<table>
<thead>
<tr>
<th>Client Sample ID</th>
<th>CTP2</th>
<th>CTP2</th>
<th>CTP2</th>
<th>CTP2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matrix</td>
<td>Soil</td>
<td>Soil</td>
<td>Soil</td>
<td>Soil</td>
</tr>
<tr>
<td>Sample Date</td>
<td>Apr 17, 2007</td>
<td>Apr 17, 2007</td>
<td>Apr 17, 2007</td>
<td>Apr 17, 2007</td>
</tr>
<tr>
<td>Units</td>
<td>% RPD</td>
<td>% Recovery</td>
<td>% Recovery</td>
<td>% Recovery</td>
</tr>
<tr>
<td>pH (1:5 Aqueous extract)</td>
<td>6.4</td>
<td>6.4</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
# Determination of Emerson Class Number

**Client:** MAUNSELL AUSTRALIA PTY LTD  
**Level 1, 44 Market Street, Sydney, NSW, 2000**

**Project:** PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY

**Location:**

<table>
<thead>
<tr>
<th>Test Procedure</th>
<th>Date Sampled</th>
<th>Material Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS1289.3.8.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sample Number:** LOVO76 - 01532  
**Sample Identification:** CTP 30 (0.60 to 0.80m)

## Test Data

**Air Dried Crumbs**

- **Time Start of Test:** 17/04/07 8:22
- **Time Dispersion Commences:**
- **Time Dispersion Completed:**

## Remoulded Material

- **Time Start of Test:** 17/04/07 13:28
- **Time Dispersion Commences:**
- **Time Dispersion Completed:**

## Material Description

(CH) - Sandy Clay  
High plasticity,  
dark grey/brown,  
Fine to medium sand.

**Type of Water Used:** Distilled  
**Water Temperature:** 20°C

### Immersion of Air Dried Crumbs

- Does not slake  
- Slakes  
- Swell  
- Does not swell

### Immersion of Remoulded Material

- Disperses  
- Does not disperse  
- Calcite or Gypsum  
- Present  
- Absent

- Vigorous shaking  
- Disperses  
- Flocculates

**Emerson Class Number:** 5

---

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**NATA Accredited Laboratory**  
**Date:** 26th April, 2007

**Approved Signatory:**  
Alex Munoz  
Senior Technical Officer

---

Unit 8/12 Mars Road, Lane Cove West, NSW, 2066  
Ph (02) 9911 1000 Fax: (02) 9911 1003
**determination of emerson class number**

**client:** MAUNSELL AUSTRALIA PTY LTD  
LEVEL 1, 44 MARKET STREET, SYDNEY, NSW, 2000  
**job no:** GEOTUNANG2580AA  
**principal:**  
**project:** PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERY  
**location:**  
**test procedure:** AS1289.3.8.1  
**sample number:** LGOV07G - 01510  
**sample identification:** CTP 2 (0.40 to 0.60m)  
**date sampled:** -  
**material source:** -  
**test report no.:** IQLT780  

### test data

#### air dried crumbs

<table>
<thead>
<tr>
<th>Time start of test</th>
<th>18/04/07 10:22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time dispersion commences:</td>
<td>-</td>
</tr>
<tr>
<td>Time dispersion completed:</td>
<td>-</td>
</tr>
</tbody>
</table>

#### remoulded material

<table>
<thead>
<tr>
<th>Time start of test</th>
<th>19/04/07 10:49</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time dispersion commences:</td>
<td>-</td>
</tr>
<tr>
<td>Time dispersion completed:</td>
<td>-</td>
</tr>
</tbody>
</table>

#### material description

(C8) - SANDY SILTY CLAY - medium to high plasticity, brown, fine to medium sand.

### immersion of air dried crumbs

- **does not slake**
- **slakes**
- **swell**
- **does not swell**

#### immersion of remoulded material

- **disperses**
- **does not disperse**

#### calcite or gypsum

- **present**
- **absent**

#### vigorous shaking

- **disperses**
- **flocsulates**

**Emerson class number** 5

---

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determination of emerson class number

client: MAUNSELL AUSTRALIA PTY LTD
job no: GEOTUNAN02580AA
level 1, 44 MARKET STREET, SYDNEY, NSW, 2000
principals: SYDNEY
project: PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY
date: April 20, 2007
location:
test report no.: IOLT784

test procedure: AS1289.3.8.1
date sampled: -
sample number: LCOV075_01628
material source: -
sample identification: CTP 23 (0.50 to 0.70m)

<table>
<thead>
<tr>
<th>test data</th>
<th>immersion of air dried crumbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>air dried crumbs</td>
<td>does not slake</td>
</tr>
<tr>
<td></td>
<td>slakes</td>
</tr>
<tr>
<td>time start of test:</td>
<td>16/04/07 10:03</td>
</tr>
<tr>
<td>time dispersion commences:</td>
<td></td>
</tr>
<tr>
<td>time dispersion completed:</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>remoulded material</th>
<th>immersion of remoulded material</th>
</tr>
</thead>
<tbody>
<tr>
<td>time start of test:</td>
<td>17/04/07 11:45</td>
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<tr>
<td>time dispersion commences:</td>
<td></td>
</tr>
<tr>
<td>time dispersion completed:</td>
<td></td>
</tr>
</tbody>
</table>

material description

(C) - SANDY CLAY -
medium plasticity, brown, fine to coarse sand.

