



**Golder Associates Pty Ltd**  
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 E: BNElab@golder.com.au



## Moisture Content Report

Client : <b>Ports North</b>	Report Number: <b>137632122 - 1</b>
Client Address: <b>Cnr Grafton &amp; Hartley Streets Cairns QLD</b>	Report Date: <b>23/09/2013</b>
Job Number : <b>137632122</b>	Order Number:
Project : <b>Cairns Shipping Development</b>	Test Method: <b>AS1289.2.1.1</b>
Location : <b>Trinity Inlet , Cairns</b>	

**Page 1 of 6**

Lab No :	13303492	13303493	13303494	13303495
ID No :	-	-	-	-
Lot No :	-	-	-	-
Item No :	-	-	-	-
Date Sampled / Received :	12/8/2013	12/8/2013	12/8/2013	12/8/2013
Date Tested :	19/8/2013	19/8/2013	19/8/2013	19/8/2013
Material Source :	Insitu	Insitu	Insitu	Insitu
For Use As :	Investigation	Investigation	Investigation	Investigation
Sample Location :	BH1 (0.1-0.5 m) 001 U75 Sampled 29/7/13 to 5/8/13	BH1 (2.1-2.5 m) 003 U75 Sampled 29/7/13 to 5/8/13	BH1 (3.1-3.5 m) 004 U75 Sampled 29/7/13 to 5/8/13	BH1 (4.1-4.5 m) 005 U75 Sampled 29/7/13 to 5/8/13
Drying Temperature(°C):	<b>105 to 110</b>	<b>105 to 110</b>	<b>105 to 110</b>	<b>105 to 110</b>
Moisture Content(%):	<b>86.0</b>	<b>78.0</b>	<b>88.0</b>	<b>40.6</b>
Remarks :	<b>This replaces the report dated 3/09/2013</b>			

Lab Number:	Soil Description
<b>13303492</b>	
<b>13303493</b>	
<b>13303494</b>	
<b>13303495</b>	

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Job Number : <b>137632122</b>	Order Number:
Project : <b>Cairns Shipping Development</b>	Test Method: <b>AS1289.2.1.1</b>
Location : <b>Trinity Inlet , Cairns</b>	

**Page 2 of 6**

Lab No :	13303497	13303498	13303499	13303500
ID No :	-	-	-	-
Lot No :	-	-	-	-
Item No :	-	-	-	-
Date Sampled / Received :	12/8/2013	12/8/2013	12/8/2013	12/8/2013
Date Tested :	20/8/2013	20/8/2013	20/8/2013	20/8/2013
Material Source :	Insitu	Insitu	Insitu	Insitu
For Use As :	Investigation	Investigation	Investigation	Investigation
Sample Location :	BH2 (2.1-2.5 m) 002 U75 Sampled 29/7/13 to 5/8/13	BH2 (3.1-3.55 m) 003 SPT Sampled 29/7/13 to 5/8/13	BH3 (0.4-0.8 m) 001 U75 Sampled 29/7/13 to 5/8/13	BH3 (1.4-1.8 m) 002 U75 Sampled 29/7/13 to 5/8/13
Drying Temperature(°C):	<b>105 to 110</b>	<b>105 to 110</b>	<b>105 to 110</b>	<b>105 to 110</b>
Moisture Content(%):	<b>40.8</b>	<b>23.2</b>	<b>36.1</b>	<b>33.3</b>
Remarks :	<b>This replaces the report dated 3/09/2013</b>			

Lab Number:	Soil Description
<b>13303497</b>	
<b>13303498</b>	
<b>13303499</b>	
<b>13303500</b>	

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Client : <b>Ports North</b>	Report Number: <b>137632122 - 1</b>
Client Address: <b>Cnr Grafton &amp; Hartley Streets Cairns QLD</b>	Report Date: <b>23/09/2013</b>
Job Number : <b>137632122</b>	Order Number:
Project : <b>Cairns Shipping Development</b>	Test Method: <b>AS1289.2.1.1</b>
Location : <b>Trinity Inlet , Cairns</b>	

