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Coffey Geotechnics Pty Ltd Unit 1/222 Berkeley St Unanderra NSW 2526 Analysis Type pH (1:5 Aqueous extract)	Client Sample ID	CTP2	CTP2	CTP2	CTP2	CTP2
	Lab Number	07-Ap06067	07-Ap06067	07-Ap06067	07-Ap06067	07-Ap06067
	QA Description		Duplicate	Duplicate	Duplicate % RPD	Spike % Recovery
	Matrix	Soil	Soil	Soil	Soil	Soil
	Sample Date	Apr 17, 2007	Apr 17, 2007	Apr 17, 2007	Apr 17, 2007	Apr 17, 2007
	Units	6.4	6.4	6.4	% RPD	% Recovery
					-	-

## determination of emerson class number

client : **MAUNSELL AUSTRALIA PTY LTD**  
**LEVEL 7, 44 MARKET STREET, SYDNEY, NSW, 2000**

job no : **GEOTUNAN02580AA**

principal :

laboratory : **SYDNEY**

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

date : **April 20, 2007**

location :

test report no. : **IOLT788**

test procedure : **AS1289.3.8.1**

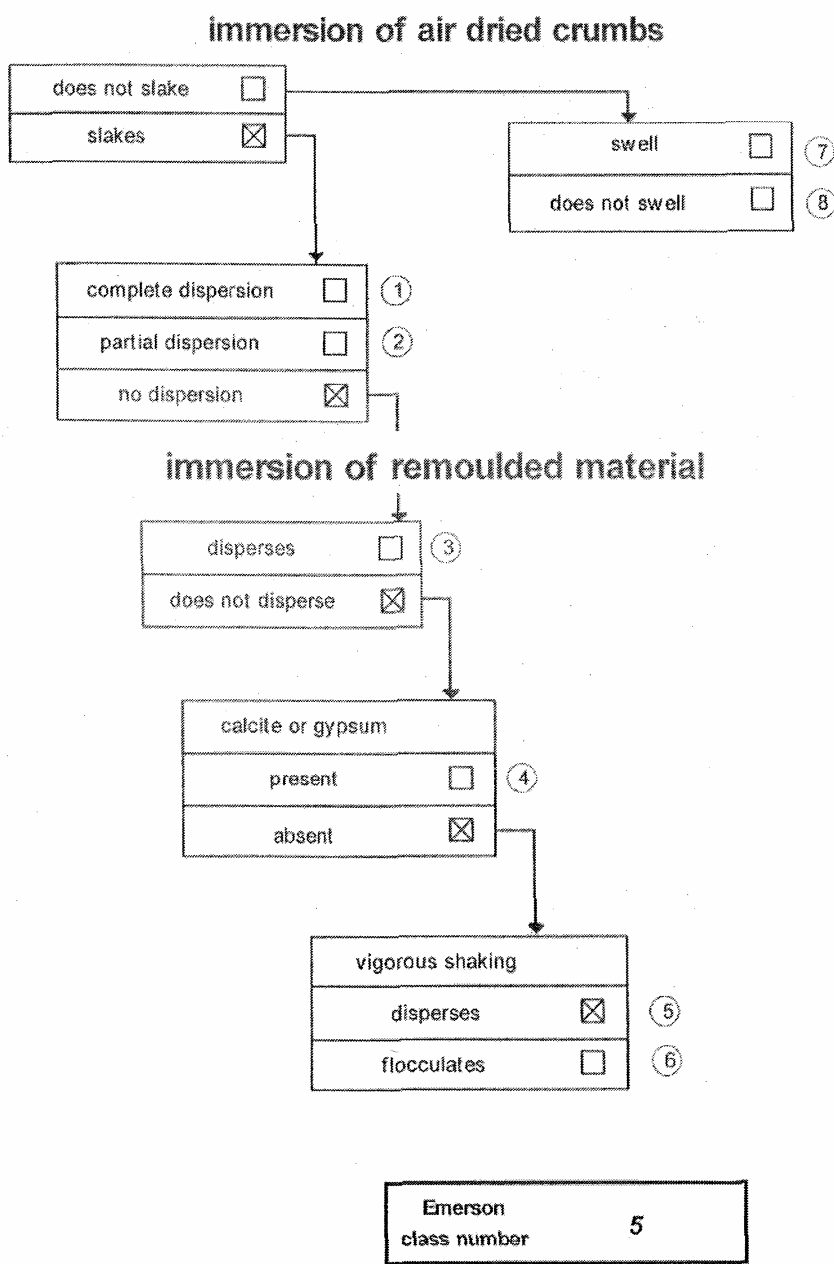
date sampled: -

material source: -

sample number: **LCOV07S - 01532**

sample identification: **CTP 30 ( 0.60 to 0.80m )**

test data	
<b>air dried crumbs</b>	
time start of test:	<b>17/04/07 8:22</b>
time dispersion commences:	
time dispersion completed:	
<b>remoulded material</b>	
time start of test:	<b>17/04/07 13:28</b>
time dispersion commences:	
time dispersion completed:	
<b>material description</b>	
<b>(CH) - SANDY CLAY - high plasticity, dark grey/brown, fine to medium sand.</b>	
type of water used:	<b>distilled</b>
water temperature:	<b>20° C</b>



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NATA Accredited Laboratory No. 431  
Approved Signatory:  
**Alex Munoz,**  
Senior Technical Officer

Date : **20th April, 2007**

Form Number LA 911 Version 6.0

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## determination of emerson class number

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 BOMADERRY

date : April 20, 2007

location :

test report no. : IOLT780

test procedure : AS1289.3.8.1

date sampled: -

material source: -

sample number: LCOV07S - 01518

sample identification: CTP 2 (0.40 to 0.60m)

### test data

#### air dried crumbs

time start of test: 18/04/07 10:22

time dispersion commences:

time dispersion completed:

#### remoulded material

time start of test: 19/04/07 10:49

time dispersion commences:

time dispersion completed:

#### material description

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

type of water used: distilled

water temperature: 20° C

### immersion of air dried crumbs

does not slake	<input type="checkbox"/>
slakes	<input checked="" type="checkbox"/>

swell	<input type="checkbox"/>	⑦
does not swell	<input type="checkbox"/>	⑧

complete dispersion	<input type="checkbox"/>	①
partial dispersion	<input type="checkbox"/>	②
no dispersion	<input checked="" type="checkbox"/>	

### immersion of remoulded material

disperses	<input type="checkbox"/>	③
does not disperse	<input checked="" type="checkbox"/>	

calcite or gypsum		
present	<input type="checkbox"/>	④
absent	<input checked="" type="checkbox"/>	

vigorous shaking		
disperses	<input checked="" type="checkbox"/>	⑤
flocculates	<input type="checkbox"/>	⑥

Emerson class number	5
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## determination of emerson class number

client : <b>MAUNSELL AUSTRALIA PTY LTD</b> LEVEL 1, 44 MARKET STREET, SYDNEY, NSW, 2000	job no : <b>GEOTUNAN02580AA</b>
principal :	laboratory : <b>SYDNEY</b>
project : <b>PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY</b>	date : <b>April 20, 2007</b>
location :	test report no. : <b>IOLT784</b>

test procedure : <b>AS1289.3.8.1</b>	date sampled : -	material source : -
sample number : <b>LCOV07S - 01528</b>		
sample identification : <b>CTP 23 (0.50 to 0.70m)</b>		

### test data

#### air dried crumbs

time start of test: **16/04/07 10:03**

time dispersion commences:

time dispersion completed:

#### remoulded material

time start of test: **17/04/07 11:45**

time dispersion commences:

time dispersion completed:

#### material description

**(Cl) - 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	<input type="checkbox"/>	
slakes	<input checked="" type="checkbox"/>	

swell  ⑦

does not swell  ⑧

complete dispersion	<input type="checkbox"/>	①
partial dispersion	<input type="checkbox"/>	②
no dispersion	<input checked="" type="checkbox"/>	

### immersion of remoulded material

disperses	<input type="checkbox"/>	③
does not disperse	<input checked="" type="checkbox"/>	

calcite or gypsum		
present	<input type="checkbox"/>	④
absent	<input checked="" type="checkbox"/>	

vigorous shaking		
disperses	<input type="checkbox"/>	⑤
flocculates	<input checked="" type="checkbox"/>	⑥

**Emerson class number 6**



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Approved Signatory:

**Alex Munoz,**  
Senior Technical Officer

Date: **20th April, 2007**

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## 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 BOMADERRY

location :

job no : GEOTUNAN02580AA

laboratory : SYDNEY

date : April 20, 2007

test report no. : IOLT782

test procedure : AS1289.3.8.1

sample number : LCOV07S - 01523

sample identification : CTP 16 (0.60 to 0.80m)

date sampled : -

material source : -

### 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	<input type="checkbox"/>	
slakes	<input checked="" type="checkbox"/>	

swell	<input type="checkbox"/>	⑦
does not swell	<input type="checkbox"/>	⑧

complete dispersion	<input type="checkbox"/>	①
partial dispersion	<input type="checkbox"/>	②
no dispersion	<input checked="" type="checkbox"/>	

### immersion of remoulded material

disperses	<input checked="" type="checkbox"/>	③
does not disperse	<input type="checkbox"/>	

calcite or gypsum		
present	<input type="checkbox"/>	④
absent	<input type="checkbox"/>	

vigorous shaking		
disperses	<input type="checkbox"/>	⑤
flocculates	<input type="checkbox"/>	⑥

Emerson  
class number 3



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

Date : 20th April, 2007

## determination of emerson class number

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 BOMADERRY

date : April 20, 2007

location :

test report no. : IOLT781

test procedure : AS1289.3.8.1

date sampled : -

material source : -

sample number : LCOV07S - 01519

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

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

type of water used: distilled

water temperature: 20° C

### immersion of air dried crumbs

does not slake	<input type="checkbox"/>	↓	swell	<input type="checkbox"/>	⑦
slakes	<input checked="" type="checkbox"/>			↓	does not swell
complete dispersion	<input type="checkbox"/>	①			
partial dispersion	<input checked="" type="checkbox"/>	②			
no dispersion	<input type="checkbox"/>				

### immersion of remoulded material

disperses	<input type="checkbox"/>	③		
does not disperse	<input type="checkbox"/>			
calcite or gypsum				
present	<input type="checkbox"/>	④		
absent	<input type="checkbox"/>			
vigorous shaking				
disperses	<input type="checkbox"/>	⑤		
flocculates	<input type="checkbox"/>	⑥		

Emerson  
class number 2



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NATA Accredited Laboratory No. 431 Date : 20th April, 2007