type of water used: distilled
water temperature: 20°C

Emerson class number 6
determination of emerson class number

client: MAUNSELL AUSTRALIA PTY LTD
level 1, 44 market street, sydney, NSW, 2000
project: PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY
location:

job no: GEOTUNAN02580AA
laboratory: SYDNEY
date: April 20, 2007
test report no: IQLT782

test procedure: AS1289 3.8.1
date sampled: 
material source: 
sample number: LCOV075-01523
sample identification: CTP16 (0.60 to 0.80m)

test data

air dried crumbs

time start of test: 16/04/07 10:01

time dispersion commences:
time dispersion completed:

remoulded material

time start of test: 17/04/07 11:37

time dispersion commences: NOT OBSERVED
time dispersion completed: NOT OBSERVED

material description

(CH) - SILTY CLAY - high plasticity, mottled grey/orange/white, fine to medium sand.

type of water used: distilled
water temperature: 20° C

immersion of air dried crumbs

does not slake 
slakes 
swell 
does not swell 

complete dispersion
partial dispersion
no dispersion

immersion of remoulded material

disperses 
do not disperse 
calcite or gypsum

vigorously shaking

disperses
flocculates

Emerson class number 3
determination of emerson class number

client: MAUNSELL AUSTRALIA PTY LTD
LEVEL 1, 44 MARKET STREET, SYDNEY, NSW, 2000
job no: GEDTUNAN02556AA
principal:
laboratory: SYDNEY
project: PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY
date: April 28, 2007
location:
test report no: IOLT781

test procedure: AS1289.3.8.1
date sampled: -
sample number: LCOV07S-01519
material source: -
sample identification: CTP 3 (0.60 to 0.80m)

test data
air dried crumbs

time start of test: 18/04/07 10:00

time dispersion commences: NOT OBSERVED
time dispersion completed: NOT OBSERVED

remoulded material
time start of test: -
time dispersion commences: -
time dispersion completed: -

material description

(CI) - SANDY SILTY CLAY -
medium plasticity, mottled grey/orange/brown, fine to coarse sand.

type of water used: distilled
water temperature: 20 °C

immersion of air dried crumbs

does not slake ☐
slakes ☒
swell ☐ 7 does not swell ☐ 8

complete dispersion ☐
partial dispersion ☒ 2
no dispersion ☐

immersion of remoulded material

disperses ☐ 3
does not disperse ☐

calcite or gypsum

absent ☐
present ☐ 4

caloric shaking

disperses ☐ 5
flocculates ☐ 6

Emerson class number 2

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NATA Accredited Laboratory: No. 431
Approved Signatory: Alex Munoz
Senior Technical Officer
determination of emerson class number

client: MAUNSELL AUSTRALIA PTY LTD
LEVEL 1, 44 MARKET STREET, SYDNEY, NSW, 2000

job no: GEOFUNO62580AA

principal: PRINCIPAL
project: PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY

laboratory: SYDNEY
date: April 20, 2007
test report no: I0L1788

location: -
material source: -
test procedure: AS1289.3.8.1
date sampled: -
sample number: L0060G075 - 01530
sample identification: CTP 27 (0.40 to 0.60m)

---

test data

air dried crumbs

time start of test: 16/04/07 10:05

time dispersion commences: -
time dispersion completed: -

remoulded material

time start of test: 17/04/07 11:47

time dispersion commences: NOT OBSERVED
time dispersion completed: NOT OBSERVED

material description

(CI) - SANDY CLAY -
medium plasticity,
brown, fine to coarse sand.

type of water used: distilled
water temperature: 20°C

---

immersion of air dried crumbs

does not slake
slakes
swell
does not swell

immersion of remoulded material

disperses

calcite or gypsum

vigorous shaking

disperses
flocculates

Emerson class number 3

---

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NATA Accredited Laboratory
Date: 20th April, 2007
No. 431
Approved Signatory:
Alex Munoz,
Senior Technical Officer
# Determination of Emerson Class Number

**Client:** MAUNSELL AUSTRALIA PTY LTD  
**Level 1, 44 Market Street, Sydney, NSW, 2000**

**Principal:**

**Project:** PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERY

**Location:**

<table>
<thead>
<tr>
<th>Test Procedure</th>
<th>Date Sampled</th>
<th>Material Source</th>
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<tbody>
<tr>
<td>AS1289.3.8.1</td>
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</table>

<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Sample Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCOV07S - 01529</td>
<td>CTP26 (0.50 to 0.70m)</td>
</tr>
</tbody>
</table>

## Test Data

### Air Dried Crumbs

- **Time Start of Test:** 16/04/07 10:04
- **Time Dispersion Commences:** NOT OBSERVED
- **Time Dispersion Completed:** NOT OBSERVED

### Remoulded Material

- **Time Start of Test:** 
- **Time Dispersion Commences:** 
- **Time Dispersion Completed:** 

## Material Description

(CH) - SANDY SILTY CLAY - high plasticity, motiled white/grey/orange, fine to medium sand.

