19                                                |                  | Borehole terminated at 18.35m                                                                                                                                      |                      |                    |                                                                       |
|                                 |                      |                  |                      |                   |                    |                                     | -20                                                |                  |                                                                                                                                                                    |                      |                    |                                                                       |

| LABORATORY DATA |                                                      | FIELD DATA ABBREVIATIONS |                                | FIELD DATA SYMBOLS |                                                              | DENSITY (N-value)  |                        | CONSISTENCY (Su) |                        |
|-----------------|------------------------------------------------------|--------------------------|--------------------------------|--------------------|--------------------------------------------------------------|--------------------|------------------------|------------------|------------------------|
| UQN             | Unconfined Comp. (Natural)                           | Suv                      | = Uncorrected vane shear (kPa) | ×                  | = Shear vane test                                            | VL                 | (very loose) 0 - 4     | VS               | (very soft) < 12 kPa   |
| UQC             | Unconfined Comp. (Compacted)                         | Sup                      | = Pocket penetrometer (kPa)    | ⊥                  | = Pocket Penetrometer test                                   | L                  | (loose) 4 - 10         | S                | (soft) 12 - 25         |
| TQN             | Uncons. Undrained Triax. (Natural)                   | N                        | = SPT blows per 300mm          | ▽                  | = Standard Penetration Test (SPT top = start of N blowcount) | MD                 | (medium dense) 10 - 30 | F                | (firm) 25 - 50         |
| TQC             | Uncons. Undrained Triax. (Compacted)                 | FPM                      | = Field permeability           | ▼                  | = SPT Spoon Sample (Pushed)                                  | D                  | (dense) 30 - 50        | St               | (stiff) 50 - 100       |
| TRX             | Consolidated Undrained Triaxial with pwp measurement |                          |                                | ■                  | = Undisturbed Tube Sample                                    | VD                 | (very dense) 50 - 100  | VSt              | (very stiff) 100 - 200 |
| PSA             | Particle Size Analysis                               |                          |                                | ●                  | = Disturbed Sample                                           | CO                 | (compact) >50/150mm    | H                | (hard) > 200 kPa       |
| CS              | 1D oedometer Test                                    |                          |                                | ○                  | = Environmental Sample                                       | MOISTURE CONDITION |                        |                  |                        |
| LPM             | Laboratory Permeability                              |                          |                                |                    |                                                              | D                  | = Dry                  | M                | = Moist                |
|                 |                                                      |                          |                                |                    |                                                              | W                  | = Wet                  |                  |                        |

SKM 001 SOIL ELV - MC0 LOWER MURRAY.GPJ SKM\_001\_DS\_GDT 14/12/09



Project: Lwr Murray Riverbank Collapse Client: DWLBC

Location: Caloote

Job No: VV04794.1

Start - Finish Date: 22/10 - 22/10/09

Bore dia: 100mm

Driller: Drilling Solution

Rig: MK5/2 Drill rig

Surface Conditions: Dirt road

Northings: 6129822.0mN

Eastings: 341548.0mE

RL:

Logged: MT

Checked: RT

Oriented: -90

| LABORATORY DATA                    |                         |                     |                         |                      |                       | FIELD DATA             |                                                              | SOIL DESCRIPTION |                                                                                                     | SOIL CONDITION          |                       | COMMENTS                                                                       |
|------------------------------------|-------------------------|---------------------|-------------------------|----------------------|-----------------------|------------------------|--------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------------------------|-------------------------|-----------------------|--------------------------------------------------------------------------------|
| dry density<br>(t/m <sup>3</sup> ) | moisture content<br>(%) | liquid limit<br>(%) | plasticity index<br>(%) | percent fines<br>(%) | design / test<br>data | field & other<br>tests | sample type<br>elevation (mAHD)<br>ground water<br>depth (m) | graphic log      | soil type, unified classification, colour, structure,<br>particle characteristics, minor components | consistency/<br>density | moisture<br>condition | drilling method, well<br>construction, water<br>and additional<br>observations |
|                                    |                         |                     |                         |                      |                       |                        |                                                              |                  | FILL: SAND: (SP)<br>grey-brown, fine grained sand, trace of clay                                    | S                       | M                     | Hollow Stem Augering<br>150mm diameter                                         |
|                                    |                         |                     |                         |                      |                       |                        |                                                              |                  | Silty CLAY: (CH)<br>grey-green                                                                      |                         |                       |                                                                                |
|                                    | 16                      | 21                  | 2                       | 21                   |                       | (2,4,2)<br>(N=6)       | 0                                                            |                  | Silty SAND: (SM) / Clayey SAND: (SC)<br>dark brown, mottled pink-brown, fine to medium sand         | L                       |                       | 100mm sample<br>recovered                                                      |
|                                    |                         | 79                  | 54                      | 89                   |                       |                        |                                                              |                  | Silty CLAY: (CH)<br>dark grey-black, with fine grained sand                                         | VS                      |                       | Pocket penetrometer<br>test attempted                                          |
|                                    |                         |                     |                         |                      |                       |                        |                                                              |                  |                                                                                                     |                         |                       |                                                                                |
|                                    | 50                      | 73                  | 48                      |                      |                       | (0,1,1)<br>(N=2)       | -1                                                           |                  | dark grey, with roots, with organic matter                                                          |                         | W                     |                                                                                |
|                                    |                         |                     |                         |                      |                       | Sup=25                 | -2                                                           |                  | light grey, increase in decomposed roots and leaves,<br>with organic matter                         |                         |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        |                                                              |                  |                                                                                                     |                         |                       |                                                                                |
|                                    | 81                      | 76                  | 50                      |                      |                       | (0,0,0)<br>(N=0)       | -3                                                           |                  | grey, mottled black, with leaves, with organic matter                                               |                         |                       |                                                                                |
| 0.78                               | 76                      | 92                  | 63                      | 97                   |                       | Suv=16<br>Sur=5        | -4                                                           |                  |                                                                                                     |                         |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       | Suv=13<br>Sur=7        | -5                                                           |                  |                                                                                                     |                         |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | -6                                                           |                  | becoming pale grey, with mottled black, with leaves                                                 |                         |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | -7                                                           |                  |                                                                                                     |                         |                       | Too soft, no sample<br>recovered                                               |
|                                    |                         |                     |                         |                      |                       |                        | -8                                                           |                  |                                                                                                     |                         |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | -9                                                           |                  |                                                                                                     |                         |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | -10                                                          |                  |                                                                                                     |                         |                       | Pocket penetrometer<br>test attempted                                          |

| LABORATORY DATA                                             | FIELD DATA ABBREVIATIONS           | FIELD DATA SYMBOLS                                                | DENSITY (N-value)         | CONSISTENCY (Su)           |
|-------------------------------------------------------------|------------------------------------|-------------------------------------------------------------------|---------------------------|----------------------------|
| UQN Unconfined Comp. (Natural)                              | Suv = Uncorrected vane shear (kPa) | × = Shear vane test                                               | VL (very loose) 0 - 4     | VS (very soft) < 12 kPa    |
| UQC Unconfined Comp. (Compacted)                            | Sup = Pocket penetrometer (kPa)    | ⊥ = Pocket Penetrometer test                                      | L (loose) 4 - 10          | S (soft) 12 - 25           |
| TQN Uncons. Undrained Triax. (Natural)                      | N = SPT blows per 300mm            | ▽ = Standard Penetration Test<br>(SPT top = start of N blowcount) | MD (medium dense) 10 - 30 | F (firm) 25 - 50           |
| TQC Uncons. Undrained Triax. (Compacted)                    | FPM = Field permeability           | ▼ = SPT Spoon Sample (Pushed)                                     | D (dense) 30 - 50         | St (stiff) 50 - 100        |
| TRX Consolidated Undrained Triaxial<br>with pwp measurement |                                    | ■ = Undisturbed Tube Sample                                       | VD (very dense) 50 - 100  | VSt (very stiff) 100 - 200 |
| PSA Particle Size Analysis                                  |                                    | ● = Disturbed Sample                                              | CO (compact) >50/150mm    | H (hard) > 200 kPa         |
| CS 1D oedometer Test                                        |                                    | ○ = Environmental Sample                                          |                           |                            |
| LPM Laboratory Permeability                                 |                                    |                                                                   |                           |                            |
|                                                             | GROUNDWATER SYMBOLS                |                                                                   | MOISTURE CONDITION        |                            |
|                                                             | ▼ = Water level (static)           |                                                                   | D = Dry M = Moist W = Wet |                            |
|                                                             | ▽ = Water level (during drilling)  |                                                                   |                           |                            |
|                                                             | → = Outflow / Inflow               |                                                                   |                           |                            |

SKM 001 SOIL ELV - MC0 LOWER MURRAY.GPJ SKM\_001\_2008 05 07\_DS.GDT 14/12/09

Project: Lwr Murray Riverbank Collapse Client: DWLBC

Location: Caloote

Job No: VV04794.1

Start - Finish Date: 22/10 - 22/10/09

Bore dia: 100mm

Driller: Drilling Solution

Rig: MK5/2 Drill rig

Surface Conditions: Dirt road

Northings: 6129822.0mN

Eastings: 341548.0mE

RL:

Logged: MT

Checked: RT

Oriented: -90

| LABORATORY DATA                    |                         |                     |                         |                      |                       | FIELD DATA             |                                                              | SOIL DESCRIPTION                                                                  |                                                                                                                   | SOIL CONDITION                                                                                                        |                       | COMMENTS                                                                       |
|------------------------------------|-------------------------|---------------------|-------------------------|----------------------|-----------------------|------------------------|--------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------------------------------------------------|
| dry density<br>(t/m <sup>3</sup> ) | moisture content<br>(%) | liquid limit<br>(%) | plasticity index<br>(%) | percent fines<br>(%) | design / test<br>data | field & other<br>tests | sample type<br>elevation (mAHD)<br>ground water<br>depth (m) | graphic log                                                                       | soil type, unified classification, colour, structure,<br>particle characteristics, minor components               | consistency/<br>density                                                                                               | moisture<br>condition | drilling method, well<br>construction, water<br>and additional<br>observations |
| 1.41                               | 47                      | 46                  | 24                      | 41                   |                       | (5,1,2)<br>(N=3)       | -9                                                           |  | Clayey SAND: (SC)<br>dark grey-black, brown, trace of medium to coarse<br>grained gravel, with shells             | VL                                                                                                                    | W                     | 450mm sample<br>recovered                                                      |
|                                    | 78                      | 40                  | 24                      | 32                   |                       |                        | 11                                                           |  | grey, fine to coarse sand, fine to medium grained<br>gravel                                                       | VD                                                                                                                    |                       |                                                                                |
|                                    |                         | 43                  | 21                      | 43                   |                       | (4,20,26)<br>(N=46)    | -10                                                          |  | dark grey-black, fine to coarse grained sand, with fine<br>to coarse grained, angular gravel                      |                                                                                                                       |                       |                                                                                |
|                                    |                         |                     |                         | 22                   | 36                    |                        |                                                              | 12                                                                                |                                  | Silty SAND: (SM)<br>dark green, orange-brown, fine grained sand,<br>compacted, with some cemented pieces, with gravel | VD                    |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | -11                                                          |  | pale orange-brown                                                                                                 |                                                                                                                       |                       |                                                                                |
|                                    |                         | 22                  | 5                       | 19                   |                       | (13+,-,-)<br>(N>50)    | 13                                                           |  | Clayey GRAVEL: (GC)<br>yellow-brown, fine to coarse grained, angular gravels,<br>with fine to coarse grained sand | VD                                                                                                                    |                       | SPT 13 blows for 50mm<br>penetration, refusal                                  |
|                                    |                         |                     |                         |                      |                       |                        | -12                                                          |  | Borehole terminated at 13.45m                                                                                     |                                                                                                                       |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | 14                                                           |                                                                                   |                                                                                                                   |                                                                                                                       |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | -13                                                          |                                                                                   |                                                                                                                   |                                                                                                                       |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | 15                                                           |                                                                                   |                                                                                                                   |                                                                                                                       |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | -14                                                          |                                                                                   |                                                                                                                   |                                                                                                                       |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | 16                                                           |                                                                                   |                                                                                                                   |                                                                                                                       |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | -15                                                          |                                                                                   |                                                                                                                   |                                                                                                                       |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | 17                                                           |                                                                                   |                                                                                                                   |                                                                                                                       |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | -16                                                          |                                                                                   |                                                                                                                   |                                                                                                                       |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | 18                                                           |                                                                                   |                                                                                                                   |                                                                                                                       |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | -17                                                          |                                                                                   |                                                                                                                   |                                                                                                                       |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | 19                                                           |                                                                                   |                                                                                                                   |                                                                                                                       |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | -18                                                          |                                                                                   |                                                                                                                   |                                                                                                                       |                       |                                                                                |
|                                    |                         |                     |                         |                      |                       |                        | 20                                                           |                                                                                   |                                                                                                                   |                                                                                                                       |                       |                                                                                |

| LABORATORY DATA |                                                         |  | FIELD DATA ABBREVIATIONS |                                |  | FIELD DATA SYMBOLS |                                                                 |  | DENSITY (N-value)  |                |           | CONSISTENCY (Su) |              |           |
|-----------------|---------------------------------------------------------|--|--------------------------|--------------------------------|--|--------------------|-----------------------------------------------------------------|--|--------------------|----------------|-----------|------------------|--------------|-----------|
| UQN             | Unconfined Comp. (Natural)                              |  | Suv                      | = Uncorrected vane shear (kPa) |  | ×                  | = Shear vane test                                               |  | VL                 | (very loose)   | 0 - 4     | VS               | (very soft)  | < 12 kPa  |
| UQC             | Unconfined Comp. (Compacted)                            |  | Sup                      | = Pocket penetrometer (kPa)    |  | ⊥                  | = Pocket Penetrometer test                                      |  | L                  | (loose)        | 4 - 10    | S                | (soft)       | 12 - 25   |
| TQN             | Uncons. Undrained Triax. (Natural)                      |  | N                        | = SPT blows per 300mm          |  | ▽                  | = Standard Penetration Test<br>(SPT top = start of N blowcount) |  | MD                 | (medium dense) | 10 - 30   | F                | (firm)       | 25 - 50   |
| TQC             | Uncons. Undrained Triax. (Compacted)                    |  | FPM                      | = Field permeability           |  | ▼                  | = SPT Spoon Sample (Pushed)                                     |  | D                  | (dense)        | 30 - 50   | St               | (stiff)      | 50 - 100  |
| TRX             | Consolidated Undrained Triaxial<br>with pwp measurement |  |                          |                                |  | ■                  | = Undisturbed Tube Sample                                       |  | VD                 | (very dense)   | 50 - 100  | VS <sub>t</sub>  | (very stiff) | 100 - 200 |
| PSA             | Particle Size Analysis                                  |  |                          |                                |  | ●                  | = Disturbed Sample                                              |  | CO                 | (compact)      | >50/150mm | H                | (hard)       | > 200 kPa |
| CS              | 1D oedometer Test                                       |  |                          |                                |  | ○                  | = Environmental Sample                                          |  | MOISTURE CONDITION |                |           |                  |              |           |
| LPM             | Laboratory Permeability                                 |  |                          |                                |  |                    |                                                                 |  | D                  | Dry            | M         | Moist            | W            | Wet       |



# EngTest

## CONE PENETRATION TEST

Page 1 of 2

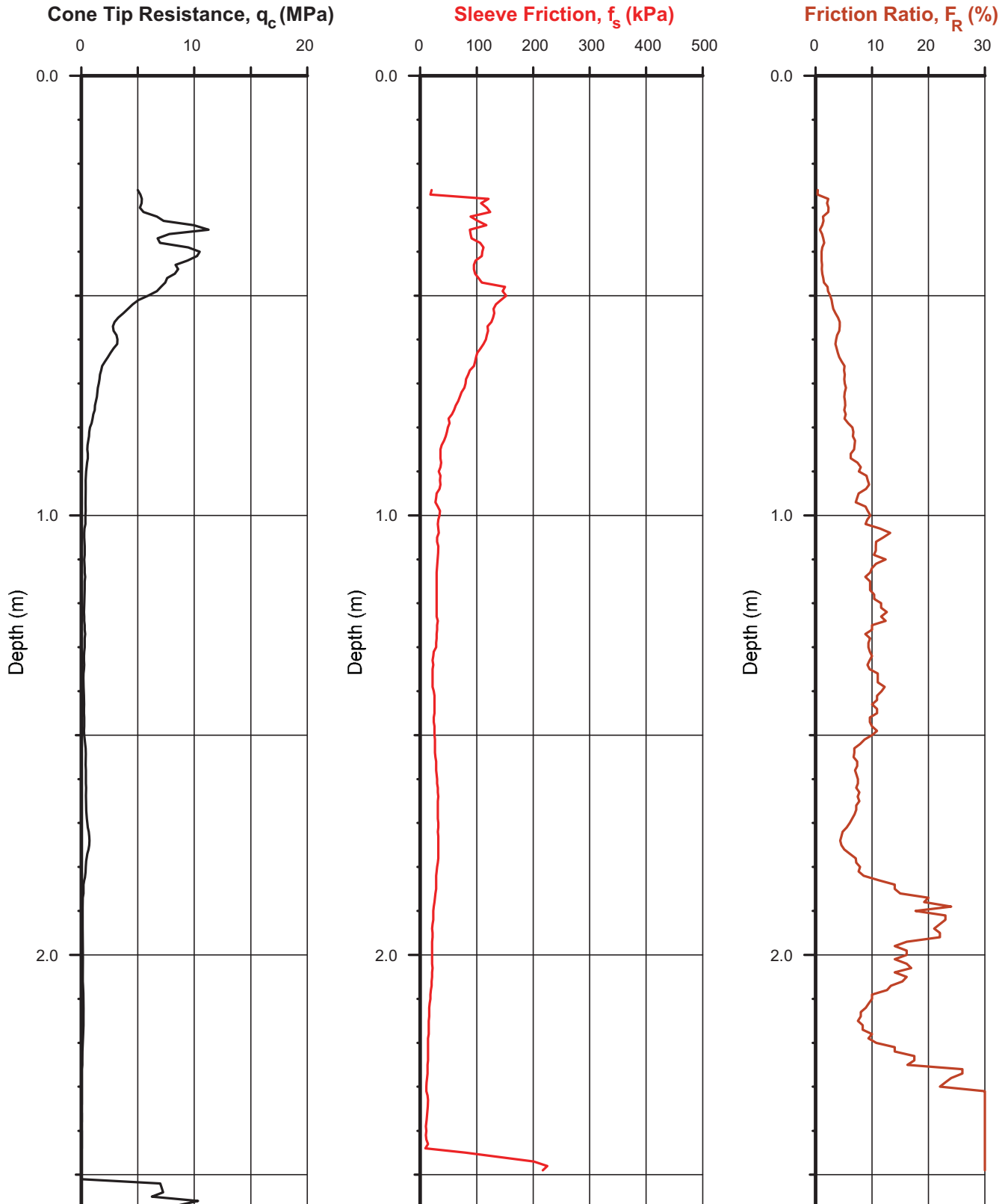
**Client:** Sinclair Knight Mertz

**Job Details:** Murray Riverbank Geotechnical Investigations

**Test Location:** Caloote CPT1

**Surface RL:** NA

**Date:** 22/10/2009





# EngTest

## CONE PENETRATION TEST

Page 2 of 2

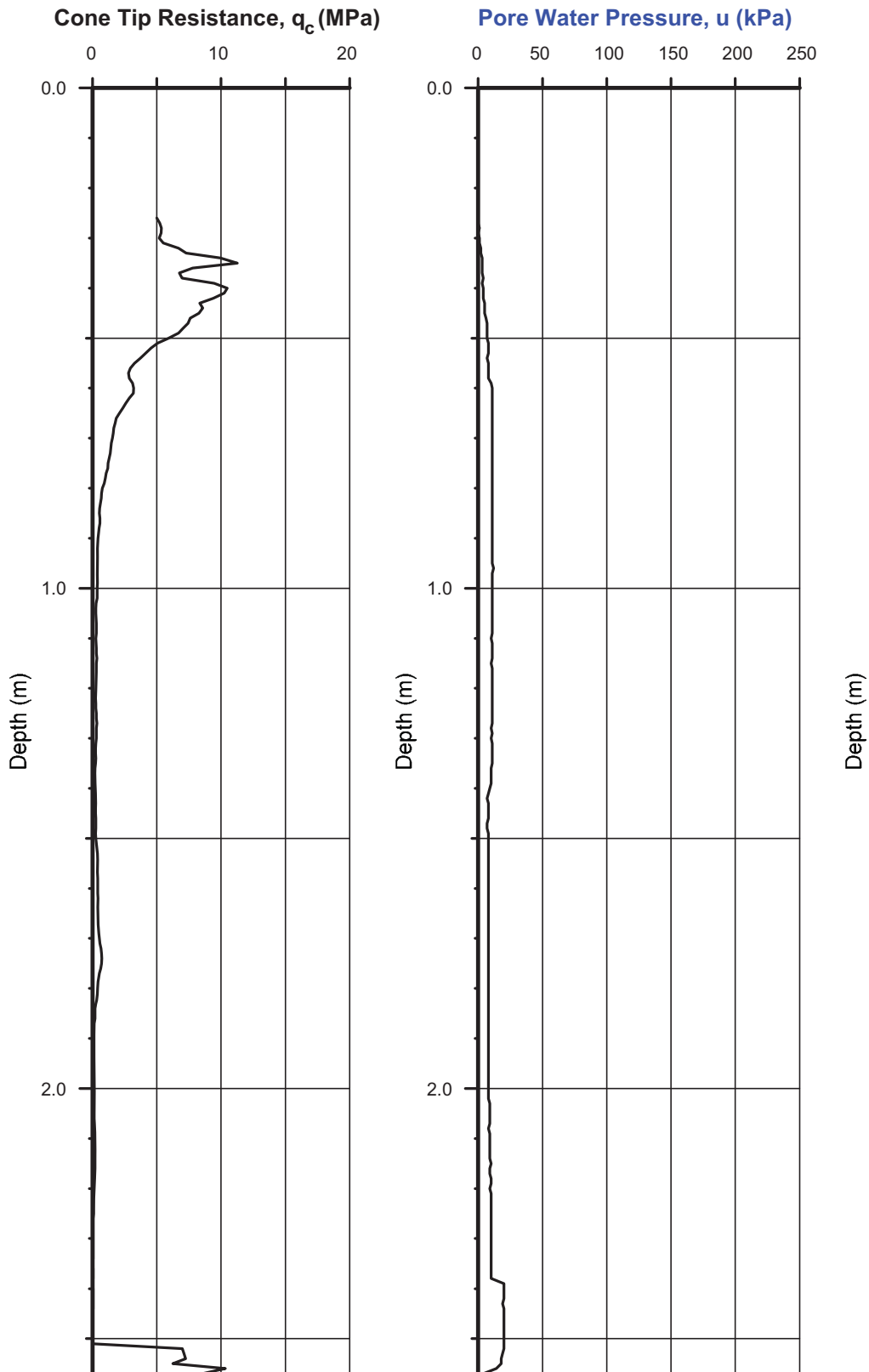
**Client:** Sinclair Knight Mertz

**Job Details:** Murray Riverbank Geotechnical Investigations

**Test Location:** Caloote CPT1

**Surface RL:** NA

**Date:** 22/10/2009



Test terminated at 2.6 m. Refusal.



# EngTest

## CONE PENETRATION TEST

Page 1 of 2

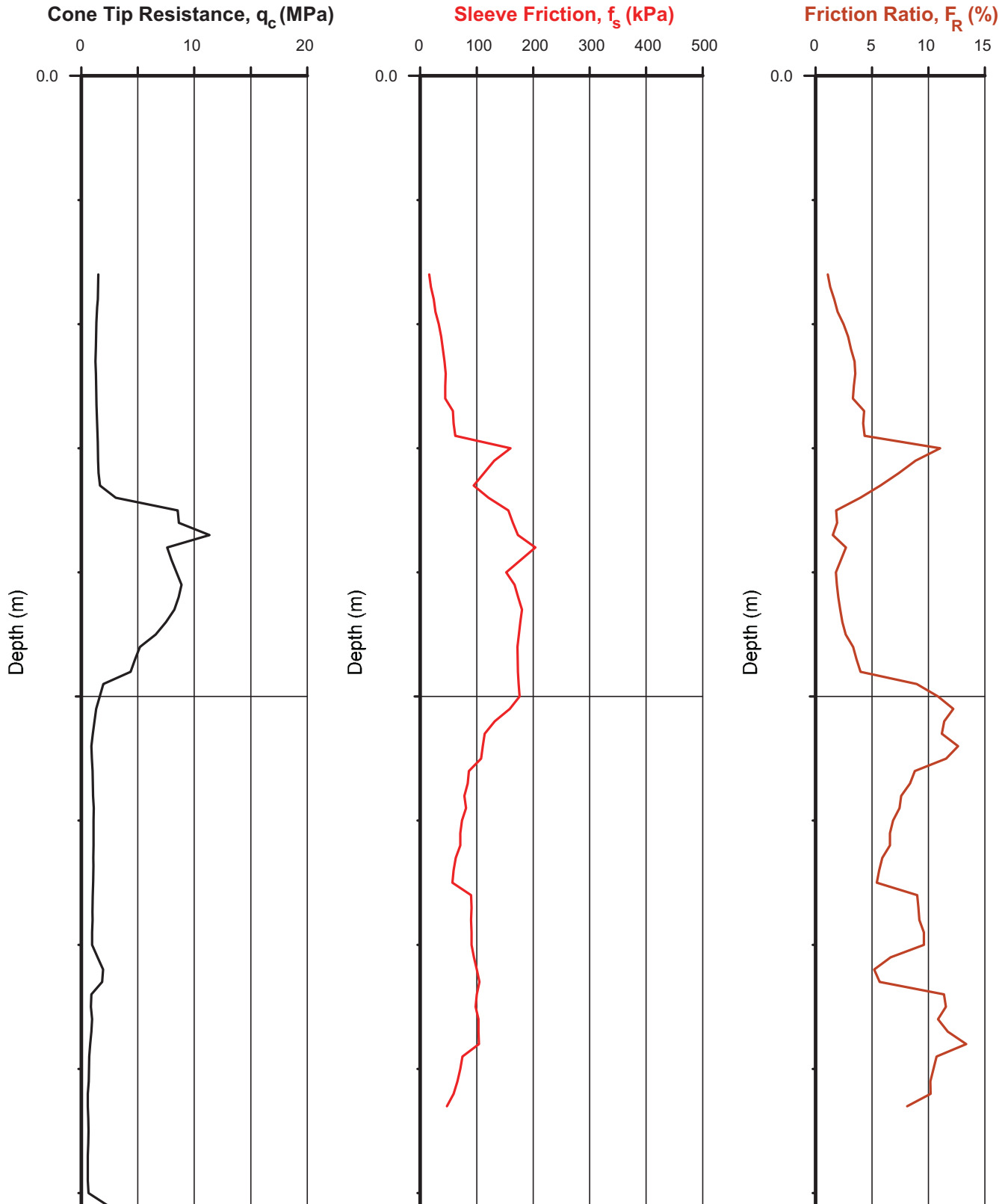
**Client:** Sinclair Knight Mertz

**Job Details:** Murray Riverbank Geotechnical Investigations

**Test Location:** Caloote CPT2

**Surface RL:** NA

**Date:** 22/10/09



Test terminated at 0.9 m. Refusal.



# EngTest

## CONE PENETRATION TEST

Page 2 of 2

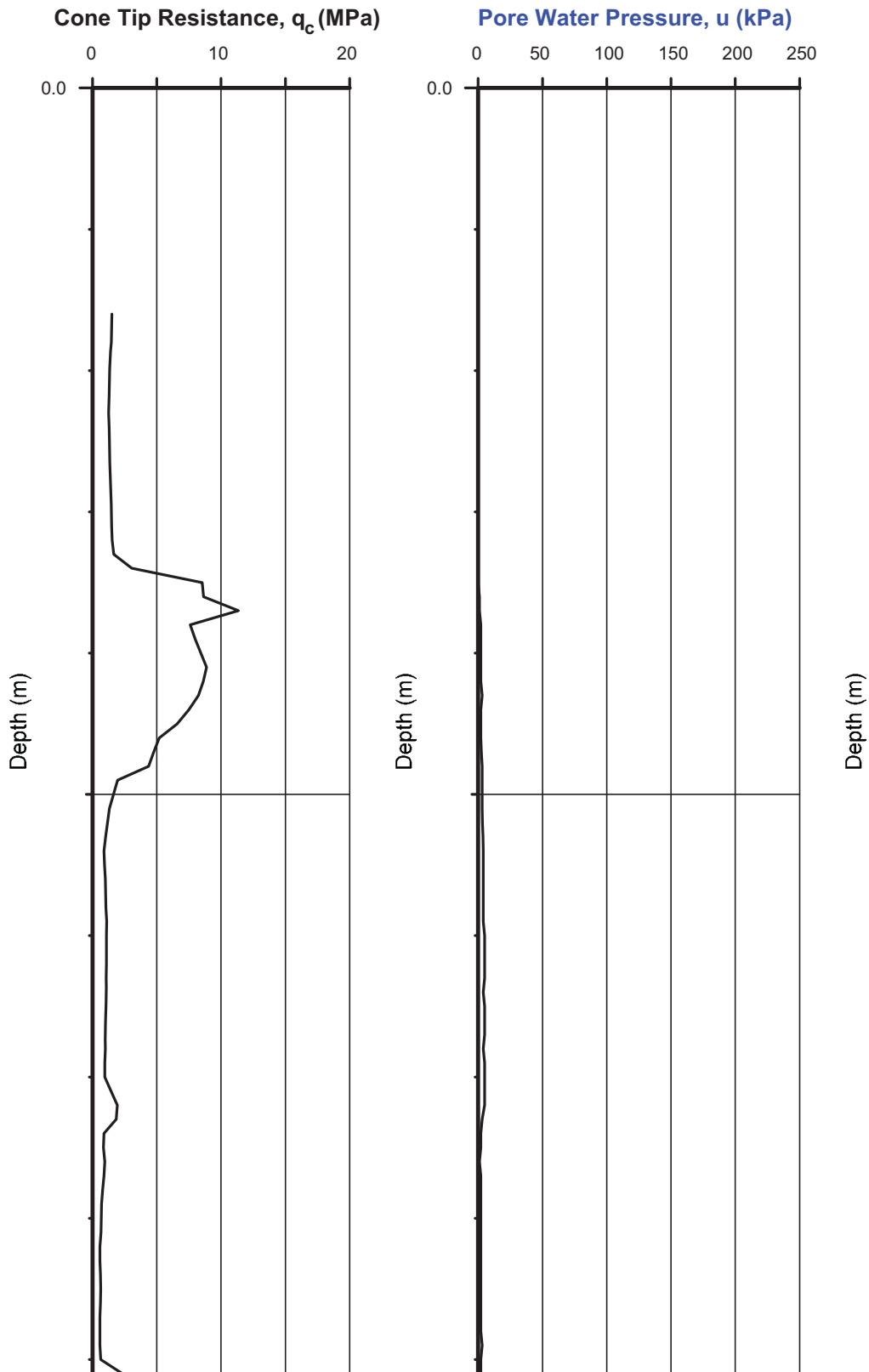
**Client:** Sinclair Knight Mertz

**Job Details:** Murray Riverbank Geotechnical Investigations

**Test Location:** Caloote CPT2

**Surface RL:** NA

**Date:** 22/10/09



Test terminated at 0.9 m. Refusal.