Approved Signatory:  
Alex Munoz,  
Senior Technical Officer

<b>determination of emerson class number</b>	
client : <b>MAUNSELL AUSTRALIA PTY LTD</b> LEVEL 1, 44 MARKET STREET, SYDNEY, NSW, 2000	job no : <b>GEOTUNAN02580AA</b>
principal :	laboratory : <b>SYDNEY</b>
project : <b>PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY</b>	date : <b>April 20, 2007</b>
location :	test report no. : <b>IOLT786</b>
test procedure : <b>AS1289.3.8.1</b>	date sampled: -      material source: -
sample number: <b>LCOV07S - 01530</b>	
sample identification: <b>CTP 27 ( 0.40 to 0.60m )</b>	


  

test data	immersion of air dried crumbs
<p style="text-align: center;"><b>air dried crumbs</b></p> time start of test: <b>16/04/07 10:05</b>  time dispersion commences: -  time dispersion completed: -	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">                         does not slake <input type="checkbox"/>                          slakes <input checked="" type="checkbox"/> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px; float: right;">                         swell <input type="checkbox"/> (7)                          does not swell <input type="checkbox"/> (8)                     </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">                         complete dispersion <input type="checkbox"/> (1)                          partial dispersion <input type="checkbox"/> (2)                          no dispersion <input checked="" type="checkbox"/> </div>
<p style="text-align: center;"><b>remoulded material</b></p> time start of test: <b>17/04/07 11:47</b>  time dispersion commences: <b>NOT OBSERVED</b>  time dispersion completed: <b>NOT OBSERVED</b>	<p style="text-align: center;"><b>immersion of remoulded material</b></p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">                         disperses <input checked="" type="checkbox"/> (3)                          does not disperse <input type="checkbox"/> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">                         calcite or gypsum                          present <input type="checkbox"/> (4)                          absent <input type="checkbox"/> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">                         vigorous shaking                          disperses <input type="checkbox"/> (5)                          flocculates <input type="checkbox"/> (6)                     </div>
<p style="text-align: center;"><b>material description</b></p> <p style="text-align: center;"><i>(Cl) - SANDY CLAY - medium plasticity, brown, fine to coarse sand.</i></p>	<div style="border: 1px solid black; padding: 10px; text-align: center; margin-top: 20px;"> <b>Emerson class number</b>      <b>3</b> </div>
type of water used: <b>distilled</b>  water temperature: <b>20° C</b>	

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 No. 431  
 Approved Signatory:  
**Alex Munoz,**  
 Senior Technical Officer 

## determination of emerson class number

client : <b>MAUNSELL AUSTRALIA PTY LTD</b> <i>LEVEL 1, 44 MARKET STREET, SYDNEY, NSW, 2000</i>	job no : <b>GEOTUNAN02580AA</b>
principal :	laboratory : <b>SYDNEY</b>
project : <b>PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY</b>	date : <b>April 20, 2007</b>
location :	test report no. : <b>IOLT785</b>

test procedure : <b>AS1289.3.8.1</b>	date sampled: -	material source: -
sample number: <b>LCOV07S - 01529</b>		
sample identification: <b>CTP 26 (0.50 to 0.70m)</b>		

### 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: -

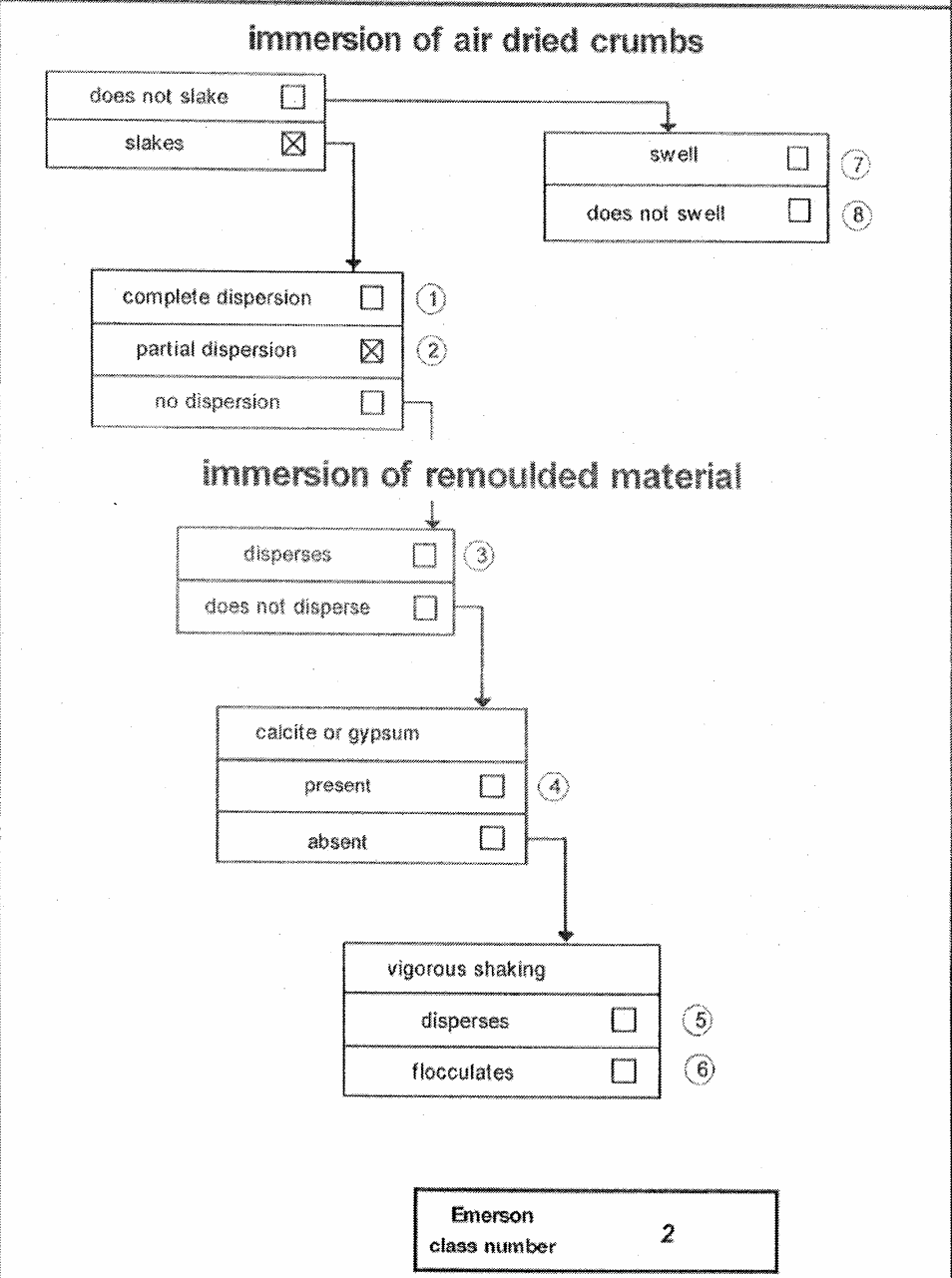
time dispersion completed: -

**material description**

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

type of water used: **distilled**

water temperature: **20° C**



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

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## determination of emerson class number

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 BOMADERRY**

date : **April 20, 2007**

location :

test report no. : **IOLT783**

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 11:40**

time dispersion commences:

time dispersion completed:

#### material description

**(Cl) - 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	<input type="checkbox"/>
slakes	<input checked="" type="checkbox"/>

swell	<input type="checkbox"/>	⑦
does not swell	<input type="checkbox"/>	⑧

complete dispersion	<input type="checkbox"/>	①
partial dispersion	<input type="checkbox"/>	②
no dispersion	<input checked="" type="checkbox"/>	

### immersion of remoulded material

disperses	<input type="checkbox"/>	③
does not disperse	<input checked="" type="checkbox"/>	

calcite or gypsum		
present	<input type="checkbox"/>	④
absent	<input checked="" type="checkbox"/>	

vigorous shaking		
disperses	<input checked="" type="checkbox"/>	⑤
flocculates	<input type="checkbox"/>	⑥

**Emerson class number 5**



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

Date: **20th April, 2007**

## 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 BOMADERRY**

location :

job no : **GEOTUNAN02580AA**

laboratory : **SYDNEY**

date : **April 20, 2007**

test report no. : **IOLT789**

test procedure : **AS1289.3.8.1**      date sampled: -      material source: -

sample number: **LCOV07S - 01533**

sample identification: **CBH 18 ( 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:

**remoulded material**

time start of test: **19/04/07 10:59**

time dispersion commences: **NOT OBSERVED**

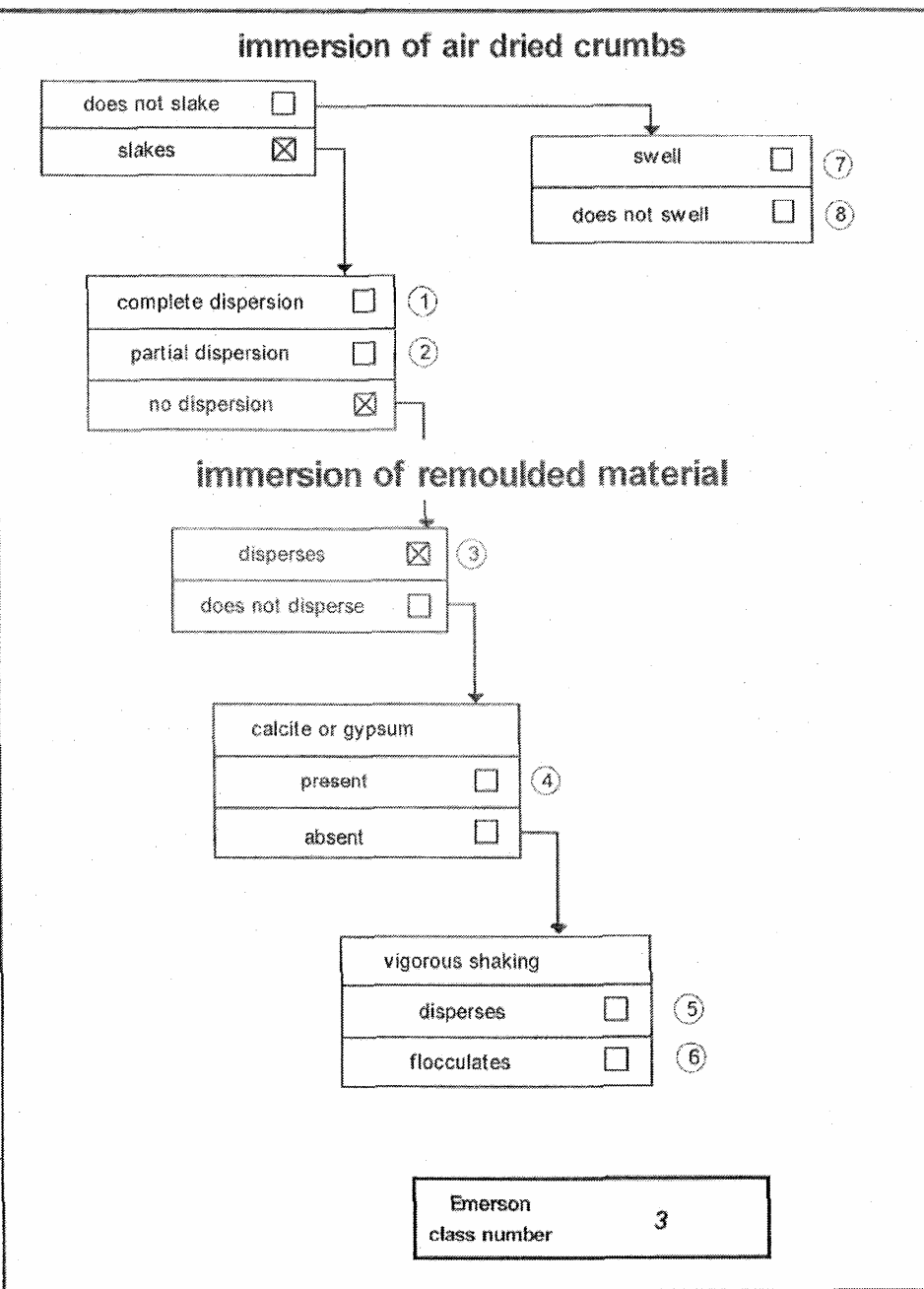
time dispersion completed: **NOT OBSERVED**