**Page 3 of 6**

Lab No :	13303501	13303502	13303503	13303504
ID No :	-	-	-	-
Lot No :	-	-	-	-
Item No :	-	-	-	-
Date Sampled / Received :	12/8/2013	12/8/2013	12/8/2013	12/8/2013
Date Tested :	20/8/2013	20/8/2013	20/8/2013	27/8/2013
Material Source :	Insitu	Insitu	Insitu	Insitu
For Use As :	Investigation	Investigation	Investigation	Investigation
Sample Location :	BH3 (4.8-5.25 m) 006 SPT Sampled 29/7/13 to 5/8/13	BH3 (2.4-2.63 m) 003 U75 Sampled 29/7/13 to 5/8/13	BH4 (2.4-2.8 m) 001 U75 Sampled 29/7/13 to 5/8/13	BH4 (3.4-3.8 m) 002 U75 Sampled 29/7/13 to 5/8/13
Drying Temperature(°C):	<b>105 to 110</b>	<b>105 to 110</b>	<b>105 to 110</b>	<b>105 to 110</b>
Moisture Content(%):	<b>29.8</b>	<b>30.4</b>	<b>68.0</b>	<b>71.5</b>
Remarks :	<b>This replaces the report dated 3/09/2013</b>			

Lab Number:	Soil Description
<b>13303501</b>	
<b>13303502</b>	
<b>13303503</b>	
<b>13303504</b>	

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Client : <b>Ports North</b>	Report Number: <b>137632122 - 1</b>
Client Address: <b>Cnr Grafton &amp; Hartley Streets Cairns QLD</b>	Report Date: <b>23/09/2013</b>
Job Number : <b>137632122</b>	Order Number:
Project : <b>Cairns Shipping Development</b>	Test Method: <b>AS1289.2.1.1</b>
Location : <b>Trinity Inlet , Cairns</b>	

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Lab No :	13303505	13303507	13303509	13303510
ID No :	-	-	-	-
Lot No :	-	-	-	-
Item No :	-	-	-	-
Date Sampled / Received :	12/8/2013	12/8/2013	12/8/2013	12/8/2013
Date Tested :	20/8/2013	20/8/2013	20/8/2013	20/8/2013
Material Source :	Insitu	Insitu	Insitu	Insitu
For Use As :	Investigation	Investigation	Investigation	Investigation
Sample Location :	BH4 (4.4-4.8 m) 003 U75 Sampled 29/7/13 to 5/8/13	BH5 (2.4-2.8 m) 001 U75 Sampled 29/7/13 to 5/8/13	BH5 (7.4-7.9 m) 006 U75 Sampled 29/7/13 to 5/8/13	BH5 (10.4-10.8 m) 009 U75 Sampled 29/7/13 to 5/8/13
Drying Temperature(°C):	<b>105 to 110</b>	<b>105 to 110</b>	<b>105 to 110</b>	<b>105 to 110</b>
Moisture Content(%):	<b>44.0</b>	<b>54.5</b>	<b>69.5</b>	<b>58.0</b>
Remarks :	<b>This replaces the report dated 3/09/2013</b>			

Lab Number:	Soil Description
<b>13303505</b>	
<b>13303507</b>	
<b>13303509</b>	
<b>13303510</b>	

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Client Address: <b>Cnr Grafton &amp; Hartley Streets Cairns QLD</b>	Report Date: <b>23/09/2013</b>
Job Number : <b>137632122</b>	Order Number:
Project : <b>Cairns Shipping Development</b>	Test Method: <b>AS1289.2.1.1</b>
Location : <b>Trinity Inlet , Cairns</b>	