# EngTest

## CONE PENETRATION TEST

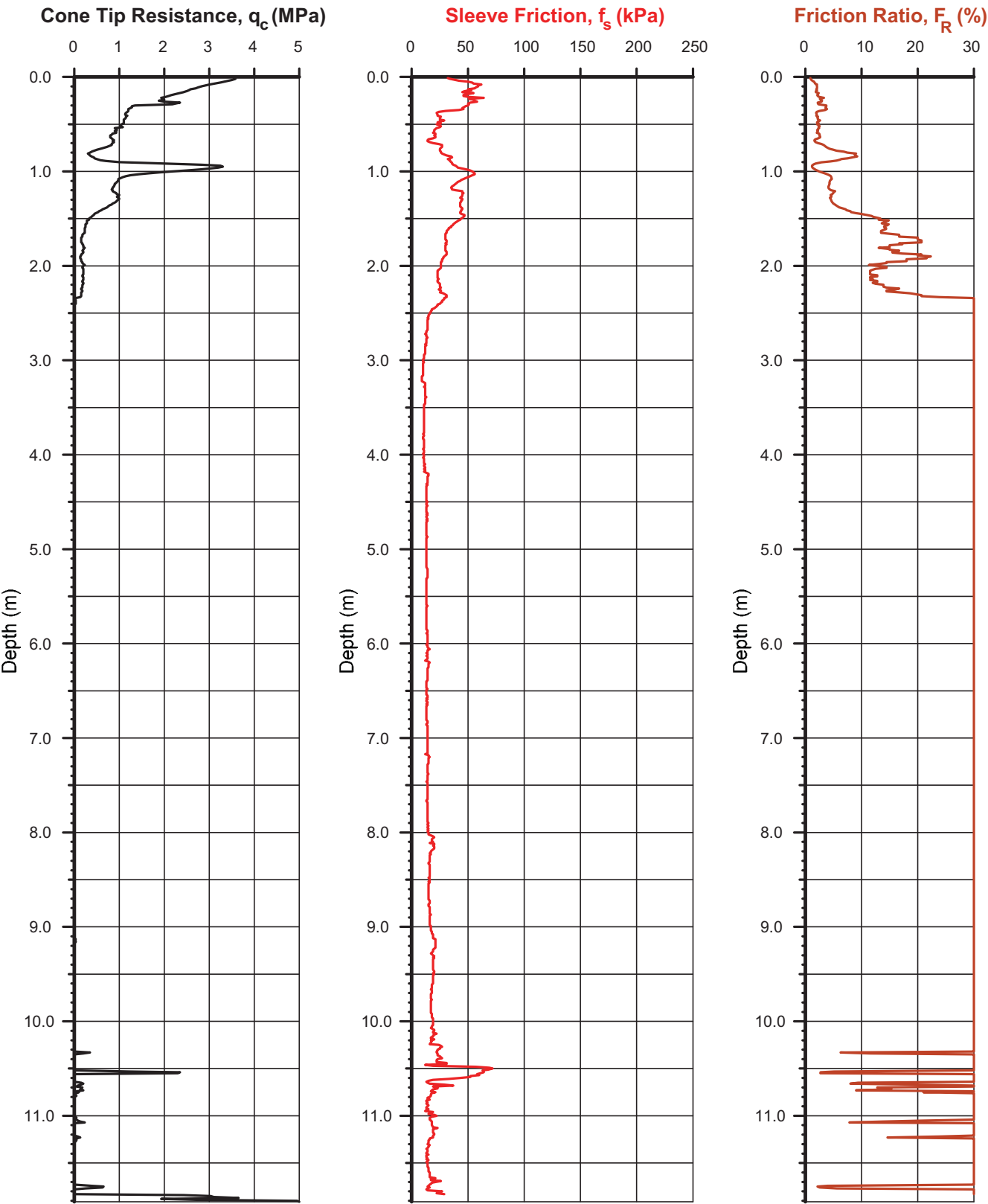
**Client:** Sinclair Knight Merz

**Job Details:** Murray Riverbank Geotechnical Investigations

**Test Location:** Caloote CPT3

**Surface RL:** NA

**Date:** 28/10/2009





# EngTest

## CONE PENETRATION TEST

Page 2 of 2

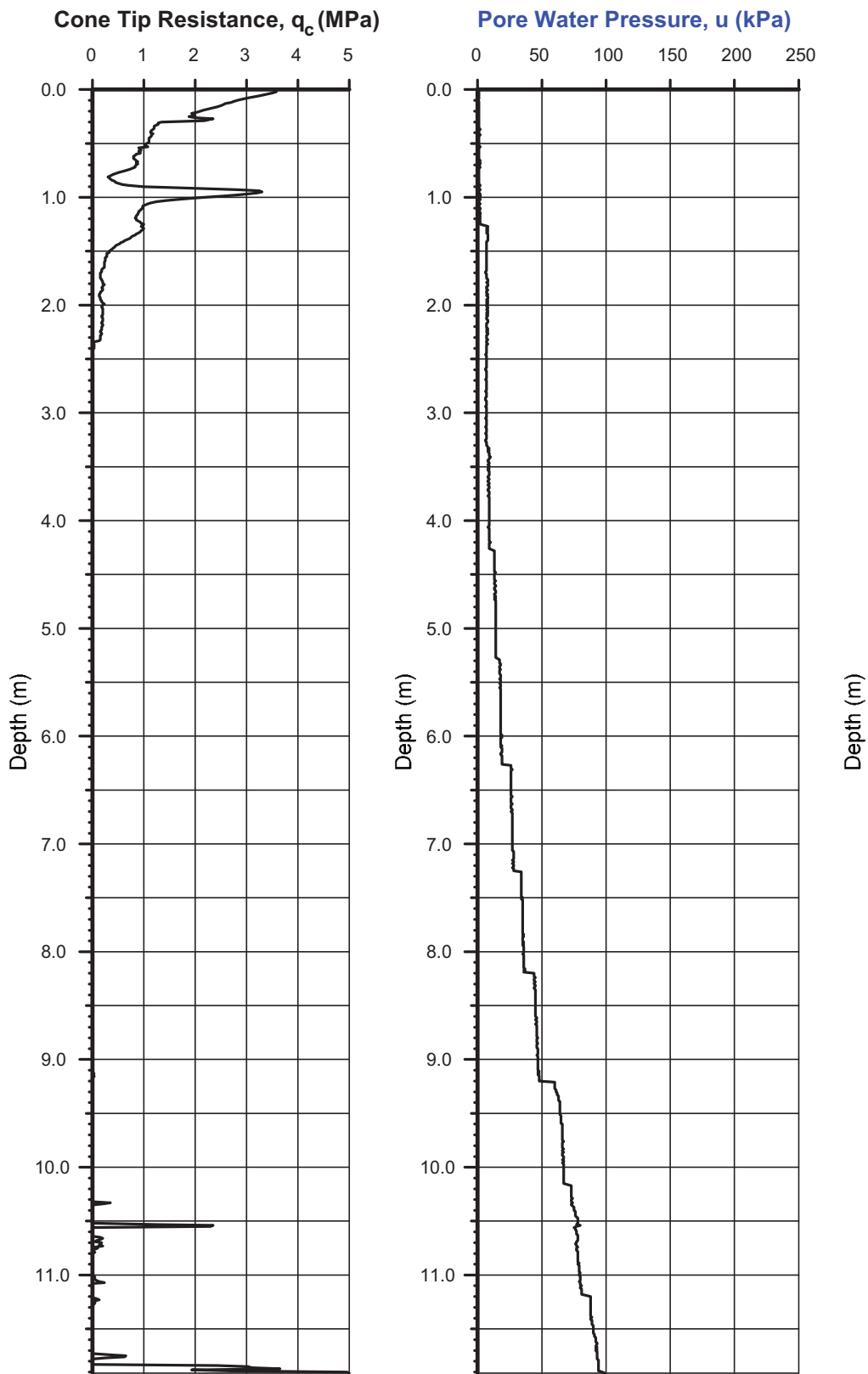
**Client:** Sinclair Knight Merz

**Job Details:** Murray Riverbank Geotechnical Investigations

**Test Location:** Caloote CPT3

**Surface RL:** NA

**Date:** 28/10/2009

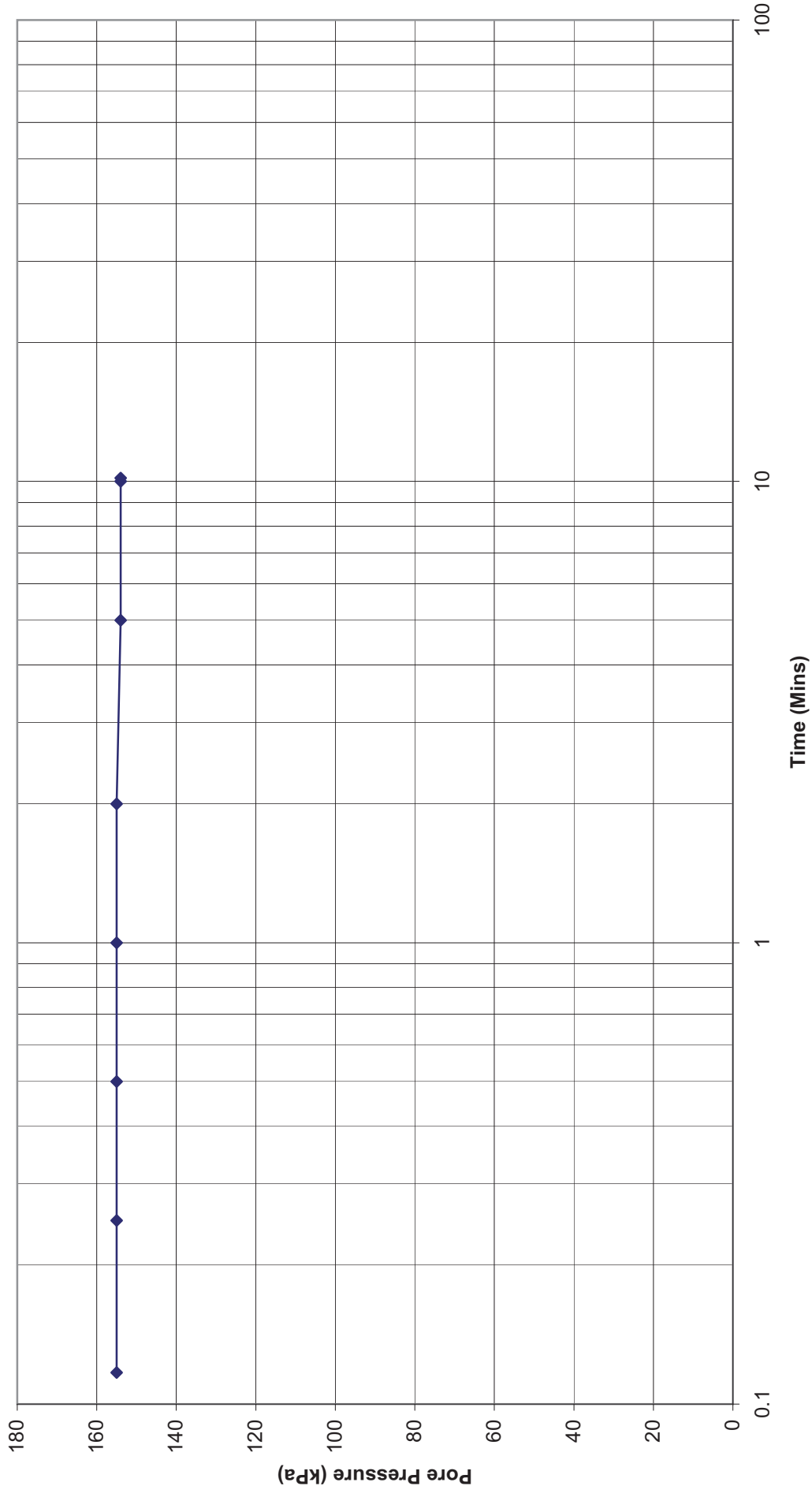


Test terminated at 11.9 m. Refusal.





**Caloote CPTu3**  
**Dissipation test @ 11.9 m depth**





# EngTest

## CONE PENETRATION TEST

Page 1 of 2

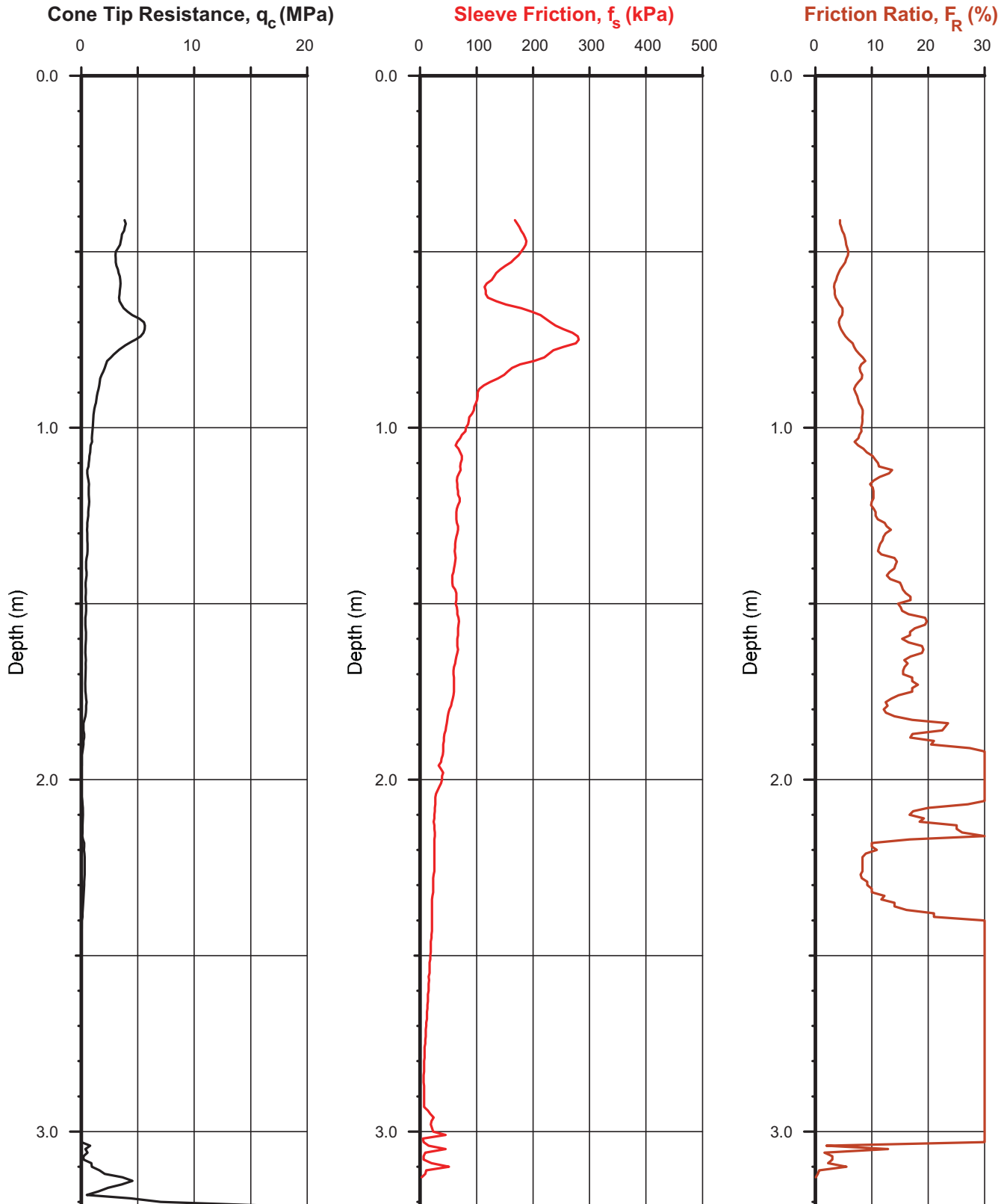
**Client:** Sinclair Knight Merz

**Job Details:** Murray Riverbank Geotechnical Investigations

**Test Location:** Caloote CPT4

**Surface RL:** NA

**Date:** 22/10/2009





# EngTest

## CONE PENETRATION TEST

Page 2 of 2

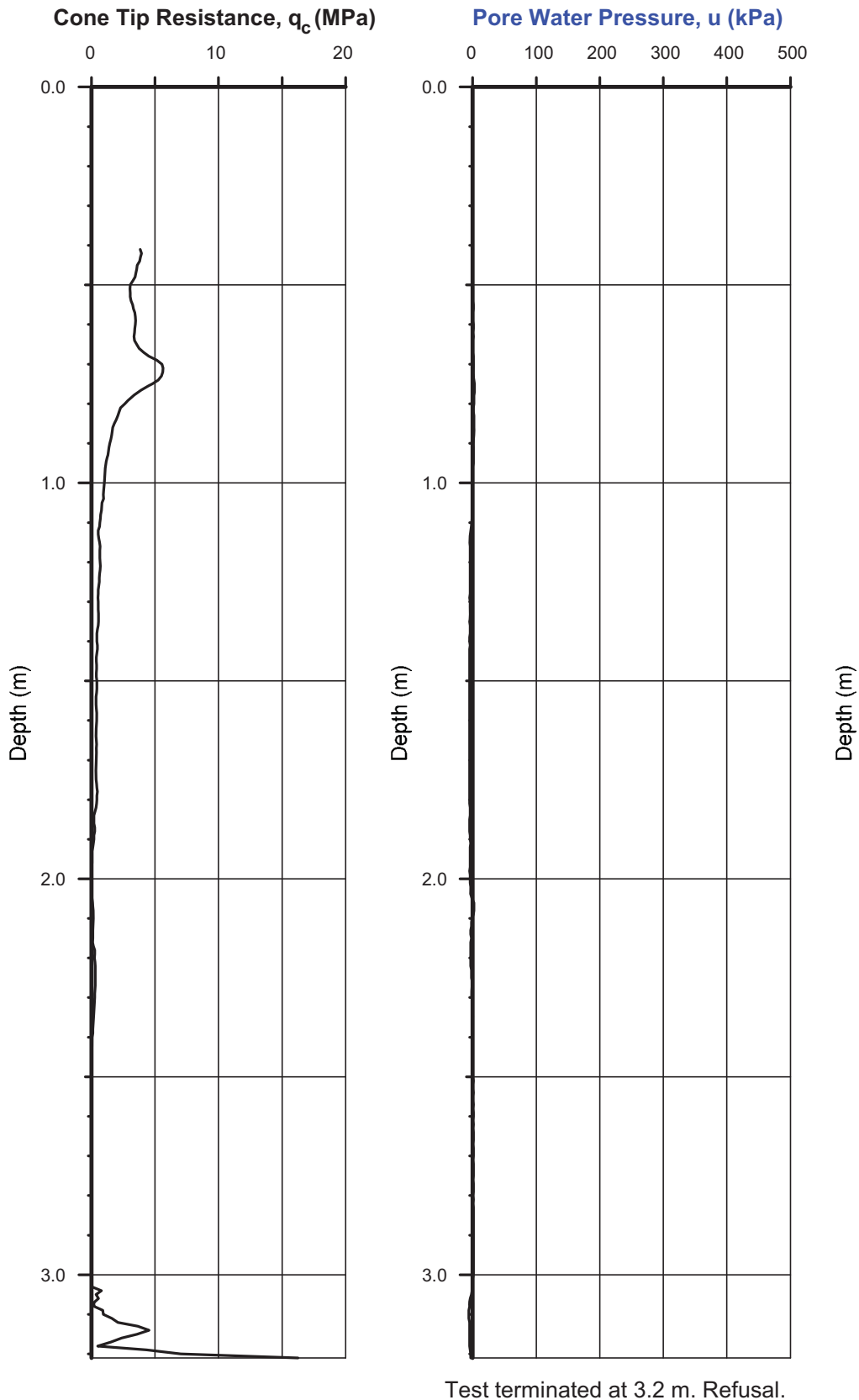
**Client:** Sinclair Knight Merz

**Job Details:** Murray Riverbank Geotechnical Investigations

**Test Location:** Caloote CPT4

**Surface RL:** NA

**Date:** 22/10/2009





# EngTest

## CONE PENETRATION TEST

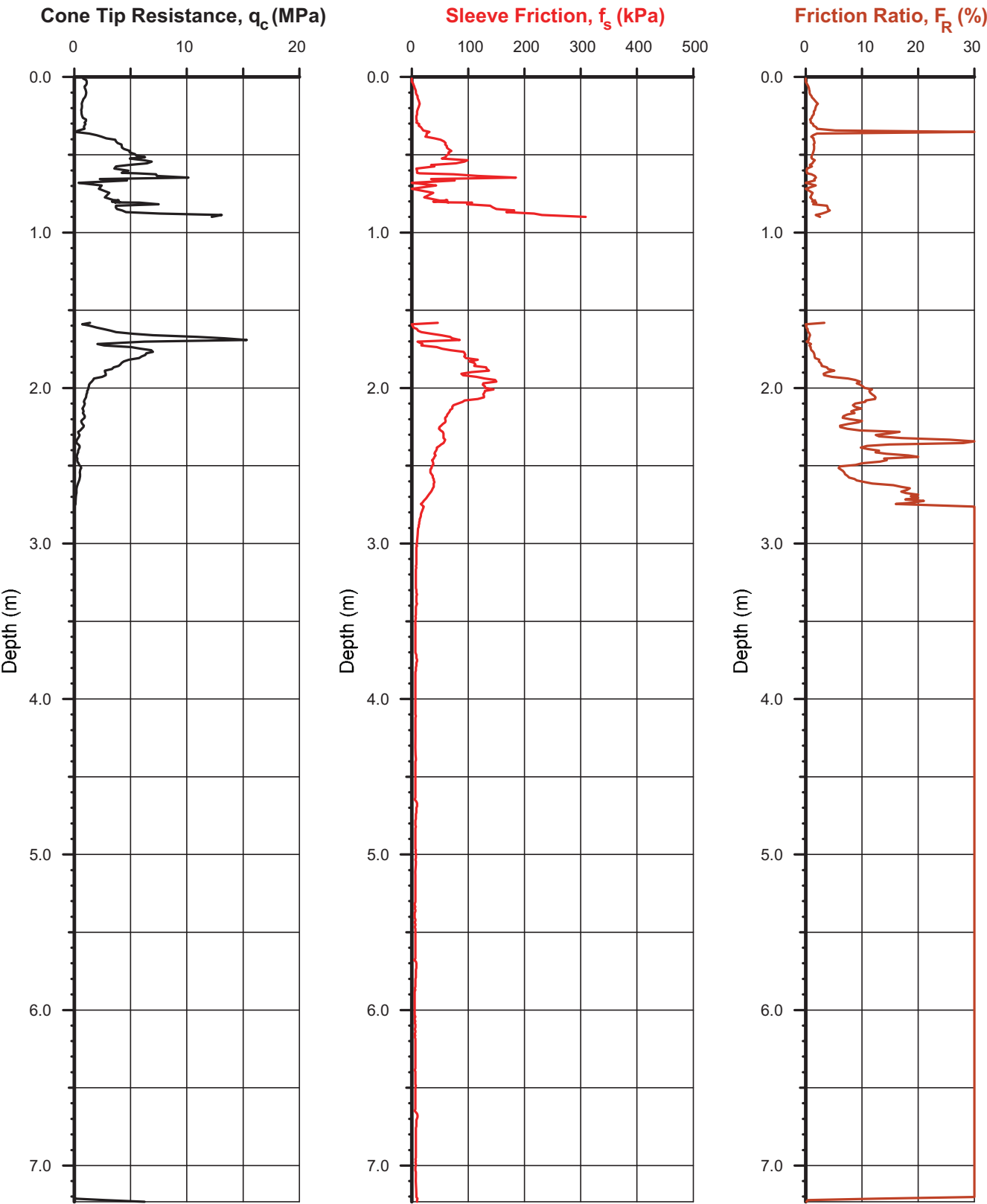
**Client:** Sinclair Knight Merz

**Job Details:** Murray Riverbank Geotechnical Investigations

**Test Location:** Caloote CPT5

**Surface RL:** NA

**Date:** 22/10/2009



Test terminated at 7.2 m. Refusal. Relief drill 0.9-1.6m.



# EngTest

## CONE PENETRATION TEST

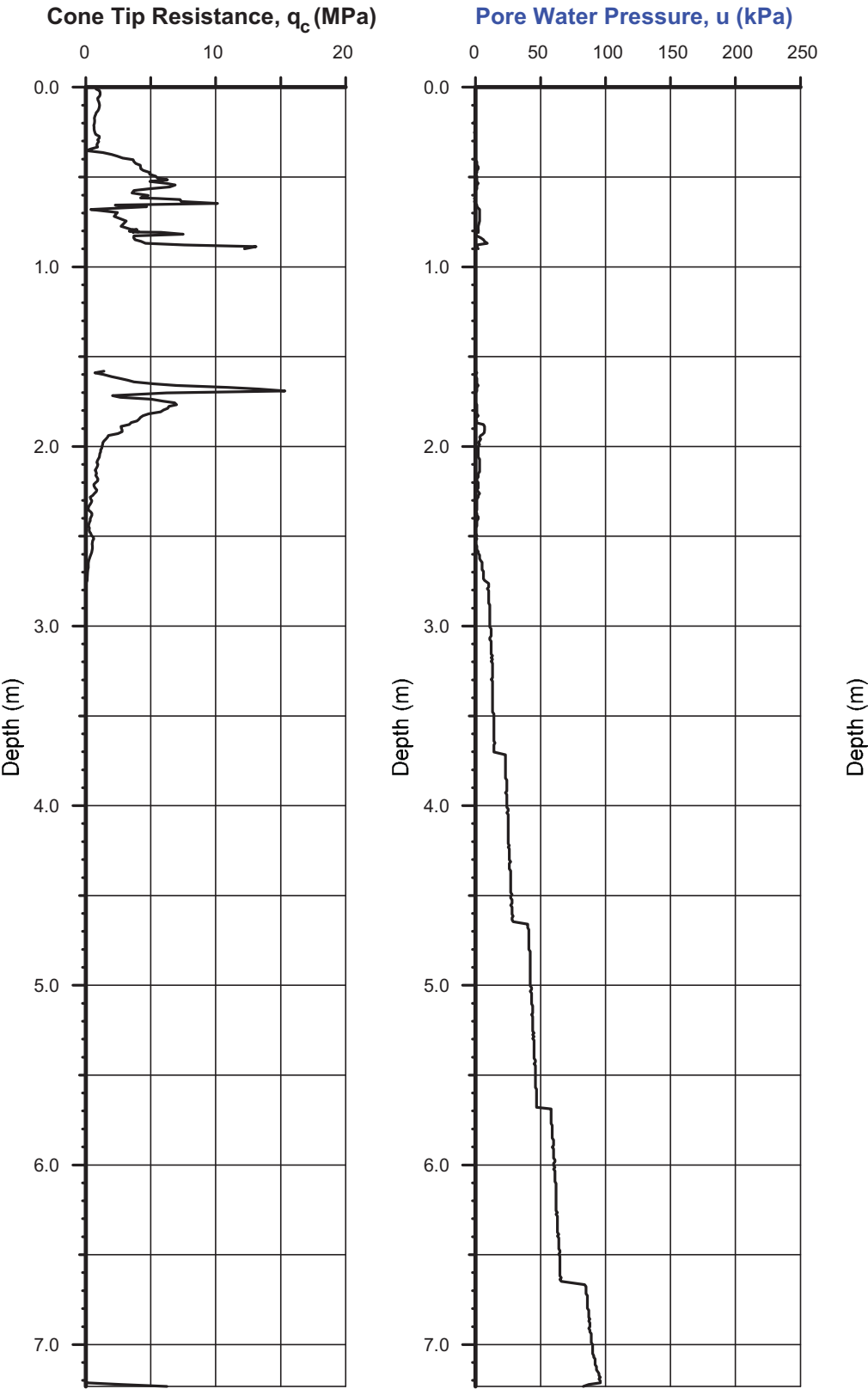
**Client:** Sinclair Knight Merz

**Job Details:** Murray Riverbank Geotechnical Investigations

**Test Location:** Caloote CPT5

**Surface RL:** NA

**Date:** 22/10/2009



Test terminated at 7.2 m. Refusal. Relief drill 0.9-1.6m.



# EngTest

## CONE PENETRATION TEST

Page 1 of 2

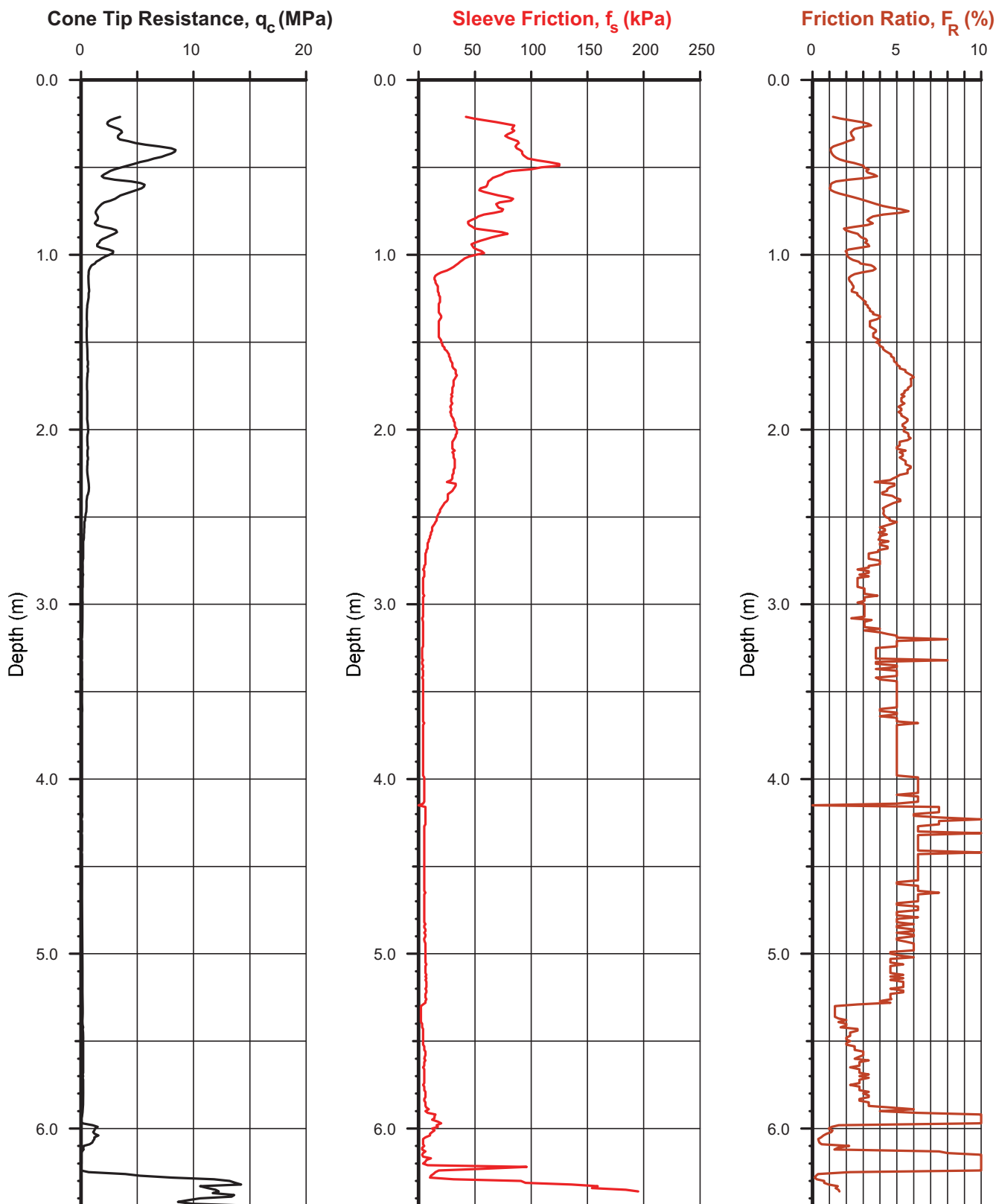
**Client:** Sinclair Knight Merz

**Job Details:** Murray Riverbank Geotechnical Investigations

**Test Location:** Caloote CPT6A

**Surface RL:** NA

**Date:** 22/10/2009



Test terminated at 6.4 m. Refusal.



# EngTest

## CONE PENETRATION TEST

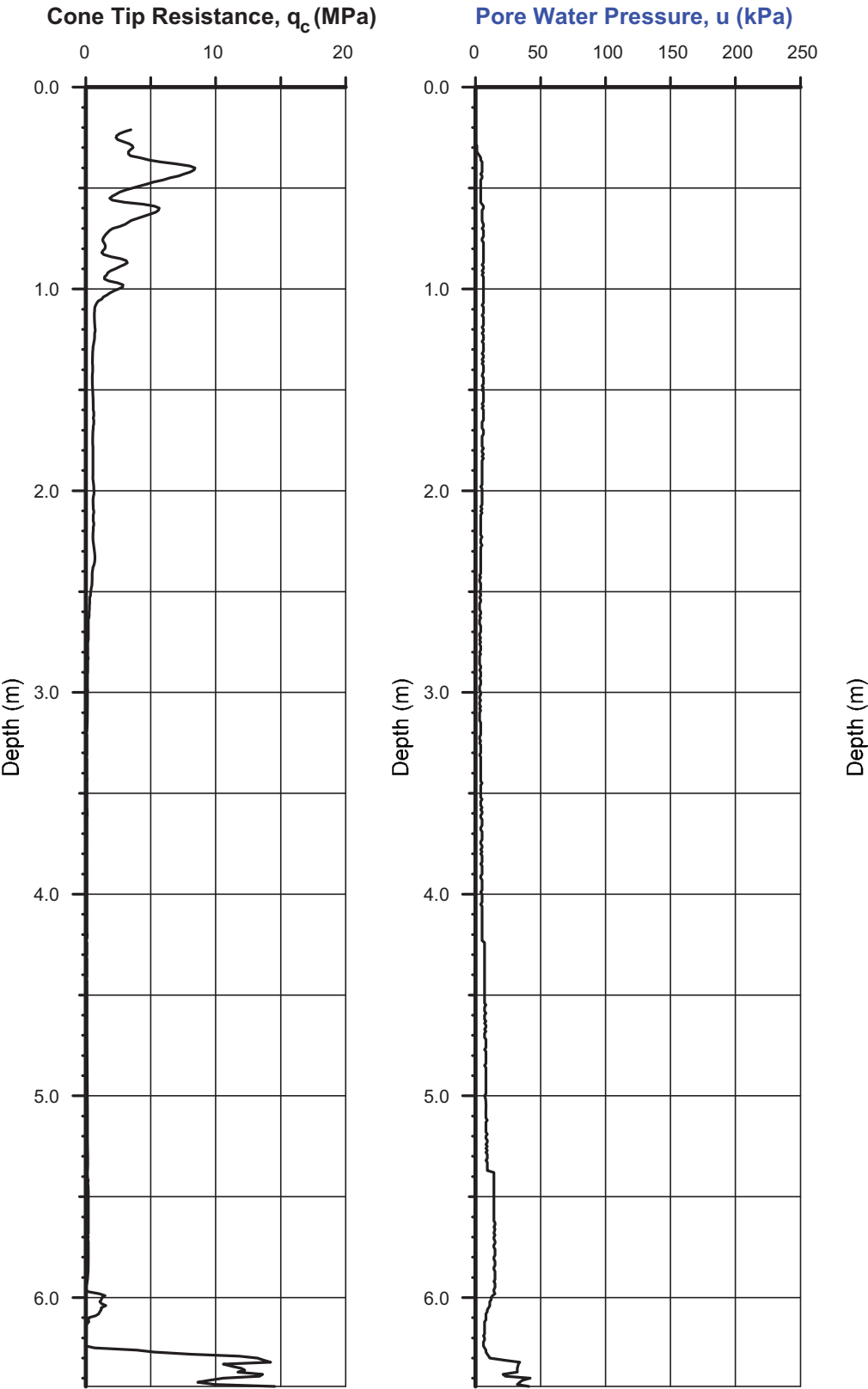
**Client:** Sinclair Knight Merz

**Job Details:** Murray Riverbank Geotechnical Investigations

**Test Location:** Caloote CPT6A

**Surface RL:** NA

**Date:** 22/10/2009



Test terminated at 6.4 m. Refusal.