**material description**

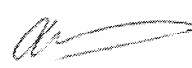
**(CH) - SANDY CLAY - high plasticity, dark grey/brown, fine to medium sand.**

type of water used: **distilled**

water temperature: **20° C**



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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 : <b>MAUNSELL AUSTRALIA PTY LTD</b> LEVEL 1, 44 MARKET STREET, SYDNEY, NSW, 2000	job no : <b>GEOTUNAN02580AA</b>
principal :	laboratory : <b>SYDNEY</b>
project : <b>PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY</b>	date : <b>April 20, 2007</b>
location :	test report no. : <b>IOLT787</b>

test procedure : <b>AS1289.3.8.1</b>	date sampled: -	material source: -
sample number: <b>LCOV07S - 01531</b>		
sample identification: <b>CTP 28 (0.30 to 0.50m)</b>		

### 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

**(Cl) - 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	<input type="checkbox"/>	
slakes	<input checked="" type="checkbox"/>	

swell	<input type="checkbox"/>	⑦
does not swell	<input type="checkbox"/>	⑧

complete dispersion	<input type="checkbox"/>	①
partial dispersion	<input type="checkbox"/>	②
no dispersion	<input checked="" type="checkbox"/>	

### immersion of remoulded material

disperses	<input type="checkbox"/>	③
does not disperse	<input checked="" type="checkbox"/>	

calcite or gypsum		
present	<input type="checkbox"/>	④
absent	<input checked="" type="checkbox"/>	

vigorous shaking		
disperses	<input type="checkbox"/>	⑤
flocculates	<input checked="" type="checkbox"/>	⑥

**Emerson class number 6**



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NATA Accredited Laboratory No. 431 Date: **20th April, 2007**

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

## test results

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 BOMADERRY

report date : April 24, 2007

location :

test report no. : JOLT802

test procedure.: AS1289.3.6.1;3.6.3

test date : 18/04/07 - 24/04/07

Sample Identification	SIEVE SIZE ( mm )	PERCENTAGE PASSING %
CTP 6 ( 0.40 to 0.60m ) Sydney Lab No. LCOV07S - 01859	37.5	100.0
	26.5	100.0
	19.0	100.0
	13.2	100.0
	9.5	100.0
	6.7	100.0
	4.75	100.0
	2.36	99.9
	1.18	99.8
	0.600	99.5
	0.300	98.9
	0.150	97.6
	0.075	94.5
	0.0402	83.7
	0.0306	78.3
	0.0199	73.8
	0.0159	72.0
0.0111	71.1	
0.0079	69.3	
0.0058	66.6	
0.0029	62.4	
0.0024	60.6	
0.0012	57.6	

Page 1 of 2

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



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Date : 24th April, 2007

No. 431

Approved Signatory:

Alex Munoz,  
Senior Technical Officer

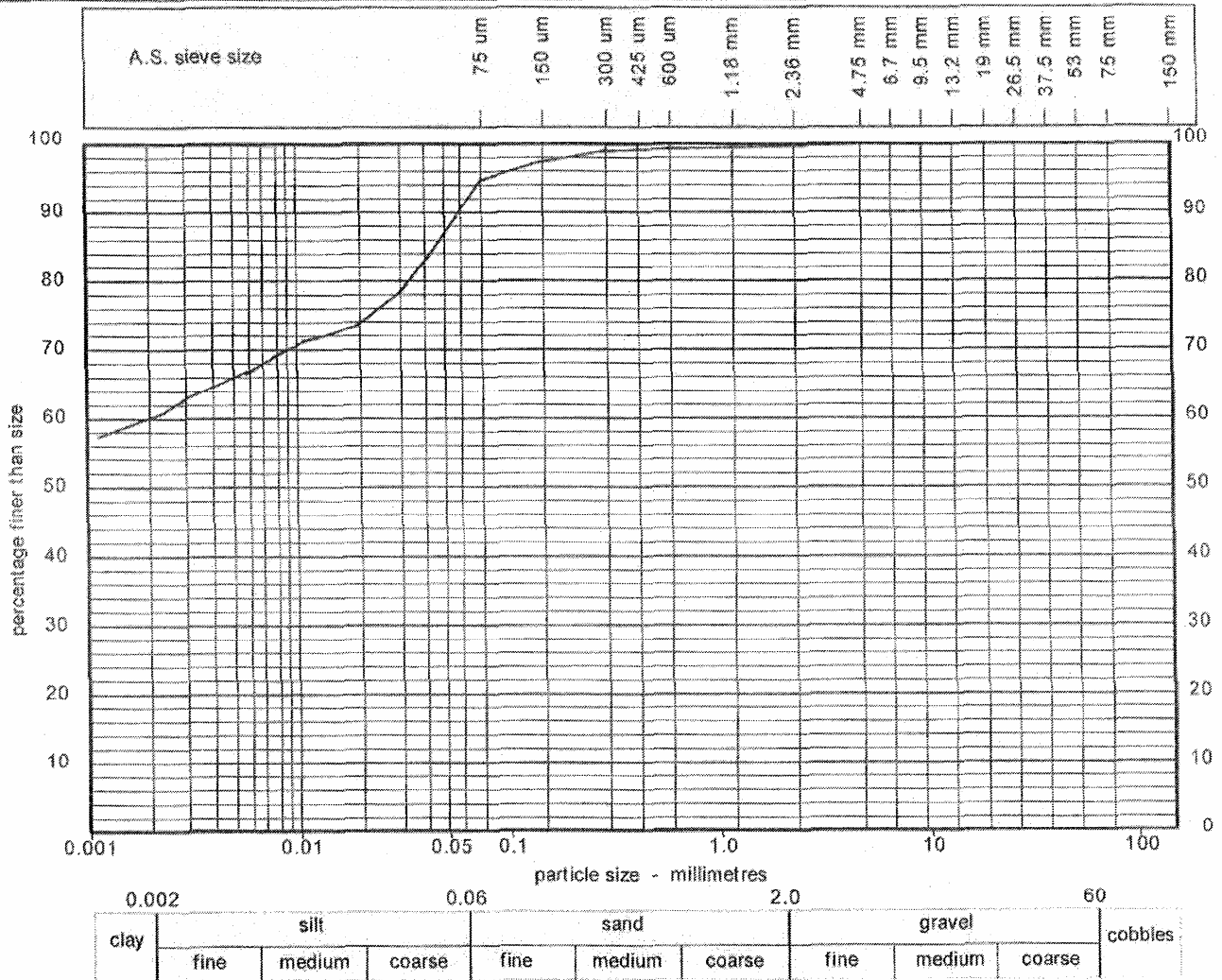
# particle size distribution

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

job no : GEOTUNAN02580AA  
laboratory : SYDNEY  
report date : April 24, 2007  
test report no : IOLT802

test procedure : AS1289.3.6.1; 3.6.3  
sample no : LCOV07S - 01859  
sample identification: CTP 6 (0.40 to 0.60m)

depth : 0.40 to 0.60m



**Atterberg Limit :**

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

**Sample History**

natural state

air dried

oven dried

other

**Preparation Method**

dry sieving

wet sieving

**Linear Shrinkage**

Mould size  mm

crumbing

curling

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



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Date : 24th April, 2007  
Approved Signatory:  
**Alex Munoz**,  
Senior 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 :

laboratory : SYDNEY

project : PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY

report date : April 24, 2007

location :

test report no. : IOLT801

test procedure : AS1289.3.6.1;3.6.3

test date : 18/04/07 - 24/04/07

Sample Identification	SIEVE SIZE ( mm )	PERCENTAGE PASSING %
CTP 28 ( 0.30 to 0.50m ) Sydney Lab No. LCOV07S - 01531	37.5	100.0
	26.5	100.0
	19.0	100.0
	13.2	100.0
	9.5	100.0
	6.7	100.0
	4.75	100.0
	2.36	99.9
	1.18	99.8
	0.600	99.4
	0.300	98.6
	0.150	96.4
	0.075	85.0
	0.0398	69.1
	0.0291	63.9
	0.0191	58.0
	0.0152	56.6
0.0114	52.2	
0.0081	50.7	
0.0058	47.8	
0.0033	43.6	
0.0026	41.4	
0.0013	37.5	

Page 1 of 2

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



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NATA Accredited Laboratory Date : 24th April, 2007  
No. 431