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Lab No :	13303512	13303513	13303514	13303516
ID No :	-	-	-	-
Lot No :	-	-	-	-
Item No :	-	-	-	-
Date Sampled / Received :	12/8/2013	12/8/2013	12/8/2013	12/8/2013
Date Tested :	20/8/2013	20/8/2013	20/8/2013	20/8/2013
Material Source :	Insitu	Insitu	Insitu	Insitu
For Use As :	Investigation	Investigation	Investigation	Investigation
Sample Location :	BH6 (2.0-2.4 m) 003 U75 Sampled 29/7/13 to 5/8/13	BH6 (5.0-5.4 m) 006 U75 Sampled 29/7/13 to 5/8/13	BH6 (6.0-6.4 m) 007 U75 Sampled 29/7/13 to 5/8/13	BH7 (3.2-3.6 m) 002 U75 Sampled 29/7/13 to 5/8/13
Drying Temperature(°C):	<b>105 to 110</b>	<b>105 to 110</b>	<b>105 to 110</b>	<b>105 to 110</b>
Moisture Content(%):	<b>49.6</b>	<b>82.0</b>	<b>45.0</b>	<b>55.0</b>
Remarks :	<b>This replaces the report dated 3/09/2013</b>			

Lab Number:	Soil Description
<b>13303512</b>	
<b>13303513</b>	
<b>13303514</b>	
<b>13303516</b>	

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## Moisture Content Report

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Client Address:	Cnr Grafton & Hartley Streets Cairns QLD	Report Date:	23/09/2013
Job Number :	137632122	Order Number:	
Project :	Cairns Shipping Development	Test Method:	AS1289.2.1.1
Location :	Trinity Inlet , Cairns		

**Page 6 of 6**

Lab No :	13303517	13303518		
ID No :	-	-		
Lot No :	-	-		
Item No :	-	-		
Date Sampled / Received :	12/8/2013	12/8/2013		
Date Tested :	20/8/2013	20/8/2013		
Material Source :	Insitu	Insitu		
For Use As :	Investigation	Investigation		
Sample Location :	BH7 (4.2-4.6 m) 003 U75 Sampled 29/7/13 to 5/8/13	BH7 (5.45-5.9 m) 004 SPT Sampled 29/7/13 to 5/8/13		
Drying Temperature(°C):	<b>105 to 110</b>	<b>105 to 110</b>		
Moisture Content(%):	<b>43.3</b>	<b>22.8</b>		
Remarks :	<b>This replaces the report dated 3/09/2013</b>			