## Test Procedure

- Does not slake
- Slakes
- Swell
- Does not swell

### Immersion of Air Dried Crumbs

- Complete dispersion
- Partial dispersion
- No dispersion

### Immersion of Remoulded Material

- Disperses
- Does not disperse

- Calcite or Gypsum
  - Present
  - Absent

- Vigorous Shaking
  - Disperses
  - Flocculates

## Emerson Class Number

Emerson class number: 2

---

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NATA Accredited Laboratory  
Date: 26th April, 2007

No. 431

Approved Signatory: 
Alex Munoz,  
Senior Technical Officer
determination of emerson class number

client: MAUNSELL AUSTRALIA PTY LTD
 Level 1, 44 Market Street, Sydney, NSW, 2000

principal:

project: PRINCIPES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY

location:

job no: GEOTUNANG2588AA

laboratory: SYDNEY

date: April 20, 2007

test report no.: IOL7783

test procedure: AS1289.3.8.1

date sampled: -

material source: -

sample number: LCOV07S-01526

sample identification: CTP 21 (0.60 to 0.70m)

---

test data

air dried crumbs

time start of test:
16/04/07
10:02

time dispersion commences:


time dispersion completed:

remoulded material

time start of test:
17/04/07
11:48

time dispersion commences:


time dispersion completed:

---

material description

(CD) - SANDY CLAY - medium plasticity, orange/brown, fine to coarse sand.

type of water used: distilled

water temperature: 20°C

---

immersion of air dried crumbs

- does not slake

- slakes

swell

do not swell

complete dispersion

partial dispersion

no dispersion

---

immersion of remoulded material

- disperses

- does not disperse

- calcite or gypsum

- present

- absent

vigorously shaking

- disperses

- flocculates

---

Emerson class number: 5

NATA Accredited Laboratory

Date: 20th April, 2007

Na. 431

Approved Signatory:
Senior Technical Officer

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# Determination of Emerson Class Number

**Client:** MAUNSELL AUSTRALIA PTY LTD  
**Location:** PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY  
**Job No.:** GEOTUNAN2580AA  
**Laboratory:** SYDNEY  
**Date:** April 20, 2007  
**Test Report No.:** IOLT789

<table>
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<tbody>
<tr>
<td>AS1289.3.8.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sample Identification:** CBH18 (1.50 to 1.95m)

## Test Data

### Air Dried Crumbs

- **Time Start of Test:** 18/04/07 10:24
- **Time Dispersion Commences:**
- **Time Dispersion Completed:**

**Immersion of Air Dried Crumbs**

- Does not slake
- Slakes
  - Swell
  - Does not swell

### Remoulded Material

- **Time Start of Test:** 19/04/07 10:59
- **Time Dispersion Commences:** NOT OBSERVED
- **Time Dispersion Completed:** NOT OBSERVED

**Immersion of Remoulded Material**

- Disperses
- Does not disperse
  - Calcite or gypsum
    - Present
    - Absent
  - Vigorous shaking
    - Disperses
    - Flocculates

**Emerson Class Number:** 3

---

*(CH) - SANDY CLAY - high plasticity, dark grey/brown, fine to medium sand.*

**Type of Water Used:** Distilled  
**Water Temperature:** 20 °C
determination of emerson class number

client: MAUNSELL AUSTRALIA PTY LTD
LEVEL 1, 44 MARKET STREET, SYDNEY, NSW, 2000

job no: GCOYUAN62880AA

principal:

project: PRINCES HIGHWAY UPGRADE, GERRINGONG TO ROMADERRY

location:

labatory: SYDNEY

date: April 20, 2007

test report no.: JOLT787

test procedure: AS1289.3.8.1
date sampled: -

material source: -
sample number: LCOV07S - 01531

sample identification: CTP 28 (0.30 to 0.50m)

---

**test data**

**air dried crumbs**

- time start of test: 16/04/07 10:06
- time dispersion commences:
- time dispersion completed:

**remoulded material**

- time start of test: 17/04/07 11:53
- time dispersion commences:
- time dispersion completed:

---

**material description**

(CJ) - SANDY CLAY - medium plasticity, brown, fine to coarse sand.

type of water used: distilled

water temperature: 20°C

---

**immersion of air dried crumbs**

- does not slake
- slakes

<table>
<thead>
<tr>
<th>1. complete dispersion</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. partial dispersion</td>
</tr>
<tr>
<td>3. no dispersion</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>4. swell</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. does not swell</td>
</tr>
</tbody>
</table>

---

**immersion of remoulded material**

- disperses
- does not disperse

<table>
<thead>
<tr>
<th>4. calcite or gypsum</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. disperses</td>
</tr>
<tr>
<td>6. flocculates</td>
</tr>
</tbody>
</table>

---

Emerson class number: 6

---

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NATA Accredited Laboratory  Date: 20th April, 2007
No. 431
Approved Signatory: Alex Munoz
Senior Technical Officer
# Test Results

**Client:** MAUNSELL AUSTRALIA PTY LTD  
**Location:** PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY  
**Job No.:** GEOTUNAM02586AA  
**Laboratory:** SYDNEY  
**Report Date:** April 24, 2007  
**Test Report No.:** IOLT802  
**Test Date:** 18/04/07 - 24/04/07

## Test Procedure: AS1289.3.6.1,3.6.3

<table>
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<tr>
<th>Sample Identification</th>
<th>Sieve Size (mm)</th>
<th>Percentage Passing (%)</th>
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</thead>
<tbody>
<tr>
<td>CTP 6 (0.40 to 0.50m)</td>
<td>37.5</td>
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</tr>
<tr>
<td></td>
<td>26.5</td>
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<tr>
<td></td>
<td>13.2</td>
<td>100.0</td>
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<tr>
<td></td>
<td>9.5</td>
<td>100.0</td>
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<tr>
<td></td>
<td>6.7</td>
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<td></td>
<td>4.75</td>
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<tr>
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<td>2.36</td>
<td>99.9</td>
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<td></td>
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<tr>
<td></td>
<td>0.600</td>
<td>99.5</td>
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<tr>
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<td>0.300</td>
<td>98.9</td>
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<td></td>
<td>0.0012</td>
<td>57.6</td>
</tr>
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</table>