Approved Signatory:  
Alex Munoz,  
Senior Technical Officer

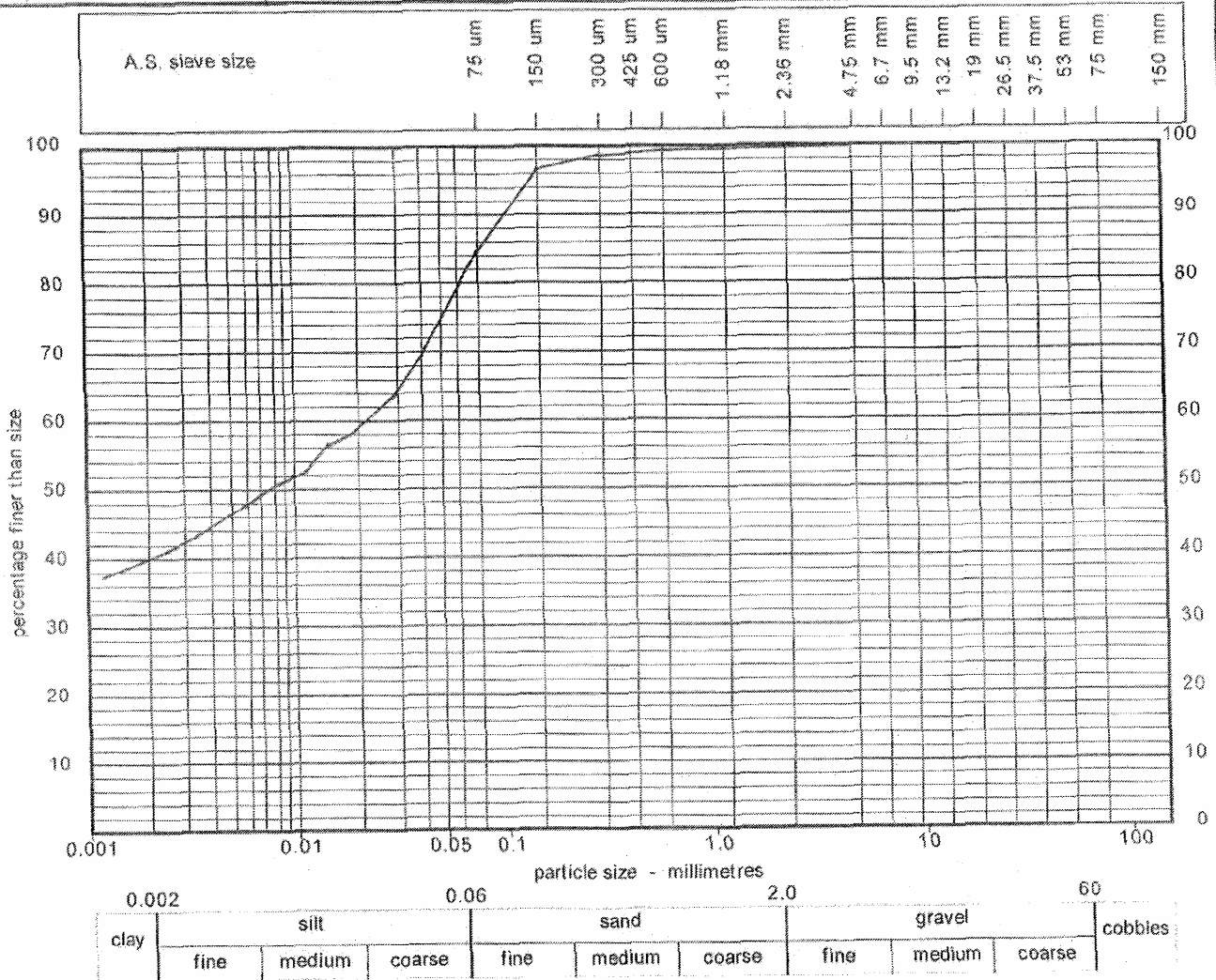
# particle size distribution

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

job no : GEOTUNAN02580AA  
laboratory : SYDNEY  
report date : April 24, 2007  
test report no : IOLT801

test procedure : AS1289.3.6.1; 3.6.3  
sample no : LCOV07S - 01531  
sample identification : CTP 28 (0.30 to 0.50m)

depth : 0.30 to 0.50m



**Atterberg Limit :**

liquid limit	%	-	Sample History	natural state	<input type="checkbox"/>	Preparation Method	
plastic limit	%	-		air dried	<input type="checkbox"/>	dry sieving	<input type="checkbox"/>
plasticity index	%	-		oven dried	<input type="checkbox"/>	wet sieving	<input type="checkbox"/>
linear shrinkage	%	-		other	<input type="checkbox"/>	Linear Shrinkage	
natural moisture	%	-				Mould size	mm
					crumbing	<input type="checkbox"/>	
					curling	<input type="checkbox"/>	

**classification :**

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



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

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## test results

client : <b>MAUNSELL AUSTRALIA PTY LTD</b> <b>LEVEL 1, 44 MARKET STREET, SYDNEY, NSW, 2000</b>	job no : <b>GEOTUNAN02580AA</b>
principal :	laboratory : <b>SYDNEY</b>
project : <b>PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY</b>	report date : <b>April 24, 2007</b>
location :	test report no. : <b>IOLT800</b>
test procedure: <b>AS1289.3.6.1;3.6.3</b>	test date : <b>18/04/07 - 24/04/07</b>

Sample Identification	SIEVE SIZE ( mm )	PERCENTAGE PASSING %
<b>CTP 22</b> <b>( 0.30 to 0.80m )</b> <b>Sydney Lab No.</b> <b>LCOV07S - 01527</b>	37.5	100.0
	26.5	100.0
	19.0	97.8
	13.2	90.4
	9.5	84.3
	6.7	78.0
	4.75	72.8
	2.36	66.0
	1.18	56.3
	0.600	47.9
	0.300	40.5
	0.150	34.8
	0.075	31.2
	0.0481	29.3
	0.0356	28.2
	0.0218	27.1
0.0174	26.0	
0.0128	24.9	
0.0091	23.8	
0.0065	22.7	
0.0035	20.6	
0.0028	19.0	
0.0014	16.0	

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



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Date : **24th April, 2007**  
Approved Signatory:  
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Senior Technical Officer

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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 :

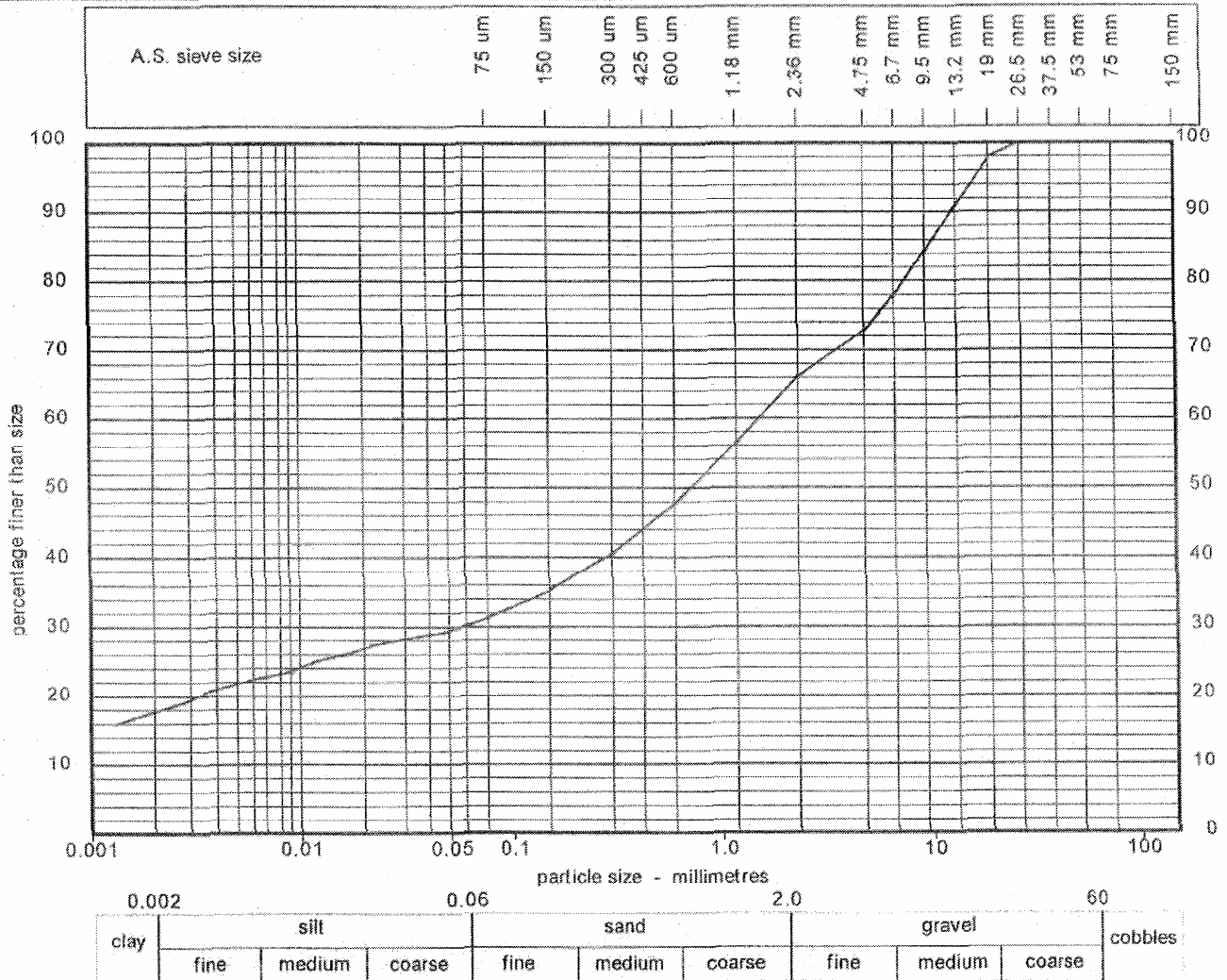
job no : **GEOTUNAN02580AA**  
laboratory : **SYDNEY**  
report date : **April 24, 2007**  
test report no. : **IOLT800**

test procedure : **AS1289.3.6.1; 3.6.3**

depth : **0.30 to 0.50m**

sample no : **LCOV07S - 01527**

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



**Atterberg Limit :**

liquid limit	%	-	Sample History	natural state	<input type="checkbox"/>	Preparation Method	
plastic limit	%	-		air dried	<input type="checkbox"/>	dry sieving	<input type="checkbox"/>
plasticity index	%	-		oven dried	<input type="checkbox"/>	wet sieving	<input type="checkbox"/>
linear shrinkage	%	-		other	<input type="checkbox"/>	Linear Shrinkage	
natural moisture	%	-				Mould size	mm
					crumbing	<input type="checkbox"/>	
					curling	<input type="checkbox"/>	

classification :

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



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NATA Accredited Laboratory No. 431

Date : 24th April, 2007

Approved Signatory:

Alex Munoz,  
Senior Technical Officer

## test results

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 BOMADERRY

report date : April 24, 2007

location :

test report no. : IOLT799

test procedure : AS1289.3.6.1;3.6.3

test date : 18/04/07 - 24/04/07

Sample Identification	SIEVE SIZE ( mm )	PERCENTAGE PASSING %
CTP 19 ( 0.70 to 0.90m ) Sydney Lab No. LCOV07S - 01525	37.5	100.0
	26.5	100.0
	19.0	100.0
	13.2	100.0
	9.5	100.0
	6.7	99.6
	4.75	99.5
	2.36	99.1
	1.18	98.4
	0.600	97.9
	0.300	97.3
	0.150	94.7
	0.075	90.6
	0.0347	82.3
	0.0272	78.2
	0.0168	72.8
0.0146	68.7	
0.0104	64.6	
0.0077	58.5	
0.0056	53.7	
0.0030	46.5	
0.0025	43.7	
0.0013	40.1	

Page 1 of 2

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



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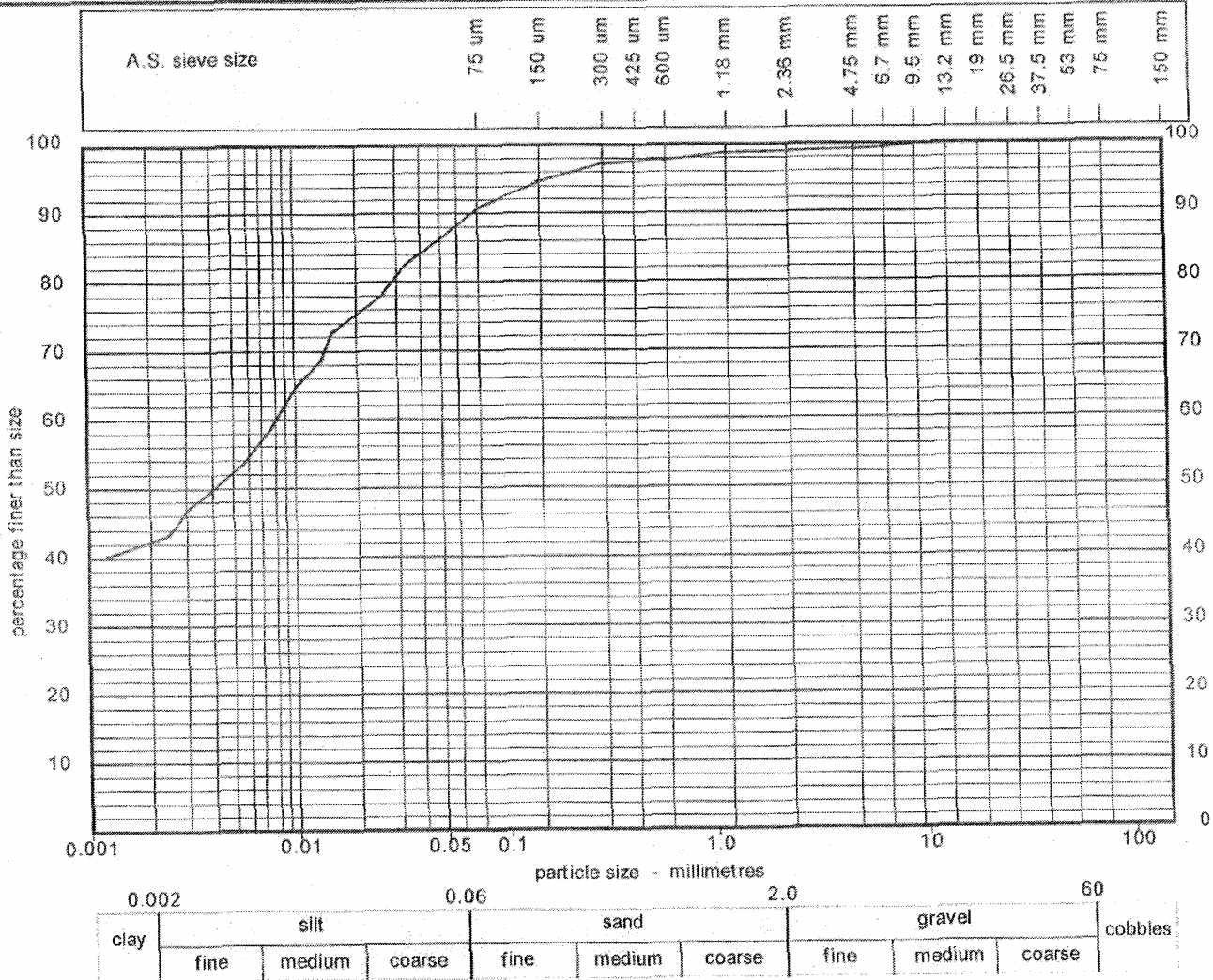
Date : 24th April, 2007

Approved Signatory:

Alex Munoz,  
Senior Technical Officer

# particle size distribution

client : <b>MAUNSELL AUSTRALIA PTY LTD</b> <b>LEVEL 1, 44 MARKET STREET SYDNEY, NSW, 2000</b>	job no : <b>GEOTUNAN02580AA</b>
principal :	laboratory : <b>SYDNEY</b>
project : <b>PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY</b>	report date : <b>April 24, 2007</b>
location :	test report no. : <b>IOLT799</b>
test procedure : <b>AS1289.3.6.1; 3.6.3</b>	depth : <b>0.70 to 0.90m</b>
sample no : <b>LCOV07S - 01525</b>	
sample identification: <b>CTP 19 (0.70 to 0.90m)</b>	




<b>Atterberg Limit :</b> liquid limit %    - plastic limit %    - plasticity index %    - linear shrinkage %    - natural moisture %    -			<b>Sample History</b> natural state <input type="checkbox"/> air dried <input type="checkbox"/> oven dried <input type="checkbox"/> other <input type="checkbox"/>	<b>Preparation Method</b> dry sieving <input type="checkbox"/> wet sieving <input type="checkbox"/>	<b>classification :</b>  Sample received from CG ( Unanderra ) on the 11/04/07.
				<b>Linear Shrinkage</b> Mould size mm crumbing <input type="checkbox"/> curling <input type="checkbox"/>	



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

Date : **24th April, 2007**



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## test results

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 BOMADERRY

report date : April 20, 2007

location :

test report no. : IOLT795

test procedure : AS1289.3.6.1;3.6.3

test date : 13/04/07 - 18/04/07

Sample Identification	SIEVE SIZE ( mm )	PERCENTAGE PASSING %
CTP 18 ( 0.90 to 1.10m ) Sydney Lab No. LCOV07S - 01524	37.5	100.0
	26.5	100.0
	19.0	100.0
	13.2	100.0
	9.5	100.0
	6.7	99.2
	4.75	98.3
	2.36	95.8
	1.18	92.4
	0.600	89.6
	0.300	87.7
	0.150	85.6
	0.075	81.5
	0.0383	71.4
	0.0296	67.2
0.0183	62.2	
0.0111	55.2	
0.0081	50.2	
0.0058	46.7	
0.0034	40.8	
0.0026	39.1	
0.0013	34.7	

Page 1 of 2

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



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

Date : 20th April, 2007

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## particle size distribution

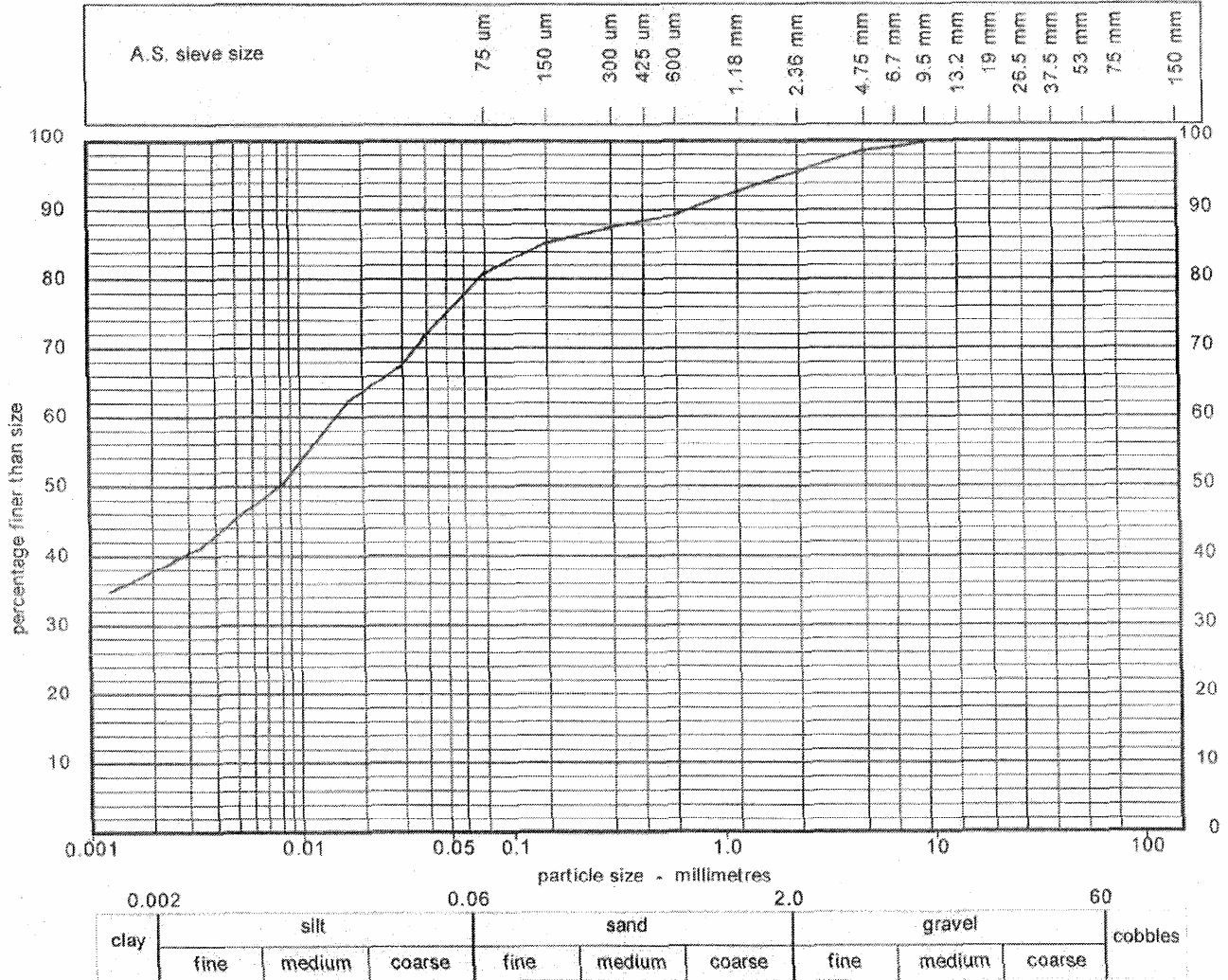
client : MAUNSELL AUSTRALIA PTY LTD  
LEVEL 1, 44 MARKET STREET SYDNEY, NSW, 2000  
principal :  
project : PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY  
location :

job no : GEOTUNAN02580AA  
laboratory : SYDNEY  
report date : April 20, 2007  
test report no. : IOLT795

test procedure : AS1289.3.6.1; 3.6.3  
sample no : LCOV07S - 01524

depth : 0.90 to 1.10m

sample identification: CTP 18 (0.90 to 1.10m)