Lab Number:	Soil Description
<b>13303517</b>	
<b>13303518</b>	

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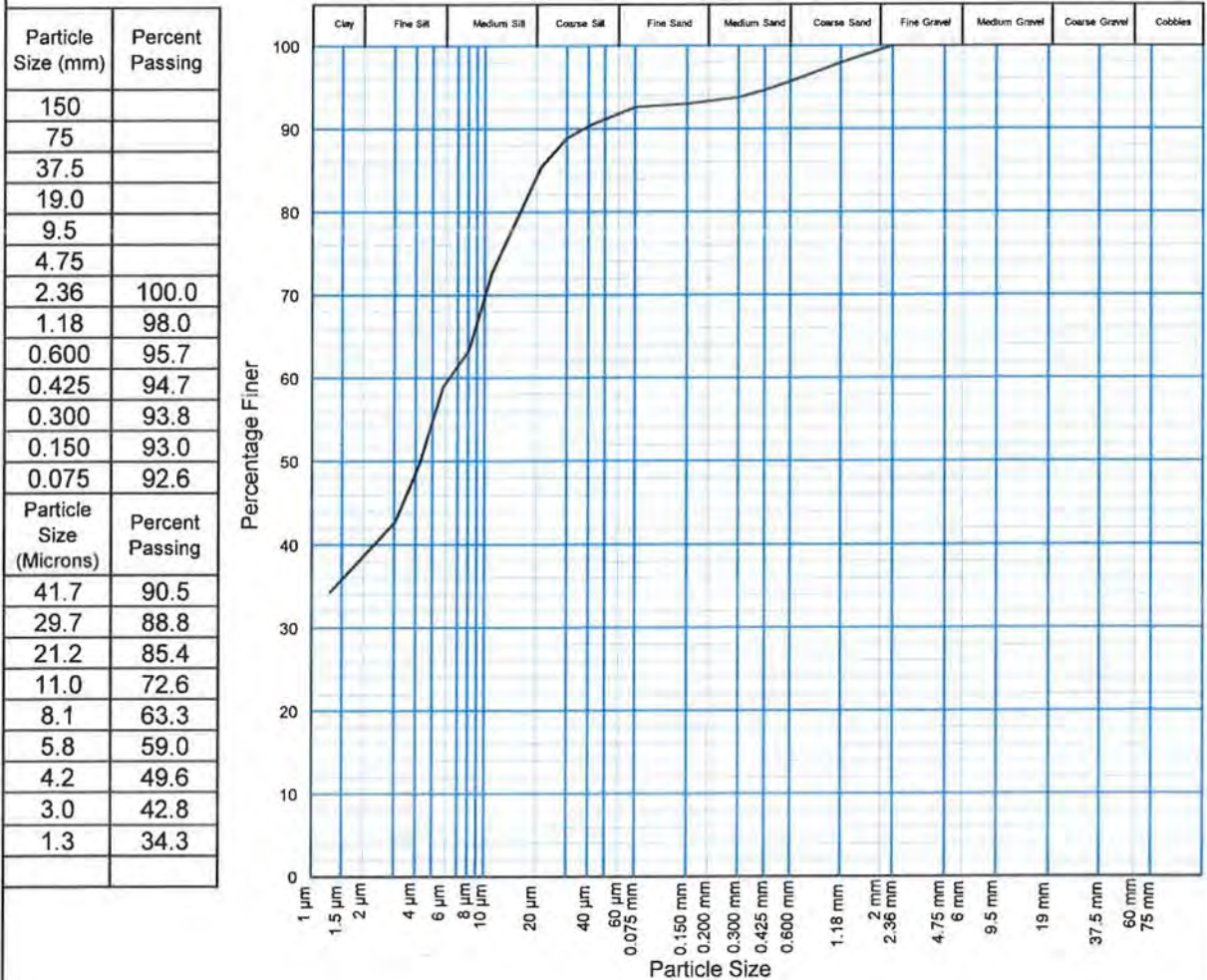
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**PARTICLE SIZE DISTRIBUTION BY HYDROMETER**

Client :	Ports North	Report No. :	R16139
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303492
Location/Sample ID :	BH1 001 (0.10 - 0.50m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure :	AS 1289.3.6.3	- Variations to test method a)assumed particle density used b) testing up to 24 hours	
Prepared by :	<i>NF</i>	Checked by :	<i>LH</i>

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Nick Farrer  
Approved Signatory