# EngTest

## CONE PENETRATION TEST

Page 1 of 2

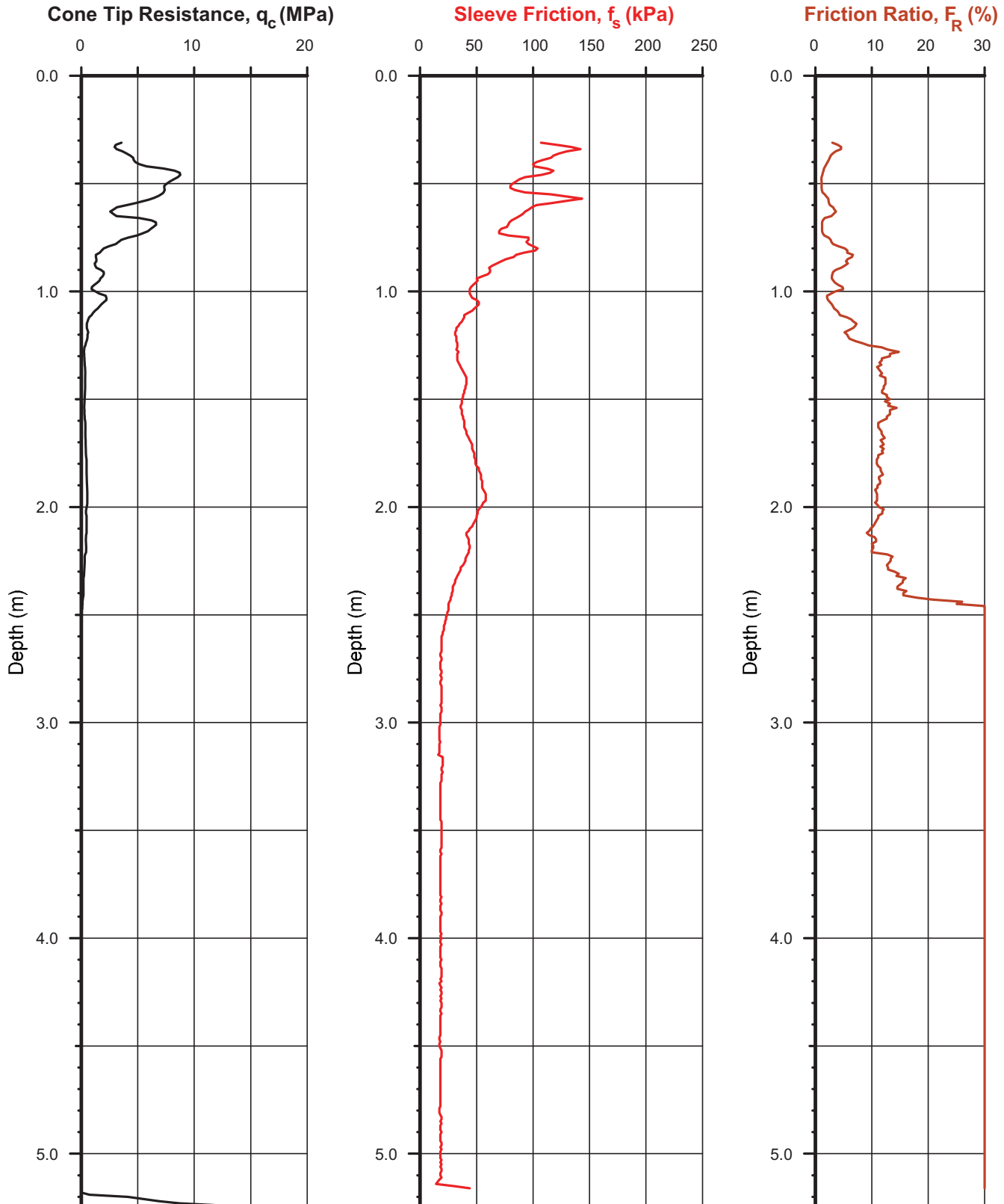
**Client:** Sinclair Knight Merz

**Job Details:** Murray Riverbank Geotechnical Investigations

**Test Location:** Caloote CPT6B

**Surface RL:** NA

**Date:** 22/10/2009



Test terminated at 5.2 m. Refusal.





# EngTest

## CONE PENETRATION TEST

Page 2 of 2

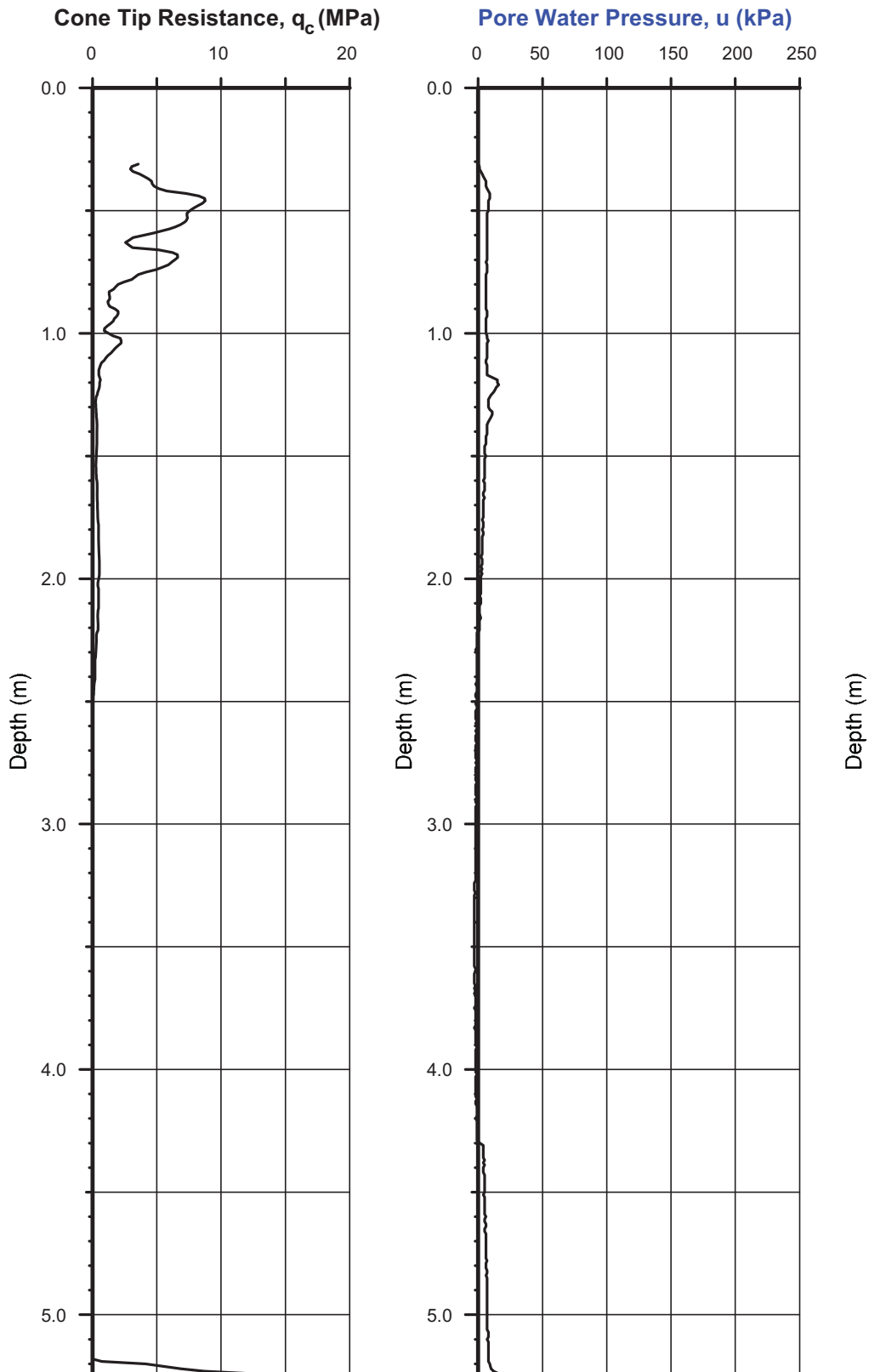
**Client:** Sinclair Knight Merz

**Job Details:** Murray Riverbank Geotechnical Investigations

**Test Location:** Caloote CPT6B

**Surface RL:** NA

**Date:** 22/10/2009



Test terminated at 5.2 m. Refusal.



# EngTest

## CONE PENETRATION TEST

Page 1 of 2

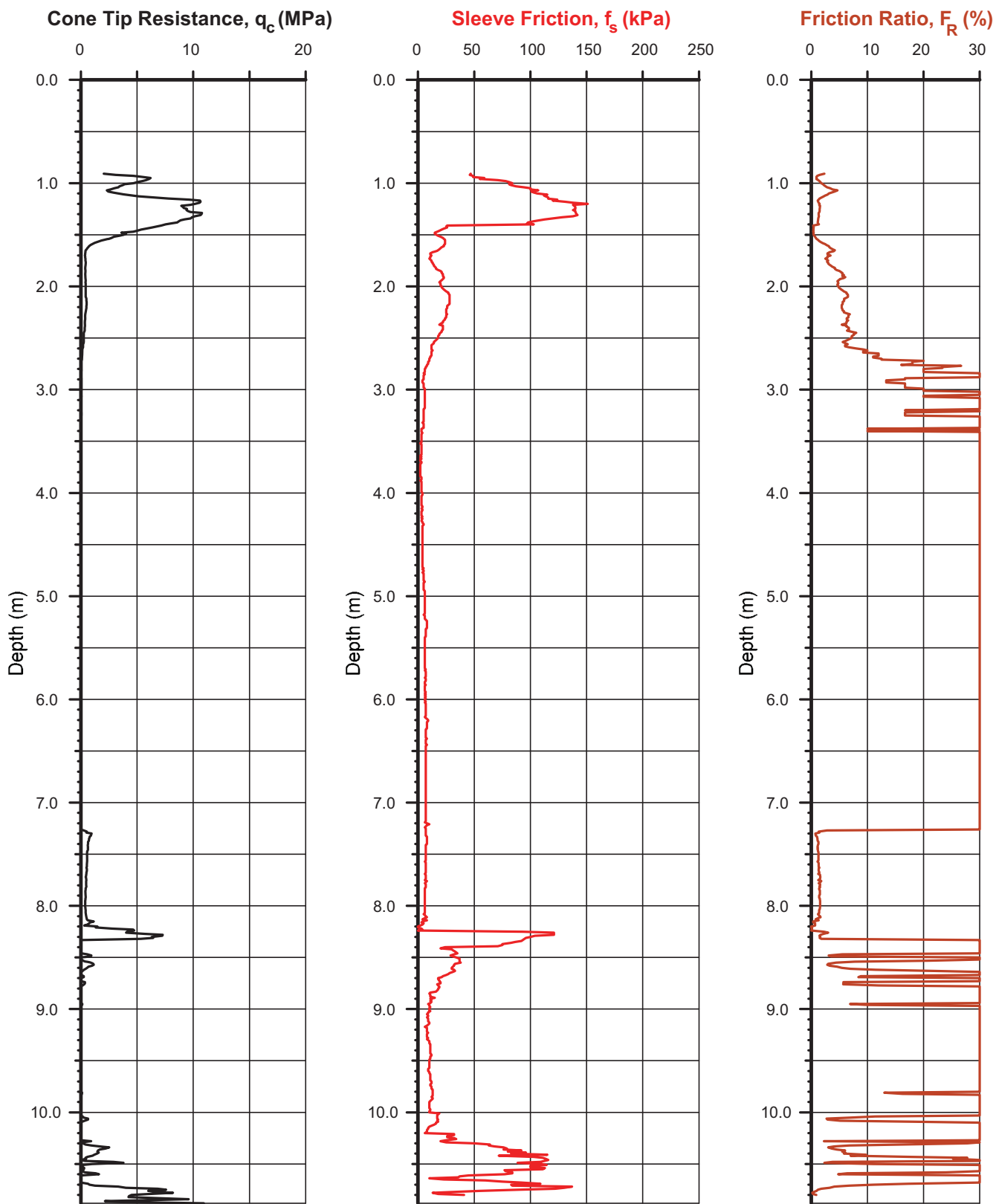
**Client:** Sinclair Knight Merz

**Job Details:** Murray Riverbank Geotechnical Investigations

**Test Location:** Caloote CPT7

**Surface RL:** NA

**Date:** 22/10/2009



Test terminated at 10.9 m. Refusal.



# EngTest

## CONE PENETRATION TEST

Page 2 of 2

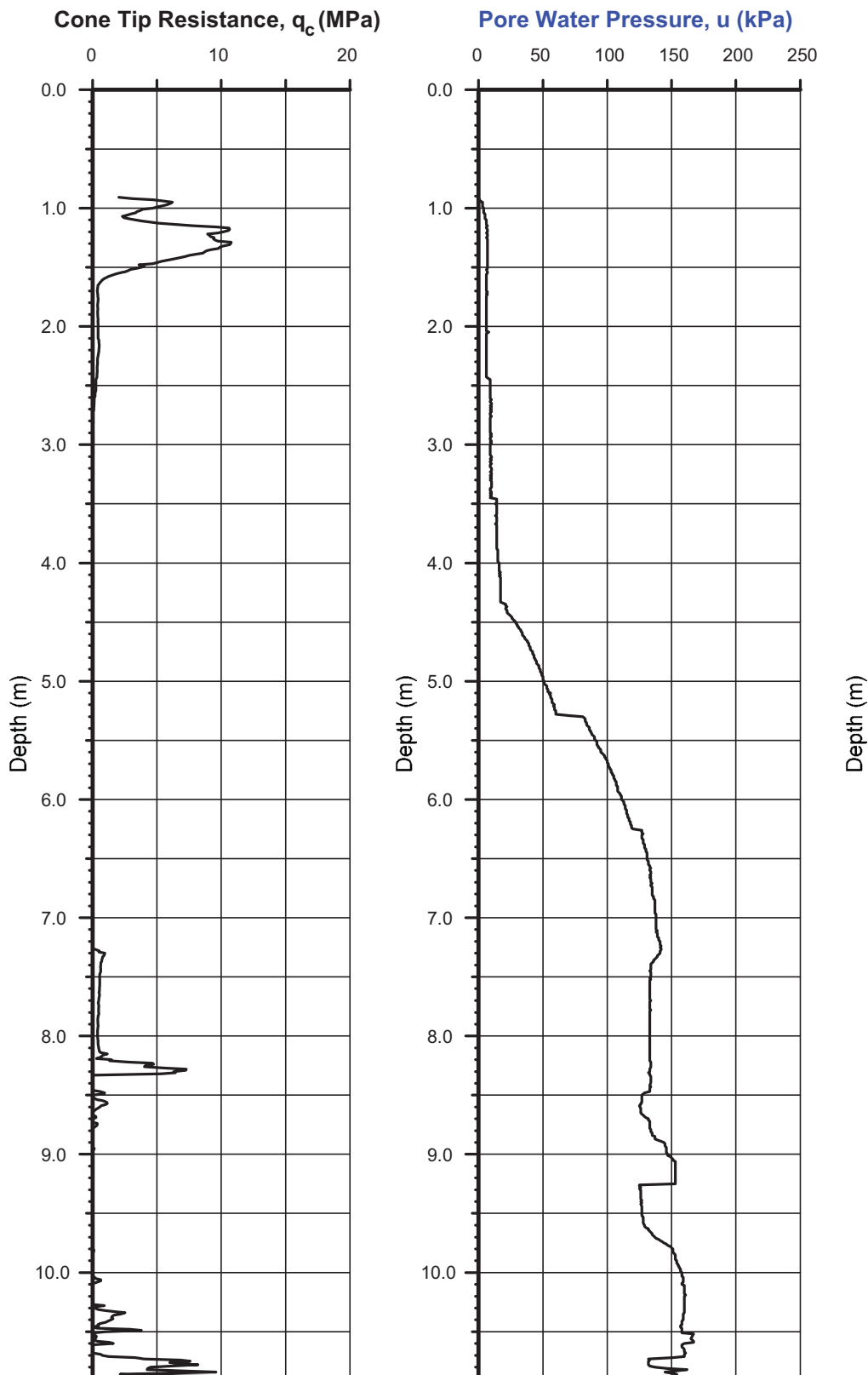
**Client:** Sinclair Knight Merz

**Job Details:** Murray Riverbank Geotechnical Investigations

**Test Location:** Caloote CPT7

**Surface RL:** NA

**Date:** 22/10/2009



Test terminated at 10.9 m. Refusal.



# EngTest

## CONE PENETRATION TEST

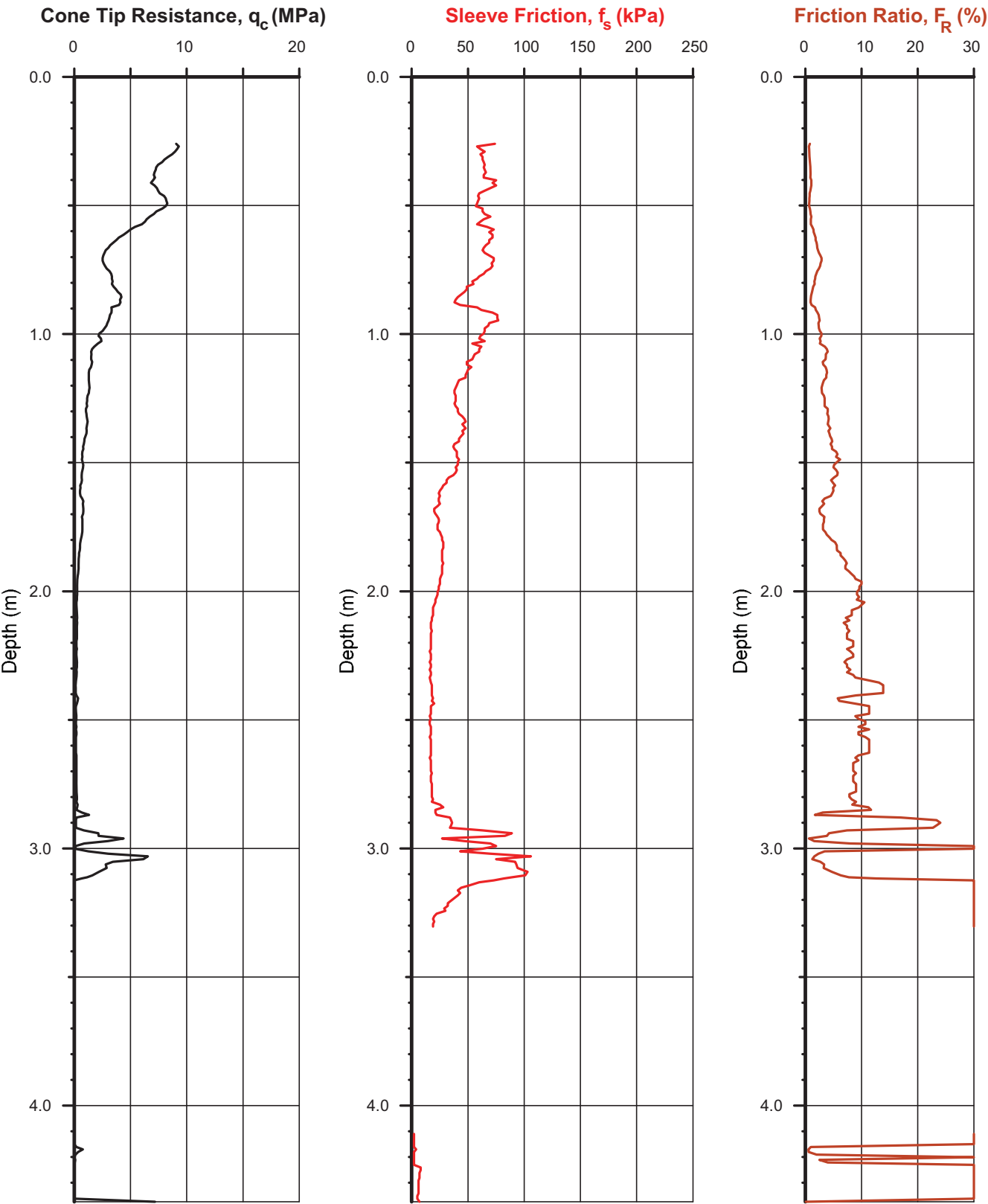
**Client:** Sinclair Knight Merz

**Job Details:** Murray Riverbank Geotechnical Investigations

**Test Location:** Caloote CPT8

**Surface RL:** NA

**Date:** 22/10/2009



Test terminated at 4.4 m. Refusal. Relief drilled: 3.30-4.11 m.



# EngTest

## CONE PENETRATION TEST

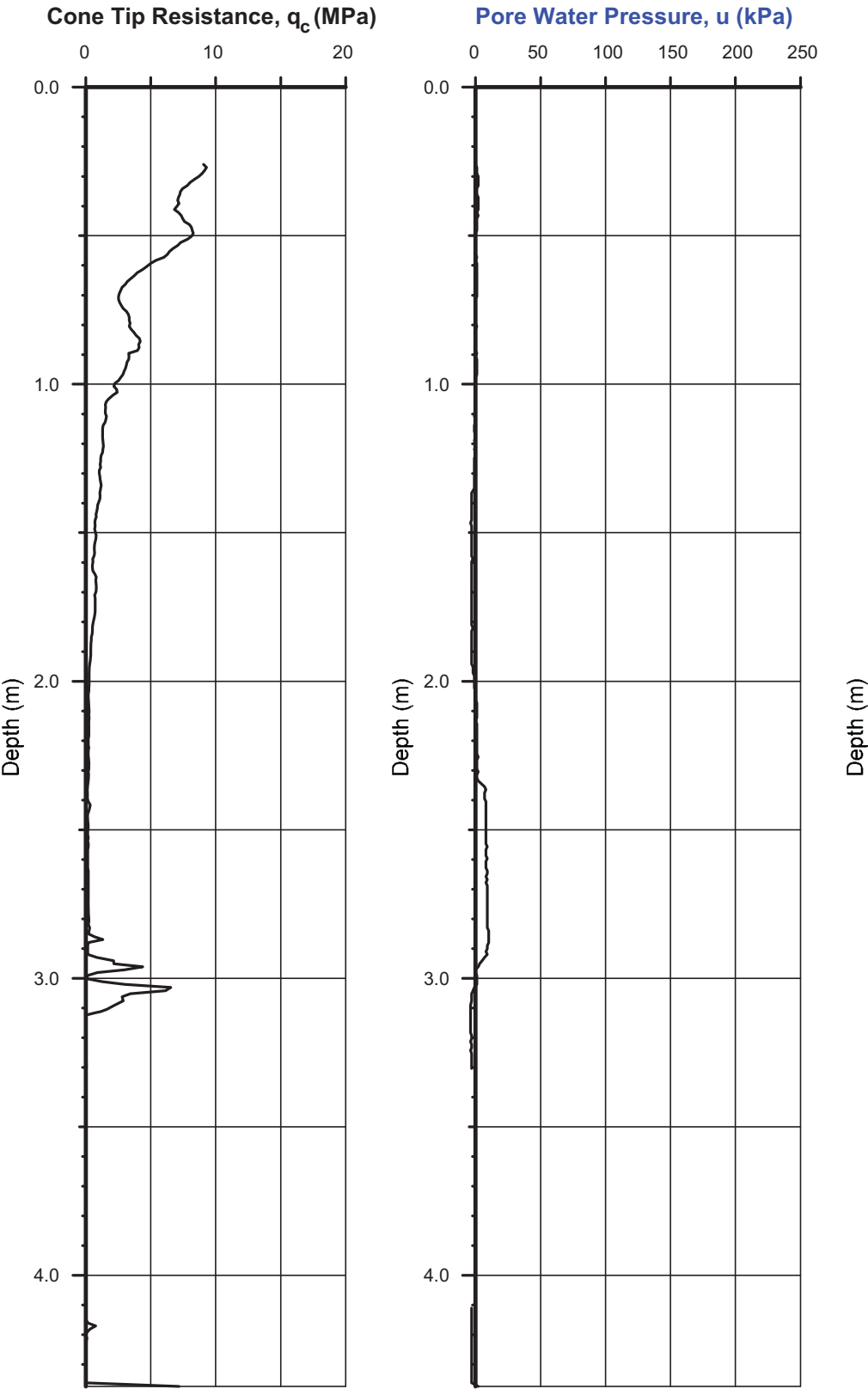
**Client:** Sinclair Knight Merz

**Job Details:** Murray Riverbank Geotechnical Investigations

**Test Location:** Caloote CPT8

**Surface RL:** NA

**Date:** 22/10/2009



Test terminated at 4.4 m. Refusal. Relief drilled: 3.30-4.11 m.



# EngTest

## CONE PENETRATION TEST

Page 1 of 2

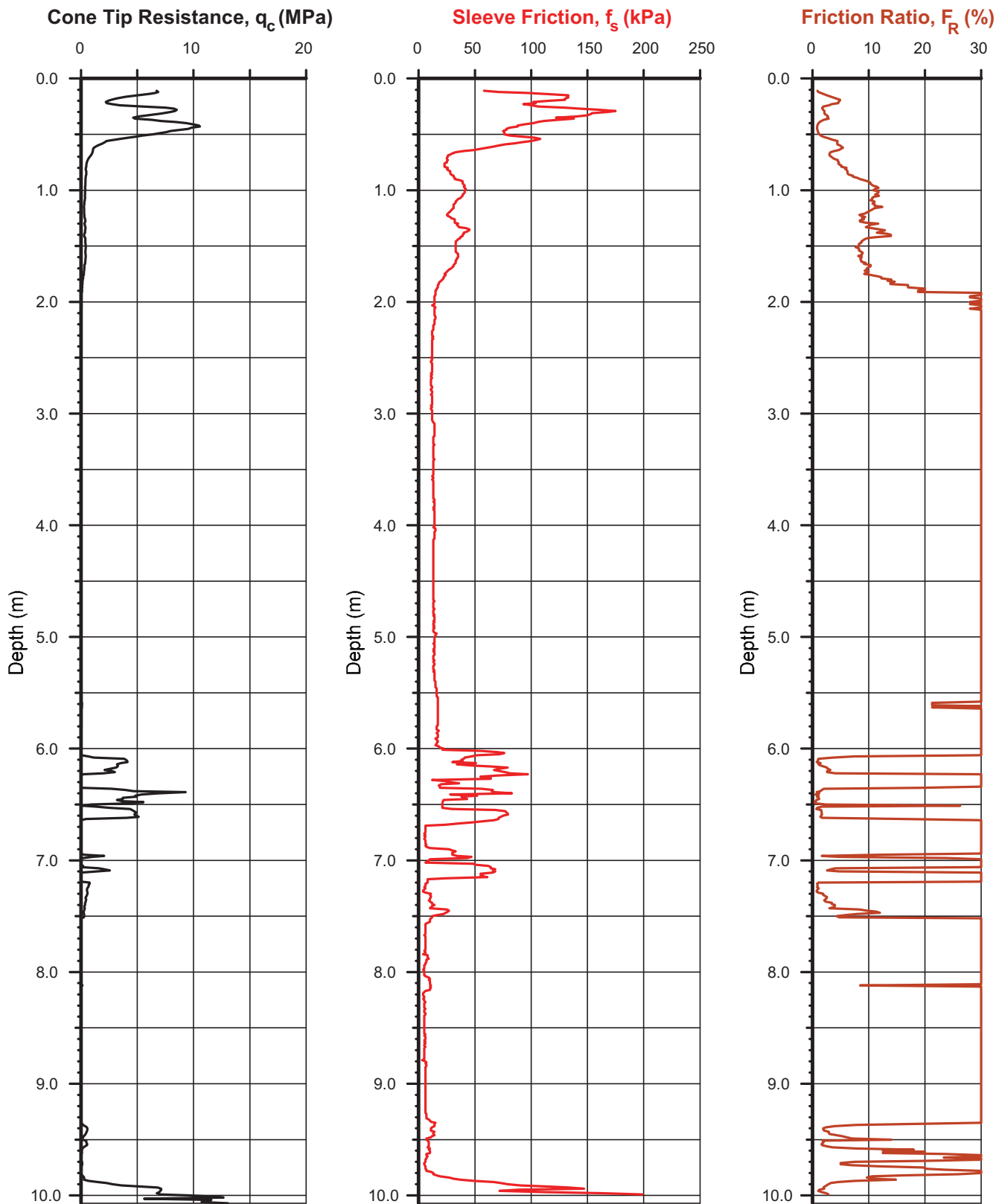
**Client:** Sinclair Knight Merz

**Job Details:** Murray Riverbank Geotechnical Investigations

**Test Location:** Caloote CPT9

**Surface RL:** NA

**Date:** 22/10/2009



Test terminated at 10.1 m. Refusal.



# EngTest

## CONE PENETRATION TEST

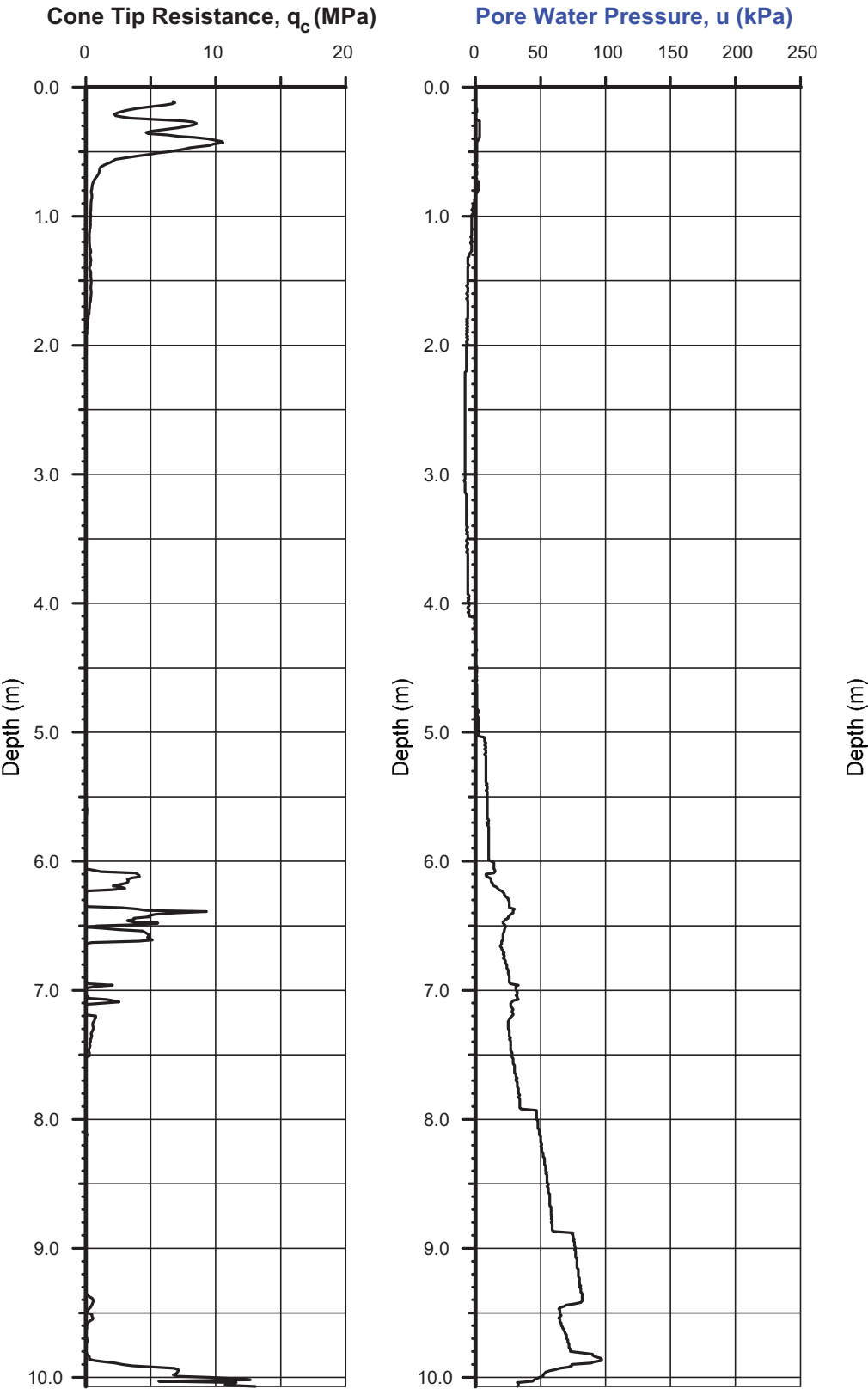
**Client:** Sinclair Knight Merz

**Job Details:** Murray Riverbank Geotechnical Investigations

**Test Location:** Caloote CPT9

**Surface RL:** NA

**Date:** 22/10/2009



Test terminated at 10.1 m. Refusal.



# EngTest

## CONE PENETRATION TEST

Page 1 of 2

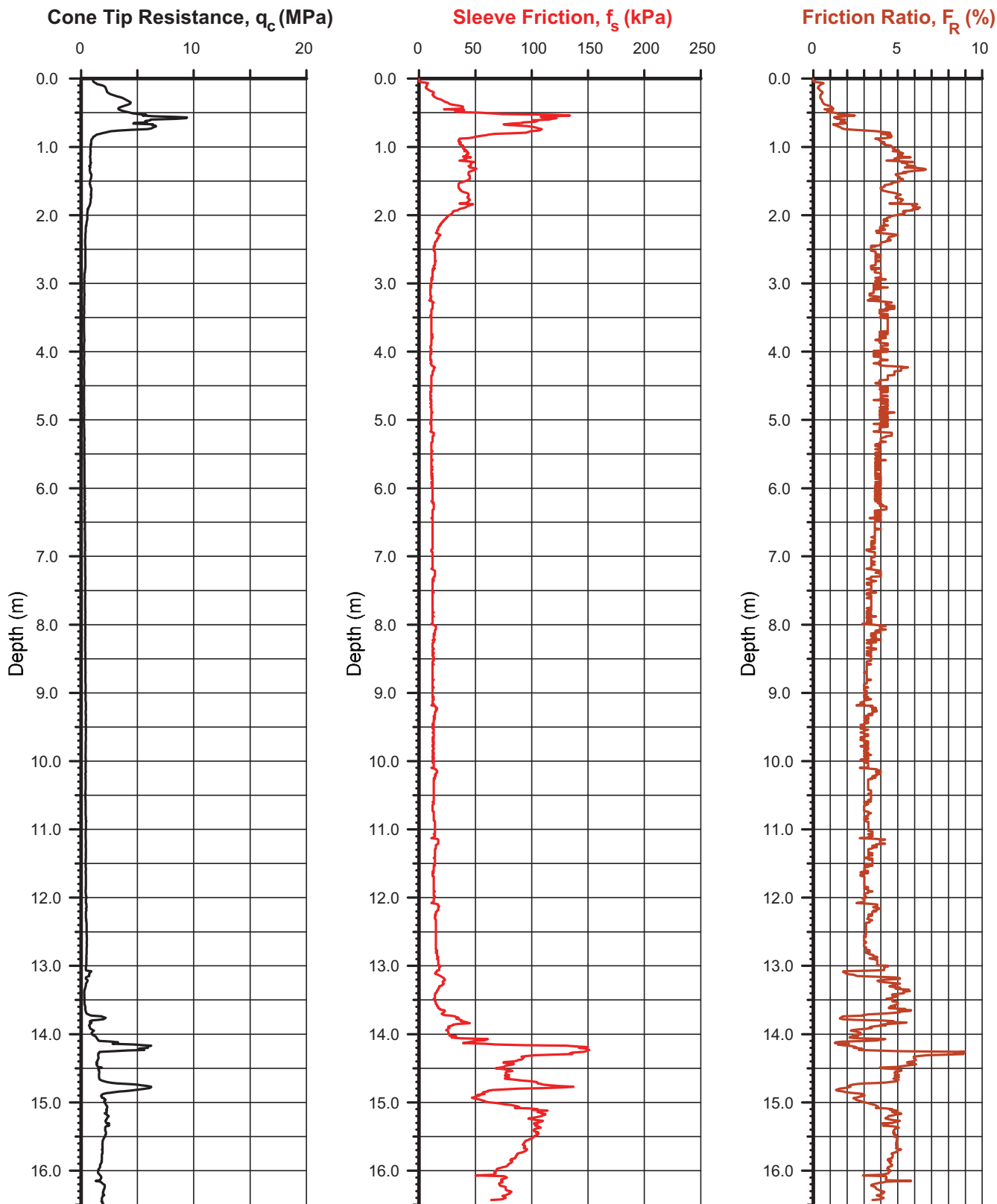
**Client:** Sinclair Knight Merz

**Job Details:** Murray Riverbank Geotechnical Investigations

**Test Location:** Caloote CPT10

**Surface RL:** NA

**Date:** 25/10/2009



Test terminated at 16.5 m.