**Remarks:** Sample received from CGS (Unanderra) on the 11/04/07.

---

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NATA Accredited Laboratory  
No. 431  
Approved Signatory:  
Alex Munoz,  
Senior Technical Officer  
Date: 24th April, 2007
particle size distribution

client: MAUNSELL AUSTRALIA PTY LTD
LEVEL 1, 44 MARKET STREET SYDNEY, NSW, 2000

principal:

project: PRINCES HIGHWAY UPGRADE, GERRINGONG TO YOMADELLY

location:

job no: GEDTUNAN02580AA

laboratory: SYDNEY

report date: April 24, 2007

test report no: JOLT802

depth: 0.40 to 0.60m

test procedure: AS1289.3.8.1; 3.8.3

sample no: 1COV078 - 01859

sample identification: CTP 6 (0.40 to 0.60m)

---

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NATA Accredited Laboratory Date: 24th April, 2007
No. 431
Approved Signatory: Alex Munoz,
Seior Technical Officer
<table>
<thead>
<tr>
<th>Sample Identification</th>
<th>SIEVE SIZE (mm)</th>
<th>PERCENTAGE PASSING</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTP 28 (0.30 to 0.50m)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sydney Lab No. LCON07S-01533</td>
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</tr>
<tr>
<td></td>
<td>37.5</td>
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<tr>
<td></td>
<td>26.5</td>
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<tr>
<td></td>
<td>0.075</td>
<td>85.0</td>
</tr>
<tr>
<td></td>
<td>0.0398</td>
<td>69.1</td>
</tr>
<tr>
<td></td>
<td>0.0291</td>
<td>63.9</td>
</tr>
<tr>
<td></td>
<td>0.0191</td>
<td>58.0</td>
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<tr>
<td></td>
<td>0.0152</td>
<td>56.6</td>
</tr>
<tr>
<td></td>
<td>0.0114</td>
<td>52.2</td>
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<td>50.7</td>
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<td>0.0058</td>
<td>47.8</td>
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<td>43.6</td>
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<td>0.0026</td>
<td>41.4</td>
</tr>
<tr>
<td></td>
<td>0.0013</td>
<td>37.5</td>
</tr>
</tbody>
</table>

**Remarks:** Sample received from CGS (Unanderra) on the 11/04/07.

---

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NATA Accredited Laboratory: 24th April, 2007

Approved Signatory:
Alex Munoz,
Senior Technical Officer
# Particle Size Distribution

**Client:** MAUNSELL AUSTRALIA PTY LTD  
**Level:** 1, 44 Market Street Sydney, NSW, 2000  
**Job No.:** GEOTUNAN02580AA  
**Principal:**  
**Project:** PRINCES HIGHWAY UPGRADE, GERRINGONG TO DOMADERRY  
**Location:**  
**Test Procedure:** AS1289.3.6.1; 3.6.3  
**Sample No.:** LCOV075 - 01531  
**Sample Identification:** CTP 28 (0.30 to 0.50m)

### Particle Size Distribution

<table>
<thead>
<tr>
<th>A.S. Sieve Size</th>
<th>75 um</th>
<th>50 um</th>
<th>30 um</th>
<th>20 um</th>
<th>10 um</th>
<th>1.18 mm</th>
<th>2.36 mm</th>
<th>4.75 mm</th>
<th>9.5 mm</th>
<th>19 mm</th>
<th>38 mm</th>
<th>50 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage finer than size</td>
<td>100</td>
<td>90</td>
<td>80</td>
<td>70</td>
<td>60</td>
<td>50</td>
<td>40</td>
<td>30</td>
<td>20</td>
<td>10</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>

**Atterberg Limit:**

- **Liquid Limit:** %  
- **Plastic Limit:** %  
- **Plasticity Index:** %  
- **Linear Shrinkage:** %  
- **Natural Moisture:** %  
- **Sample History:**  
  - Natural State:  
    - Dry Sieving: ☐  
    - Wet Sieving: ☐  
  - Linear Shrinkage:  
    - Oven Dried: ☐  
    - Mould Size: mm  
  - Other:  
    - Crumbling: ☐  

**Classification:**  
Sample received from CG (Unanderra) on the 11/04/07.

---

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## Test Results

<table>
<thead>
<tr>
<th>Sample Identification</th>
<th>Sieve Size (mm)</th>
<th>Percentage Passing (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTP 22 (0.30 to 0.80m)</td>
<td>37.5</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>26.5</td>
<td>100.0</td>
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<tr>
<td></td>
<td>19.0</td>
<td>97.8</td>
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<tr>
<td></td>
<td>13.2</td>
<td>90.4</td>
</tr>
<tr>
<td></td>
<td>9.5</td>
<td>84.3</td>
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<tr>
<td></td>
<td>6.7</td>
<td>78.0</td>
</tr>
<tr>
<td></td>
<td>4.75</td>
<td>72.8</td>
</tr>
<tr>
<td></td>
<td>2.36</td>
<td>66.0</td>
</tr>
<tr>
<td></td>
<td>1.18</td>
<td>58.3</td>
</tr>
<tr>
<td></td>
<td>0.600</td>
<td>47.9</td>
</tr>
<tr>
<td></td>
<td>0.300</td>
<td>40.5</td>
</tr>
<tr>
<td></td>
<td>0.150</td>
<td>34.8</td>
</tr>
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<td>0.075</td>
<td>31.2</td>
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<td>0.0481</td>
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<td>0.0218</td>
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<td>0.0091</td>
<td>23.8</td>
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<td>22.7</td>
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<td></td>
<td>0.0035</td>
<td>20.8</td>
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<tr>
<td></td>
<td>0.0014</td>
<td>16.0</td>
</tr>
</tbody>
</table>

Remarks: Sample received from CGS (Unanderra) on the 11/04/07.