*NH* 26/8/13  
Senior Technical Officer  
NATA Accred. No. : 1961



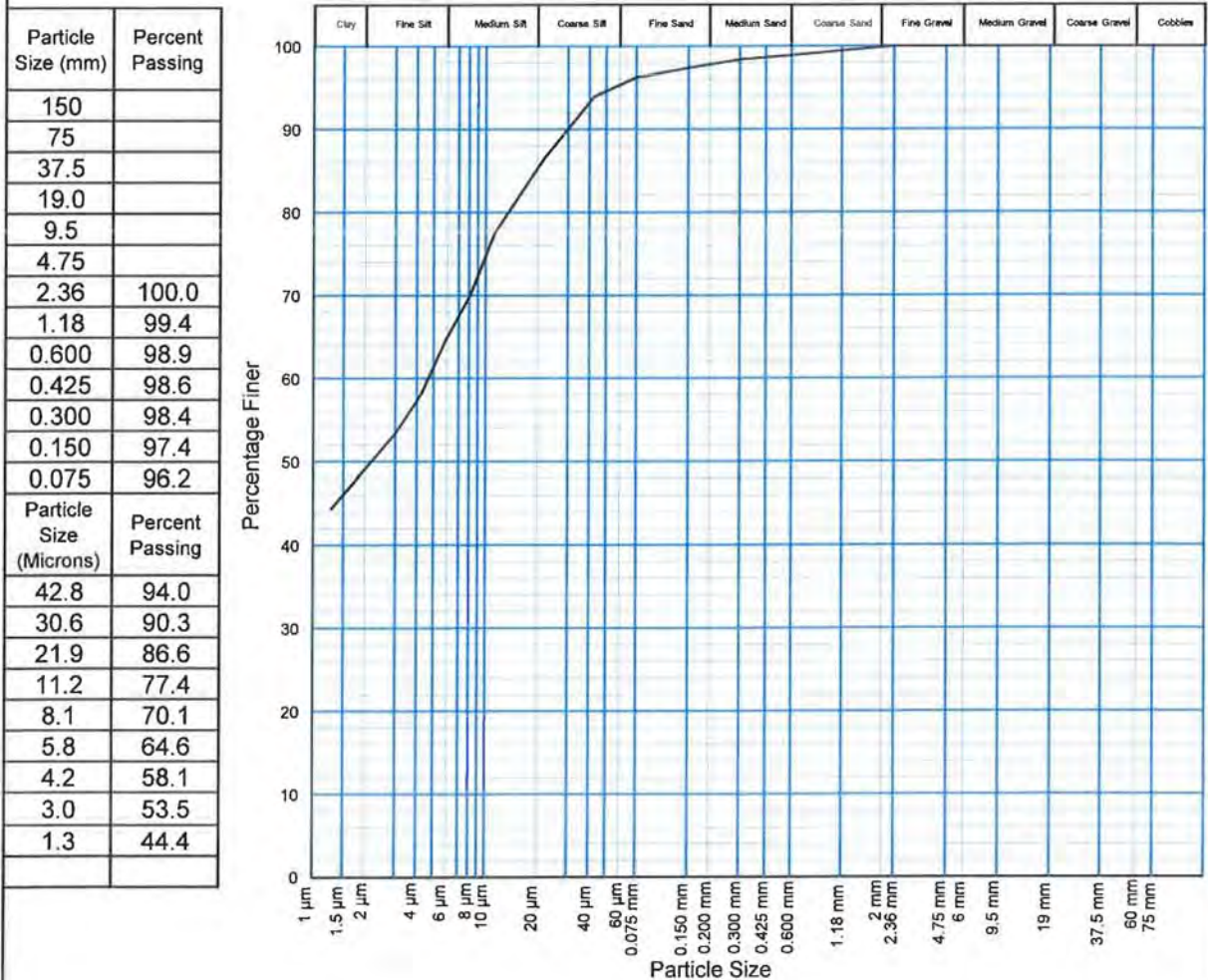
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**PARTICLE SIZE DISTRIBUTION BY HYDROMETER**

Client :	Ports North	Report No. :	R16140
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303493
Location/Sample ID :	BH1 003 (2.10 - 2.50m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a) assumed particle density used b) testing up to 24 hours			
Prepared by : <i>nk</i>		Checked by : <i>lit</i>	

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 Approved Signatory  
 Senior Technical Officer  
 NATA Accred. No. : 1961