# EngTest

## CONE PENETRATION TEST

Page 2 of 2

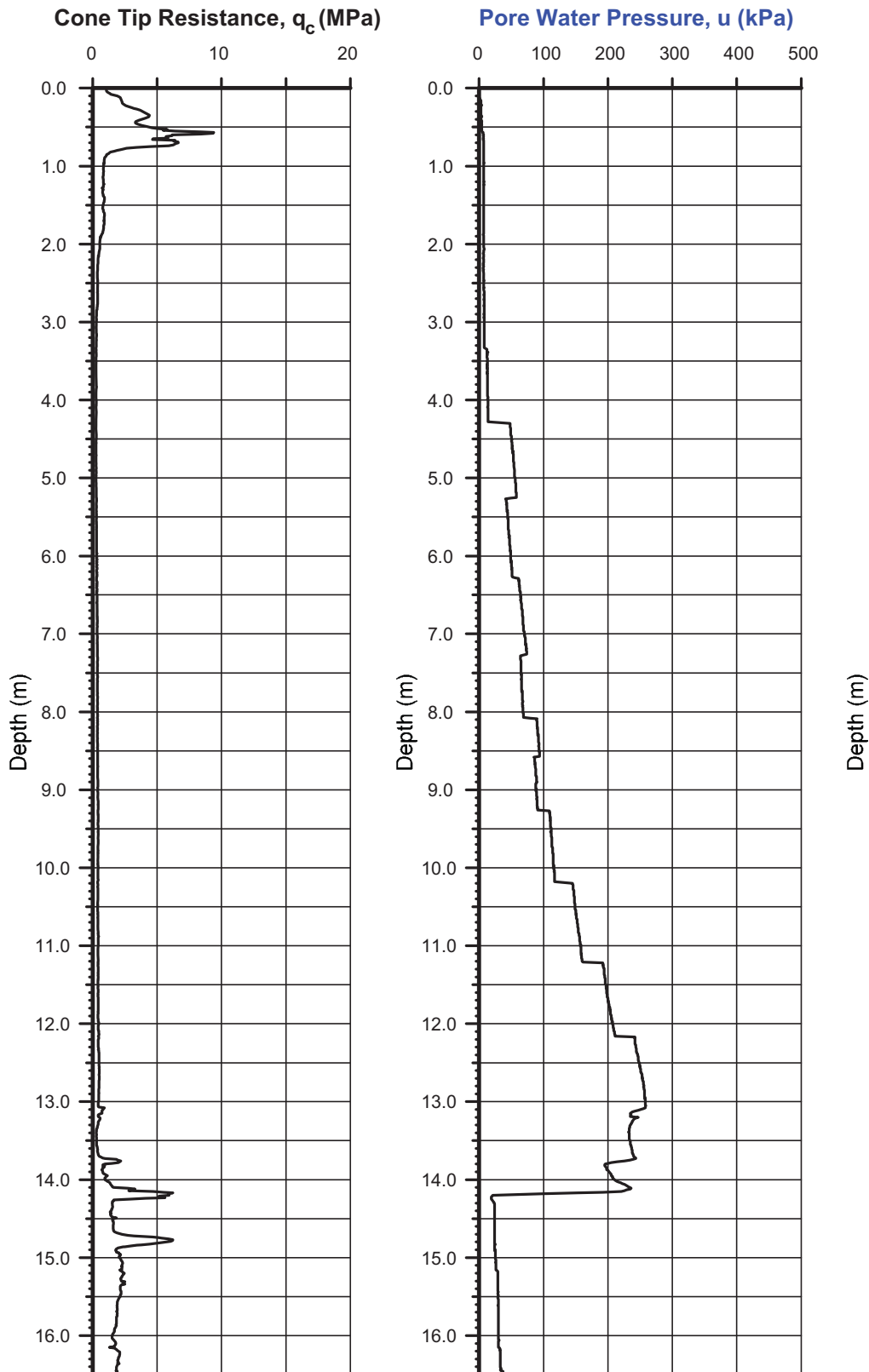
**Client:** Sinclair Knight Merz

**Job Details:** Murray Riverbank Geotechnical Investigations

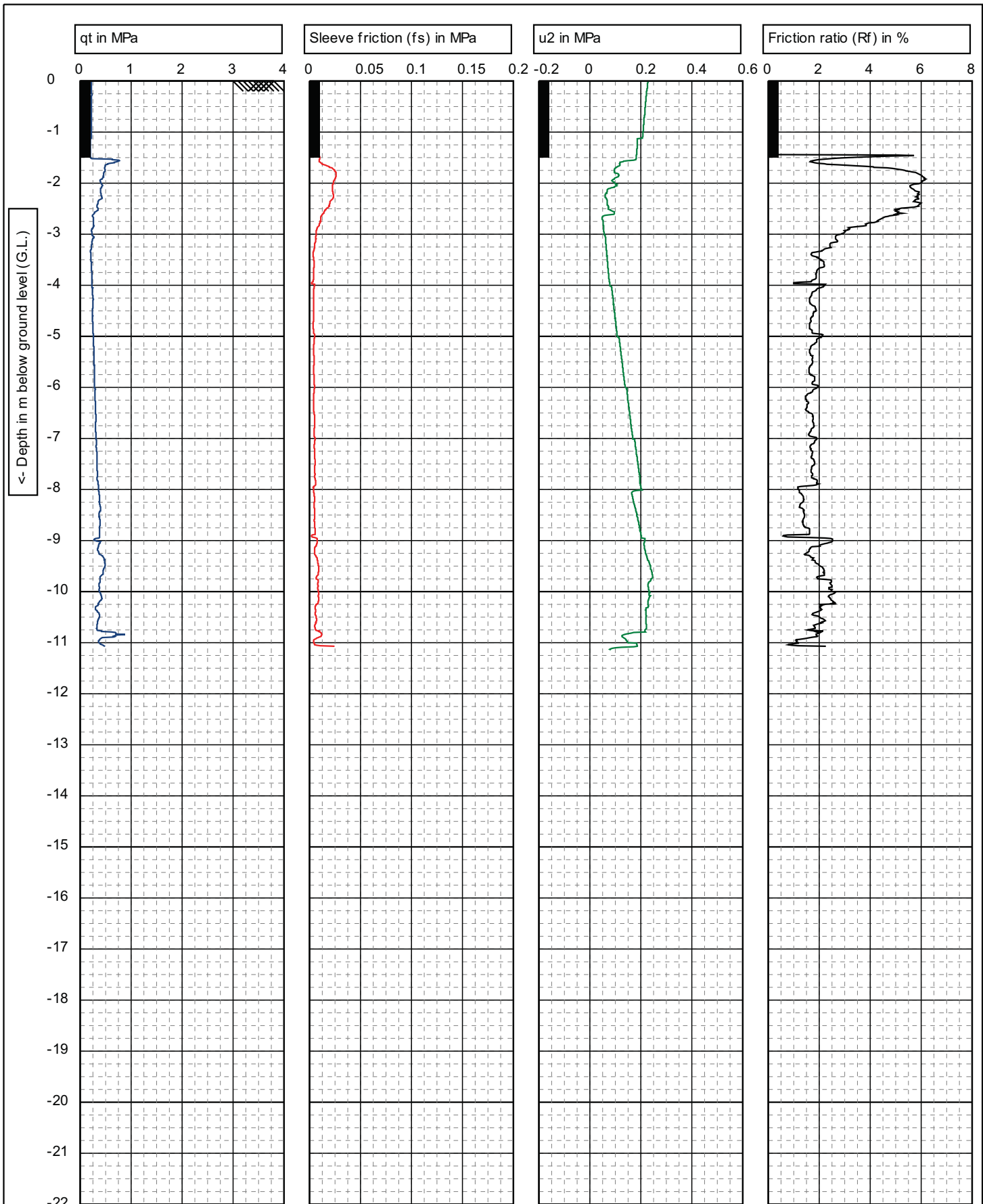
**Test Location:** Caloote CPT10

**Surface RL:** NA

**Date:** 25/10/2009



Test terminated at 16.5 m.



Refusal at 11.14. High qc.



CLIENT: SKM

Predrill : 1.5

G.L. 0

W.L.: 0

Date: 18/11/2009

Project: Murray Riverbank Slumping Study

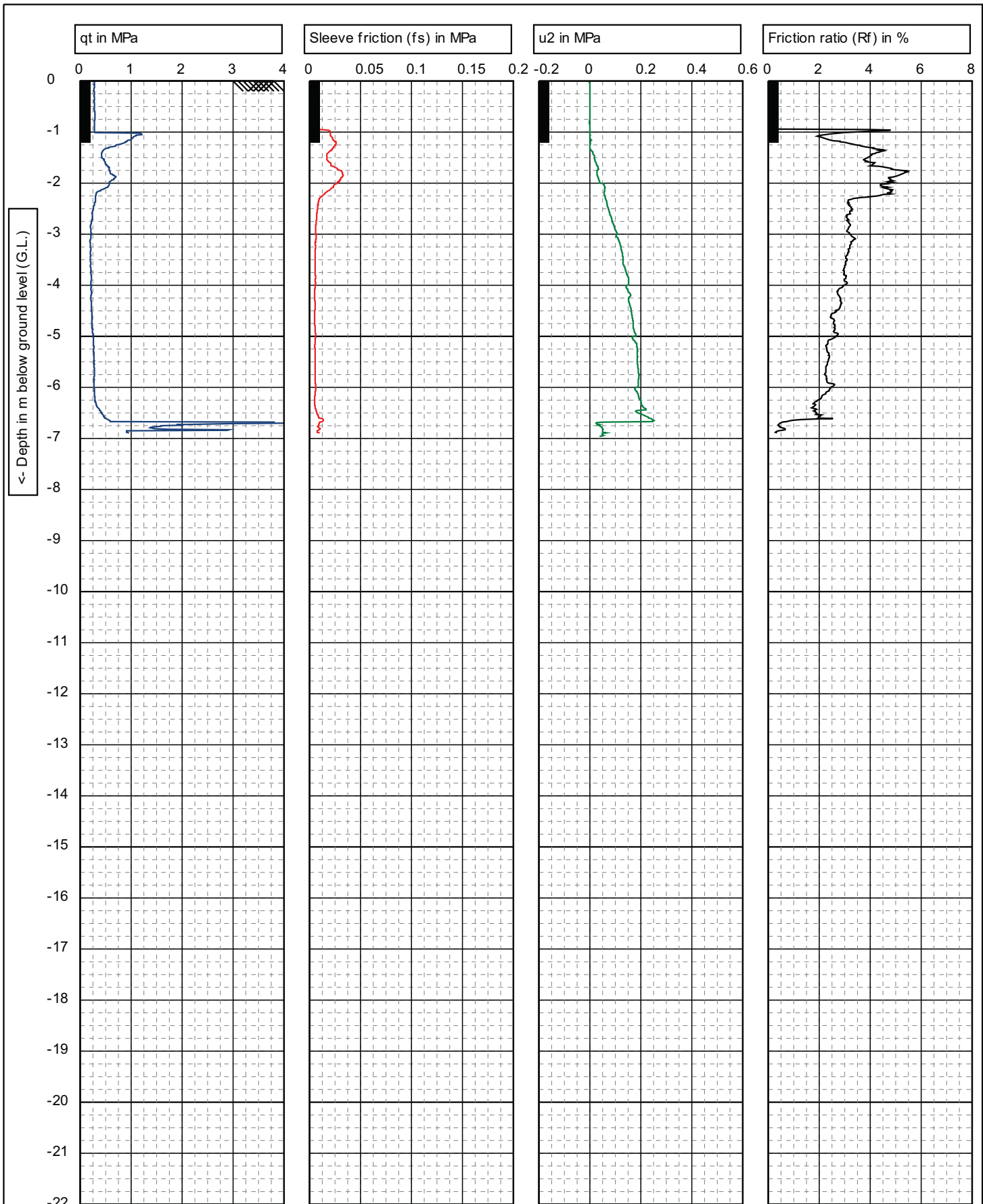
Location: Caloote Landing

Cone no.: C10CFIP.F55

Project no.: 091118B

Position:

CPT no.: CA CPT 3s 1/1



Refusal at 6.96m. Inclination.

qc > 10 MPa



CLIENT: SKM

Predrill : 1.2

G.L. 0

W.L.: 0

Date: 24/11/2009

Project: Murray Riverbank Slumping Study

Cone no.: C10CFIP.F53

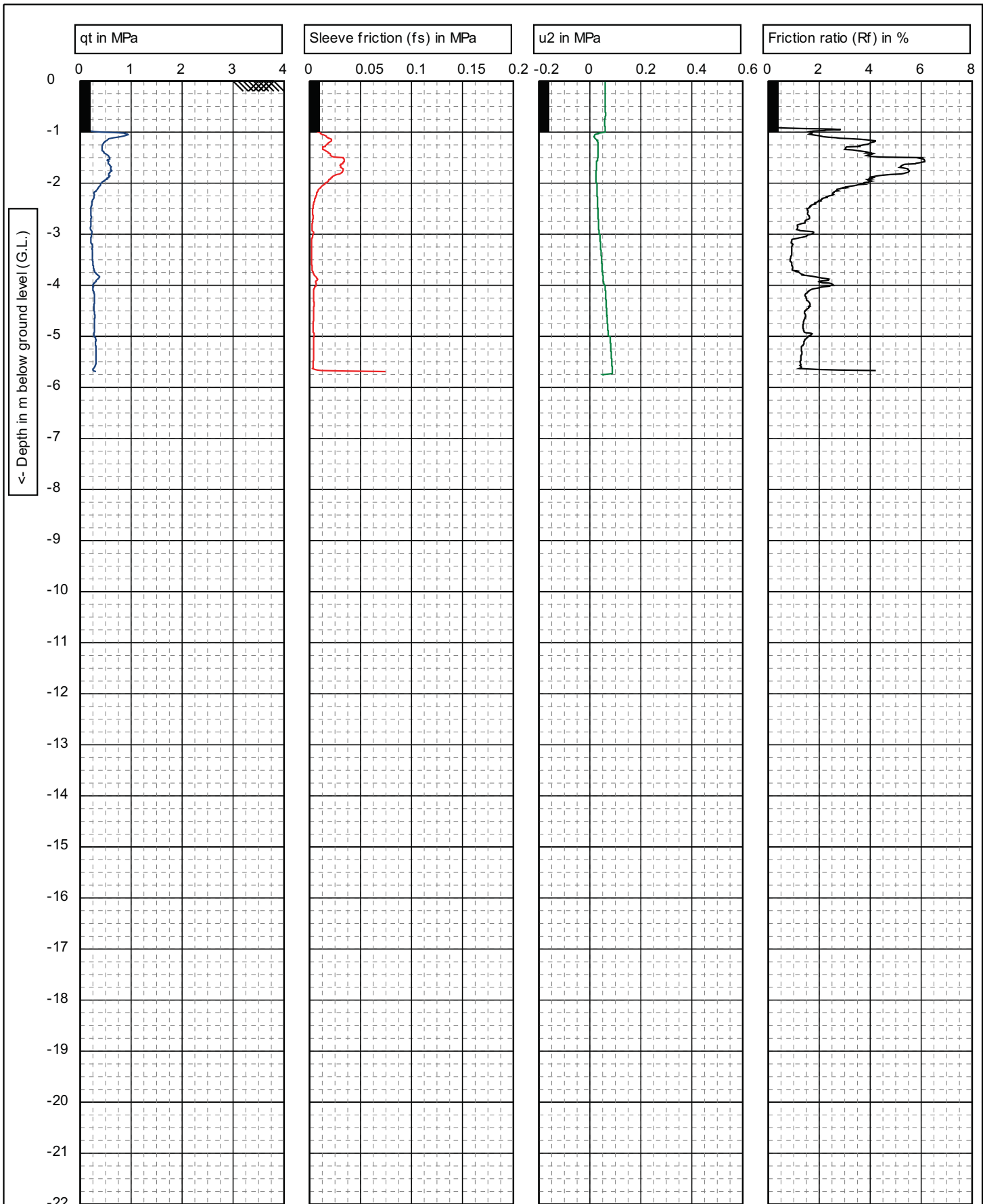
Location: Caloote Landing

Project no.: 091118B

Position:

CPT no.: CA CPT 9

1/1



Refusal at 5.76m. High qc.



CLIENT: BIT & SKM

Predrill : 1

G.L. 0

W.L.: 0

Date: 18/11/2009

Project: Murray Riverbank Slumping Study

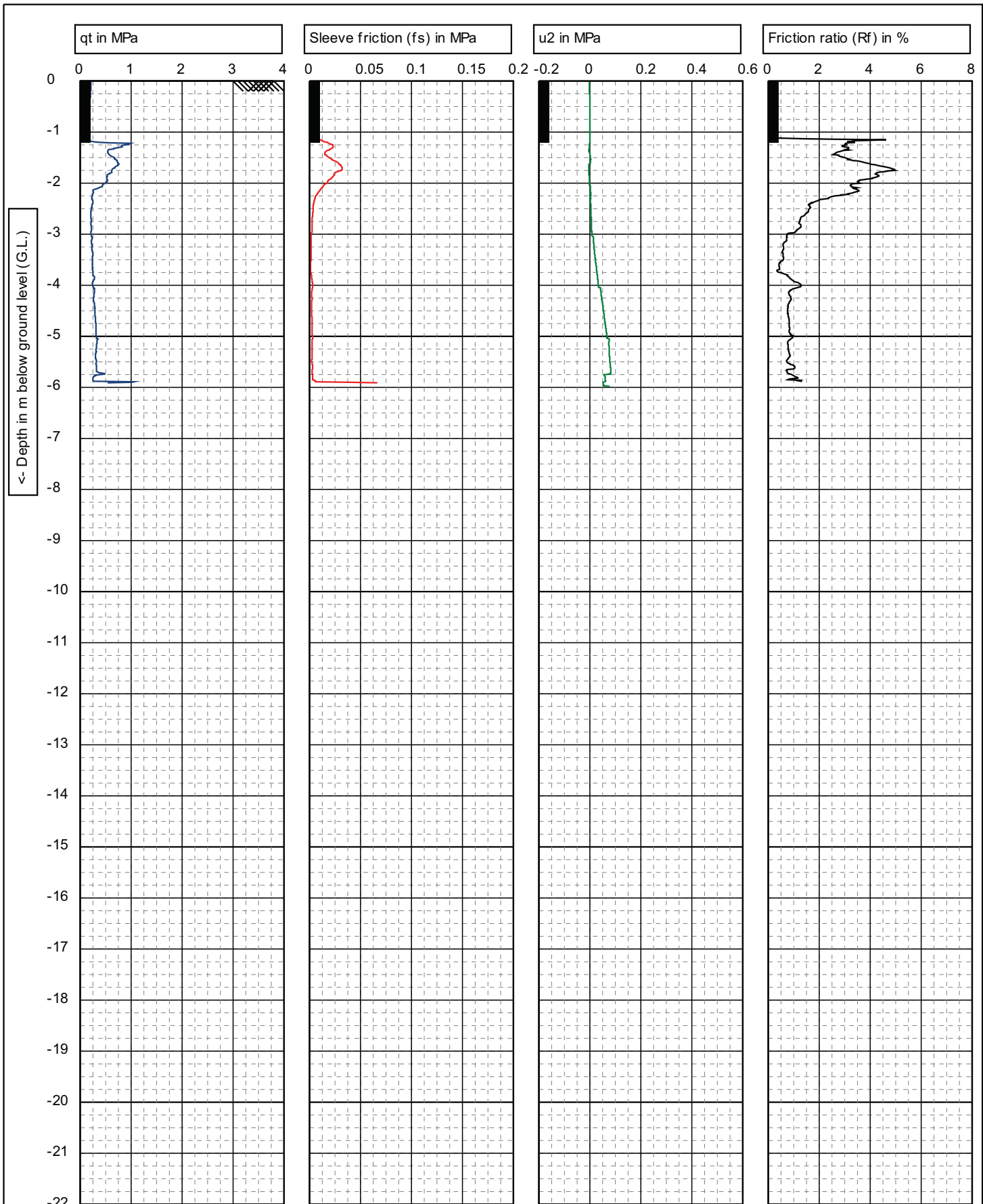
Cone no.: C10CFIP.F55

Location: Caloote Landing

Project no.: 091118B

Position:

CPT no.: CA CPT 9s 1/1



Refusal at 5.98m. High qc.



CLIENT: SKM

Predrill : 1.2

G.L. 0

W.L.: 0

Date: 18/11/2009

Project: Murray Riverbank Slumping Study

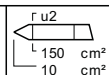
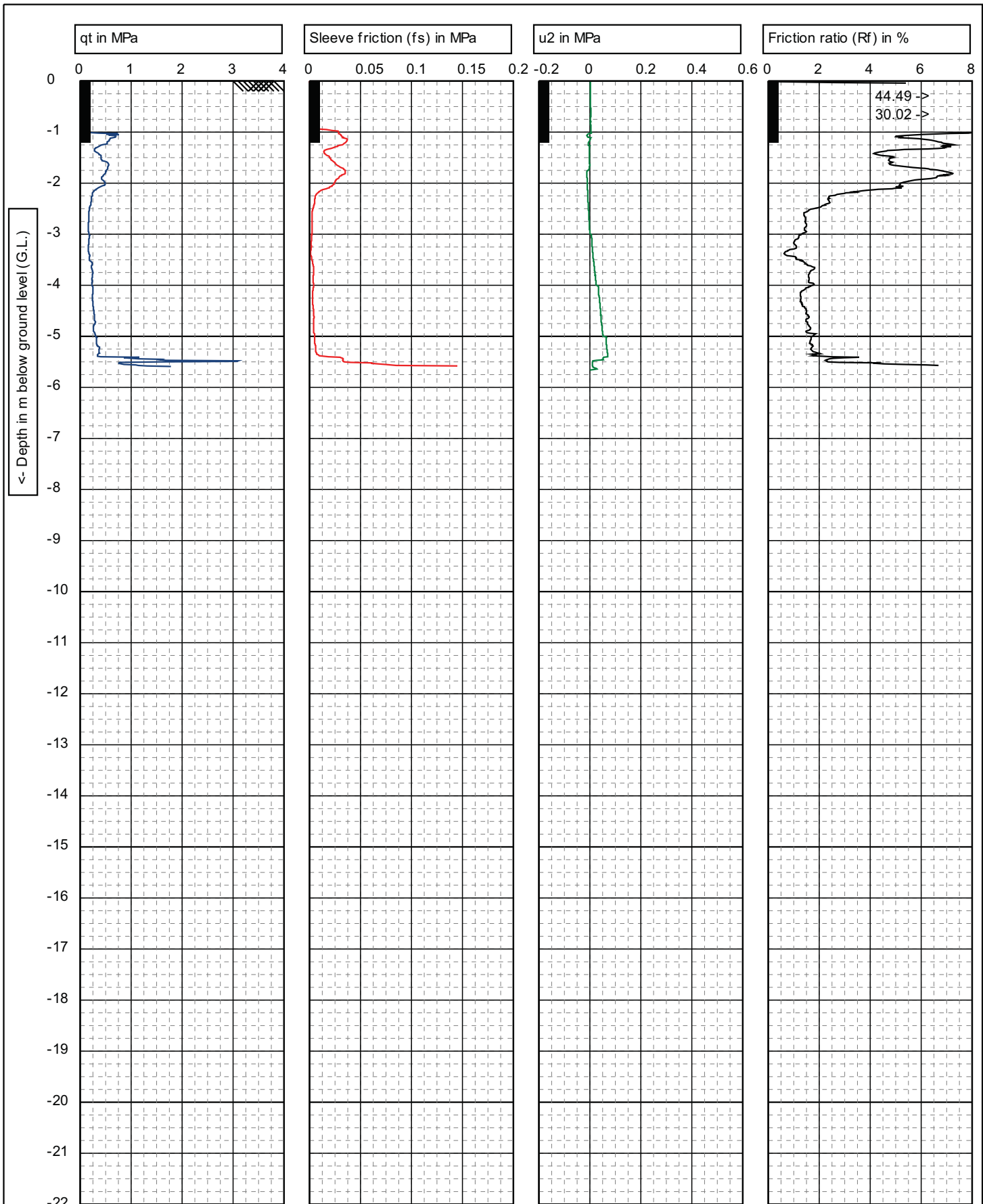
Cone no.: C10CFIP.F55

Location: Caloote Landing

Project no.: 091118B

Position:

CPT no.: CA CPT 9s a 1/1



Project: **Murray Riverbank Slumping Study**  
 Location: **Caloote Landing**  
 Position:

CLIENT: SKM

G.L. 0

W.L.: 0

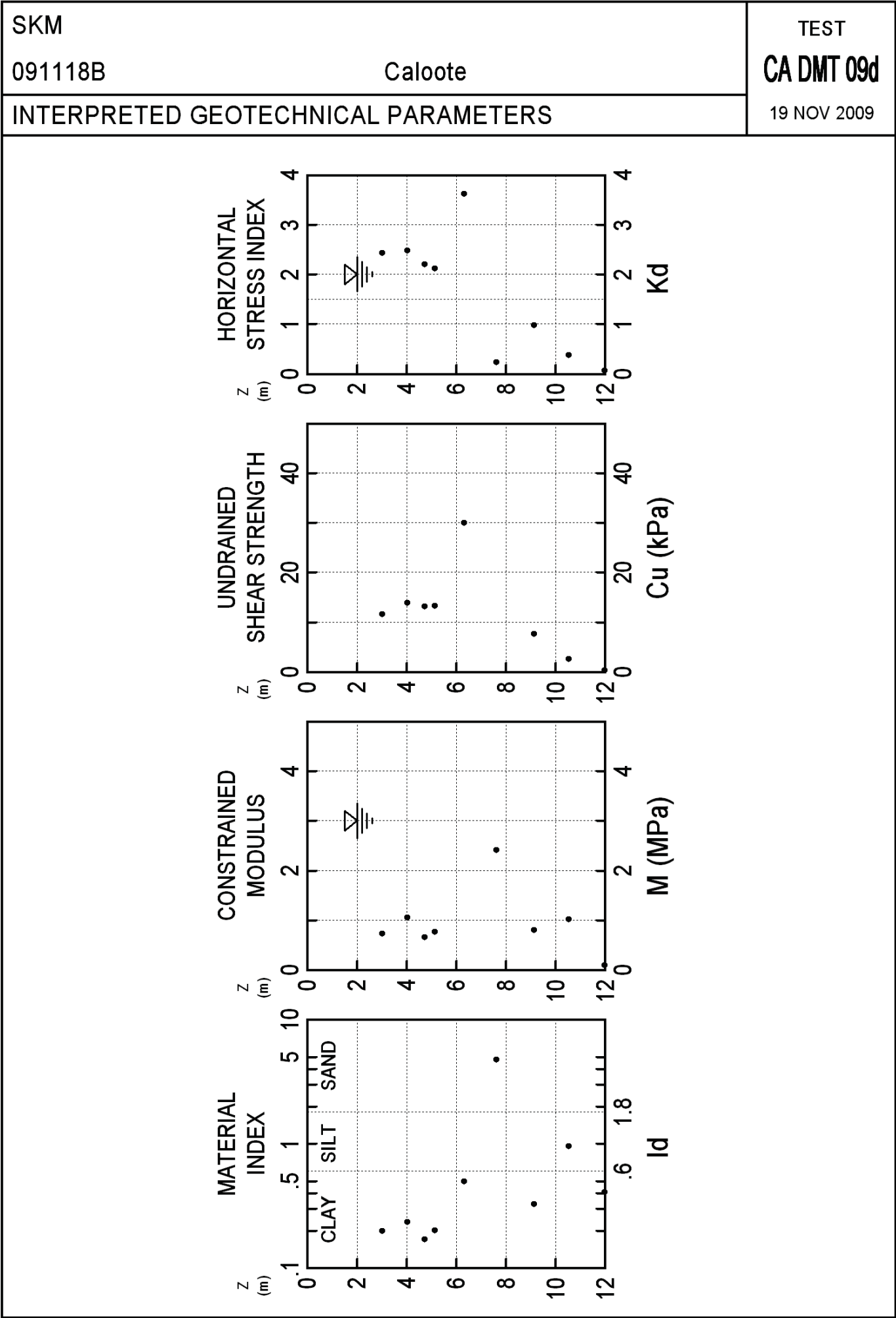
Predrill : 1.2

Date: 18/11/2009

Cone no.: C10CFIP.F55

Project no.: 091118B

CPT no.: CA CPT 9s b 1/1





## Material Test Report

**Report No: MAT:MEND09S-12476**

**Issue No: 2**

*This report replaces all previous issues of report no 'MAT:MEND09S-12476'.*

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**  
**Project No.:** INFOMEND00211AA  
**Project Name:** SUBMITTED SAMPLES - 2009  
**Lot No.:** **TRN:**



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*[Signature]*  
Approved Signatory: WESTLEY FIELDHOUSE  
(Laboratory Manager)  
NATA Accredited Laboratory Number: 431  
Date of Issue: 10/12/2009

### Sample Details

**Sample ID:** MEND09S-12476  
**Client Sample:** CA-BH-1  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:** AS Grading  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VW04794  
**Sample Location:** 1.0-1.1m

### Test Results

| Description          | Method        | Result     | Limits |
|----------------------|---------------|------------|--------|
| Sample History       | AS 1289.1.1   | Oven-dried |        |
| Preparation          | AS 1289.1.1   | Dry Sieved |        |
| Linear Shrinkage (%) | AS 1289.3.4.1 | 15.0       |        |
| Mould Length (mm)    |               | 250        |        |
| Crumbling            |               | Yes        |        |
| Curling              |               | No         |        |
| Liquid Limit (%)     | AS 1289.3.1.2 | 63         |        |
| Method               |               | One Point  |        |
| Plastic Limit (%)    | AS 1289.3.2.1 | 24         |        |
| Plasticity Index (%) | AS 1289.3.3.1 | 39         |        |
| Moisture Content (%) | AS 1289.2.1.1 | 59.0       |        |

### Comments

N/A



## Material Test Report

**Report No: MAT:MEND09S-12477**

**Issue No: 2**

*This report replaces all previous issues of report no 'MAT:MEND09S-12477'.*

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**  
**Project No.:** INFOMEND00211AA  
**Project Name:** SUBMITTED SAMPLES - 2009  
**Lot No.:** **TRN:**



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*[Signature]*  
Approved Signatory: WESTLEY FIELDHOUSE  
(Laboratory Manager)  
NATA Accredited Laboratory Number: 431  
Date of Issue: 10/12/2009

### Sample Details

**Sample ID:** MEND09S-12477  
**Client Sample:** CA-BH-1  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:** AS Grading  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VW04794  
**Sample Location:** 1.5-2.0m

### Test Results

| Description          | Method        | Result     | Limits |
|----------------------|---------------|------------|--------|
| Sample History       | AS 1289.1.1   | Oven-dried |        |
| Preparation          | AS 1289.1.1   | Dry Sieved |        |
| Linear Shrinkage (%) | AS 1289.3.4.1 | 22.5       |        |
| Mould Length (mm)    |               | 254        |        |
| Crumbling            |               | Yes        |        |
| Curling              |               | Yes        |        |
| Liquid Limit (%)     | AS 1289.3.1.2 | 91         |        |
| Method               |               | One Point  |        |
| Plastic Limit (%)    | AS 1289.3.2.1 | 25         |        |
| Plasticity Index (%) | AS 1289.3.3.1 | 66         |        |
| Moisture Content (%) | AS 1289.2.1.1 | 41.2       |        |

### Comments

N/A

## Material Test Report

**Report No: MAT:MEND09S-12478**

**Issue No: 2**

*This report replaces all previous issues of report no 'MAT:MEND09S-12478'.*

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**  
**Project No.:** INFOMEND00211AA  
**Project Name:** SUBMITTED SAMPLES - 2009  
**Lot No.:** **TRN:**



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*[Signature]*  
Approved Signatory: WESTLEY FIELDHOUSE  
(Laboratory Manager)  
NATA Accredited Laboratory Number:431  
Date of Issue: 10/12/2009

### Sample Details

**Sample ID:** MEND09S-12478  
**Client Sample:** CA-BH-1  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:** AS Grading  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VW04794  
**Sample Location:** 3.0-3.5m

### Test Results

| Description          | Method        | Result     | Limits |
|----------------------|---------------|------------|--------|
| Sample History       | AS 1289.1.1   | Oven-dried |        |
| Preparation          | AS 1289.1.1   | Dry Sieved |        |
| Linear Shrinkage (%) | AS 1289.3.4.1 | 15.0       |        |
| Mould Length (mm)    |               | 250        |        |
| Crumbling            |               | Yes        |        |
| Curling              |               | No         |        |
| Liquid Limit (%)     | AS 1289.3.1.2 | 62         |        |
| Method               |               | One Point  |        |
| Plastic Limit (%)    | AS 1289.3.2.1 | 21         |        |
| Plasticity Index (%) | AS 1289.3.3.1 | 41         |        |
| Moisture Content (%) | AS 1289.2.1.1 | 54.0       |        |

### Comments

N/A

## Material Test Report

**Report No: MAT:MEND09S-12479**

**Issue No: 1**

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**  
**Project No.:** INFOMEND00211AA  
**Project Name:** SUBMITTED SAMPLES - 2009  
**Lot No.:** **TRN:**



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Approved Signatory: WESTLEY FIELDHOUSE  
(Laboratory Manager)  
NATA Accredited Laboratory Number:431  
Date of Issue: 22/11/2009

### Sample Details

**Sample ID:** MEND09S-12479  
**Client Sample:** CA BH2  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:** AS Grading  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VW04794  
**Sample Location:** 1.0-1.45m