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to national standards of measurement. This document shall not be reproduced except in full.

NATA Accredited Laboratory Date: 24th April, 2007

Approved Signatory: Alex Munoz, Senior Technical Officer
particle size distribution

client: MAUNSELL AUSTRALIA PTY LTD
level 1, 44 market street sydney, nsw, 2000

job no: GEOTUNANA2550AA

laboratory: sydney

project: PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERY

report date: April 24, 2007
test report no: IOT800

depth: 0.30 to 0.50m

sample no: LCOVO7S - 01827

c sample identification: CTP 22 (0.30 to 0.50m)

A.S. sieve size

75 um  |  50 um  |  30 um  |  20 um  |  10 um  |  1 um  |  0.1 mm  |  0.06 mm  |  0.02 mm

-     |        |        |        |        | 1.18 mm| 2.36 mm  | 4.75 mm  | 9.5 mm

0.001 0.002 0.06 0.1 1 10 100

classification:
Sample received from CG (UNANDRA) on the 11/04/07.

Atterberg Limit:

liquid limit % -
plastic limit % -
plasticity index % -
linear shrinkage % -
natural moisture % -

Preparation Method:

natural state dry sieving
air dried wet sieving
oven dried Linear Shrinkage
other Mould size

mm

Sample History:

clay fine medium coarse
silt fine medium coarse
sand fine medium coarse
gravel fine medium coarse
cobbles

0.001 0.002 0.06 0.1 1 10 100

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC
17025 and are traceable to national standards of measurement. This document shall not be reproduced except in full.

NATA Accredited Laboratory No. 431
Date: 24th April, 2007
Approved Signatory: Alex Munoz,
Seior Technical Officer
<table>
<thead>
<tr>
<th>Sample Identification</th>
<th>Sieve Size (mm)</th>
<th>Percentage Passing (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTP 15</td>
<td>37.5</td>
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<tr>
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<td>26.5</td>
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<tr>
<td></td>
<td>19.0</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>13.2</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>9.5</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>6.7</td>
<td>99.6</td>
</tr>
<tr>
<td></td>
<td>4.75</td>
<td>99.5</td>
</tr>
<tr>
<td></td>
<td>2.36</td>
<td>99.1</td>
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<tr>
<td></td>
<td>1.18</td>
<td>98.4</td>
</tr>
<tr>
<td></td>
<td>0.600</td>
<td>97.9</td>
</tr>
<tr>
<td></td>
<td>0.300</td>
<td>97.3</td>
</tr>
<tr>
<td></td>
<td>0.150</td>
<td>94.7</td>
</tr>
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<td></td>
<td>0.075</td>
<td>90.6</td>
</tr>
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<td>43.7</td>
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<td>0.0013</td>
<td>40.1</td>
</tr>
</tbody>
</table>

Remarks: Sample received from CGS (Unanderra) on the 11/04/07.
particle size distribution

client: MAUNSELL AUSTRALIA PTY LTD
LEVEL 1, 44 MARKET STREET SYDNEY, NSW, 2000
principal:
project: PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY
location:
test procedure: AS1289.3.6.1; 3.6.3
sample no: LCOV075 - 01525
sample identification: CTP 19 (0.70 to 0.90m)

A.S. sieve size

percentage finer than size

particle size - millimetre

Afterberg Limit:
liquid limit %
plastic limit %
plasticity index %
linear shrinkage %
natural moisture %

natural state
dry sieving
dry sieving
oven dried
Mould size

Sample received from CG (Unandera) on the 11/04/07.

Preparation Method

Wet sieving
Linear Shrinkage
Crumbling

Sample:

classification:

NATA Accredited Laboratory

Date: 24th Apr, 2007

Approved Signatory:
Alex Munoz,
Senior Technical Officer

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### Test Results

**Client:** MAUNSELL AUSTRALIA PTY LTD  
**Address:** LEVEL 1, 44 MARKET STREET, SYDNEY, NSW, 2000  
**Job No:** GEOTUNANO2580AA  
**Principal:**  
**Project:** PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY  
**Location:**  
**Test Procedure:** AS1289.3.6.1,3.6.3  
**Test Date:** 13/04/07 - 18/04/07  
**Laboratory:** SYDNEY  
**Report Date:** April 20, 2007  
**Test Report No:** IQLT795  
**Sample Identification:** CTP 18  
**Specimen Size (0.90 to 1.10m)**  
**Specimen No:** Sydney Lab No. LCOV075 - 01524