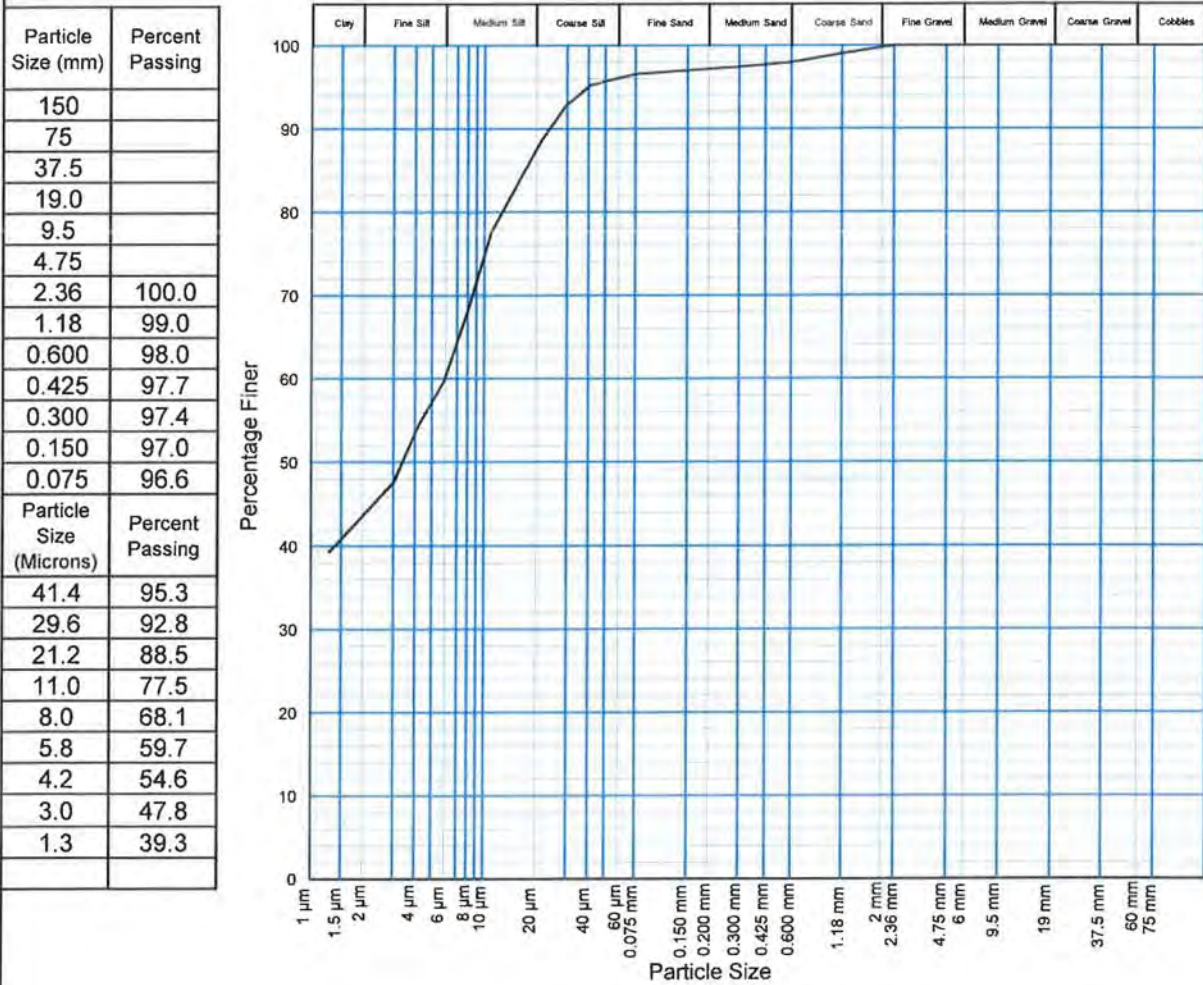
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**PARTICLE SIZE DISTRIBUTION BY HYDROMETER**

Client :	Ports North	Report No. :	R16141
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303494
Location/Sample ID :	BH1 004 (3.10 - 3.50m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a) assumed particle density used b) testing up to 24 hours			
Prepared by : <i>NT</i>		Checked by : <i>GH</i>	