### Other Test Results

| Description          | Method        | Result     | Limits |
|----------------------|---------------|------------|--------|
| Sample History       | AS 1289.1.1   | Oven-dried |        |
| Preparation          | AS 1289.1.1   | Dry Sieved |        |
| Linear Shrinkage (%) | AS 1289.3.4.1 | 7.0        |        |
| Mould Length (mm)    |               | 127        |        |
| Crumbling            |               | Yes        |        |
| Curling              |               | No         |        |
| Liquid Limit (%)     | AS 1289.3.1.2 | 32         |        |
| Method               |               | One Point  |        |
| Plastic Limit (%)    | AS 1289.3.2.1 | 20         |        |
| Plasticity Index (%) | AS 1289.3.3.1 | 12         |        |
| Moisture Content (%) | AS 1289.2.1.1 | 20.8       |        |

### Particle Size Distribution

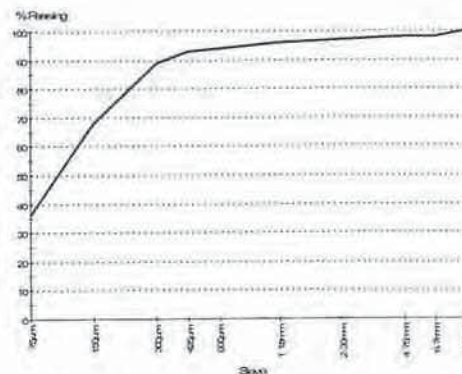
**Method:** AS 1289.3.6.1

**Drying by:**

**Note:** Sample Washed

| Sieve Size | % Passing | Limits |
|------------|-----------|--------|
| 9.5mm      | 100       |        |
| 6.7mm      | 98        |        |
| 4.75mm     | 98        |        |
| 2.36mm     | 97        |        |
| 1.18mm     | 96        |        |
| 600µm      | 94        |        |
| 425µm      | 93        |        |
| 300µm      | 89        |        |
| 150µm      | 68        |        |
| 75µm       | 36        |        |

### Chart



### Comments

N/A

**Report No: MAT:MEND09S-12480**

**Issue No: 1**

## Material Test Report

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

**Lot No.:** **TRN:**



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Approved Signatory: WESTLEY FIELDHOUSE

(Laboratory Manager)

NATA Accredited Laboratory Number:431

Date of Issue: 22/11/2009

### Sample Details

**Sample ID:** MEND09S-12480  
**Client Sample:** CA BH2  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:**  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VW04794  
**Sample Location:** 2.0-2.5m

### Test Results

| Description          | Method        | Result | Limits |
|----------------------|---------------|--------|--------|
| Moisture Content (%) | AS 1289.2.1.1 | 61.5   |        |

### Comments

N/A



## Material Test Report

**Report No: MAT:MEND09S-12481**

**Issue No: 1**

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**  
**Project No.:** INFOMEND00211AA  
**Project Name:** SUBMITTED SAMPLES - 2009  
**Lot No.:** **TRN:**



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Approved Signatory: WESTLEY FIELDHOUSE  
(Laboratory Manager)  
NATA Accredited Laboratory Number: 431  
Date of Issue: 22/11/2009

### Sample Details

**Sample ID:** MEND09S-12481  
**Client Sample:** CA BH2  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:**  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VW04794  
**Sample Location:** 3.0-3.5m

### Test Results

| Description          | Method        | Result | Limits |
|----------------------|---------------|--------|--------|
| Moisture Content (%) | AS 1289.2.1.1 | 80.5   |        |

### Comments

N/A

## Material Test Report

**Report No: MAT:MEND09S-12482**

**Issue No: 1**

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

**Lot No.:** **TRN:**



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Approved Signatory: WESTLEY FIELDHOUSE  
(Laboratory Manager)  
NATA Accredited Laboratory Number:431  
Date of Issue: 22/11/2009

### Sample Details

**Sample ID:** MEND09S-12482  
**Client Sample:** CA BH2  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:**  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VW04794  
**Sample Location:** 4.0-4.45m

### Test Results

| Description          | Method        | Result | Limits |
|----------------------|---------------|--------|--------|
| Moisture Content (%) | AS 1289.2.1.1 | 72.0   |        |

### Comments

N/A

**Report No: MAT:MEND09S-12483**

**Issue No: 1**

## Material Test Report

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

**Lot No.:** **TRN:**



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Approved Signatory: WESTLEY FIELDHOUSE  
(Laboratory Manager)  
NATA Accredited Laboratory Number: 431  
Date of Issue: 22/11/2009

### Sample Details

**Sample ID:** MEND09S-12483  
**Client Sample:** CA BH2  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:** AS Grading  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VW04794  
**Sample Location:** 7.0-7.45m

### Other Test Results

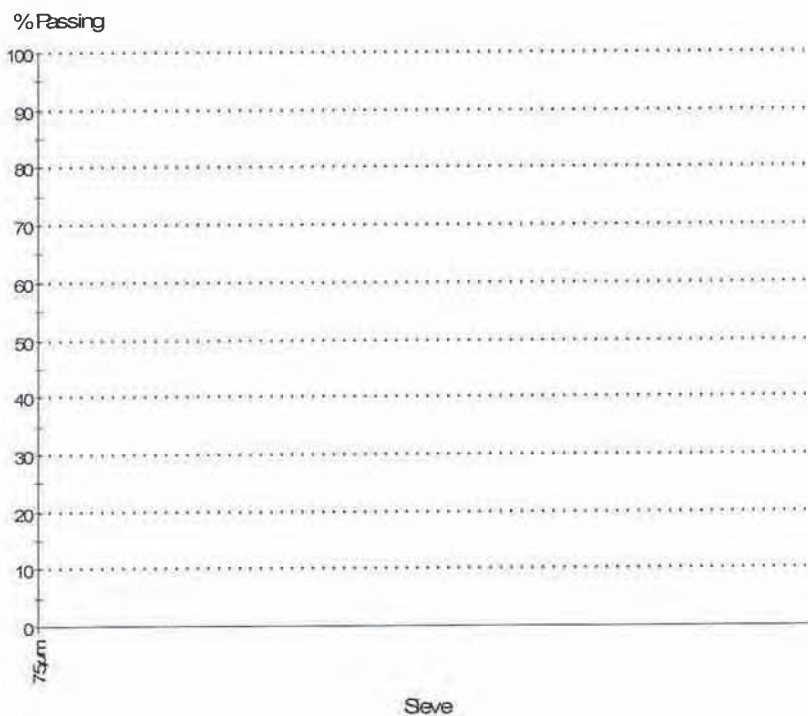
| Description          | Method        | Result | Limits |
|----------------------|---------------|--------|--------|
| Moisture Content (%) | AS 1289.2.1.1 | 42.6   |        |

### Particle Size Distribution

**Method:** AS 1289.3.6.1

**Drying by:**

**Note:** Sample Washed



| Sieve Size | % Passing | Limits |
|------------|-----------|--------|
| 75µm       | 34        |        |

### Comments

N/A

**Report No: MAT:MEND09S-12485**

**Issue No: 1**

## Material Test Report

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

**Lot No.:** **TRN:**



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(Laboratory Manager)  
NATA Accredited Laboratory Number:431  
Date of Issue: 22/11/2009

### Sample Details

**Sample ID:** MEND09S-12485  
**Client Sample:** CA BH2  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:** AS Grading  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VW04794  
**Sample Location:** 10.0-10.34m

### Other Test Results

| Description | Method | Result | Limits |
|-------------|--------|--------|--------|
|-------------|--------|--------|--------|

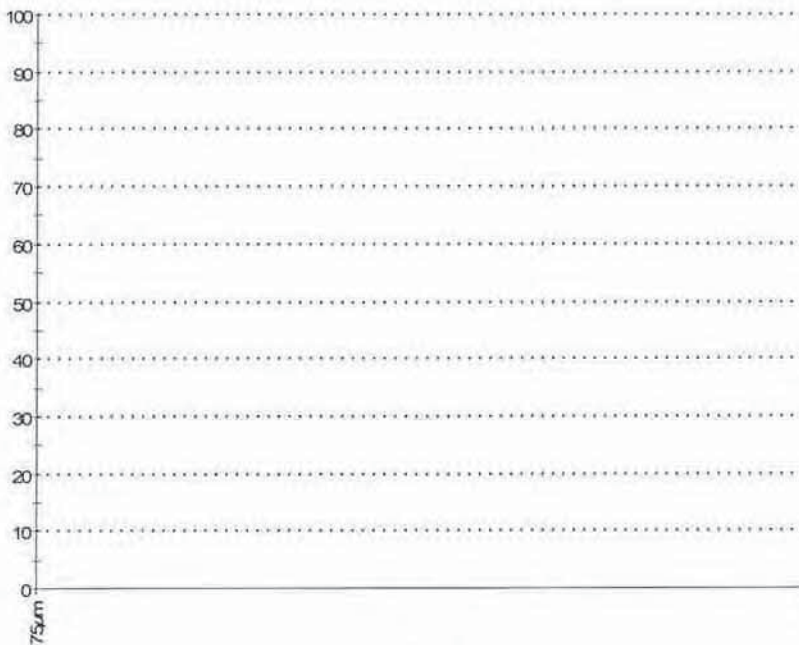
### Particle Size Distribution

**Method:** AS 1289.3.6.1

**Drying by:**

**Note:** Sample Washed

% Passing



| Sieve Size | % Passing | Limits |
|------------|-----------|--------|
| 75µm       | 34        |        |

### Comments

N/A



**Report No: MAT:MEND09S-12486**

**Issue No: 1**

## Material Test Report

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

**Lot No.:** **TRN:**



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(Laboratory Manager)

NATA Accredited Laboratory Number:431

Date of Issue: 22/11/2009

### Sample Details

**Sample ID:** MEND09S-12486  
**Client Sample:** CA BH3  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:**  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VE04794  
**Sample Location:** 1.0-1.45m

### Test Results

| Description          | Method        | Result | Limits |
|----------------------|---------------|--------|--------|
| Moisture Content (%) | AS 1289.2.1.1 | 30.8   |        |

### Comments

N/A

## Material Test Report

**Report No: MAT:MEND09S-12487**

**Issue No: 1**

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

**Lot No.:** **TRN:**



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NATA Accredited Laboratory Number:431  
Date of Issue: 22/11/2009

### Sample Details

**Sample ID:** MEND09S-12487  
**Client Sample:** CA BH3  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:**  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VE04794  
**Sample Location:** 1.5-1.7m

### Test Results

| Description          | Method        | Result | Limits |
|----------------------|---------------|--------|--------|
| Moisture Content (%) | AS 1289.2.1.1 | 60.0   |        |

### Comments

N/A

## Material Test Report

**Report No: MAT:MEND09S-12488**

**Issue No: 1**

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

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NATA Accredited Laboratory Number:431  
Date of Issue: 22/11/2009

### Sample Details

**Sample ID:** MEND09S-12488  
**Client Sample:** CA BH3  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:**  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VE04794  
**Sample Location:** 3.0-3.2m

### Test Results

| Description          | Method        | Result | Limits |
|----------------------|---------------|--------|--------|
| Moisture Content (%) | AS 1289.2.1.1 | 70.5   |        |

### Comments

N/A

## Material Test Report

**Report No: MAT:MEND09S-12489**

**Issue No: 1**

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

**Lot No.:** TRN:



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Date of Issue: 22/11/2009

### Sample Details

**Sample ID:** MEND09S-12489  
**Client Sample:** CA BH3  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:**  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VE04794  
**Sample Location:** 7.5-7.7m

### Test Results

| Description          | Method        | Result | Limits |
|----------------------|---------------|--------|--------|
| Moisture Content (%) | AS 1289.2.1.1 | 71.5   |        |

### Comments

N/A

## Material Test Report

**Report No: MAT:MEND09S-12490**

**Issue No: 1**

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

**Lot No.:** TRN:



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Approved Signatory: WESTLEY FIELDHOUSE  
(Laboratory Manager)  
NATA Accredited Laboratory Number: 431  
Date of Issue: 22/11/2009

### Sample Details

**Sample ID:** MEND09S-12490  
**Client Sample:** CA BH3  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:** AS Grading  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VE04794  
**Sample Location:** 10.5-11.0m

### Other Test Results

| Description          | Method        | Result     | Limits |
|----------------------|---------------|------------|--------|
| Moisture Content (%) | AS 1289.2.1.1 | 116        |        |
| Sample History       | AS 1289.1.1   | Over-dried |        |
| Preparation          | AS 1289.1.1   | Dry Sieved |        |
| Linear Shrinkage (%) | AS 1289.3.4.1 | 7.5        |        |
| Mould Length (mm)    |               | 250        |        |
| Crumbling            |               | Yes        |        |
| Curling              |               | No         |        |
| Liquid Limit (%)     | AS 1289.3.1.2 | 56         |        |
| Method               |               | One Point  |        |
| Plastic Limit (%)    | AS 1289.3.2.1 | 47         |        |
| Plasticity Index (%) | AS 1289.3.3.1 | 9          |        |

### Particle Size Distribution

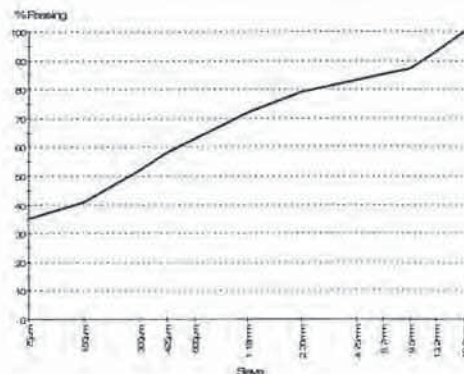
**Method:** AS 1289.3.6.1

**Drying by:**

**Note:** Sample Washed

| Sieve Size | % Passing | Limits |
|------------|-----------|--------|
| 19.0mm     | 100       |        |
| 13.2mm     | 93        |        |
| 9.5mm      | 87        |        |
| 6.7mm      | 85        |        |
| 4.75mm     | 83        |        |
| 2.36mm     | 79        |        |
| 1.18mm     | 72        |        |
| 600µm      | 63        |        |
| 425µm      | 58        |        |
| 300µm      | 52        |        |
| 150µm      | 41        |        |
| 75µm       | 35        |        |

### Chart



### Comments

N/A



## Material Test Report

**Report No: MAT:MEND09S-12491**

**Issue No: 1**

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

**Lot No.:** TRN:



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NATA Accredited Laboratory Number: 431  
Date of Issue: 22/11/2009

### Sample Details

**Sample ID:** MEND09S-12491  
**Client Sample:** CA BH3  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:** AS Grading  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VE04794  
**Sample Location:** 11.5-11.95m

### Other Test Results

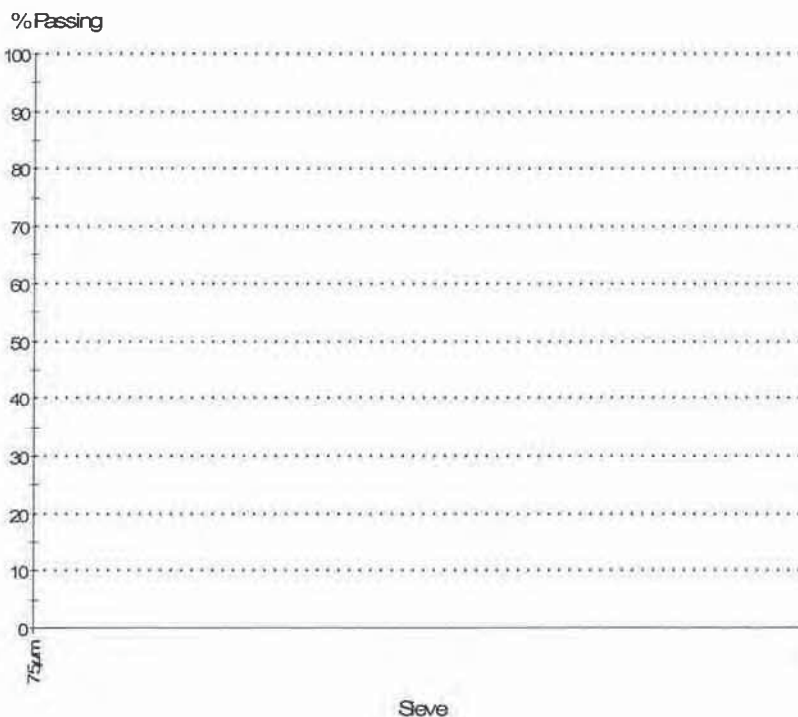
| Description          | Method        | Result | Limits |
|----------------------|---------------|--------|--------|
| Moisture Content (%) | AS 1289.2.1.1 | 26.2   |        |

### Particle Size Distribution

**Method:** AS 1289.3.6.1

**Drying by:**

**Note:** Sample Washed



| Sieve Size | % Passing | Limits |
|------------|-----------|--------|
| 75µm       | 24        |        |

### Comments

N/A

## Material Test Report

**Report No: MAT:MEND09S-12492**

**Issue No: 1**

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

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NATA Accredited Laboratory Number: 431  
Date of Issue: 22/11/2009

### Sample Details

**Sample ID:** MEND09S-12492  
**Client Sample:** CA BH3  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:** AS Grading  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VE04794  
**Sample Location:** 15.5-16.0m

### Other Test Results

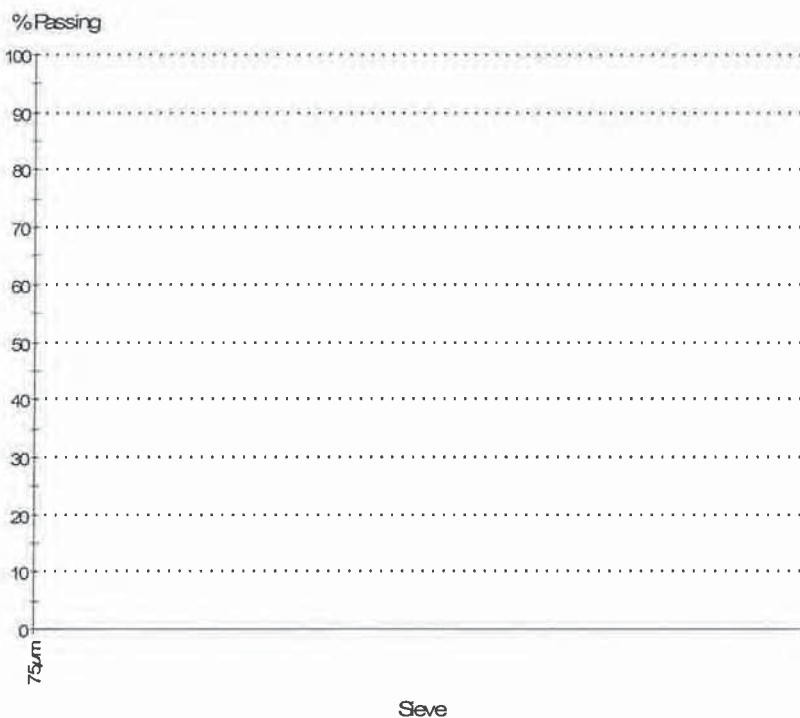
| Description          | Method        | Result     | Limits |
|----------------------|---------------|------------|--------|
| Sample History       | AS 1289.1.1   | Oven-dried |        |
| Preparation          | AS 1289.1.1   | Dry Sieved |        |
| Linear Shrinkage (%) | AS 1289.3.4.1 | 9.5        |        |
| Mould Length (mm)    |               | 250        |        |
| Crumbling            |               | Yes        |        |
| Curling              |               | No         |        |
| Liquid Limit (%)     | AS 1289.3.1.2 | 37         |        |
| Method               |               | One Point  |        |
| Plastic Limit (%)    | AS 1289.3.2.1 | 17         |        |
| Plasticity Index (%) | AS 1289.3.3.1 | 20         |        |
| Moisture Content (%) | AS 1289.2.1.1 | 30.6       |        |

### Particle Size Distribution

**Method:** AS 1289.3.6.1

**Drying by:**

**Note:** Sample Washed



| Sieve Size | % Passing | Limits |
|------------|-----------|--------|
| 75µm       | 48        |        |

### Comments

N/A

## Material Test Report

**Report No: MAT:MEND09S-12493**

**Issue No: 1**

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

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NATA Accredited Laboratory Number:431  
Date of Issue: 22/11/2009

### Sample Details

**Sample ID:** MEND09S-12493  
**Client Sample:** CA BH3  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:** AS Grading  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VE04794  
**Sample Location:** 18.0-18.5m

### Other Test Results

| Description          | Method        | Result | Limits |
|----------------------|---------------|--------|--------|
| Moisture Content (%) | AS 1289.2.1.1 | 28.0   |        |

### Particle Size Distribution

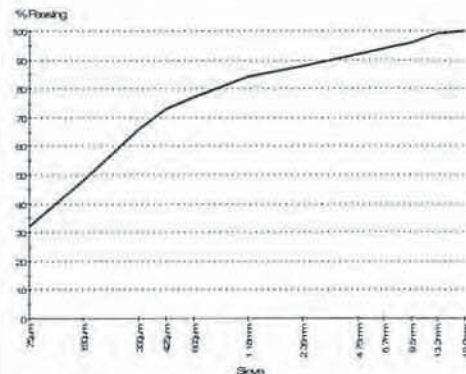
**Method:** AS 1289.3.6.1

**Drying by:**

**Note:** Sample Washed

| Sieve Size | % Passing | Limits |
|------------|-----------|--------|
| 19.0mm     | 100       |        |
| 13.2mm     | 99        |        |
| 9.5mm      | 96        |        |
| 6.7mm      | 94        |        |
| 4.75mm     | 92        |        |
| 2.36mm     | 88        |        |
| 1.18mm     | 84        |        |
| 600µm      | 77        |        |
| 425µm      | 73        |        |
| 300µm      | 66        |        |
| 150µm      | 48        |        |
| 75µm       | 32        |        |

### Chart



### Comments

N/A



## Material Test Report

**Report No: MAT:MEND09S-12494**

**Issue No: 1**

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

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(Laboratory Manager)

NATA Accredited Laboratory Number: 431

Date of Issue: 22/11/2009

### Sample Details

**Sample ID:** MEND09S-12494  
**Client Sample:** CA BH4  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:** AS Grading  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VE04794  
**Sample Location:** 1.0-1.5m

### Other Test Results

| Description          | Method        | Result     | Limits |
|----------------------|---------------|------------|--------|
| Sample History       | AS 1289.1.1   | Oven-dried |        |
| Preparation          | AS 1289.1.1   | Dry Sieved |        |
| Linear Shrinkage (%) | AS 1289.3.4.1 | 1.0        |        |
| Mould Length (mm)    |               | 254        |        |
| Crumbling            |               | Yes        |        |
| Curling              |               | No         |        |
| Liquid Limit (%)     | AS 1289.3.1.2 | 21         |        |
| Method               |               | One Point  |        |
| Plastic Limit (%)    | AS 1289.3.2.1 | 19         |        |
| Plasticity Index (%) | AS 1289.3.3.1 | 2          |        |
| Moisture Content (%) | AS 1289.2.1.1 | 15.5       |        |

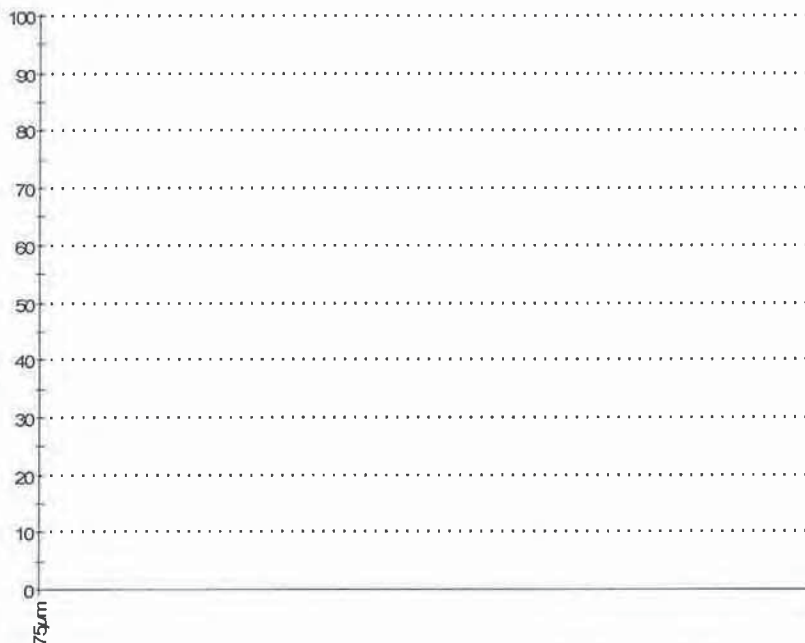
### Particle Size Distribution

**Method:** AS 1289.3.6.1

**Drying by:**

**Note:** Sample Washed

% Passing



Save

| Sieve Size | % Passing | Limits |
|------------|-----------|--------|
| 75µm       | 21        |        |

### Comments

N/A

## Material Test Report

**Report No: MAT:MEND09S-12495**

**Issue No: 1**

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

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Date of Issue: 22/11/2009

### Sample Details

**Sample ID:** MEND09S-12495  
**Client Sample:** CA BH4  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:** AS Grading  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VE04794  
**Sample Location:** 1.5-2.0m

### Other Test Results

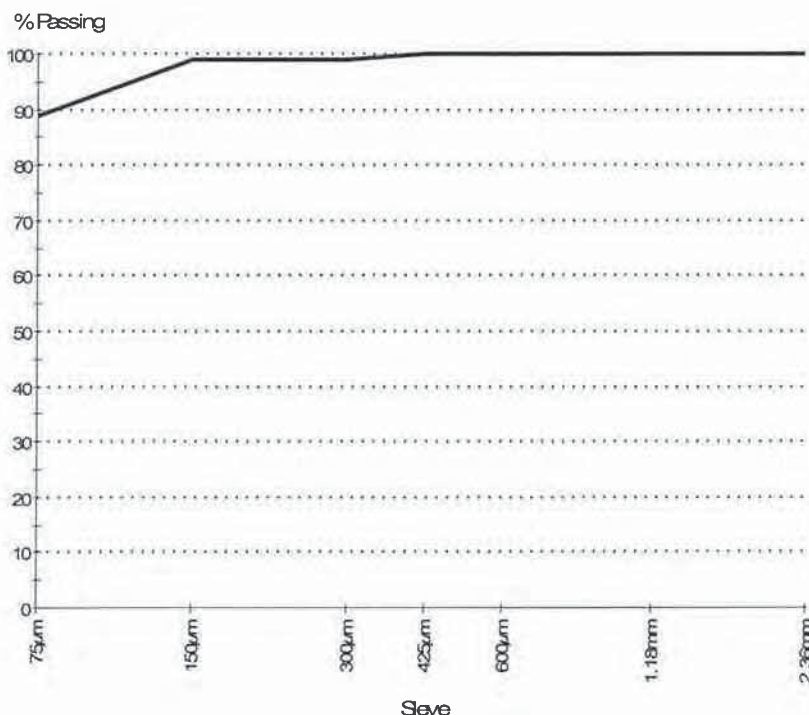
| Description          | Method        | Result     | Limits |
|----------------------|---------------|------------|--------|
| Sample History       | AS 1289.1.1   | Oven-dried |        |
| Preparation          | AS 1289.1.1   | Dry Sieved |        |
| Linear Shrinkage (%) | AS 1289.3.4.1 | 18.0       |        |
| Mould Length (mm)    |               | 254        |        |
| Crumbling            |               | No         |        |
| Curling              |               | Yes        |        |
| Liquid Limit (%)     | AS 1289.3.1.2 | 79         |        |
| Method               |               | One Point  |        |
| Plastic Limit (%)    | AS 1289.3.2.1 | 25         |        |
| Plasticity Index (%) | AS 1289.3.3.1 | 54         |        |

### Particle Size Distribution

**Method:** AS 1289.3.6.1

**Drying by:**

**Note:** Sample Washed



| Sieve Size | % Passing | Limits |
|------------|-----------|--------|
| 2.36mm     | 100       |        |
| 1.18mm     | 100       |        |
| 600µm      | 100       |        |
| 425µm      | 100       |        |
| 300µm      | 99        |        |
| 150µm      | 99        |        |
| 75µm       | 89        |        |

### Comments

N/A

## Material Test Report

**Report No: MAT:MEND09S-12496**

**Issue No: 1**

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

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Date of Issue: 22/11/2009

### Sample Details

**Sample ID:** MEND09S-12496  
**Client Sample:** CA BH4  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:** AS Grading  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VE04794  
**Sample Location:** 2.5-3.0m

### Test Results

| Description          | Method        | Result     | Limits |
|----------------------|---------------|------------|--------|
| Sample History       | AS 1289.1.1   | Oven-dried |        |
| Preparation          | AS 1289.1.1   | Dry Sieved |        |
| Linear Shrinkage (%) | AS 1289.3.4.1 | 16.5       |        |
| Mould Length (mm)    |               | 254        |        |
| Crumbling            |               | Yes        |        |
| Curling              |               | No         |        |
| Liquid Limit (%)     | AS 1289.3.1.2 | 73         |        |
| Method               |               | One Point  |        |
| Plastic Limit (%)    | AS 1289.3.2.1 | 25         |        |
| Plasticity Index (%) | AS 1289.3.3.1 | 48         |        |
| Moisture Content (%) | AS 1289.2.1.1 | 49.6       |        |

### Comments

N/A

## Material Test Report

**Report No: MAT:MEND09S-12497**

**Issue No: 1**

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

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### Sample Details

**Sample ID:** MEND09S-12497  
**Client Sample:** CA BH4  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:** AS Grading  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VE04794  
**Sample Location:** 4.0-4.5m

### Test Results

| Description          | Method        | Result     | Limits |
|----------------------|---------------|------------|--------|
| Sample History       | AS 1289.1.1   | Oven-dried |        |
| Preparation          | AS 1289.1.1   | Dry Sieved |        |
| Linear Shrinkage (%) | AS 1289.3.4.1 | 18.5       |        |
| Mould Length (mm)    |               | 250        |        |
| Crumbling            |               | No         |        |
| Curling              |               | Yes        |        |
| Liquid Limit (%)     | AS 1289.3.1.2 | 76         |        |
| Method               |               | One Point  |        |
| Plastic Limit (%)    | AS 1289.3.2.1 | 26         |        |
| Plasticity Index (%) | AS 1289.3.3.1 | 50         |        |
| Moisture Content (%) | AS 1289.2.1.1 | 81.0       |        |

### Comments

N/A

## Material Test Report

**Report No: MAT:MEND09S-12498**

**Issue No: 1**

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

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Approved Signatory: WESTLEY FIELDHOUSE  
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NATA Accredited Laboratory Number:431  
Date of Issue: 22/11/2009

### Sample Details

**Sample ID:** MEND09S-12498  
**Client Sample:** CA BH4  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:** AS Grading  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VE04794  
**Sample Location:** 7.0-7.5m

### Test Results

| Description          | Method        | Result     | Limits |
|----------------------|---------------|------------|--------|
| Moisture Content (%) | AS 1289.2.1.1 | 76.5       |        |
| Sample History       | AS 1289.1.1   | Oven-dried |        |
| Preparation          | AS 1289.1.1   | Dry Sieved |        |
| Linear Shrinkage (%) | AS 1289.3.4.1 | 20.0       |        |
| Mould Length (mm)    |               | 250        |        |
| Crumbling            |               | No         |        |
| Curling              |               | Yes        |        |
| Liquid Limit (%)     | AS 1289.3.1.2 | 81         |        |
| Method               |               | One Point  |        |
| Plastic Limit (%)    | AS 1289.3.2.1 | 24         |        |
| Plasticity Index (%) | AS 1289.3.3.1 | 57         |        |

### Comments

N/A



## Material Test Report

**Report No: MAT:MEND09S-12499**

**Issue No: 1**

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

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Date of Issue: 22/11/2009

### Sample Details

**Sample ID:** MEND09S-12499  
**Client Sample:** CA BH4  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:**  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VE04794  
**Sample Location:** 8.0-9.0m

### Test Results

| Description          | Method        | Result | Limits |
|----------------------|---------------|--------|--------|
| Moisture Content (%) | AS 1289.2.1.1 | 72.5   |        |

### Comments

N/A

## Material Test Report

**Report No: MAT:MEND09S-12500**

**Issue No: 1**

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

**Lot No.:** **TRN:**



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*[Signature]*

Approved Signatory: WESTLEY FIELDHOUSE  
(Laboratory Manager)  
NATA Accredited Laboratory Number:431  
Date of Issue: 22/11/2009

### Sample Details

**Sample ID:** MEND09S-12500  
**Client Sample:** CA BH4  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:** AS Grading  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VE04794  
**Sample Location:** 10.0-10.5m

### Other Test Results

| Description          | Method        | Result     | Limits |
|----------------------|---------------|------------|--------|
| Moisture Content (%) | AS 1289.2.1.1 | 46.6       |        |
| Sample History       | AS 1289.1.1   | Oven-dried |        |
| Preparation          | AS 1289.1.1   | Dry Sieved |        |
| Linear Shrinkage (%) | AS 1289.3.4.1 | 11.5       |        |
| Mould Length (mm)    |               | 254        |        |
| Crumbling            |               | Yes        |        |
| Curling              |               | No         |        |
| Liquid Limit (%)     | AS 1289.3.1.2 | 46         |        |
| Method               |               | One Point  |        |
| Plastic Limit (%)    | AS 1289.3.2.1 | 22         |        |
| Plasticity Index (%) | AS 1289.3.3.1 | 24         |        |

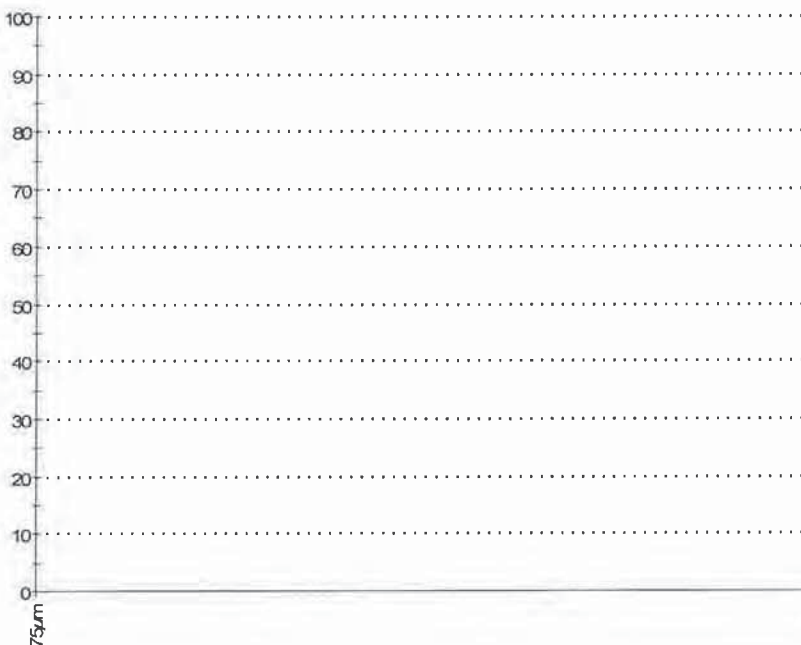
### Particle Size Distribution

**Method:** AS 1289.3.6.1

**Drying by:**

**Note:** Sample Washed

% Passing



| Sieve Size | % Passing | Limits |
|------------|-----------|--------|
| 75µm       | 41        |        |