**Atterberg Limit :**

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

Sample History

- natural state
- air dried
- oven dried
- other

**Preparation Method**

- dry sieving
- wet sieving
- Linear Shrinkage
- Mould size mm
- crumbing
- curling

**classification :**

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



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Date : 20th April, 2007

Approved Signatory:  
**Alex Munoz,**  
Seior Technical Officer

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## test results

client : <b>MAUNSELL AUSTRALIA PTY LTD</b> LEVEL 1, 44 MARKET STREET, SYDNEY, NSW, 2000	job no : <b>GEOTUNAN02580AA</b>
principal :	laboratory : <b>SYDNEY</b>
project : <b>PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY</b>	report date : <b>April 20, 2007</b>
location :	test report no. : <b>IOLT794</b>
test procedure : <b>AS1289.3.6.1;3.6.3</b>	test date : <b>13/04/07 - 18/04/07</b>

Sample Identification	SIEVE SIZE	PERCENTAGE PASSING
	( mm )	%
CTP 16 ( 0.60 to 0.80m ) Sydney Lab No. LCOV07S - 01523	37.5	100.0
	26.5	100.0
	19.0	100.0
	13.2	100.0
	9.5	100.0
	6.7	99.9
	4.75	99.9
	2.36	99.8
	1.18	99.8
	0.600	99.5
	0.300	98.9
	0.150	91.7
	0.075	77.1
	0.0449	71.5
	0.0334	69.3
	0.0202	69.3
	0.0161	68.2
0.0119	64.9	
0.0084	64.9	
0.0060	60.5	
0.0034	60.1	
0.0026	58.6	
0.0013	55.0	

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

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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 :

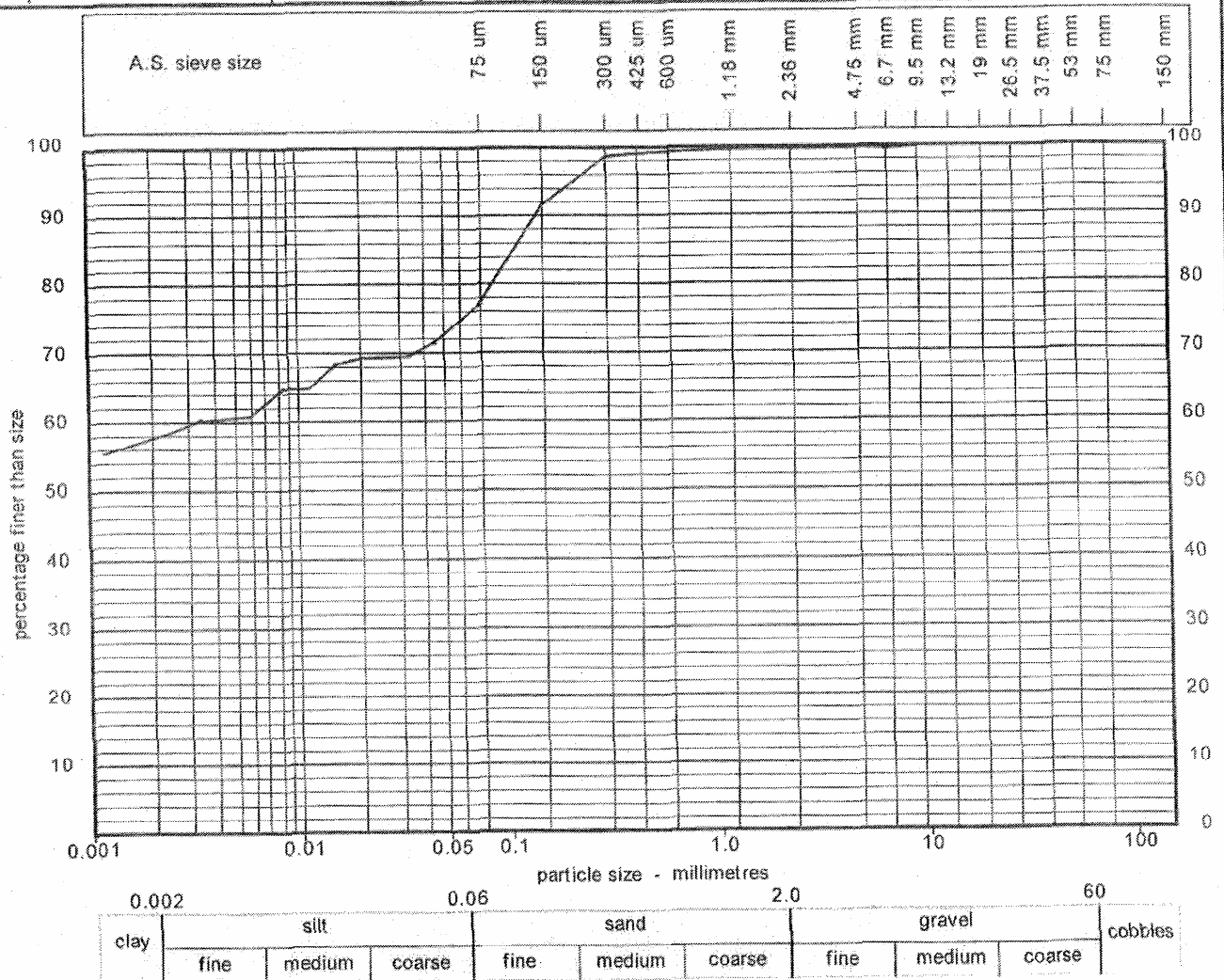
job no : **GEOTUNAN02580AA**  
laboratory : **SYDNEY**  
report date : **April 20, 2007**  
test report no. : **IOLT794**

test procedure : **AS1289.3.6.1; 3.6.3**

depth : **0.60 to 0.80m**

sample no : **LCOV07S - 01523**

sample identification: **CTP 16 (0.60 to 0.80m)**



**Atterberg Limit :**

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

**Sample History**

natural state

air dried

oven dried

other

**Preparation Method**

dry sieving

wet sieving

**Linear Shrinkage**

Mould size mm

crumbing

curling

**classification :**

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



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**Alex Munoz,**  
Senior Technical Officer

Date : **20th April, 2007**

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## test results

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 BOMADERRY**

report date : **April 20, 2007**

location :

test report no. : **IOLT793**

test procedure : **AS1289.3.6.1;3.6.3**

test date : **13/04/07 - 18/04/07**

Sample Identification	SIEVE SIZE ( mm )	PERCENTAGE PASSING %
CTP 12 ( 0.30 to 0.50m ) Sydney Lab No. LCOV07S - 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	81.9
	0.075	69.0
	0.0425	56.6
	0.0324	51.5
	0.0201	46.3
0.0160	44.8	
0.0119	41.9	
0.0085	39.7	
0.0061	36.8	
0.0033	35.0	
0.0026	34.0	
0.0013	31.6	

Page 1 of 2

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



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NATA Accredited Laboratory No. 431

Date : **20th April, 2007**

Approved Signatory:

**Alex Munoz,**  
Senior Technical Officer

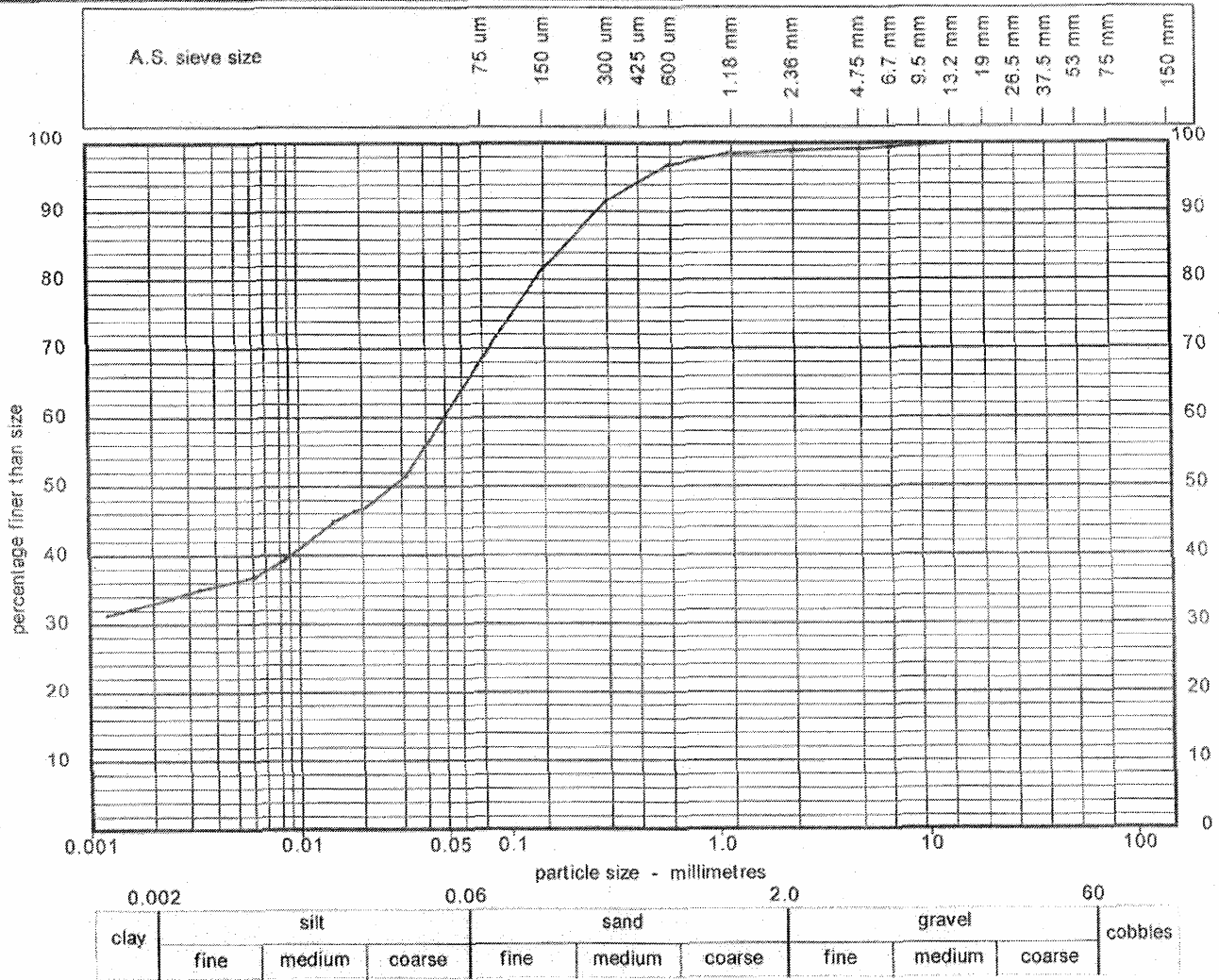
Form Number 11 02P Version 6.0

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## particle size distribution