<table>
<thead>
<tr>
<th>Sample Identification</th>
<th>Sieve Size (mm)</th>
<th>Percentage Passing (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>37.5</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>26.5</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>19.0</td>
<td>100.0</td>
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<tr>
<td></td>
<td>13.2</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>9.5</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>6.7</td>
<td>99.2</td>
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<tr>
<td></td>
<td>4.75</td>
<td>98.3</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>0.600</td>
<td>88.6</td>
</tr>
<tr>
<td></td>
<td>0.300</td>
<td>87.7</td>
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<td>0.150</td>
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<td></td>
<td>0.075</td>
<td>81.5</td>
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<tr>
<td></td>
<td>0.0383</td>
<td>71.4</td>
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<td>0.0296</td>
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<td>0.0058</td>
<td>46.7</td>
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<td>0.0034</td>
<td>40.8</td>
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<td>0.0028</td>
<td>39.1</td>
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<tr>
<td></td>
<td>0.0013</td>
<td>34.7</td>
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</tbody>
</table>

**Remarks:** Sample received from CGS (Unanderra) on the 11/04/07.

---

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**NATA Accredited Laboratory**  
**Date:** 29th April, 2007  
**No:** 431  
**Approved Signatory:** Alex Manuz, Senior Technical Officer
particle size distribution

client: MAUNSELL AUSTRALIA PTY LTD
LEVEL 1, 44 MARKET STREET SYDNEY, NSW, 2000
principal:
project: PRINCES HIGHWAY UPGRADE, GERRINGONG TO DOMAINDERY
location:

job no: GEOTUNA02580AA
laboratory: SYDNEY
report date: April 20, 2007
test report no: IQLT795

test procedure: AS1289.3.6.1; 3.6.3
depth: 0.90 to 1.10m

sample no: LCOV073 - 01524
sample identification: CTP18 (0.90 to 1.10m)

<table>
<thead>
<tr>
<th>A.S. sieve size</th>
<th>75 um</th>
<th>130 um</th>
<th>300 um</th>
<th>435 um</th>
<th>600 um</th>
<th>1.18 mm</th>
<th>2.36 mm</th>
<th>4.75 mm</th>
<th>9.5 mm</th>
<th>19 mm</th>
<th>37.5 mm</th>
<th>75 mm</th>
<th>total 100</th>
</tr>
</thead>
</table>

percentage finer than size:

<table>
<thead>
<tr>
<th>clay</th>
<th>silt</th>
<th>sand</th>
<th>gravel</th>
<th>cobbles</th>
</tr>
</thead>
<tbody>
<tr>
<td>fine</td>
<td>medium</td>
<td>coarse</td>
<td>fine</td>
<td>medium</td>
</tr>
</tbody>
</table>

Atterberg Limit:

| liquid limit | % | - |
| plastic limit | % | - |
| plasticity index | % | - |
| linear shrinkage | % | - |
| natural moisture | % | - |

Sample History:

Preparation Method:

natural state | dry sieving | - |
air dried | wet sieving | - |
oven dried | Linear Shrinkage | - |
other | Mould size | - |
crumbing | curling | - |

classification:

Sample received from CG (Unanderra) on the 11/04/07.

NATA Accredited Laboratory No. 431
Approved Signatory: Alex Munoz
Seior Technical Officer

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### Test Results

**Client:** MAUNSELL AUSTRALIA PTY LTD  
**Level 1, 44 Market Street, Sydney, NSW, 2000**  
**Job No:** GEOTUNAN02580AA  
**Principal:**  
**Project:** PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY  
**Location:**  
**Test Procedure:** AS1289.3.6.1,3.6.3  
**Test Date:** 13/04/07 - 15/04/07

<table>
<thead>
<tr>
<th>Sample Identification</th>
<th>Sieve Size (mm)</th>
<th>Percentage Passing (%)</th>
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<tbody>
<tr>
<td>CTP 16</td>
<td>37.5</td>
<td>100.0</td>
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<tr>
<td>(0.60 to 0.80m)</td>
<td>26.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Sydney Lab No.</td>
<td>19.0</td>
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<tr>
<td>LCOV07S - 01523</td>
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<tr>
<td></td>
<td>9.5</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>6.7</td>
<td>99.9</td>
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<td></td>
<td>4.75</td>
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<td></td>
<td>0.0034</td>
<td>60.1</td>
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<tr>
<td></td>
<td>0.0026</td>
<td>58.6</td>
</tr>
<tr>
<td></td>
<td>0.0013</td>
<td>55.0</td>
</tr>
</tbody>
</table>

**Remarks:** Sample received from CGS (Unanderra) on the 11/04/07.

---

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NATA Accredited Laboratory  
No. 431  
Approved Signatory: Alex Munoz, Senior Technical Officer  
Date: 20th April, 2007
particle size distribution

client: MAUNSELL AUSTRALIA PTY LTD  
LEVEL 1, 44 MARKET STREET SYDNEY, NSW, 2000  
project: PRINCES HIGHWAY UPGRADE; GERRINGONG TO BOMADEERY  
location:  

job no: GEXFLUNAN02580AA  
laboratory: SYDNEY  
report date: April 20, 2007  
test report no.: IOLT794  
depth: 0.60 to 0.80m

test procedure: AS1289.3.6.1:3.6.3  
sample no: LCOV79S - 01523  
sample identification: CTP 16 (0.60 to 0.80m)

A.S. sieve size

percentage finer than size

clay  silt  sand  gravel  cobbles

0.002  0.06  0.1  1.0  2.0  60

classification:

Atterberg Limit:

liquid limit %  -  
plastic limit %  -  
plasticity index %  -  
linear shrinkage %  -  
natural moisture %  -  

Preparation Method  
natural state  [ ]  dry sieving  [ ]  
air dried  [ ]  wet sieving  [ ]  
oven dried  [ ]  Linear Shrinkage  [ ]  
Mould size  [ ]  mm  
other  [ ]  crumbing  [ ]  
curling  [ ]

Sample History:

Sample received from CG (Unandera) on the 11/04/07.