### Comments

N/A

## Material Test Report

**Report No: MAT:MEND09S-12501**

**Issue No: 1**

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

**Lot No.:** TRN:



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*[Signature]*

Approved Signatory: WESTLEY FIELDHOUSE  
(Laboratory Manager)  
NATA Accredited Laboratory Number: 431  
Date of Issue: 22/11/2009

### Sample Details

**Sample ID:** MEND09S-12501  
**Client Sample:** CA BH4  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:** AS Grading  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VE04794  
**Sample Location:** 11.0-11.5m

### Other Test Results

| Description          | Method        | Result     | Limits |
|----------------------|---------------|------------|--------|
| Sample History       | AS 1289.1.1   | Oven-dried |        |
| Preparation          | AS 1289.1.1   | Dry Sieved |        |
| Linear Shrinkage (%) | AS 1289.3.4.1 | 10.0       |        |
| Mould Length (mm)    |               | 254        |        |
| Crumbling            |               | Yes        |        |
| Curling              |               | No         |        |
| Liquid Limit (%)     | AS 1289.3.1.2 | 43         |        |
| Method               |               | One Point  |        |
| Plastic Limit (%)    | AS 1289.3.2.1 | 22         |        |
| Plasticity Index (%) | AS 1289.3.3.1 | 21         |        |

### Particle Size Distribution

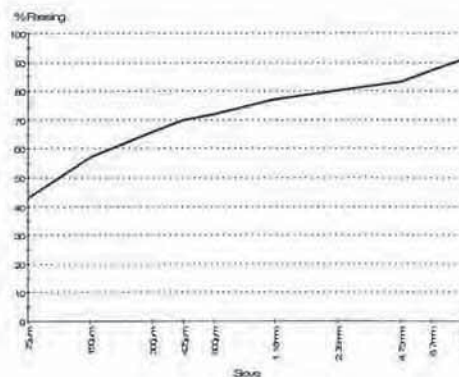
**Method:** AS 1289.3.6.1

**Drying by:**

**Note:** Sample Washed

| Sieve Size | % Passing | Limits |
|------------|-----------|--------|
| 9.5mm      | 91        |        |
| 6.7mm      | 87        |        |
| 4.75mm     | 83        |        |
| 2.36mm     | 80        |        |
| 1.18mm     | 77        |        |
| 600µm      | 72        |        |
| 425µm      | 70        |        |
| 300µm      | 66        |        |
| 150µm      | 57        |        |
| 75µm       | 43        |        |

### Chart



### Comments

N/A



## Material Test Report

**Report No: MAT:MEND09S-12502**

**Issue No: 1**

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

**Lot No.:** **TRN:**



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Approved Signatory: WESTLEY FIELDHOUSE  
(Laboratory Manager)

NATA Accredited Laboratory Number:431  
Date of Issue: 22/11/2009

### Sample Details

**Sample ID:** MEND09S-12502  
**Client Sample:** CA BH4  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:** AS Grading  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VE04794  
**Sample Location:** 11.5m-12.0m

### Other Test Results

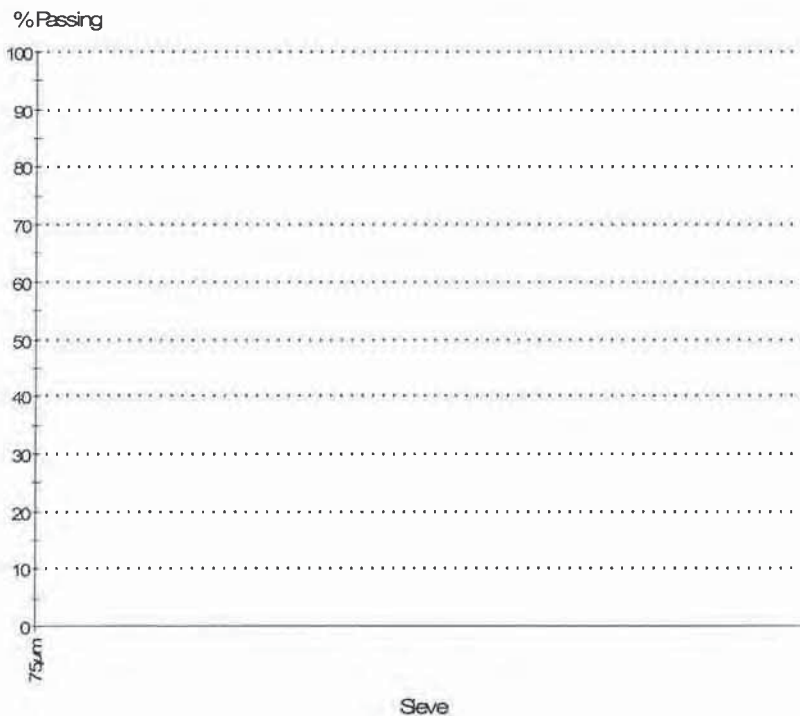
| Description | Method | Result | Limits |
|-------------|--------|--------|--------|
|-------------|--------|--------|--------|

### Particle Size Distribution

**Method:** AS 1289.3.6.1

**Drying by:**

**Note:** Sample Washed



| Sieve Size | % Passing | Limits |
|------------|-----------|--------|
| 75µm       | 22        |        |

### Comments

N/A

# Material Test Report

**Report No: MAT:MEND09S-12503**

**Issue No: 1**

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

**Lot No.:** TRN:



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*[Signature]*

Approved Signatory: WESTLEY FIELDHOUSE  
(Laboratory Manager)  
NATA Accredited Laboratory Number:431  
Date of Issue: 22/11/2009

## Sample Details

**Sample ID:** MEND09S-12503  
**Client Sample:** CA BH4  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:** AS Grading  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VE04794  
**Sample Location:** 12.0-12.5m

## Other Test Results

| Description | Method | Result | Limits |
|-------------|--------|--------|--------|
|-------------|--------|--------|--------|

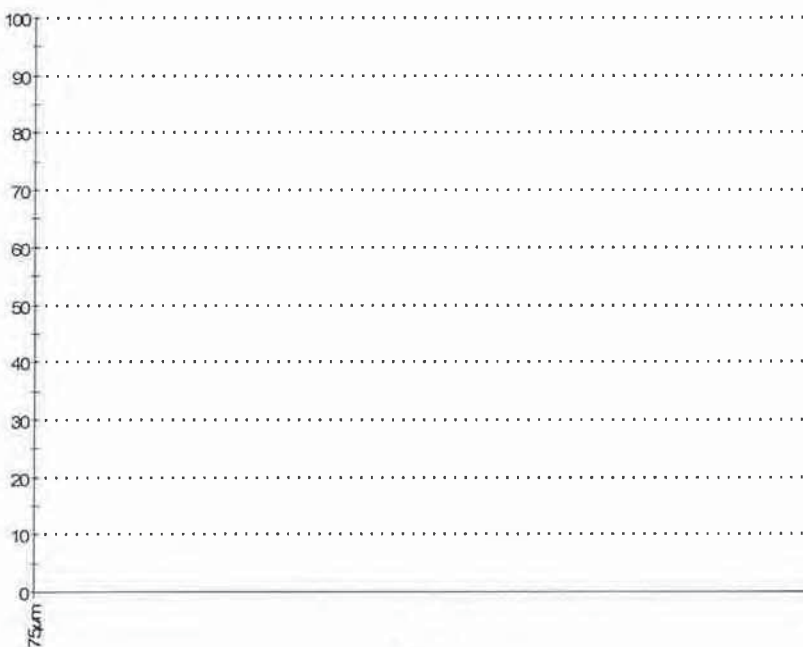
## Particle Size Distribution

**Method:** AS 1289.3.6.1

**Drying by:**

**Note:** Sample Washed

% Passing



| Sieve Size | % Passing | Limits |
|------------|-----------|--------|
| 75µm       | 36        |        |

## Comments

N/A

**Report No: MAT:MEND09S-12504**

**Issue No: 1**

## Material Test Report

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

**Lot No.:** TRN:



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*[Signature]*

Approved Signatory: WESTLEY FIELDHOUSE  
(Laboratory Manager)  
NATA Accredited Laboratory Number: 431  
Date of Issue: 22/11/2009

### Sample Details

**Sample ID:** MEND09S-12504  
**Client Sample:** CA BH4  
**Date Sampled:**  
**Source:**  
**Material:**  
**Specification:** AS Grading  
**Sampling Method:** Submitted by client  
**Project Location:** MURRAY RIVERBANKS - VE04794  
**Sample Location:** 13.0m

### Other Test Results

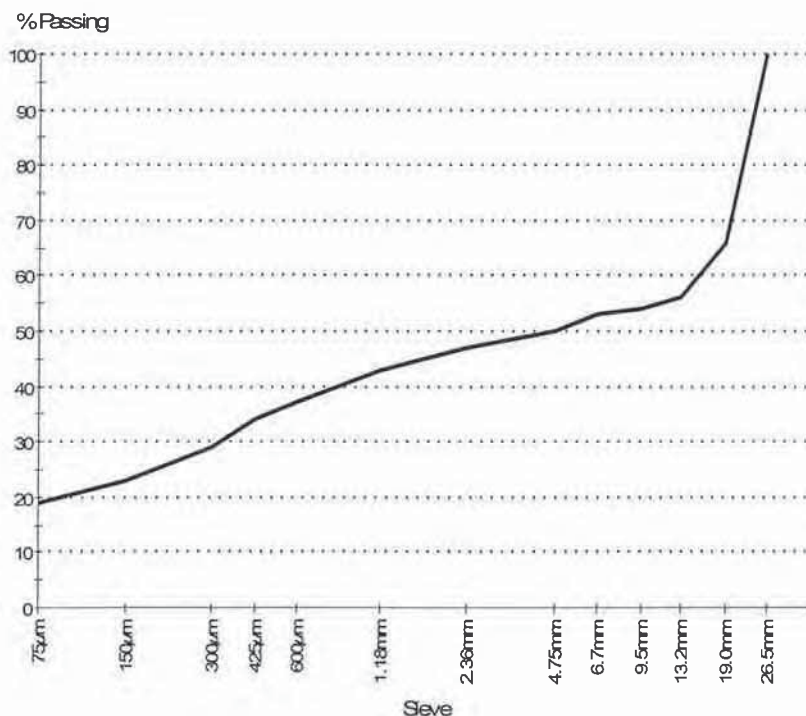
| Description          | Method        | Result     | Limits |
|----------------------|---------------|------------|--------|
| Sample History       | AS 1289.1.1   | Oven-dried |        |
| Preparation          | AS 1289.1.1   | Dry Sieved |        |
| Linear Shrinkage (%) | AS 1289.3.4.1 | 4.0        |        |
| Mould Length (mm)    |               | 127        |        |
| Crumbling            |               | Yes        |        |
| Curling              |               | No         |        |
| Liquid Limit (%)     | AS 1289.3.1.2 | 22         |        |
| Method               |               | One Point  |        |
| Plastic Limit (%)    | AS 1289.3.2.1 | 17         |        |
| Plasticity Index (%) | AS 1289.3.3.1 | 5          |        |

### Particle Size Distribution

**Method:** AS 1289.3.6.1

**Drying by:**

**Note:** Sample Washed



| Sieve Size | % Passing | Limits |
|------------|-----------|--------|
| 26.5mm     | 100       |        |
| 19.0mm     | 66        |        |
| 13.2mm     | 56        |        |
| 9.5mm      | 54        |        |
| 6.7mm      | 53        |        |
| 4.75mm     | 50        |        |
| 2.36mm     | 47        |        |
| 1.18mm     | 43        |        |
| 600µm      | 37        |        |
| 425µm      | 34        |        |
| 300µm      | 29        |        |
| 150µm      | 23        |        |
| 75µm       | 19        |        |

### Comments

N/A

**Report No: MAT:MEND09S-14244**

**Issue No: 1**

## Material Test Report

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

**Lot No.:** **TRN:**



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Approved Signatory: ROSS DINGLE  
(Senior Geotechnician)  
NATA Accredited Laboratory Number: 431  
Date of Issue: 21/12/2009

### Sample Details

**Sample ID:** MEND09S-14244  
**Client Sample:** CA-BH-1  
**Date Sampled:**  
**Source:**  
**Material:** CLAY, HIGH PLASTICITY, GREY  
**Specification:** No Specification  
**Sampling Method:** Submitted by client  
**Project Location:** VW 04794  
**Sample Location:** 2.5 - 3.0 m

### Test Results

| Description               | Method        | Result    | Limits |
|---------------------------|---------------|-----------|--------|
| Emerson Class Number      | AS 1289.3.8.1 | Class 4   |        |
| Soil Description          |               |           |        |
| Type of Water             |               | Distilled |        |
| Temperature of Water (°C) |               | 25.0      |        |

### Comments

N/A

## Material Test Report

**Report No: MAT:MEND09S-14245**

**Issue No: 1**

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

**Lot No.:** **TRN:**



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Approved Signatory: ROSS DINGLE  
(Senior Geotechnician)

NATA Accredited Laboratory Number: 431  
Date of Issue: 21/12/2009

### Sample Details

**Sample ID:** MEND09S-14245  
**Client Sample:** CA-BH-2  
**Date Sampled:**  
**Source:**  
**Material:** CLAY, HIGH PLASTICITY, DARK GREY  
**Specification:** No Specification  
**Sampling Method:** Submitted by client  
**Project Location:** VW 04794  
**Sample Location:** 1.5 - 2.0 m

### Test Results

| Description               | Method        | Result    | Limits |
|---------------------------|---------------|-----------|--------|
| Emerson Class Number      | AS 1289.3.8.1 | Class 4   |        |
| Soil Description          |               |           |        |
| Type of Water             |               | Distilled |        |
| Temperature of Water (°C) |               | 25.0      |        |

### Comments

N/A

## Material Test Report

**Report No: MAT:MEND09S-14246**

**Issue No: 1**

**Client:** Sinclair Knight Merz  
Level 5, 33 King William Street  
Adelaide SA 5000

**Principal:**

**Project No.:** INFOMEND00211AA

**Project Name:** SUBMITTED SAMPLES - 2009

**Lot No.:** **TRN:**



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Approved Signatory: ROSS DINGLE  
(Senior Geotechnician)  
NATA Accredited Laboratory Number: 431  
Date of Issue: 21/12/2009

### Sample Details

**Sample ID:** MEND09S-14246  
**Client Sample:** CA-BH-3  
**Date Sampled:**  
**Source:**  
**Material:** CLAY, HIGH PLASTICITY, GREY  
**Specification:** No Specification  
**Sampling Method:** Submitted by client  
**Project Location:** VW 04794  
**Sample Location:** 5.5 - 5.95 m

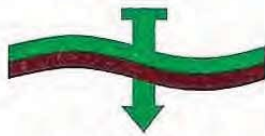
### Test Results

| Description               | Method        | Result    | Limits |
|---------------------------|---------------|-----------|--------|
| Emerson Class Number      | AS 1289.3.8.1 | Class 4   |        |
| Soil Description          |               |           |        |
| Type of Water             |               | Distilled |        |
| Temperature of Water (°C) |               | 25.0      |        |

### Comments

N/A





**AUSTRALIAN SOIL TESTING PTY LTD.** A.B.N. 79 003 493 623

24 Bermill Street, Rockdale, NSW, 2216 P.O. Box 2014, Rockdale D.C. NSW 2216

Tel: 9597 5599, 9597 3286 Fax: 9597 3442 Email: austst@bigpond.com

## SOIL CLASSIFICATION TEST DATA

**CLIENT:**

**Sinclair Knight Merz**

PO Box 2500 Malvern Victoria 3144

**PROJECT:**

**Study Into Riverbank Collapsing for the Lower Murray River**

| LAB. NO. | SAMPLE SOURCE        | SAMPLE DESCRIPTION                                                                      | MOISTURE CONTENT (%)<br>1 | DRY DENSITY (t/m <sup>3</sup> ) | LIQUID LIMIT<br>2 | PLASTIC INDEX<br>3 | PREPAR-<br>ATION &<br>HISTORY<br>4 | PARTICLE DENSITY (g/cc)<br>5 |
|----------|----------------------|-----------------------------------------------------------------------------------------|---------------------------|---------------------------------|-------------------|--------------------|------------------------------------|------------------------------|
| 55494    | SR-BH1<br>4.5-5.0m   | SILTY CLAY: dark-grey, high plasticity, trace of fine to medium sand, slightly organic. | 49.9                      | 1.11                            | 50                | 34                 | N<br>N                             | 2.47                         |
| 55495    | SR-BH-1<br>8-8.5m    | SILTY CLAY: dark-grey, high plasticity.                                                 | 72.6                      | 0.89                            | 76                | 48                 | N<br>N                             | -                            |
| 55496    | SR-BH-1<br>13-13.5m  | SILTY CLAY: dark-grey, high plasticity, trace of fine sand.                             | 80.6                      | 0.81                            | 113               | 72                 | N<br>N                             | -                            |
| 55497    | SR-BH-1<br>18-18.5m  | SILTY CLAY: dark-grey, high plasticity, trace of fine to medium sand, slightly organic. | 57.9                      | 1.05                            | 67                | 47                 | N<br>N                             | 2.54                         |
| 54498    | SR-BH-2<br>7-7.43m   | SILTY CLAY: dark-grey, high plasticity, slightly organic.                               | 80.7                      | 0.79                            | 116               | 87                 | N<br>N                             | 2.50                         |
| 54499    | CA-BH-2<br>5.5-5.83m | SILTY CLAY: dark-grey, high plasticity, with fine to coarse sand, slightly organic.     | 61.8                      | 0.93                            | 65                | 40                 | N<br>N                             | 2.58                         |
| 54500    | CA-BH-3<br>4.5-4.93m | SILTY CLAY: dark-grey, high plasticity, trace of fine to medium sand.                   | 88.8                      | 0.73                            | 96                | 70                 | N<br>N                             | -                            |
| 54501    | CA-BH-3<br>10-10.29m | SILTY CLAY: dark-grey, high plasticity, trace of fine to coarse sand.                   | 75.9                      | 0.65                            | 93                | 62                 | N<br>N                             | 2.53                         |

**NOTES TO TESTING**

- 1 Test Method: AS 1289 2.1.1  
2 Test Method: AS 1289 3.1.2  
3 Test Method: AS 1289 3.2.1, 3.3.1  
4 Preparation: DS = Dry Sieved  
WS = Wet Sieved  
N = Natural State With No Sieving  
Sample History: AD = Air Dried  
OD = Oven Dried at 50°C  
N = Natural State As Received  
5 Test Method: AS 1289 3.5.1

Sampled by: Client  
Job Number: 116-101  
Date Tested: 17.11.09

Form C01 File C:\Excel Reports\C01 Classification Issue 5 February 2008 CL



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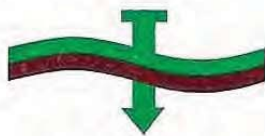
Signed:

Name: Chris Lloyd

Title: Laboratory Manager

Date: 2.12.09





**AUSTRALIAN SOIL TESTING PTY LTD.** A.B.N. 79 003 493 623

24 Bermill Street, Rockdale, NSW, 2216 P.O. Box 2014, Rockdale D.C. NSW 2216

Tel: 9597 5599, 9597 3286 Fax: 9597 3442 Email: austst@bigpond.com

## SOIL CLASSIFICATION TEST DATA

**CLIENT:**

**Sinclair Knight Merz**

PO Box 2500 Malvern Victoria 3144

**PROJECT:**

**Study Into Riverbank Collapsing for the Lower Murray River**

| LAB. NO. | SAMPLE SOURCE         | SAMPLE DESCRIPTION                                                                         | MOISTURE CONTENT (%)<br>1 | DRY DENSITY (t/m <sup>3</sup> ) | LIQUID LIMIT<br>2 | PLASTIC INDEX<br>3 | PREPAR-<br>ATION &<br>HISTORY<br>4 | PARTICLE DENSITY (g/cc)<br>5 |
|----------|-----------------------|--------------------------------------------------------------------------------------------|---------------------------|---------------------------------|-------------------|--------------------|------------------------------------|------------------------------|
| 55502    | CA-BH-4<br>4.5-5.0m   | SILTY CLAY: dark-grey, high plasticity, trace of fine to medium sand, slightly organic.    | 75.9                      | 0.78                            | 92                | 63                 | N<br>N                             | 2.57                         |
| 55503    | CA-BH-4<br>10.5-11.0m | CLAYEY GRAVELLY SAND: grey, fine to coarse sand, fine to coarse gravel, medium plasticity. | 77.5                      | 1.41                            | 40                | 24                 | N<br>N                             | -                            |

### NOTES TO TESTING

- 1 Test Method: AS 1289 2.1.1  
2 Test Method: AS 1289 3.1.2  
3 Test Method: AS 1289 3.2.1, 3.3.1  
4 Preparation: DS = Dry Sieved  
WS = Wet Sieved  
N = Natural State With No Sieving  
Sample History: AD = Air Dried  
OD = Oven Dried at 50°C  
N = Natural State As Received  
5 Test Method: AS 1289 3.5.1

Sampled by: Client  
Job Number: 116-101  
Date Tested: 17.11.09

Form C01 File C:\Excel Reports\C01 Classification Issue 5 February 2008 CL



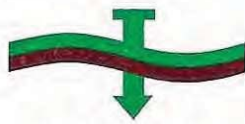
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Signed:

Name: Chris Lloyd

Title: Laboratory Manager

Date: 2.12.09



**AUSTRALIAN SOIL TESTING PTY LTD.** A.B.N. 79 003 493 623

24 Bermill Street, Rockdale, NSW, 2216 P.O. Box 2014, Rockdale D.C. NSW 2216

Tel: 9597 5599, 9597 3286 Fax: 9597 3442 Email: austst@bigpond.com

## PARTICLE SIZE DISTRIBUTION TEST REPORT

**Client:** Sinclair Knight Merz

**Address:** 590 Orong Rd, Armadale Vic 3143

**Project:** Study into Riverbank Collapsing for the Lower Murray River

**Test Method:** AS 1289 3.6.1 / 3

**Job Number:** 116-101

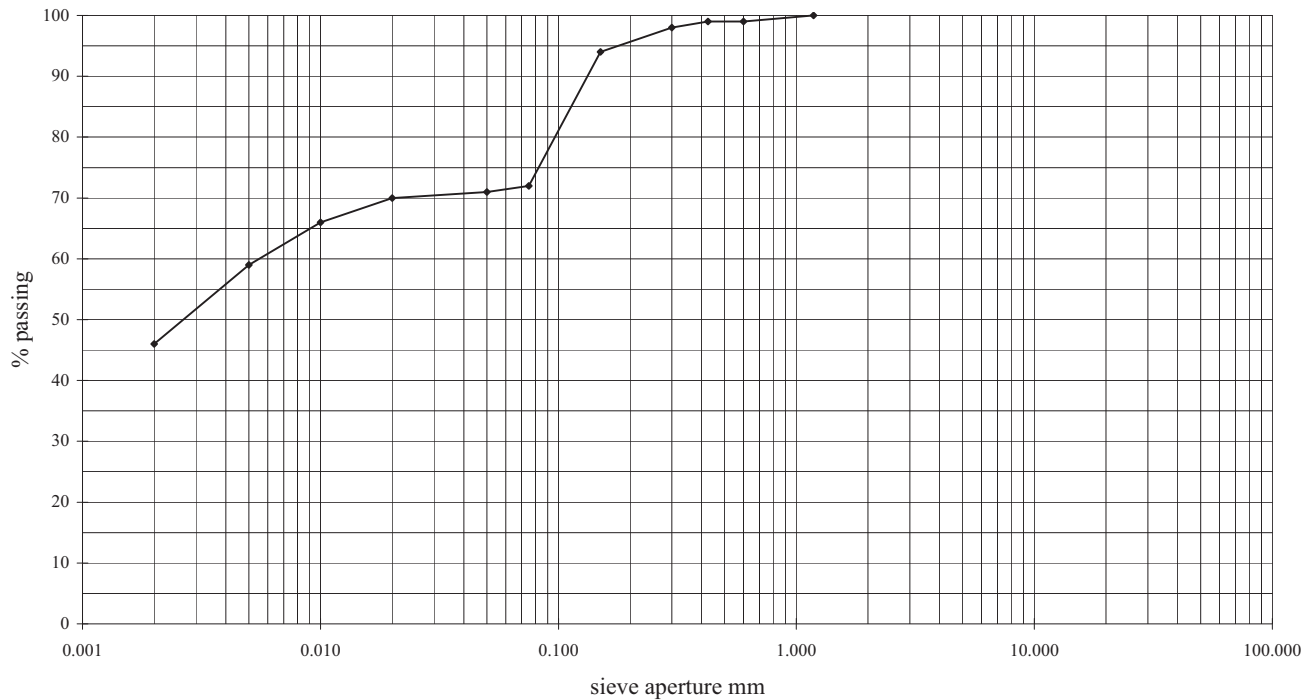
**Lab Number:** 55499

**Sample Source:** CA-BH-2 5.5-5.83m

**Date Tested:** 12.11.09

**Sampled by:** SKM

**Checked By:** CL



|      |      |      |        |
|------|------|------|--------|
| Clay | Silt | Sand | Gravel |
|------|------|------|--------|

**Sample Description:** SILTY CLAY: dark-grey, high plasticity, with fine to coarse sand, slightly organic.

| Sieve Size (mm) | % Passing | Sieve Size (mm) | % Passing |
|-----------------|-----------|-----------------|-----------|
| 150.0           |           | 1.18            | 100       |
| 75.0            |           | 0.600           | 99        |
| 63.0            |           | 0.425           | 99        |
| 53.0            |           | 0.300           | 98        |
| 37.5            |           | 0.150           | 94        |
| 26.5            |           | 0.075           | 72        |
| 19.0            |           | 0.050           | 71        |
| 13.2            |           | 0.020           | 70        |
| 9.5             |           | 0.010           | 66        |
| 6.7             |           | 0.005           | 59        |
| 4.75            |           | 0.002           | 46        |
| 2.36            |           |                 |           |

**Hydrometer Type:** ASTM 152H

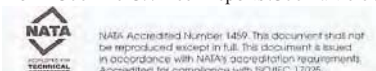
**Dispersant Type:** Sodium Hexametaphosphate

**Pretreatment:** None

**Loss on Pretreatment:** None

**Remarks:**

Form C06 File C:\Excel Reports\C06 Particle Size Distribution -19mm No Riffle Issue 2 June 2008 CL

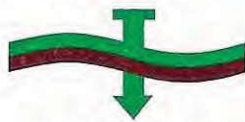


Signed:

Name: Chris Lloyd

Title: Laboratory Manager

Date: 2.12.09



## PARTICLE SIZE DISTRIBUTION TEST REPORT

**Client:** Sinclair Knight Merz

**Address:** 590 Orong Rd, Armadale Vic 3143

**Project:** Study into Riverbank Collapsing for the Lower Murray River

**Test Method:** AS 1289 3.6.1 / 3

**Job Number:** 116-101

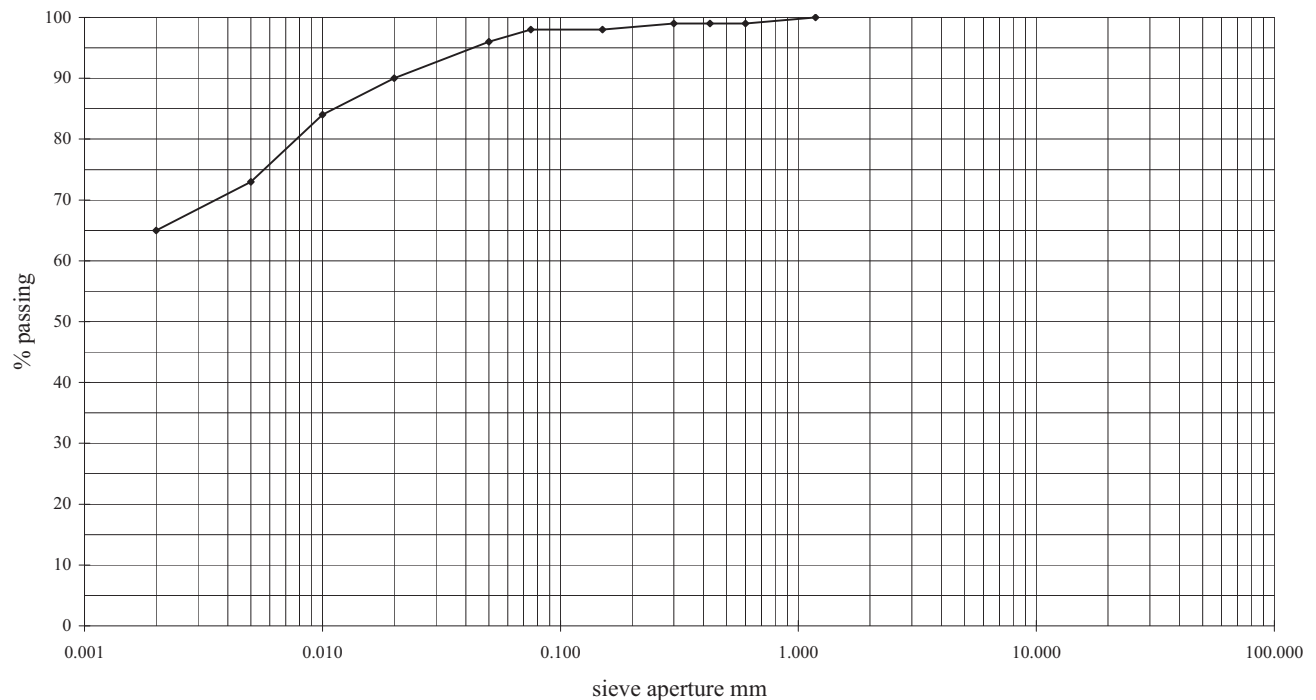
**Lab Number:** 55500

**Sample Source:** CA-BH-3 4.5-4.93m

**Date Tested:** 12.11.09

**Sampled by:** SKM

**Checked By:** CL



|      |      |      |        |
|------|------|------|--------|
| Clay | Silt | Sand | Gravel |
|------|------|------|--------|

**Sample Description:** SILTY CLAY: dark-grey, high plasticity, trace of fine to medium sand.

| Sieve Size (mm) | % Passing | Sieve Size (mm) | % Passing |
|-----------------|-----------|-----------------|-----------|
| 150.0           |           | 1.18            | 100       |
| 75.0            |           | 0.600           | 99        |
| 63.0            |           | 0.425           | 99        |
| 53.0            |           | 0.300           | 99        |
| 37.5            |           | 0.150           | 98        |
| 26.5            |           | 0.075           | 98        |
| 19.0            |           | 0.050           | 96        |
| 13.2            |           | 0.020           | 90        |
| 9.5             |           | 0.010           | 84        |
| 6.7             |           | 0.005           | 73        |
| 4.75            |           | 0.002           | 65        |
| 2.36            |           |                 |           |

**Hydrometer Type:** ASTM 152H

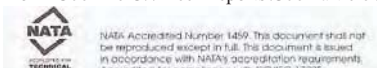
**Dispersant Type:** Sodium Hexametaphosphate

**Pretreatment:** None

**Loss on Pretreatment:** None

**Remarks:**

Form C06 File C:\Excel Reports\C06 Particle Size Distribution -19mm No Riffle Issue 2 June 2008 CL

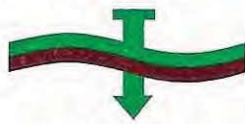


Signed:

Name: Chris Lloyd

Title: Laboratory Manager

Date: 2.12.09



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Tel: 9597 5599, 9597 3286 Fax: 9597 3442 Email: austst@bigpond.com

## PARTICLE SIZE DISTRIBUTION TEST REPORT

**Client:** Sinclair Knight Merz

**Address:** 590 Orong Rd, Armadale Vic 3143

**Project:** Study into Riverbank Collapsing for the Lower Murray River

**Test Method:** AS 1289 3.6.1 / 3

**Job Number:** 116-101

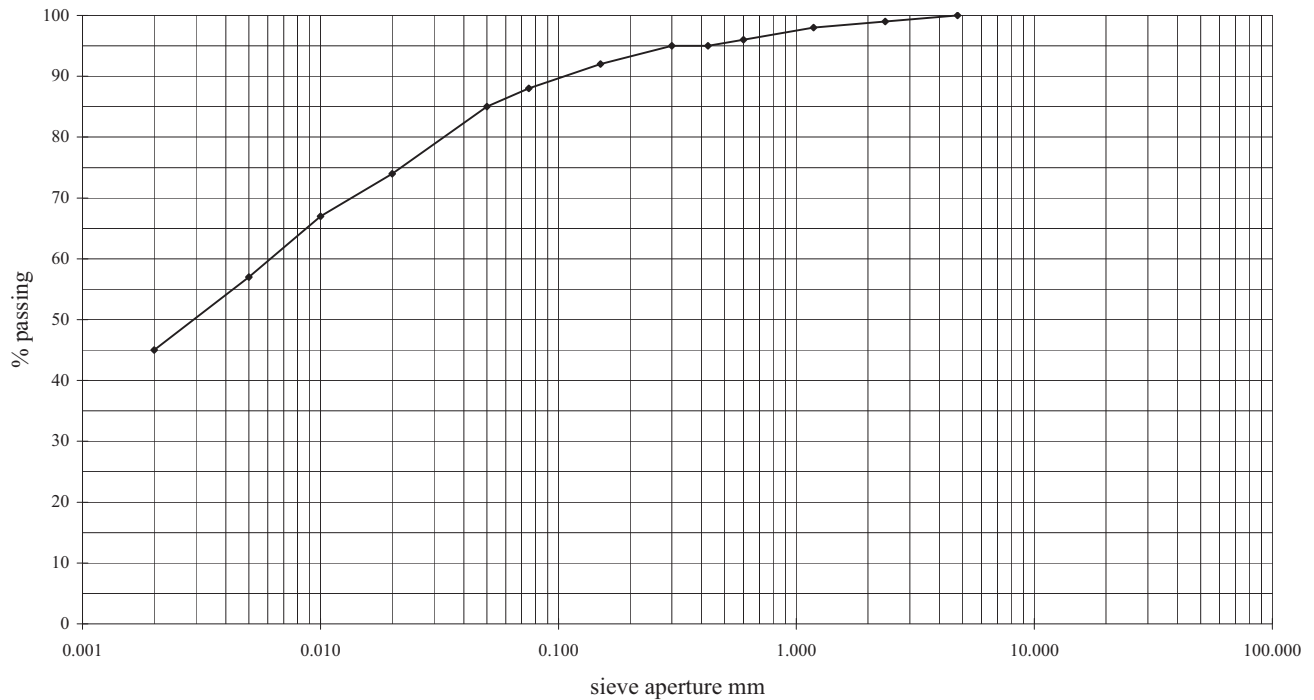
**Lab Number:** 55501

**Sample Source:** CA-BH-3 10.00-10.29m

**Date Tested:** 12.11.09

**Sampled by:** SKM

**Checked By:** CL



|      |      |      |        |
|------|------|------|--------|
| Clay | Silt | Sand | Gravel |
|------|------|------|--------|