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*Mur* 26/8/13  
Senior Technical Officer  
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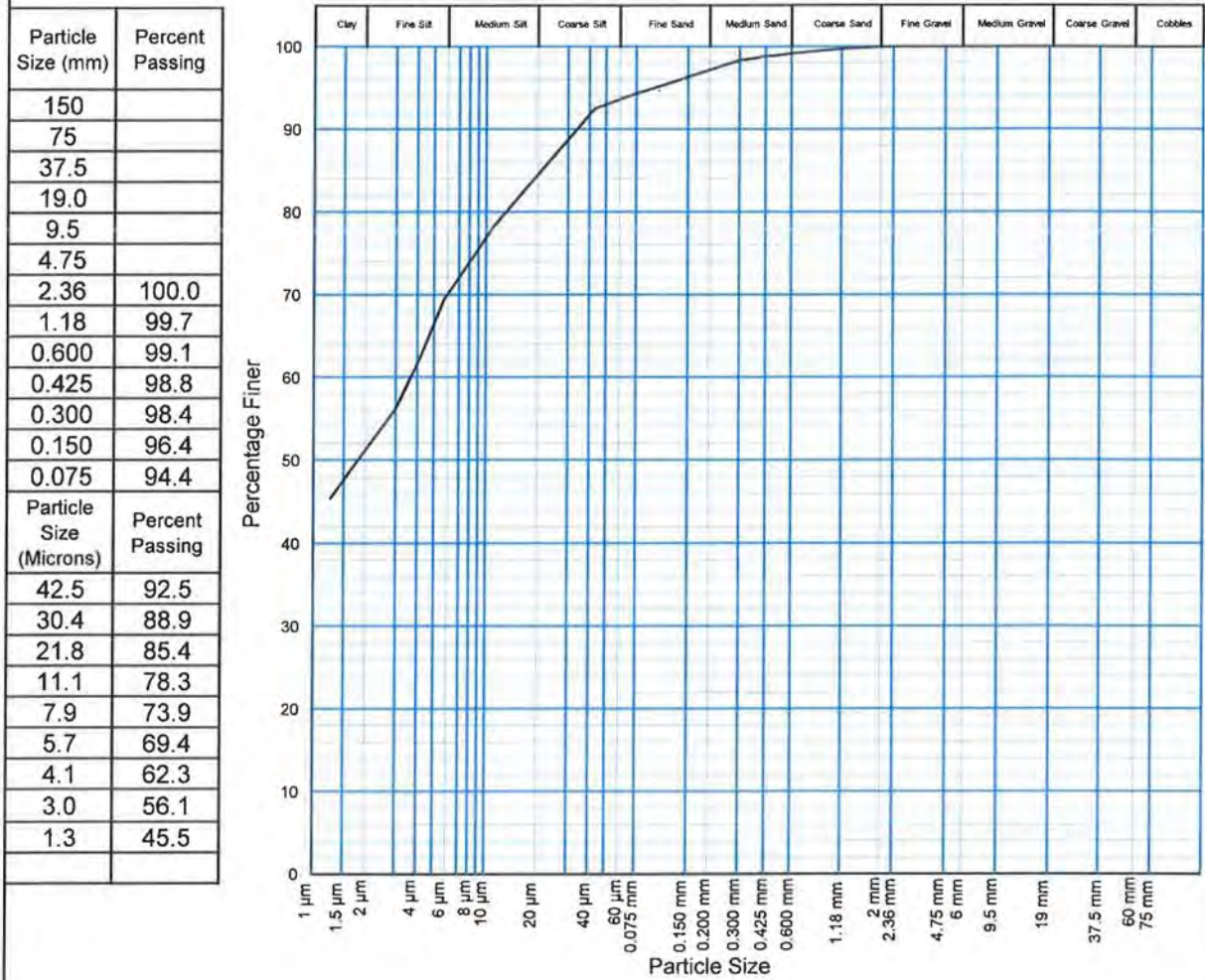
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**PARTICLE SIZE DISTRIBUTION BY HYDROMETER**

Client :	Ports North	Report No. :	R16142
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303495
Location/Sample ID :	BH1 005 (4.10 - 4.50m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a) assumed particle density used b) testing up to 24 hours			
Prepared by : <i>NT</i>		Checked by : <i>GH</i>	