client : <b>MAUNSELL AUSTRALIA PTY LTD</b> LEVEL 1, 44 MARKET STREET SYDNEY, NSW, 2000	job no : <b>GEOTUNAN02580AA</b>
principal :	laboratory : <b>SYDNEY</b>
project : <b>PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY</b>	report date : <b>April 20, 2007</b>
location :	test report no. : <b>IOLT793</b>
test procedure : <b>AS1289.3.6.1; 3.6.3</b>	depth : <b>0.30 to 0.50m</b>
sample no : <b>LCOV07S - 01522</b>	
sample identification: <b>CTP 12 ( 0.30 to 0.50m )</b>	



<b>Atterberg Limit :</b>		<b>Sample History</b>	<b>Preparation Method</b>			
liquid limit	%			-	natural state <input type="checkbox"/>	dry sieving <input type="checkbox"/>
plastic limit	%			-	air dried <input type="checkbox"/>	wet sieving <input type="checkbox"/>
plasticity index	%			-	oven dried <input type="checkbox"/>	Linear Shrinkage
linear shrinkage	%			-	other <input type="checkbox"/>	Mould size      mm
natural moisture	%	-		crumbing <input type="checkbox"/>		
				curling <input type="checkbox"/>		

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



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No. 431  
Approved Signatory:  
**Alex Munoz,**  
Senior 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 :

laboratory : SYDNEY

project : PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY

report date : April 20, 2007

location :

test report no. : IOLT792

test procedure : AS1289.3.6.1;3.6.3

test date : 13/04/07 - 18/04/07

Sample Identification	SIEVE SIZE ( mm )	PERCENTAGE PASSING %
CTP 11 ( 0.55 to 0.75m ) Sydney Lab No. LCOV07S - 01521	37.5	100.0
	26.5	100.0
	19.0	100.0
	13.2	100.0
	9.5	100.0
	6.7	99.9
	4.75	99.9
	2.36	99.6
	1.18	99.3
	0.600	97.1
	0.300	85.7
	0.150	64.3
	0.075	50.3
	0.0459	42.1
	0.0342	39.9
	0.0209	38.4
0.0167	36.2	
0.0122	35.4	
0.0088	33.2	
0.0063	31.0	
0.0034	27.8	
0.0027	26.8	
0.0013	22.9	

Page 1 of 2

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



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NATA Accredited Laboratory No. 431

Date : 20th April, 2007

Approved Signatory:

Alex Munoz,  
Senior Technical Officer

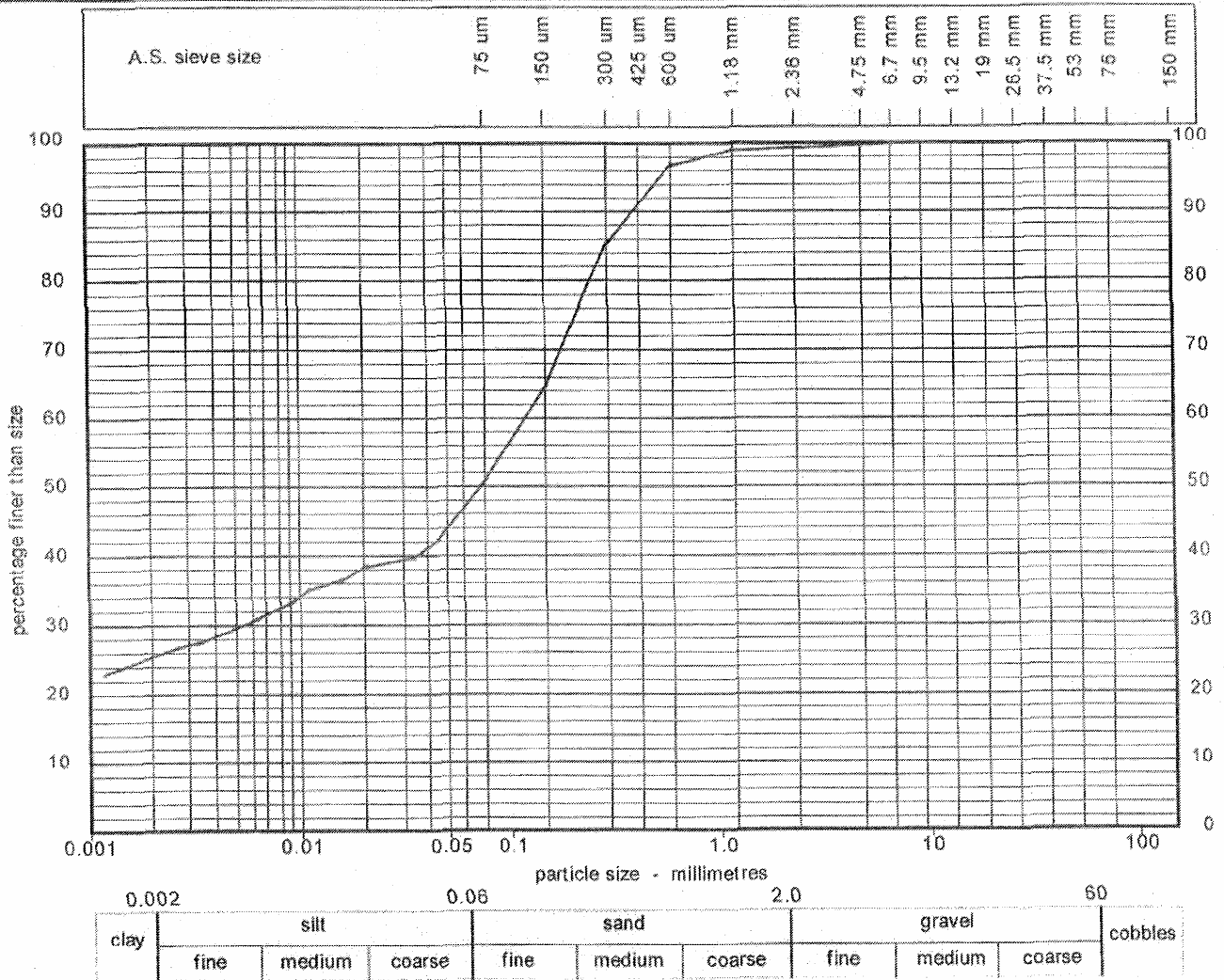
# particle size distribution

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

job no : GEOTUNAN02580AA  
laboratory : SYDNEY  
report date : April 20, 2007  
test report no. : IOLT792

test procedure : AS1289.3.6.1; 3.6.3  
sample no : LCOV07S - 01521  
sample identification : CTP 11 ( 0.55 to 0.75m )

depth : 0.55 to 0.75m



<b>Atterberg Limit :</b>					
liquid limit	%	-	Sample History	natural state	<input type="checkbox"/>
plastic limit	%	-		air dried	<input type="checkbox"/>
plasticity index	%	-		oven dried	<input type="checkbox"/>
linear shrinkage	%	-		other	<input type="checkbox"/>
natural moisture	%	-			
				<b>Preparation Method</b>	
				dry sieving	<input type="checkbox"/>
				wet sieving	<input type="checkbox"/>
				<b>Linear Shrinkage</b>	
				Mould size	mm
				crumbing	<input type="checkbox"/>
				curling	<input type="checkbox"/>

classification :  
*Sample received from CG ( 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 No. 431 Date : 20th April, 2007  
Approved Signatory:  
**Alex Munoz,**  
Senior Technical Officer

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## test results

client : <b>MAUNSELL AUSTRALIA PTY LTD</b> LEVEL 1, 44 MARKET STREET, SYDNEY, NSW, 2000	job no : <b>GEOTUNAN02580AA</b>
principal :	laboratory : <b>SYDNEY</b>
project : <b>PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY</b>	report date : <b>April 20, 2007</b>
location :	test report no. : <b>IOLT791</b>
test procedure : <b>AS1289.3.6.1;3.6.3</b>	test date : <b>13/04/07 - 18/04/07</b>

Sample Identification	SIEVE SIZE ( mm )	PERCENTAGE PASSING %
CTP 8 ( 0.60 to 0.80m ) Sydney Lab No. LCOV07S - 01520	37.5	100.0
	26.5	100.0
	19.0	100.0
	13.2	100.0
	9.5	100.0
	6.7	99.8
	4.75	99.7
	2.36	99.3
	1.18	97.9
	0.600	95.2
	0.300	91.5
	0.150	87.0
	0.075	83.4
	0.0385	77.8
	0.0300	72.6
	0.0182	70.3
0.0155	67.3	
0.0109	64.3	
0.0079	60.6	
0.0057	56.1	
0.0031	48.4	
0.0025	45.9	
0.0013	38.1	

Page 1 of 2

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



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NATA Accredited Laboratory No. 431

Date : 20th 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  
principal :  
project : PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY  
location :