**Sample Description:** SILTY CLAY: dark-grey, high plasticity, trace of fine to coarse sand.

| Sieve Size (mm) | % Passing | Sieve Size (mm) | % Passing |
|-----------------|-----------|-----------------|-----------|
| 150.0           |           | 1.18            | 98        |
| 75.0            |           | 0.600           | 96        |
| 63.0            |           | 0.425           | 95        |
| 53.0            |           | 0.300           | 95        |
| 37.5            |           | 0.150           | 92        |
| 26.5            |           | 0.075           | 88        |
| 19.0            |           | 0.050           | 85        |
| 13.2            |           | 0.020           | 74        |
| 9.5             |           | 0.010           | 67        |
| 6.7             |           | 0.005           | 57        |
| 4.75            | 100       | 0.002           | 45        |
| 2.36            | 99        |                 |           |

**Hydrometer Type:** ASTM 152H

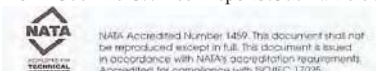
**Dispersant Type:** Sodium Hexametaphosphate

**Pretreatment:** None

**Loss on Pretreatment:** None

**Remarks:**

Form C06 File C:\Excel Reports\C06 Particle Size Distribution -19mm No Riffle Issue 2 June 2008 CL

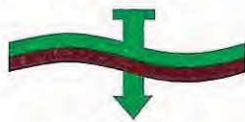


Signed:

Name: Chris Lloyd

Title: Laboratory Manager

Date: 2.12.09



## PARTICLE SIZE DISTRIBUTION TEST REPORT

**Client:** Sinclair Knight Merz

**Address:** 590 Orong Rd, Armadale Vic 3143

**Project:** Study into Riverbank Collapsing for the Lower Murray River

**Test Method:** AS 1289 3.6.1 / 3

**Job Number:** 116-101

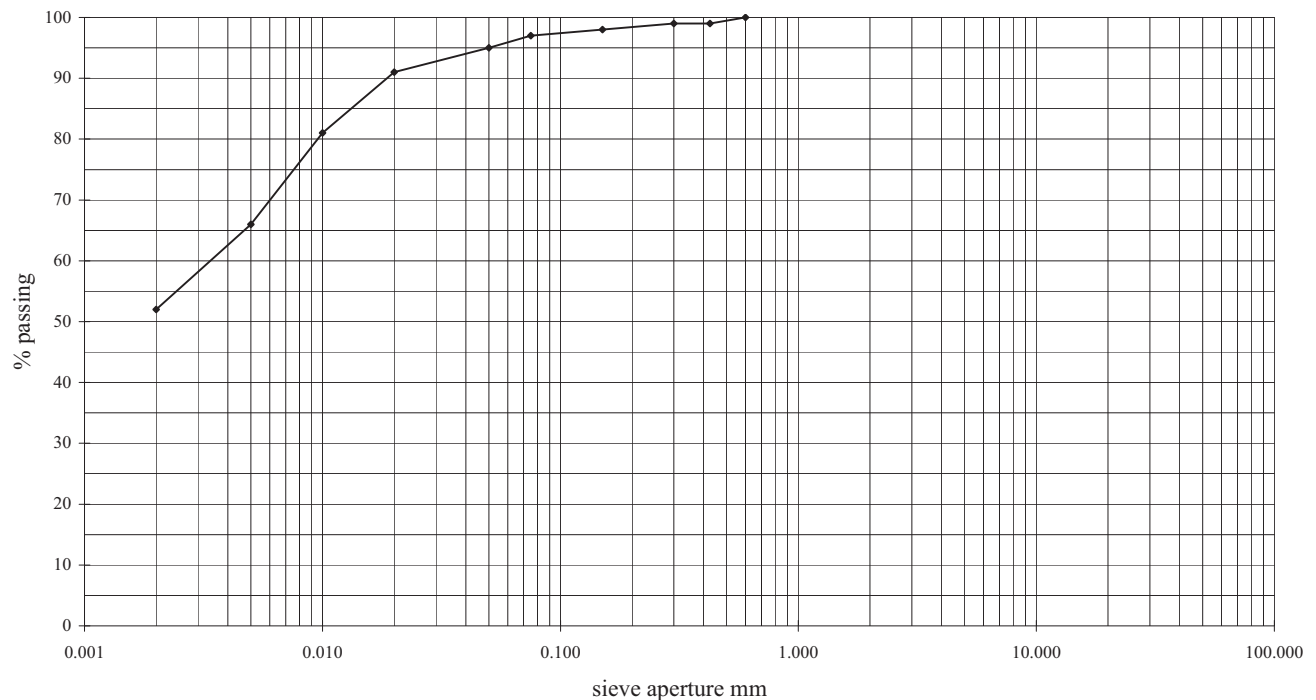
**Lab Number:** 55502

**Sample Source:** CA-BH-4 4.5-5m

**Date Tested:** 12.11.09

**Sampled by:** SKM

**Checked By:** CL



|      |      |      |        |
|------|------|------|--------|
| Clay | Silt | Sand | Gravel |
|------|------|------|--------|

**Sample Description:** SILTY CLAY: dark-grey, high plasticity, trace of fine sand, slightly organic.

| Sieve Size (mm) | % Passing | Sieve Size (mm) | % Passing |
|-----------------|-----------|-----------------|-----------|
| 150.0           |           | 1.18            |           |
| 75.0            |           | 0.600           | 100       |
| 63.0            |           | 0.425           | 99        |
| 53.0            |           | 0.300           | 99        |
| 37.5            |           | 0.150           | 98        |
| 26.5            |           | 0.075           | 97        |
| 19.0            |           | 0.050           | 95        |
| 13.2            |           | 0.020           | 91        |
| 9.5             |           | 0.010           | 81        |
| 6.7             |           | 0.005           | 66        |
| 4.75            |           | 0.002           | 52        |
| 2.36            |           |                 |           |

**Hydrometer Type:** ASTM 152H

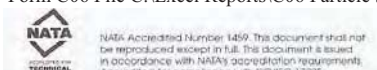
**Dispersant Type:** Sodium Hexametaphosphate

**Pretreatment:** None

**Loss on Pretreatment:** None

**Remarks:**

Form C06 File C:\Excel Reports\C06 Particle Size Distribution -19mm No Riffle Issue 2 June 2008 CL

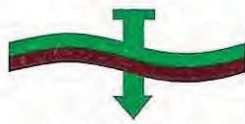


Signed:

Name: Chris Lloyd

Title: Laboratory Manager

Date: 2.12.09



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Tel: 9597 5599, 9597 3286 Fax: 9597 3442 Email: austst@bigpond.com

## PARTICLE SIZE DISTRIBUTION TEST REPORT

**Client:** Sinclair Knight Merz

**Address:** 590 Orong Rd, Armadale Vic 3143

**Project:** Study into Riverbank Collapsing for the Lower Murray River

**Test Method:** AS 1289 3.6.1 / 3

**Job Number:** 116-101

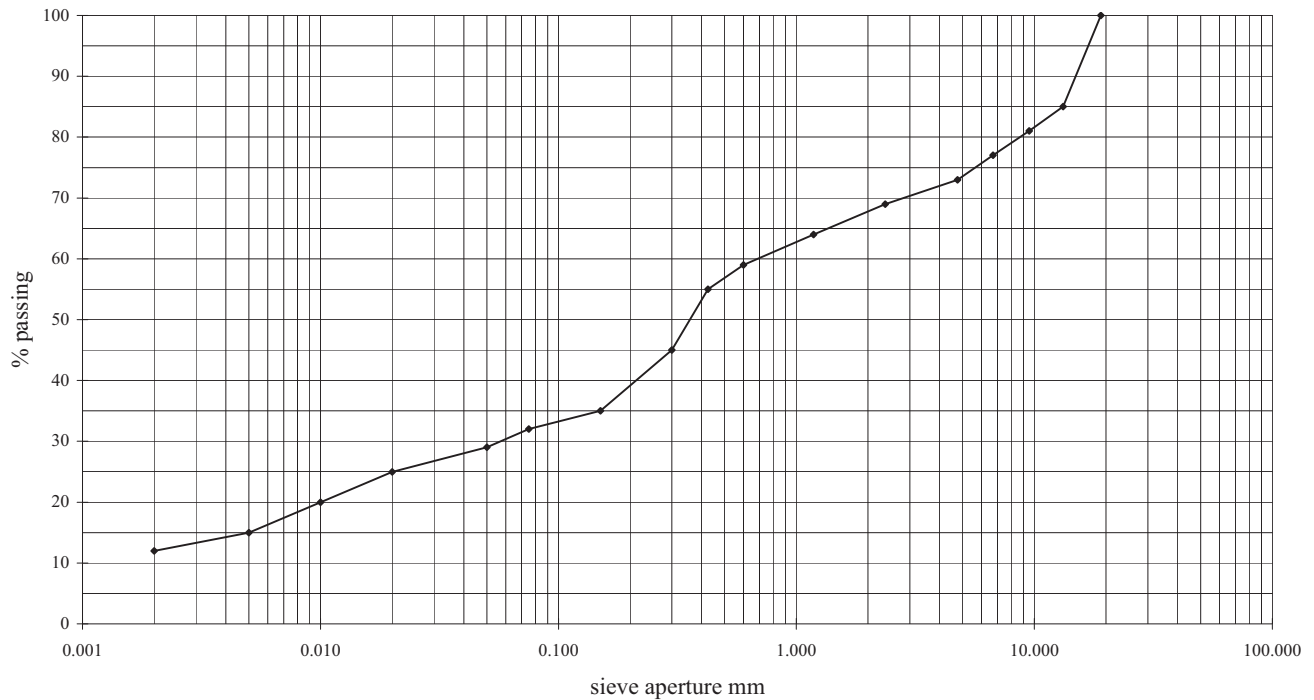
**Lab Number:** 55503

**Sample Source:** CA-BH-4 10.5-11.0m

**Date Tested:** 12.11.09

**Sampled by:** SKM

**Checked By:** CL



|      |      |      |        |
|------|------|------|--------|
| Clay | Silt | Sand | Gravel |
|------|------|------|--------|

**Sample Description:** CLAYEY GRAVELLY SAND: grey, fine to coarse sand, fine to coarse gravel, medium plasticity.

| Sieve Size (mm) | % Passing | Sieve Size (mm) | % Passing |
|-----------------|-----------|-----------------|-----------|
| 150.0           |           | 1.18            | 64        |
| 75.0            |           | 0.600           | 59        |
| 63.0            |           | 0.425           | 55        |
| 53.0            |           | 0.300           | 45        |
| 37.5            |           | 0.150           | 35        |
| 26.5            | 100       | 0.075           | 32        |
| 19.0            | 85        | 0.050           | 29        |
| 13.2            | 81        | 0.020           | 25        |
| 9.5             | 81        | 0.010           | 20        |
| 6.7             | 77        | 0.005           | 15        |
| 4.75            | 73        | 0.002           | 12        |
| 2.36            | 69        |                 |           |

**Hydrometer Type:** ASTM 152H

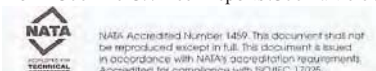
**Dispersant Type:** Sodium Hexametaphosphate

**Pretreatment:** None

**Loss on Pretreatment:** None

**Remarks:**

Form C06 File C:\Excel Reports\C06 Particle Size Distribution -19mm No Riffle Issue 2 June 2008 CL



Signed:

Name: Chris Lloyd

Title: Laboratory Manager

Date: 2.12.09



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## UNSATURATED UNDRAINED TRIAXIAL COMPRESSION TEST AS 1289 6.4.1

**CLIENT:** Sinclair Knight Merz

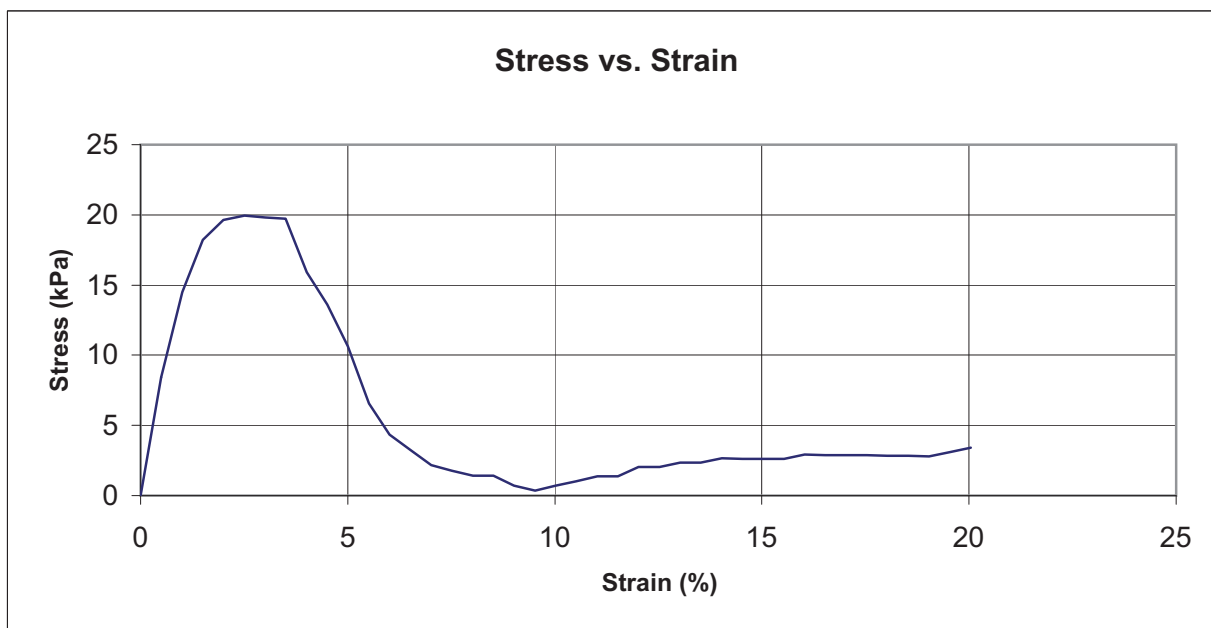
PO Box 2500 Malvern Victoria 3144

**PROJECT:** Study Into River Bank Collapsing For The Lower Murray River

Lab Number: 55499

Sample Source: CA-BH-2 5.5-5.83m

Sample Description: SILTY CLAY: grey, high plasticity, with fine to coarse sand, slightly organic.



**MOISTURE CONTENT:** 75.1 %

**DRY DENSITY:** 0.93 t/m<sup>3</sup>

**COHESION:** 10 kPa

**FRICTION:** 0 Degrees

Confining Pressure (kPa): 650

Principal Stress (kPa): 20

Strain at Failure (%): 2.0

Rate of Strain (mm/min): 1.0

Failure Mode: Plastic

Description of Failure: Barrel

Sample Diameter (mm): 50.1

Sample Length (mm): 99.8

Date Tested: 19.11.09

Date Sampled: Unknown

Job Number: 116-101

Sampled By: Sinclair Knight Merz

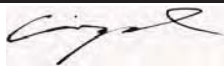
Tested By: N O'M

Sample Method: U50 Tube

**Test procedure: AS1289.6.4.1-1998 Undrained triaxial compression, without pore water pressure.**

Form TX01 Issue 5 C:\ExcelReports\ Unconsolidated Undrained Triaxial June 2007 CL

Page 1 of 1

Signed:  Name: Chris Lloyd

Title: Laboratory Manager Date: 2.12.09



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Tel: 9597 5599, 9597 3286 Fax: 9597 3442 Email: austst@bigpond.com

## UNSATURATED UNDRAINED TRIAXIAL COMPRESSION TEST AS 1289 6.4.1

**CLIENT:** Sinclair Knight Merz

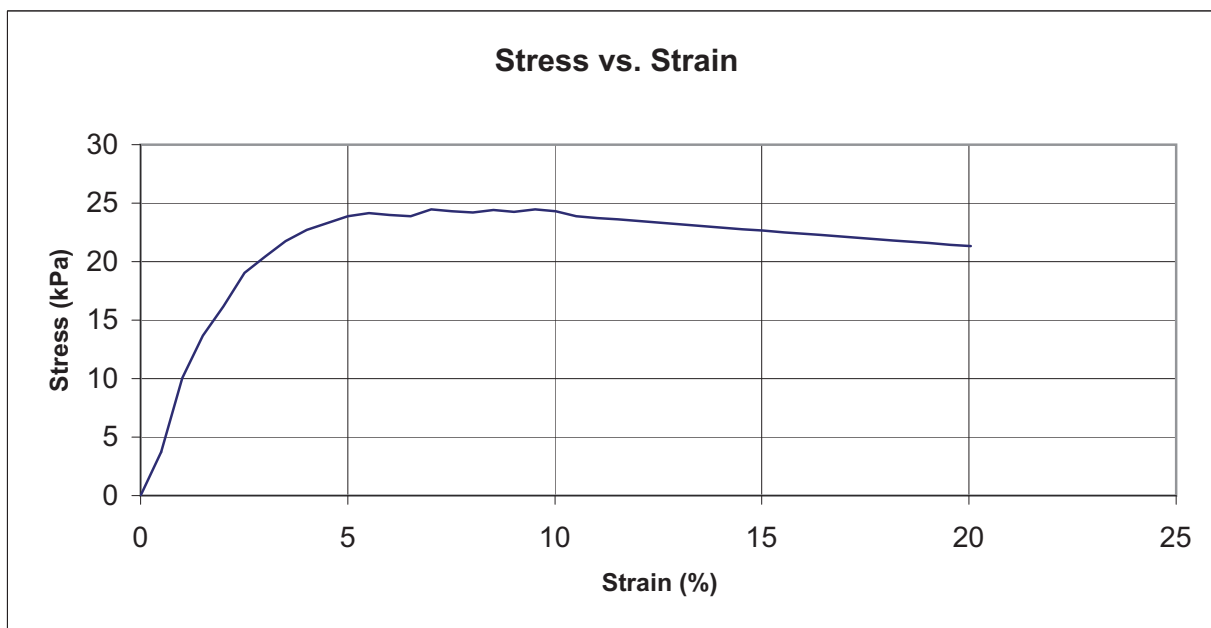
PO Box 2500 Malvern Victoria 3144

**PROJECT:** Study Into River Bank Collapsing For The Lower Murray River

Lab Number: 55500

Sample Source: CA-BH-3 4.5-4.93m

Sample Description: SILTY CLAY: grey, high plasticity, trace of fine to medium sand.



**MOISTURE CONTENT:** 98.5 %

**DRY DENSITY:** 0.73 t/m<sup>3</sup>

**COHESION:** 12 kPa

**FRICTION:** 0 Degrees

Confining Pressure (kPa): 650

Principal Stress (kPa): 24

Strain at Failure (%): 5.0

Rate of Strain (mm/min): 1.0

Failure Mode: Plastic

Description of Failure: Barrel

Sample Diameter (mm): 50.1

Sample Length (mm): 99.8

Date Tested: 19.11.09

Date Sampled: Unknown

Job Number: 116-101

Sampled By: Sinclair Knight Merz

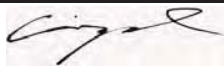
Tested By: N O'M

Sample Method: U50 Tube

**Test procedure: AS1289.6.4.1-1998 Undrained triaxial compression, without pore water pressure.**

Form TX01 Issue 5 C:\ExcelReports\ Unconsolidated Undrained Triaxial June 2007 CL

Page 1 of 1

Signed:  Name: Chris Lloyd

Title: Laboratory Manager Date: 2.12.09



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Tel: 9597 5599, 9597 3286 Fax: 9597 3442 Email: austst@bigpond.com

## UNSATURATED UNDRAINED TRIAXIAL COMPRESSION TEST AS 1289 6.4.1

**CLIENT:** Sinclair Knight Merz

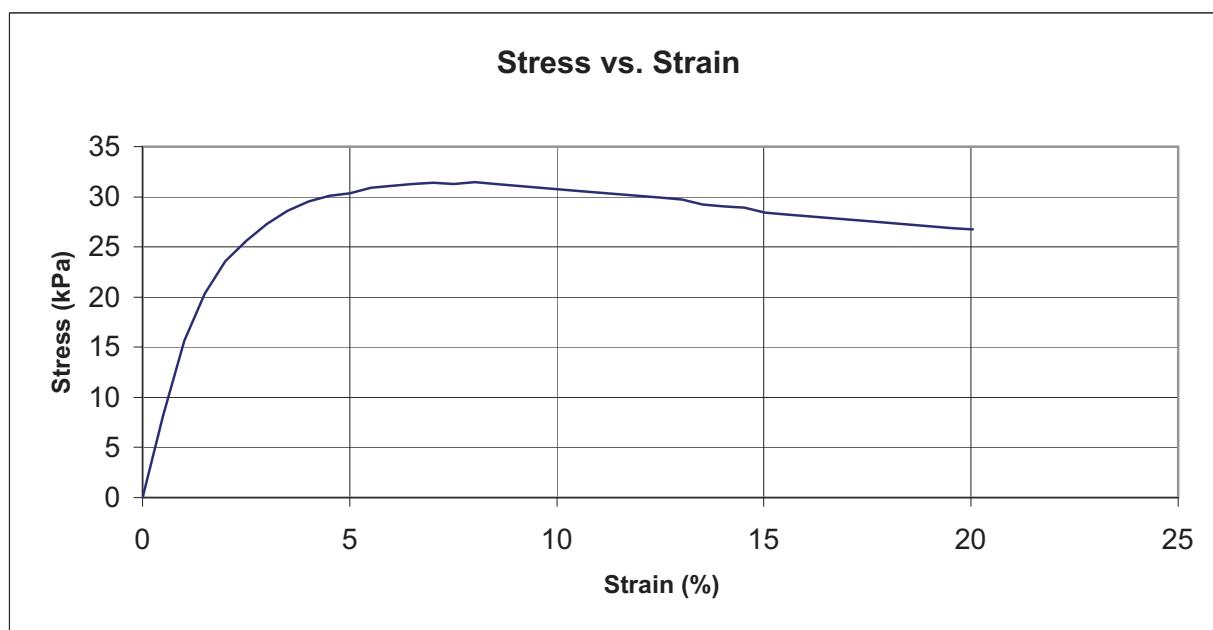
PO Box 2500 Malvern Victoria 3144

**PROJECT:** Study Into River Bank Collapsing For The Lower Murray River

Lab Number: 55501

Sample Source: CA-BH-3 10.0 to 10.29m

Sample Description: SILTY CLAY: grey, high plasticity, trace of fine to coarse sand.



**MOISTURE CONTENT:** 97.0 %

**DRY DENSITY:** 0.65 t/m<sup>3</sup>

**COHESION:** 14 kPa

**FRICTION:** 0 Degrees

Confining Pressure (kPa): 650

Principal Stress (kPa): 28

Strain at Failure (%): 5.5

Rate of Strain (mm/min): 1.0

Failure Mode: Plastic

Description of Failure: Barrel

Sample Diameter (mm): 50.1

Sample Length (mm): 99.8

Date Tested: 19.11.09

Date Sampled: Unknown

Job Number: 116-101

Sampled By: Sinclair Knight Merz

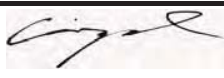
Tested By: N O'M

Sample Method: U50 Tube

**Test procedure: AS1289.6.4.1-1998 Undrained triaxial compression, without pore water pressure.**

Form TX01 Issue 5 C:\ExcelReports\ Unconsolidated Undrained Triaxial June 2007 CL

Page 1 of 1

Signed:  Name: Chris Lloyd

Title: Laboratory Manager Date: 2.12.09



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Tel: 9597 5599, 9597 3286 Fax: 9597 3442 Email: austst@bigpond.com

## UNSATURATED UNDRAINED TRIAXIAL COMPRESSION TEST AS 1289 6.4.1

**CLIENT:** Sinclair Knight Merz

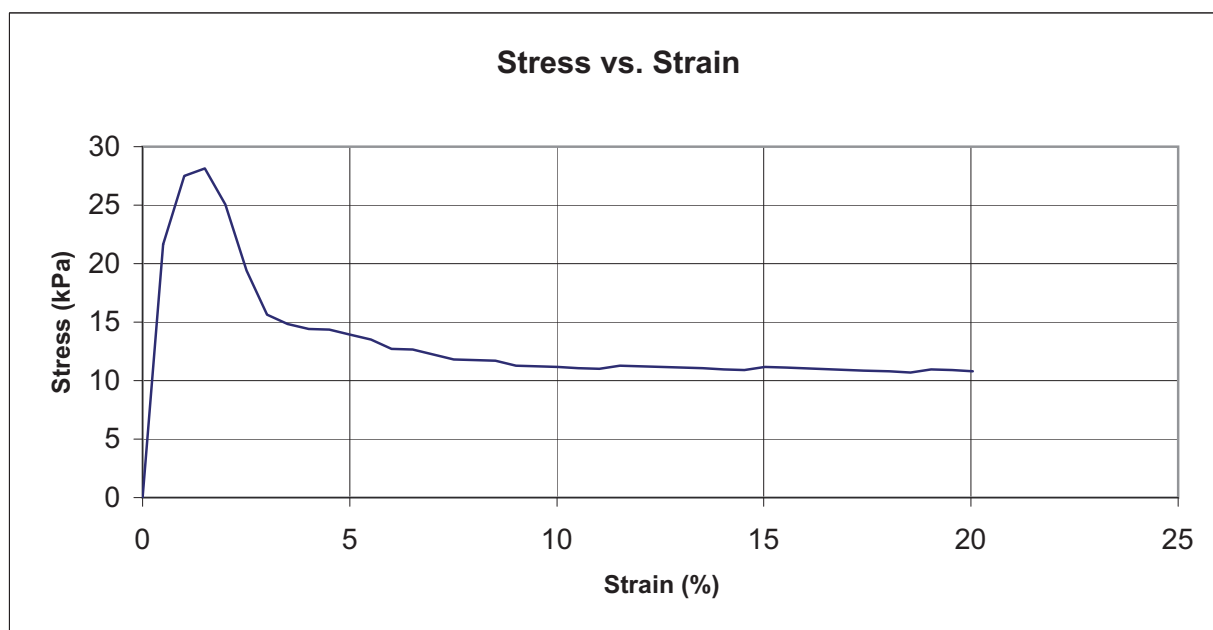
PO Box 2500 Malvern Victoria 3144

**PROJECT:** Study Into River Bank Collapsing For The Lower Murray River

Lab Number: 55502

Sample Source: CA-BH-4 4.5-5.0m

Sample Description: SILTY CLAY: grey, high plasticity, trace of fine to medium sand, slightly organic.



**MOISTURE CONTENT:** 94.6 %

**DRY DENSITY:** 0.78 t/m<sup>3</sup>

**COHESION:** 14 kPa

**FRICTION:** 0 Degrees

Confining Pressure (kPa): 650

Principal Stress (kPa): 28

Strain at Failure (%): 1.5

Rate of Strain (mm/min): 1.0

Failure Mode: Plastic

Description of Failure: Barrel

Sample Diameter (mm): 50.1

Sample Length (mm): 99.8

Date Tested: 19.11.09

Date Sampled: Unknown

Job Number: 116-101

Sampled By: Sinclair Knight Merz

Tested By: N O'M

Sample Method: U50 Tube

**Test procedure: AS1289.6.4.1-1998 Undrained triaxial compression, without pore water pressure.**

Form TX01 Issue 5 C:\ExcelReports\ Unconsolidated Undrained Triaxial June 2007 CL

Page 1 of 1

Signed:  Name: Chris Lloyd

Title: Laboratory Manager Date: 2.12.09



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Tel: 9597 5599, 9597 3286 Fax: 9597 3442 Email: austst@bigpond.com

## UNSATURATED UNDRAINED TRIAXIAL COMPRESSION TEST AS 1289 6.4.1

**CLIENT:** Sinclair Knight Merz

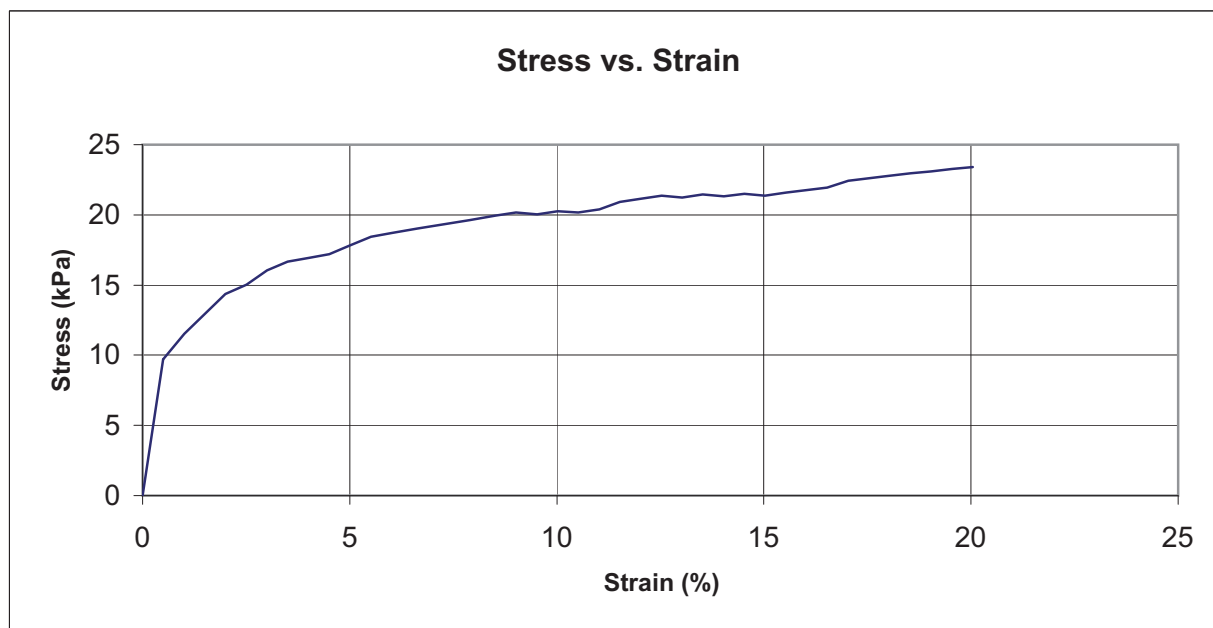
PO Box 2500 Malvern Victoria 3144

**PROJECT:** Study Into River Bank Collapsing For The Lower Murray River

Lab Number: 55503

Sample Source: CA-BH-4 10.5 to 11.0m

Sample Description: GRAVELLY CLAYEY SAND: grey, fine to coarse sand, fine to medium gravel, low plasticity.



**MOISTURE CONTENT:** 34.2 %

**DRY DENSITY:** 1.41 t/m<sup>3</sup>

**COHESION:** 10 kPa

**FRICTION:** 0 Degrees

Confining Pressure (kPa): 650

Principal Stress (kPa): 20

Strain at Failure (%): 7.5

Rate of Strain (mm/min): 1.0

Failure Mode: Plastic

Description of Failure: Barrel

Sample Diameter (mm): 50.1

Sample Length (mm): 99.8

Date Tested: 19.11.09

Date Sampled: Unknown

Job Number: 116-101

Sampled By: Sinclair Knight Merz

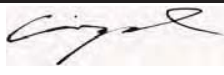
Tested By: N O'M

Sample Method: U50 Tube

**Test procedure: AS1289.6.4.1-1998 Undrained triaxial compression, without pore water pressure.**

Form TX01 Issue 5 C:\ExcelReports\ Unconsolidated Undrained Triaxial June 2007 CL

Page 1 of 1

Signed:  Name: Chris Lloyd

Title: Laboratory Manager Date: 2.12.09



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## EFFECTIVE STRESS TRIAXIAL TEST REPORT

**CLIENT:** Sinclair Knight Merz  
590 Orong Rd, Armadale Vic 3143  
**PROJECT:** Study Into River Bank Collapse for the Lower  
Murray River

**Sample Source:** CA-BH-4 4.5 to 5.0m **Lab No:** 55502

**Sample Description:** SILTY CLAY: grey, high plasticity  
0.00

**Initial Moisture Content (%):** 81.0 **Dry Density (t/m<sup>3</sup>):** 1.55

**Final Moisture Content (%):** 73.1

**Sample Diameter (mm):** 50.0 **Sample Height (mm):** 100.1

**Coefficient of Consolidation (m<sup>2</sup>/yr):** 46.00 **Rate of Strain (mm):** 0.005

### Shear Details at Peak Stress Ratio

|                                      |      |      |      |
|--------------------------------------|------|------|------|
| <b>Net Confining Pressure (kPa):</b> | 40   | 0    | 0    |
| <b>Deviator Stress (kPa):</b>        | 22   | 0    | 0    |
| <b>Pore Water Pressure (kPa):</b>    | 19   | 0    | 0    |
| <b>Strain At Failure (%):</b>        | 3.90 | 0.00 | 0.00 |

### From Mohr Circles

**Effective Cohesion (kPa):** 22

**Effective Angle Of Friction (degrees):** 0.0

Note: sample may have been touching the cell side from 100mm strain

Date Tested: 11.11.09

Job Number: 116-101

Sampled By: SKM

Tested By: N O'M

**Test Type: Backsaturated, consolidated, single stage with pore water pressure measurement.**

**Test procedure: AS 1289 6.4.2 Determination of compressive strength of soil - Compressive strength of a saturated specimen tested in undrained triaxial compression with measurement of pore water pressure.**

Form TX02 CU Triaxial Issue 3 January 2008 CL

Page 1 of 4



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Signed: .....  
Title: .....