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to national standards of measurement. This document shall not be reproduced except in full.

NATA Accredited Laboratory  Date: 20th April, 2007  
No. 431  
Approved Signatory: Alex Munoz,  
Senior Technical Officer
### Test Results

**Client:** MUNSELL AUSTRALIA PTY LTD  
**Level 1, 44 Market Street, Sydney, NSW, 2000**

**Principal:**  
**Project:** PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERY

**Location:**  
**Test Procedure:** AS1289.3.6.1, 3.6.3

<table>
<thead>
<tr>
<th>Sample Identification</th>
<th>Sieve Size (mm)</th>
<th>Percentage Passing (%)</th>
</tr>
</thead>
</table>
| CTP 12  
(0.30 to 0.50m)  
Sydney Lab No. LCOV075 - 01522 | 37.5 | 100.0 |
| 26.5 | 100.0 |
| 19.0 | 100.0 |
| 13.2 | 100.0 |
| 9.5 | 99.6 |
| 6.7 | 99.4 |
| 4.75 | 99.2 |
| 2.36 | 98.8 |
| 1.18 | 98.5 |
| 0.600 | 97.0 |
| 0.300 | 91.9 |
| 0.150 | 61.9 |
| 0.075 | 69.0 |
| 0.0425 | 56.6 |
| 0.0324 | 51.5 |
| 0.0201 | 46.3 |
| 0.0160 | 44.9 |
| 0.0115 | 41.9 |
| 0.0085 | 39.7 |
| 0.0061 | 36.8 |
| 0.0033 | 35.0 |
| 0.0026 | 34.0 |
| 0.0013 | 31.6 |

**Remarks:** Sample received from CGS (Unanderra) on the 11/04/07.

---

NATA Accredited Laboratory  
No. 431  
Approved Signatory:  
Alex Munoz,  
Senior Technical Officer  
Date: 20th Apr, 2007

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particle size distribution

client: MAUNSELL AUSTRALIA PTY LTD
level 1, 44 market street sydney, NSW, 2000

job no: GEO1289.02580AA

principal:

project: PRINCES' HIGHWAY UPGRADE, GERRINGONG TO BOMADEERRY

report date: April 20, 2007

location:

test procedure: AS1289.3.6.1; 3.6.3

sample no: LCOV076 - 01522

sample identification: CTP12 (0.30 to 0.50m)

A.S. sieve size

0.001 0.002 0.01 0.06 0.1 1.0

clay fine medium coarse fine medium coarse fine medium coarse

Atterberg Limit:

Liquid limit % -
Plastic limit % -
Plasticity index % -
Linear shrinkage % -
Natural moisture % -

Sample History:

Preparation Method

Natural state □
Air dried □
Oven dried □
Other □

Linear shrinkage

Mould size mm
Crumbling □
Curling □

Classification:

Sample received from CG (Unanderra) on the 11/04/07.

NATA Accredited Laboratory

Date: 20th April, 2007

Approved Signatory:
Alex Munro,
Senior Technical Officer

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to national standards of measurement. This document shall not be reproduced except in full.
## Test Results

<table>
<thead>
<tr>
<th>Sample Identification</th>
<th>Sieve Size (mm)</th>
<th>Percentage Passing (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTP 11 (0.55 to 0.75m)</td>
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<td>100.0</td>
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<tr>
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<td></td>
<td>19.0</td>
<td>100.0</td>
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<tr>
<td></td>
<td>13.2</td>
<td>100.0</td>
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<tr>
<td></td>
<td>9.5</td>
<td>100.0</td>
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<tr>
<td></td>
<td>6.7</td>
<td>99.9</td>
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<tr>
<td></td>
<td>4.75</td>
<td>99.9</td>
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<tr>
<td></td>
<td>2.36</td>
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<td>1.18</td>
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</tr>
<tr>
<td></td>
<td>0.600</td>
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<td>0.0013</td>
<td>22.9</td>
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</tbody>
</table>

**Remarks:** Sample received from CGS (Unanderra) on the 11/04/07.

---

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NATA Accredited Laboratory  
Date: 20th April, 2007  
No. 431  
Approved Signatory:  
Alex Munoz,  
Senior Technical Officer
particle size distribution

client: MAUNSELL AUSTRALIA PTY LTD
LEVEL 1, 44 MARKET STREET SYDNEY, NSW, 2000
job no: GEOTUNAN02580AA
principal: laboratory: SYDNEY
project: PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERY
report date: April 20, 2001
test report no.: IOLT792
location:
depth: 0.55 to 0.75m

test procedure: AS1288.3.6.1; 3.6.3
sample no: LCOV07S - 01921
sample identification: CTP 11 (0.55 to 0.75m)

Atterberg Limit:

- liquid limit % -
- plastic limit % -
- plasticity index % -
- linear shrinkage % -
- natural moisture % -

Preparation Method:
- natural state dry sieving
- air dried wet sieving
- oven dried Linear Shrinkage
- mould size
- other crumbling

classification:
Sample received from CG (Unandara) on the 11/04/07.

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to national standards of measurement. This document shall not be reproduced except in full.