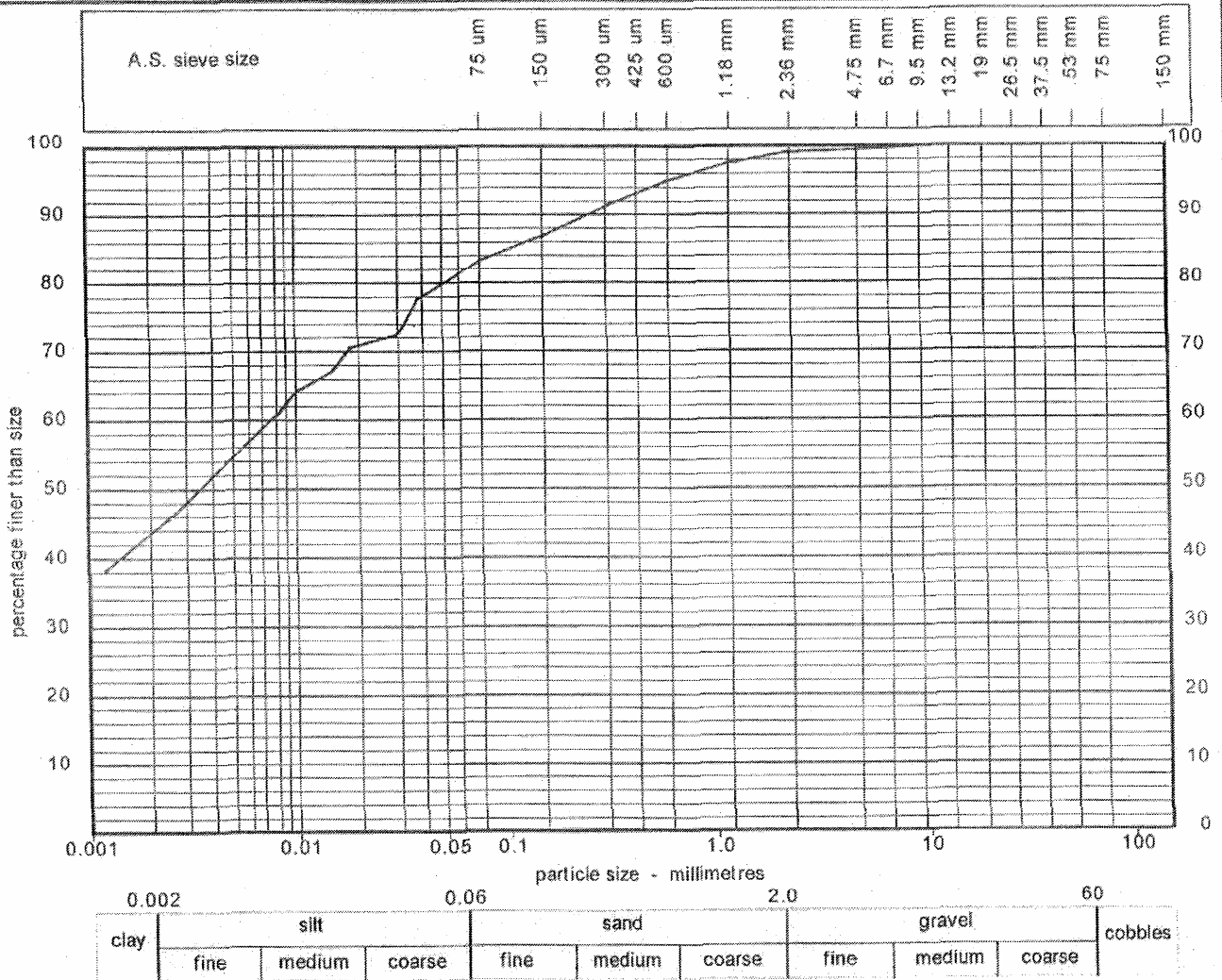
job no : GEOTUNAN02580AA  
laboratory : SYDNEY  
report date : April 20, 2007  
test report no : IOLT791

test procedure : AS1289.3.6.1; 3.6.3

depth : 0.60 to 0.80m

sample no : LCOV07S - 01520

sample identification : CTP 8 (0.60 to 0.80m)



**Atterberg Limit :**

liquid limit	%	-	Sample History	natural state	<input type="checkbox"/>	Preparation Method	
plastic limit	%	-		air dried	<input type="checkbox"/>	dry sieving	<input type="checkbox"/>
plasticity index	%	-		oven dried	<input type="checkbox"/>	wet sieving	<input type="checkbox"/>
linear shrinkage	%	-		other	<input type="checkbox"/>	Linear Shrinkage	
natural moisture	%	-				Mould size	mm
					crumbing	<input type="checkbox"/>	
					curling	<input type="checkbox"/>	

**classification :**

Sample received from CG (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

## test results

client : <b>MAUNSELL AUSTRALIA PTY LTD</b> <b>LEVEL 1, 44 MARKET STREET, SYDNEY, NSW, 2000</b>	job no : <b>GEOTUNAN02580AA</b>
principal :	laboratory : <b>SYDNEY</b>
project : <b>PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY</b>	report date : <b>April 20, 2007</b>
location :	test report no. : <b>IOLT790</b>
test procedure : <b>AS1289.3.6.1;3.6.3</b>	test date : <b>13/04/07 - 18/04/07</b>

Sample Identification	SIEVE SIZE ( mm )	PERCENTAGE PASSING %
<b>CTP 3</b> <b>( 0.60 to 0.80m )</b> <b>Sydney Lab No.</b> <b>LCOV07S - 01519</b>	37.5	100.0
	26.5	99.3
	19.0	99.3
	13.2	98.9
	9.5	97.9
	6.7	97.4
	4.75	97.0
	2.36	96.5
	1.18	95.3
	0.600	93.3
	0.300	90.6
	0.150	86.7
	0.075	79.5
	0.0342	68.1
	0.0269	64.1
	0.0176	60.1
0.0142	57.8	
0.0100	55.5	
0.0072	53.2	
0.0053	50.9	
0.0027	46.1	
0.0022	45.4	
0.0011	41.2	

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



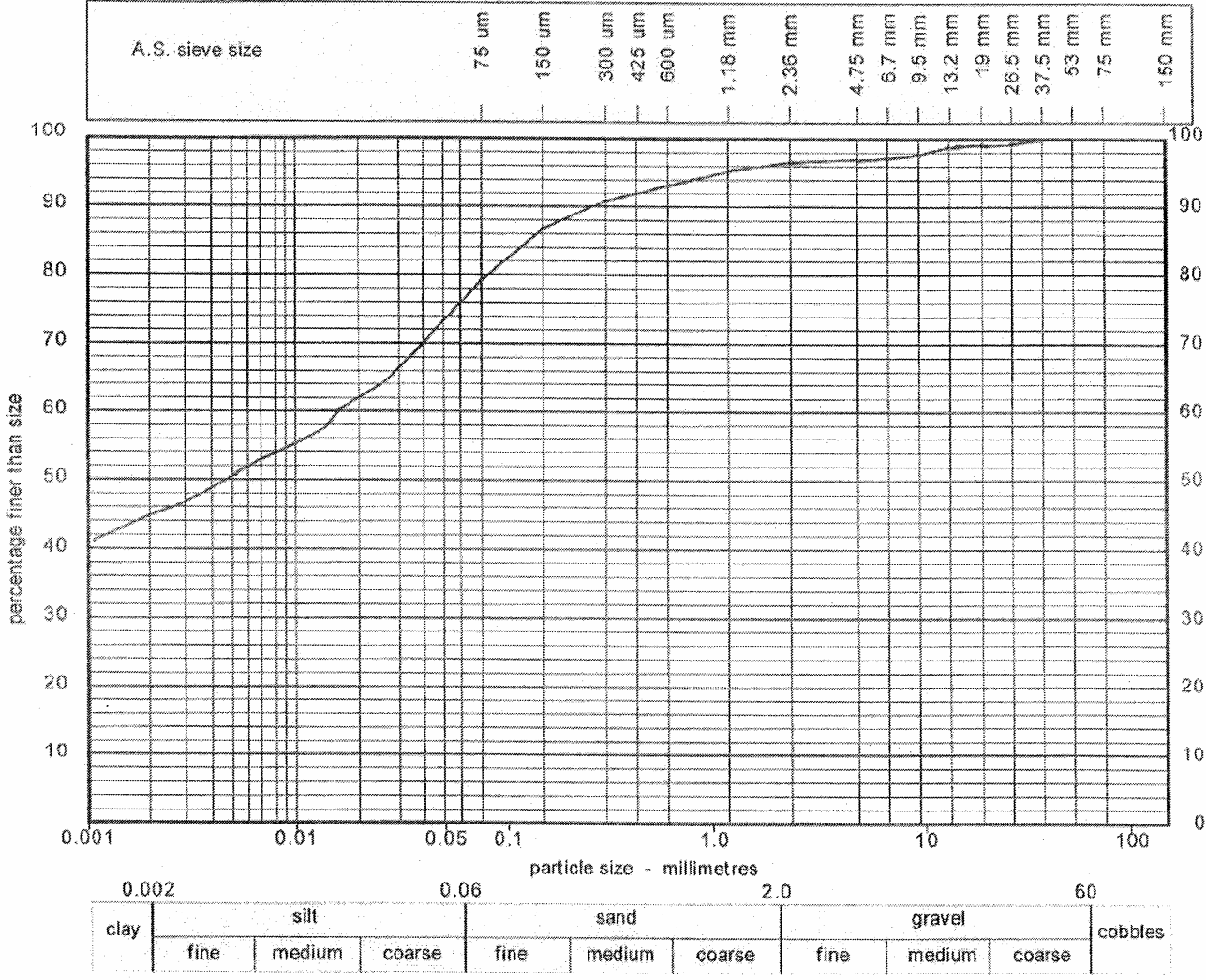
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Approved Signatory:  
**Alex Munoz,**  
Senior Technical Officer

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# particle size distribution

client : <b>MAUNSELL AUSTRALIA PTY LTD</b> <b>LEVEL 1, 44 MARKET STREET SYDNEY, NSW, 2000</b>	job no : <b>GEOTUNAN02580AA</b>
principal :	laboratory : <b>SYDNEY</b>
project : <b>PRINCES HIGHWAY UPGRADE, GERRINGONG TO BOMADERRY</b>	report date : <b>April 20, 2007</b>
location :	test report no. : <b>IOLT790</b>
test procedure : <b>AS1289.3.6.1; 3.6.3</b>	depth : <b>0.60 to 0.80m</b>
sample no : <b>LCOV07S - 01519</b>	
sample identification : <b>CTP 3 ( 0.60 to 0.80m )</b>	



<b>Atterberg Limit :</b>		<b>Sample History</b>	<b>Preparation Method</b>			
liquid limit	%			-	natural state <input type="checkbox"/>	dry sieving <input type="checkbox"/>
plastic limit	%			-	air dried <input type="checkbox"/>	wet sieving <input type="checkbox"/>
plasticity index	%			-	oven dried <input type="checkbox"/>	Linear Shrinkage
linear shrinkage	%			-	other <input type="checkbox"/>	Mould size mm
natural moisture	%	-		crumbing <input type="checkbox"/>		
				curling <input type="checkbox"/>		

classification :

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



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

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