Name: .....  
Date: .....

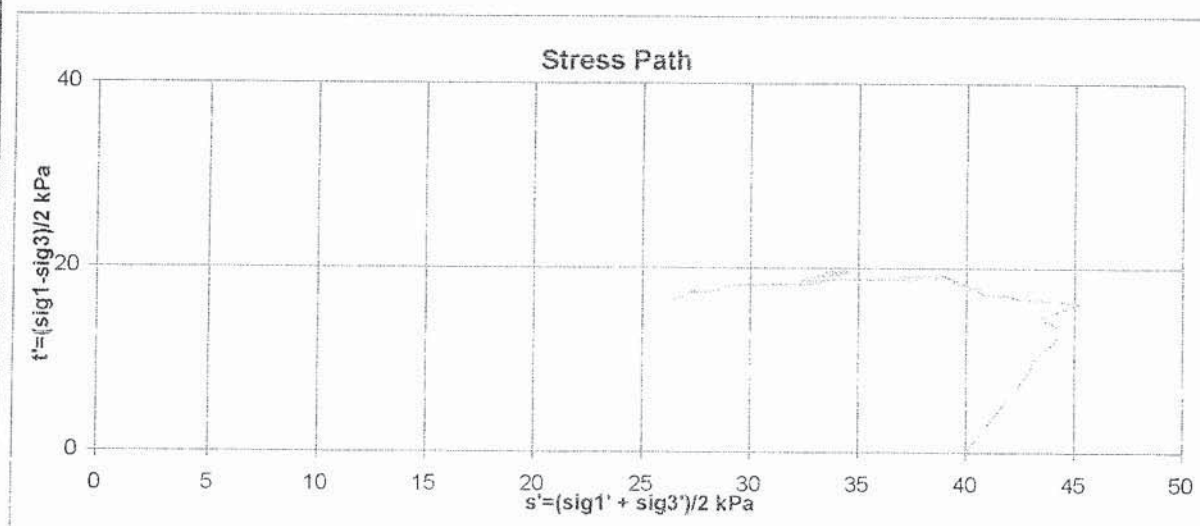
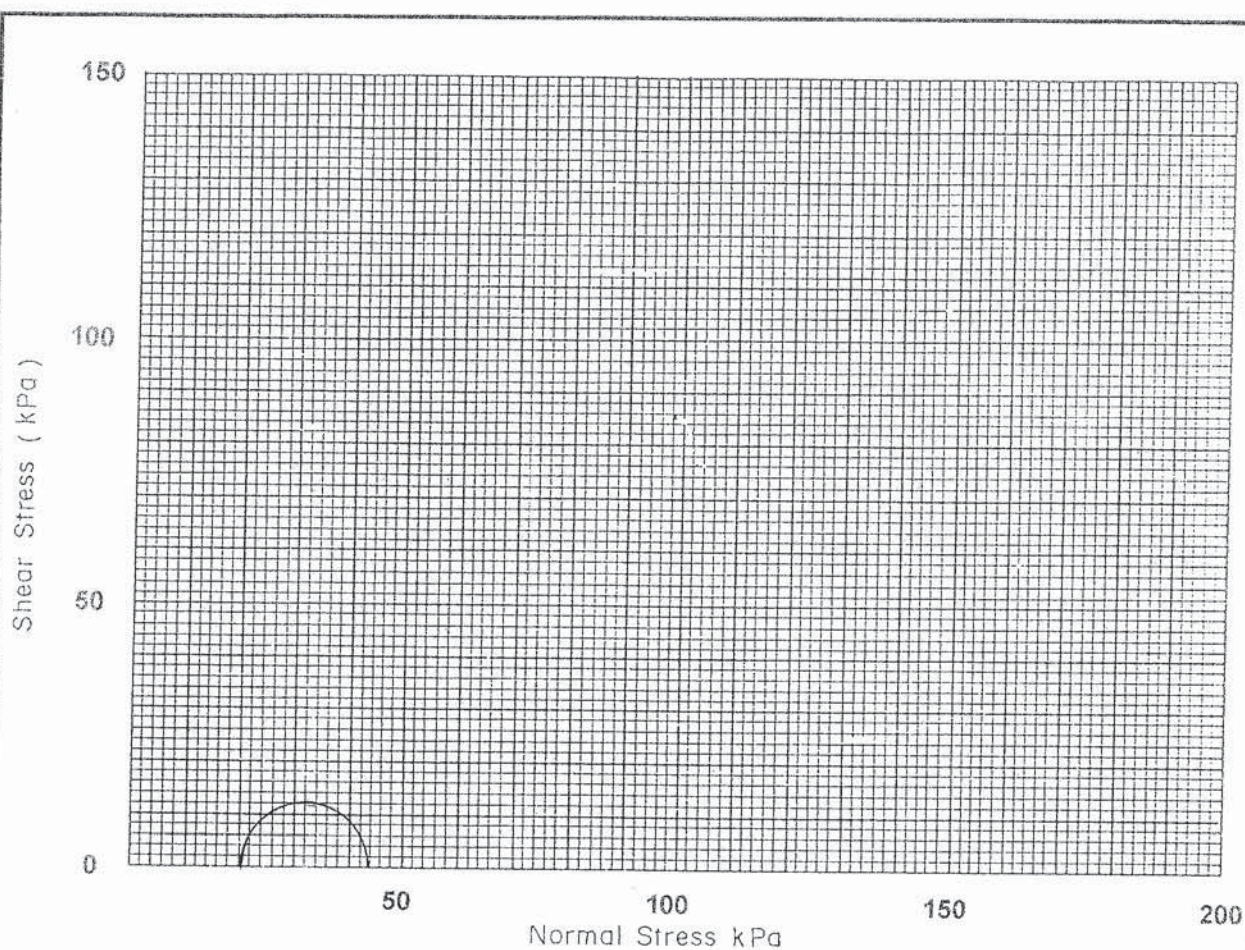


# EFFECTIVE STRESS TRIAXIAL TEST REPORT

CLIENT: Sinclair Knight Merz

590 Orong Rd, Armadale Vic 3143

PROJECT: Study Into River Bank Collapse for the Lower Murray River



Lab No: 55502

Sample Source:

CA-BH-4 4.5 to 5.0m

Test procedure: AS 1289 6.4.2 Determination of compressive strength of soil - Compressive strength of a saturated specimen tested in undrained triaxial compression with measurement of pore water pressure.

Form TX02 CU Triaxial Issue 3 January 2008 CL

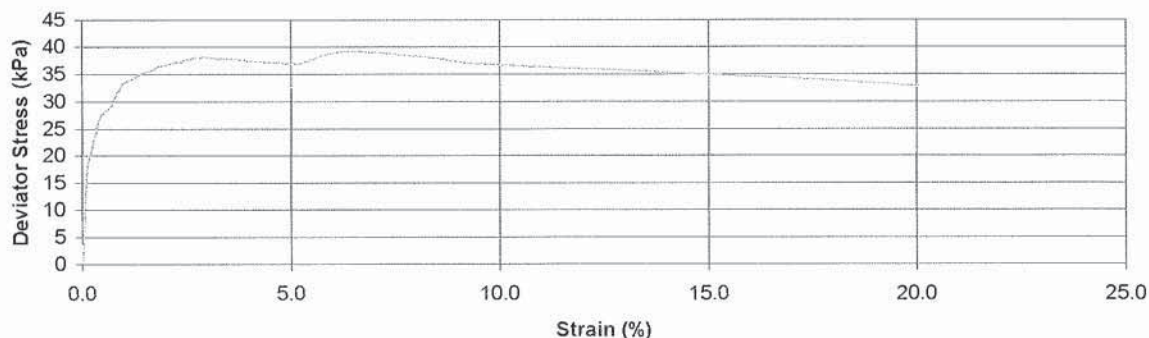
Page 2 of 4

# EFFECTIVE STRESS TRIAXIAL TEST REPORT

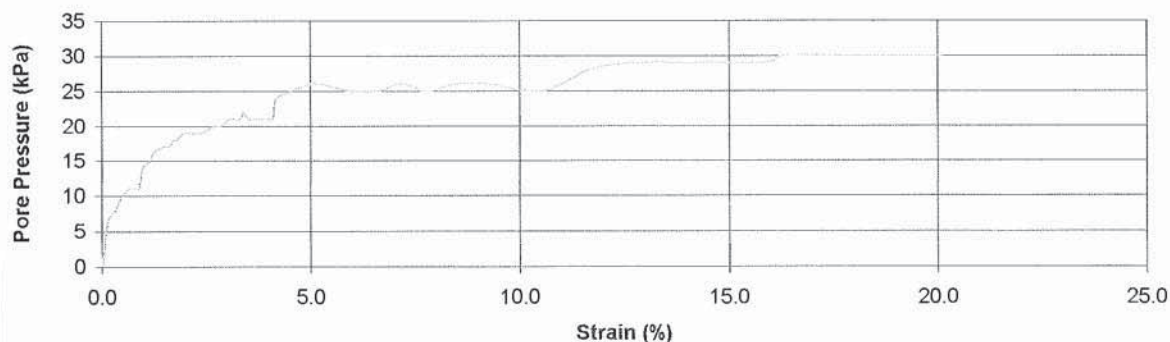
**CLIENT:** Sinclair Knight Merz  
590 Orong Rd, Armadale Vic 3143

**PROJECT:** Study Into River Bank Collapse for the Lower Murray River

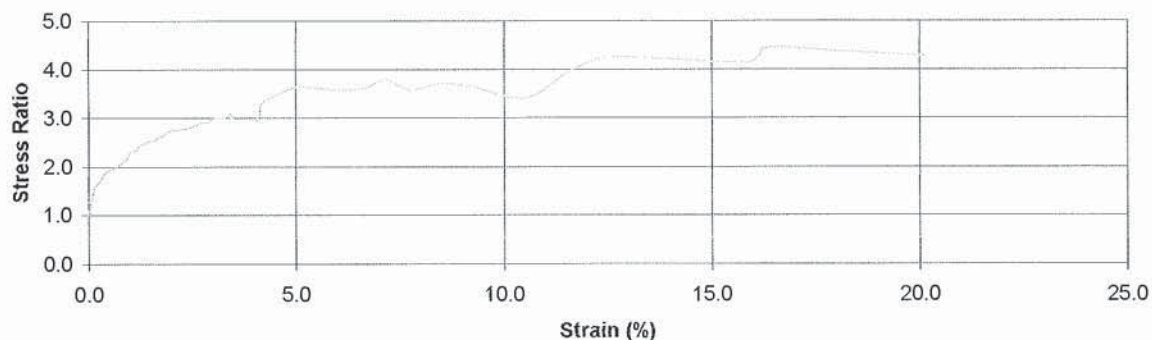
Deviator Stress Vs Strain



Pore Pressure Vs Strain



Stress Ratio Vs Strain



Lab No: 55502

Sample Source:

CA-BH-4 4.5 to 5.0m

Test procedure: AS 1289 6.4.2 Determination of compressive strength of soil - Compressive strength of a saturated specimen tested in undrained triaxial compression with measurement of pore water pressure.

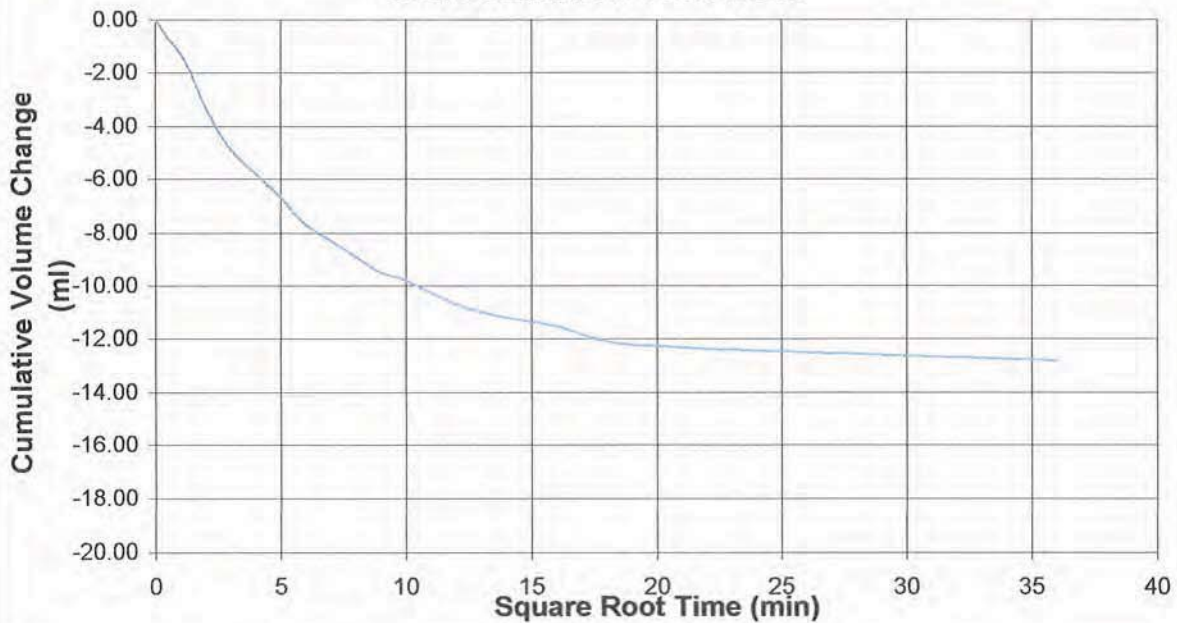


# EFFECTIVE STRESS TRIAXIAL TEST REPORT

**CLIENT:** Sinclair Knight Merz  
590 Orong Rd, Armadale Vic 3143

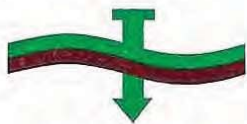
**PROJECT:** Study Into River Bank Collapse for the Lower  
Murray River

**Consolidation Test Data**



|                                                          |                     |                          |       |
|----------------------------------------------------------|---------------------|--------------------------|-------|
| Sample Source:                                           | CA-BH-4 4.5 to 5.0m | Lab No:                  | 55502 |
| Drainage Conditions:                                     | Bottom, Side        |                          |       |
|                                                          | <b>Stage 1</b>      |                          |       |
| Net Cell Pressure (kPa):                                 | 40                  |                          |       |
| Time for 100% Consolidation (min):                       | 169                 |                          |       |
| Coefficient of Consolidation ( $\text{m}^2/\text{yr}$ ): | 46.00               |                          |       |
| B Bar Response:                                          | 1.00                | Rate Of Strain (mm/min): | 0.005 |

**Test procedure: AS 1289 6.4.2 Determination of compressive strength of soil - Compressive strength of a saturated specimen tested in undrained triaxial compression with measurement of pore water pressure.**



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Tel: 9597 5599, 9597 3286 Fax: 9597 3442 Email: austst@bigpond.com

## DIRECT SHEAR TEST REPORT

**CLIENT:** Sinclair Knight Merz

PO Box 2500 Malvern Victoria 3144

**PROJECT:** Study - Riverbank Collapsing - Lower Murray River

Lab Number: 55502

Sample Source: CA-BH-4 4.5-5.0m

Sample Description: SILTY CLAY: dark-grey, high plasticity, trace of fine to medium sand, slightly organic.

Sample Size: 60.00 mm

Rate of Strain: 0.005 (mm/min)

Initial Dry Density: N/A (t/m<sup>3</sup>)

Initial Moisture Content: N/A (%)

### Peak Strength

Stage Number:

Normal Stress: (kPa)

Shear Stress (kPa)

Remoulding Conditions: Partial remoulding around intact sample

### STRENGTH PARAMETERS:

#### Peak

**COHESION:** - kPa

**FRICTION:** - Degrees

Date Tested: 26.11.09

Job Number: 116-101

Sampled By: SKM

Tested By: NOM

**Test procedure: AS1289 6.2.2-1998**

**Test Type:** Single Staged Residual x 1

Form DS06 Issue 3 C:\excelreports\Directshear Round 6 Stage March 2008 CL

55502 Page 1 of 2



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Signed:

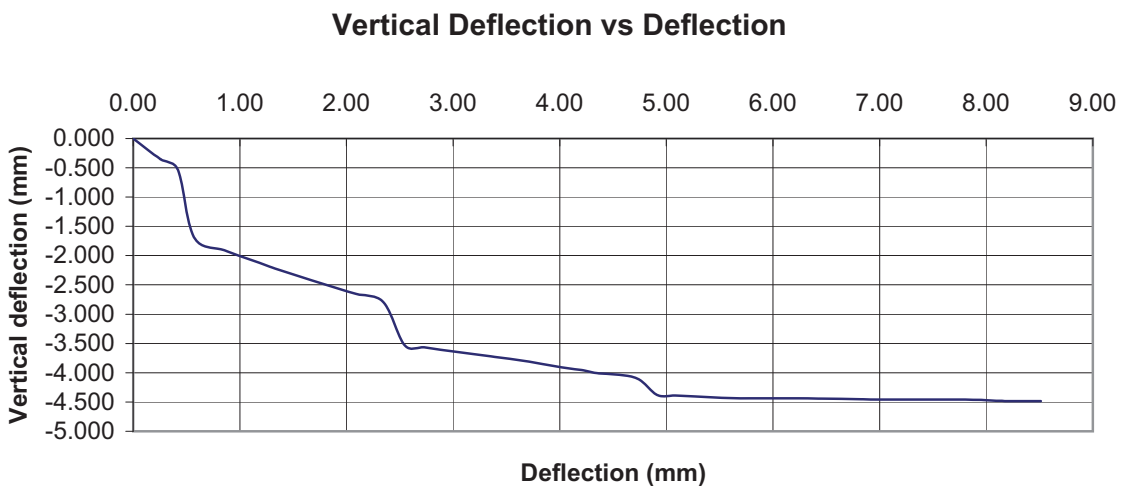
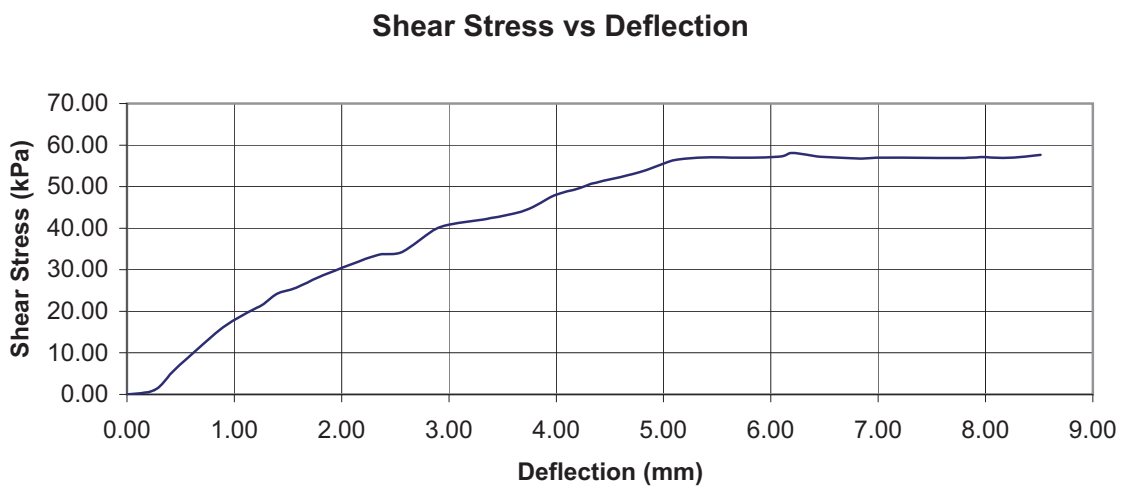
Name: Chris Lloyd

Title: Lab Manager

Date: 3.12.09

# DIRECT SHEAR TEST REPORT

**CLIENT:** Sinclair Knight Merz  
PO Box 2500 Malvern Victoria 3144  
**PROJECT:** Study - Riverbank Collapsing - Lower Murray River



## PEAK SHEAR STAGE 1

**Nominal normal pressure:** 100 kPa

Sample Source: CA-BH-4 4.5-5.0m

**Test procedure:** AS1289 6.2.2-1998 **Test Type:** Single Staged Residual x 1

Form DS06 Issue 3 C:\excelreports\Directshear Round 6 Stage March 2008 CL

55502

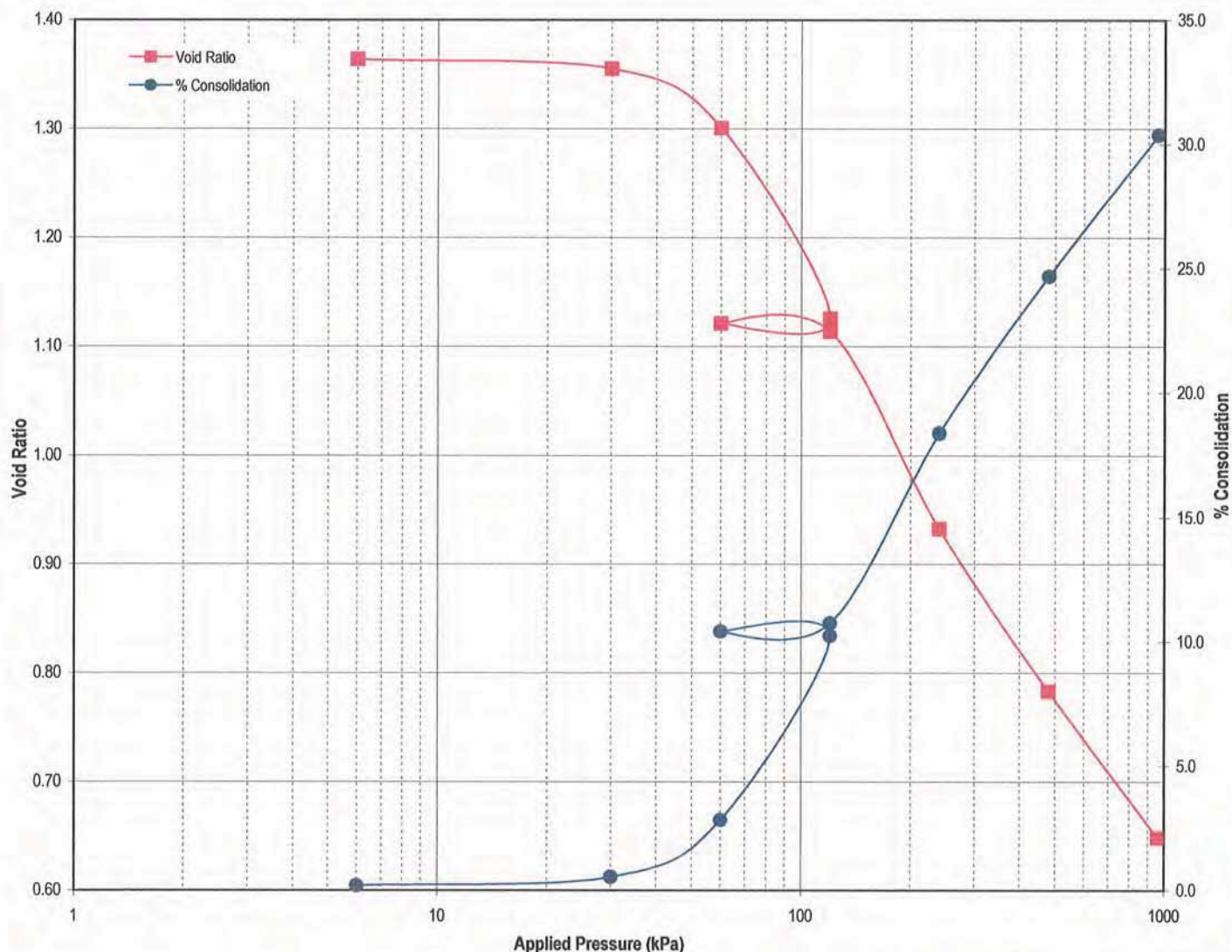
Page 2 of 2



## OEDOMETER TEST REPORT

Test Method: AS1289.6.6.1

|                                                                        |                                                             |
|------------------------------------------------------------------------|-------------------------------------------------------------|
| <b>Client:</b> Sinclair Knight Merz                                    | <b>Lab No.:</b> 55499                                       |
| <b>Project:</b> Study into Riverbank Collapsing for Lower Murray River | <b>Test Date:</b> 12.11.09<br><b>Report Date:</b> 0/01/1900 |
| <b>Client Id.:</b> CA-BH-2                                             | <b>Depth (m):</b> 5.5-5.83m                                 |
| <b>Description:</b> SILTY CLAY: grey, high plasticity.                 |                                                             |



|                                                    |                            |                                         |
|----------------------------------------------------|----------------------------|-----------------------------------------|
| Dry Density ( $\text{t/m}^3$ ): 1.09               | Initial Moisture (%): 54.1 | Test Condition: Inundated on load       |
| Measured Particle Density ( $\text{t/m}^3$ ): 2.58 | Initial Voids Ratio: 1.368 | Initial Degree of Saturation (%): 102.1 |
| Undisturbed sample supplied by the client          | Remarks: U50               | Page 1 of 2                             |



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Signed:   
Title:

Name: C. Uoyd  
Date: 2/12/09



## OEDOMETER TEST REPORT

Test Method: AS1289.6.6.1

|                                                                        |                                                             |
|------------------------------------------------------------------------|-------------------------------------------------------------|
| <b>Client:</b> Sinclair Knight Merz                                    | <b>Lab No.:</b> 55499                                       |
| <b>Project:</b> Study into Riverbank Collapsing for Lower Murray River | <b>Test Date:</b> 12.11.09<br><b>Report Date:</b> 0/01/1900 |
| <b>Client Id.:</b> CA-BH-2                                             | <b>Depth (m):</b> 5.5-5.83m                                 |

**Description:** SILTY CLAY: grey, high plasticity.

### TEST RESULTS

| Stage | Load<br>(kPa) | Cc    | Cv (m <sup>2</sup> /yr) |                 | Mv (kPa <sup>-1</sup> x10 <sup>-3</sup> ) | C <sub>a</sub> x 10 <sup>-3</sup> | % Consolidation |
|-------|---------------|-------|-------------------------|-----------------|-------------------------------------------|-----------------------------------|-----------------|
|       |               |       | t <sub>50</sub>         | t <sub>90</sub> |                                           |                                   |                 |
| 1     | 6-30          | 0.012 | 3.23                    | 7.91            | 0.148                                     | 1.11                              | 0.5             |
| 2     | 30-60         | 0.181 | 0.37                    | 3.30            | 0.772                                     | 5.27                              | 2.8             |
| 3     | 60-120        | 0.582 | 0.55                    | 0.92            | 1.270                                     | 9.01                              | 10.2            |
| 4     | 120-60        | -     | -                       | -               | -                                         | -                                 | 10.4            |
| 5     | 60-120        | 0.025 | 0.09                    | 11.11           | 0.060                                     | 4.43                              | 10.7            |
| 6     | 120-240       | 0.601 | 0.46                    | 0.65            | 0.714                                     | 8.42                              | 18.4            |
| 7     | 240-480       | 0.496 | 0.53                    | 0.74            | 0.322                                     | 7.96                              | 24.7            |
| 8     | 480-960       | 0.447 | 0.74                    | 0.84            | 0.157                                     | 17.06                             | 30.4            |

Remarks: U50

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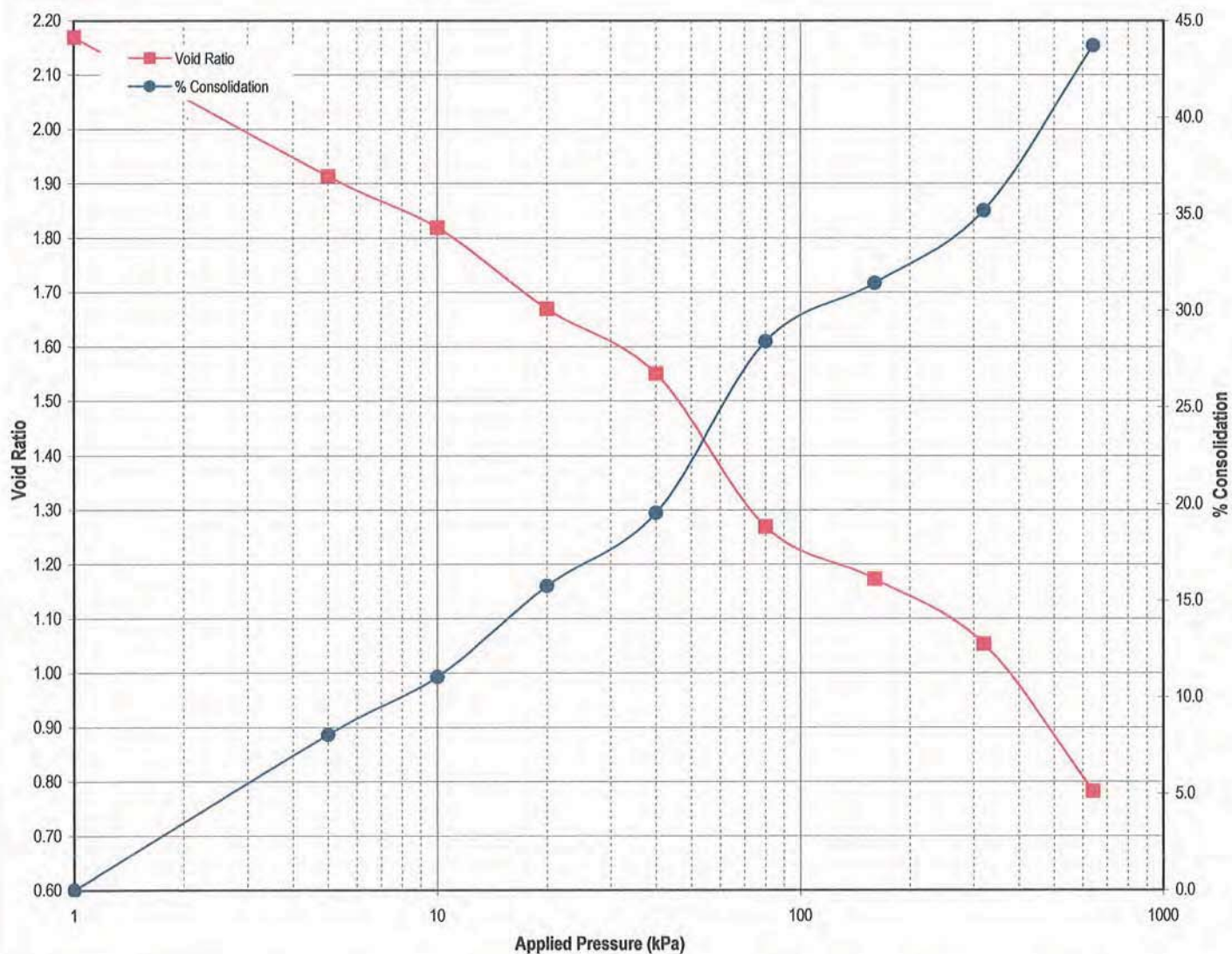


## OEDOMETER TEST REPORT

Test Method: AS1289.6.6.1

|                                                                        |                                                           |
|------------------------------------------------------------------------|-----------------------------------------------------------|
| <b>Client:</b> Sinclair Knight Merz                                    | <b>Lab No.:</b> 55499                                     |
| <b>Project:</b> Study into Riverbank Collapsing for Lower Murray River | <b>Test Date:</b> 13.11.09<br><b>Report Date:</b> 2.11.09 |
| <b>Client Id.:</b> CA-BH-2                                             | <b>Depth (m):</b> 5.5-5.83m                               |

**Description:** SILTY CLAY: grey, high plasticity, with fine to coarse sand, slightly organic.



|                                            |                                           |                                        |
|--------------------------------------------|-------------------------------------------|----------------------------------------|
| Dry Density ( $t/m^3$ ): 0.84              | Initial Moisture (%): 80.5                | Test Condition: Inundated on load      |
| Assumed Particle Density ( $t/m^3$ ): 2.65 | Initial Voids Ratio: 2.169                | Initial Degree of Saturation (%): 98.5 |
| Undisturbed sample supplied by the client  | Remarks: Remoulded to Liquid Limit x 1.2. | Page 1 of 2                            |



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Signed:   
Title: LM

Name: C Lloyd  
Date: 4/12/09

## OEDOMETER TEST REPORT

Test Method: AS1289.6.6.1

|                                                                                                    |                                                           |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| <b>Client:</b> Sinclair Knight Merz                                                                | <b>Lab No.:</b> 55499                                     |
| <b>Project:</b> Study into Riverbank Collapsing for Lower Murray River                             | <b>Test Date:</b> 13.11.09<br><b>Report Date:</b> 2.11.09 |
| <b>Client Id.:</b> CA-BH-2                                                                         | <b>Depth (m):</b> 5.5-5.83m                               |
| <b>Description:</b> SILTY CLAY: grey, high plasticity, with fine to coarse sand, slightly organic. |                                                           |

### TEST RESULTS

| Stage | Load<br>(kPa) | Cc    | Cv (m <sup>2</sup> /yr) |                 | Mv (kPa <sup>-1</sup> x10 <sup>-3</sup> ) | C <sub>a</sub> x 10 <sup>-3</sup> | % Consolidation |
|-------|---------------|-------|-------------------------|-----------------|-------------------------------------------|-----------------------------------|-----------------|
|       |               |       | t <sub>50</sub>         | t <sub>90</sub> |                                           |                                   |                 |
| 1     | 1-5           | 0.365 | 0.12                    | 0.28            | 20.138                                    | 6.19                              | 8.1             |
| 2     | 5-10          | 0.315 | 0.11                    | 0.13            | 6.505                                     | 7.49                              | 11.0            |
| 3     | 10-20         | 0.497 | 0.12                    | 0.14            | 5.309                                     | 8.02                              | 15.8            |
| 4     | 20-40         | 0.397 | 0.10                    | 0.14            | 2.236                                     | 7.33                              | 19.5            |
| 5     | 40-80         | 0.932 | 0.22                    | 0.26            | 2.752                                     | 8.10                              | 28.4            |
| 6     | 80-160        | 0.319 | 0.18                    | 0.20            | 0.529                                     | 18.34                             | 31.4            |
| 7     | 160-320       | 0.397 | 0.18                    | 0.23            | 0.344                                     | 7.51                              | 35.2            |
| 8     | 320-640       | 0.899 | 0.21                    | 0.22            | 0.412                                     | 23.64                             | 43.7            |

Remarks: Remoulded to Liquid Limit x 1.2.

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