NATA Accredited Laboratory Date: 20th April, 2007
No. 431
Approved Signatory:
Alex Munoz, Seior Technical Officer
# Test Results

**Client:** MAUNSWELL AUSTRALIA PTY LTD  
**Level:** 1, 44 Market Street, Sydney, NSW, 2000  
**Job No.:** GDOU0025800AA  
**Principal:**  
**Project:** PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY  
**Location:**  
**Laboratory:** SYDNEY  
**Report Date:** April 20, 2007  
**Test Report No.:** IQTT91  
**Test Date:** 13/04/07 - 18/04/07

**Test Procedure:** AS1289.3.6.1;3.6.3

<table>
<thead>
<tr>
<th>Sample Identification</th>
<th>Sieve Size (mm)</th>
<th>Percentage Passing (%)</th>
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</thead>
<tbody>
<tr>
<td>CTP 8</td>
<td>37.5</td>
<td>100.0</td>
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<tr>
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<td>26.5</td>
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<td></td>
<td>19.0</td>
<td>100.0</td>
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<tr>
<td></td>
<td>13.2</td>
<td>100.0</td>
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<tr>
<td></td>
<td>9.5</td>
<td>100.0</td>
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<tr>
<td></td>
<td>6.7</td>
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<td>4.75</td>
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<td>2.36</td>
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<td></td>
<td>0.300</td>
<td>91.5</td>
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<td></td>
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<td>87.0</td>
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<td>0.0013</td>
<td>38.1</td>
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</tbody>
</table>

**Remarks:** Sample received from CGS (Unanderra) on the 11/04/07.

---

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NATA Accredited Laboratory  
Date: 25th April, 2007  
No. 431  
Approved Signatory:  
Alex Munoz,  
Senior Technical Officer
particle size distribution

client: MAINESEL AUSTRALIA PTY LTD
LEVEL 1, 44 MARKET STREET SYDNEY, NSW, 2000

job no: GEOTUNAN02580AA

principal:
laboratory: SYDNEY

project: PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY
report date: April 20, 2007
test report no: IOL7791

location:
depth: 0.60 to 0.80m

test procedure: AS1289.3.6.1; 3.6.3

sample no: LCOV07S - 01520
sample identification: CTP 8 (0.60 to 0.80m)

Atterberg Limit:

<table>
<thead>
<tr>
<th>liquid limit</th>
<th>plastic limit</th>
<th>plasticity index</th>
<th>linear shrinkage</th>
<th>natural moisture</th>
<th>natural state</th>
<th>dry sieving</th>
<th>wet sieving</th>
<th>air dried</th>
<th>oven dried</th>
<th>Linear Shrinkage</th>
<th>Mould size</th>
<th>mm</th>
<th>other</th>
<th>crumbling</th>
<th>curling</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Preparation Method

<table>
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<tr>
<th>Sample History</th>
<th>Sample History</th>
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<tr>
<td>natural state</td>
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<tr>
<td>dry sieving</td>
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<td>wet sieving</td>
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<tr>
<td>air dried</td>
<td></td>
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<tr>
<td>oven dried</td>
<td></td>
</tr>
<tr>
<td>Linear Shrinkage</td>
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</tr>
<tr>
<td>Mould size</td>
<td>mm</td>
</tr>
<tr>
<td>other</td>
<td></td>
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<tr>
<td>curling</td>
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</table>

classification:

Sample received from CG (Unanderra) on the 11/04/07.

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NATA Accredited Laboratory

Date: 20th April, 2007

Approved Signatory:
Alex Munoz,
Seior Technical Officer
test results

client: MAUNSELL AUSTRALIA PTY LTD
        LEVEL 1, 44 MARKET STREET, SYDNEY, NSW, 2000
principal: 
project: PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY
location: 

test procedure: AS1289.3.6.1;3.6.3

copy no.: 

<table>
<thead>
<tr>
<th>Sample Identification</th>
<th>SIEVE SIZE (mm)</th>
<th>PERCENTAGE PASSING %</th>
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</thead>
<tbody>
<tr>
<td>CTP 3 (0.60 to 0.80m)</td>
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<td>Sydney Lab No. LCOV075 - 01519</td>
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<tr>
<td>37.5</td>
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<td>26.5</td>
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<td>2.36</td>
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remarks: Sample received from CGS (Unanderra) on the 11/04/07.

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Particle size distribution

Client: MAUNSELL AUSTRALIA PTY LTD
Level 1, 44 Market Street Sydney, NSW, 2000

Principal:

Project: PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY

Location:

Test procedure: AS1289.3.6.1; 3.6.3

Sample no.: LCOV07S-01519

Sample identification: CTP3 (0.60 to 0.80m)

A.S. sieve size

<table>
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<th>Size (mm)</th>
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<th>60</th>
<th>50</th>
<th>42.5</th>
<th>30</th>
<th>20</th>
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<th>4.75</th>
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<th>75</th>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Atterberg Limit:

Liquid limit % -
Plastic limit % -
Plasticity index % -
Linear shrinkage % -
Natural moisture % -

Natural state
Air dried
Oven dried
Other

Preparation Method
Dry sieving
Wet sieving
Linear shrinkage
Mould size mm
Crumbling
Curling

Sample History:

Sample received from CG (Unanderra) on the 11/04/07.

Classification:

NATA Accredited Laboratory Date: 20th April, 2007
No. 431
Approved Signatory: Alex Munoz,
Senior Technical Officer