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*Nhu 26/8/13*  
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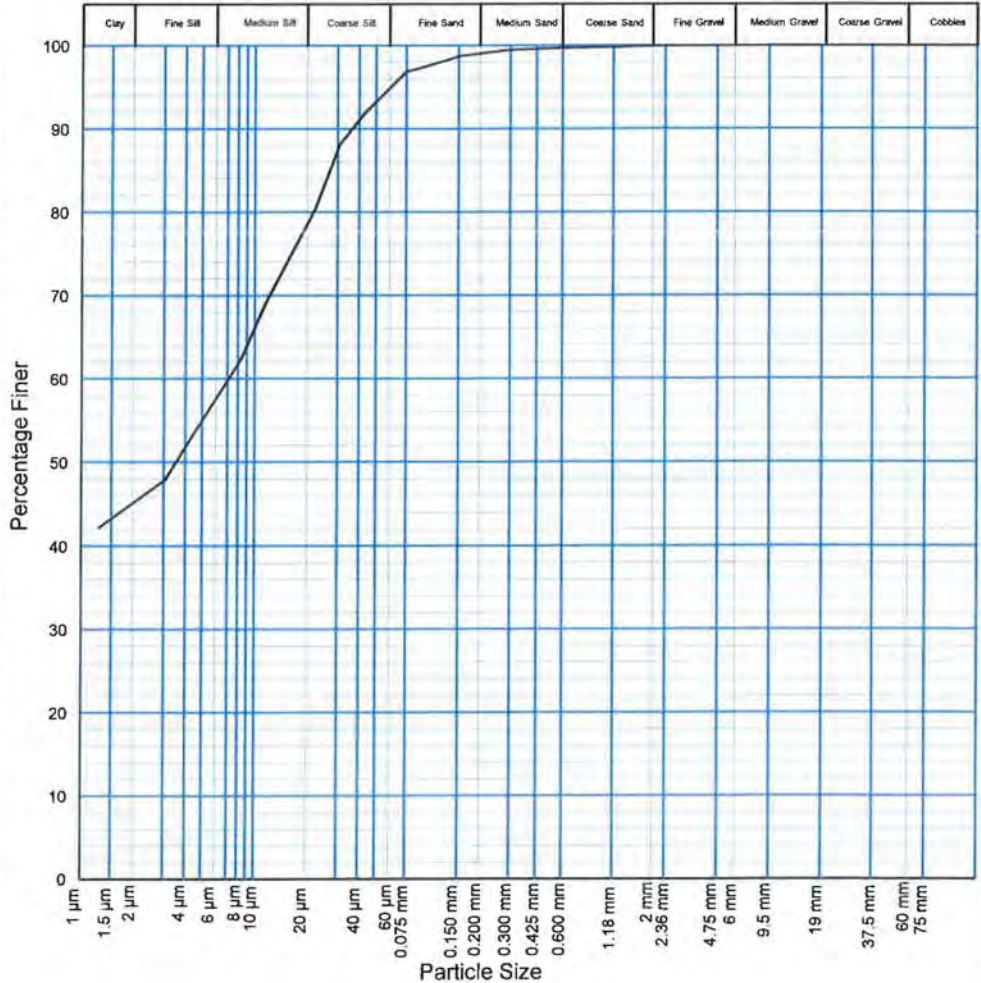
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Phone : (07) 3840 9500  
Email : bnelab@golder.com.au

**PARTICLE SIZE DISTRIBUTION BY HYDROMETER**

Client :	Ports North	Report No. :	R16143
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303496
Location/Sample ID :	BH2 001 (1.10 - 1.50m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726

Particle Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.8
0.600	99.7
0.425	99.6
0.300	99.5
0.150	98.7
0.075	96.9
Particle Size (Microns)	Percent Passing
43.0	91.9
30.8	88.1
22.3	80.5
11.5	69.0
8.3	62.3
5.9	57.5
4.3	52.8
3.0	48.0
1.3	42.3



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a) assumed particle density used b) testing up to 24 hours			
Prepared by : <i>nt</i>		Checked by : <i>CH</i>	

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*nt* 26/8/13  
.....  
Nick Farrer Senior Technical Officer  
Approved Signatory NATA Accred. No. : 1961



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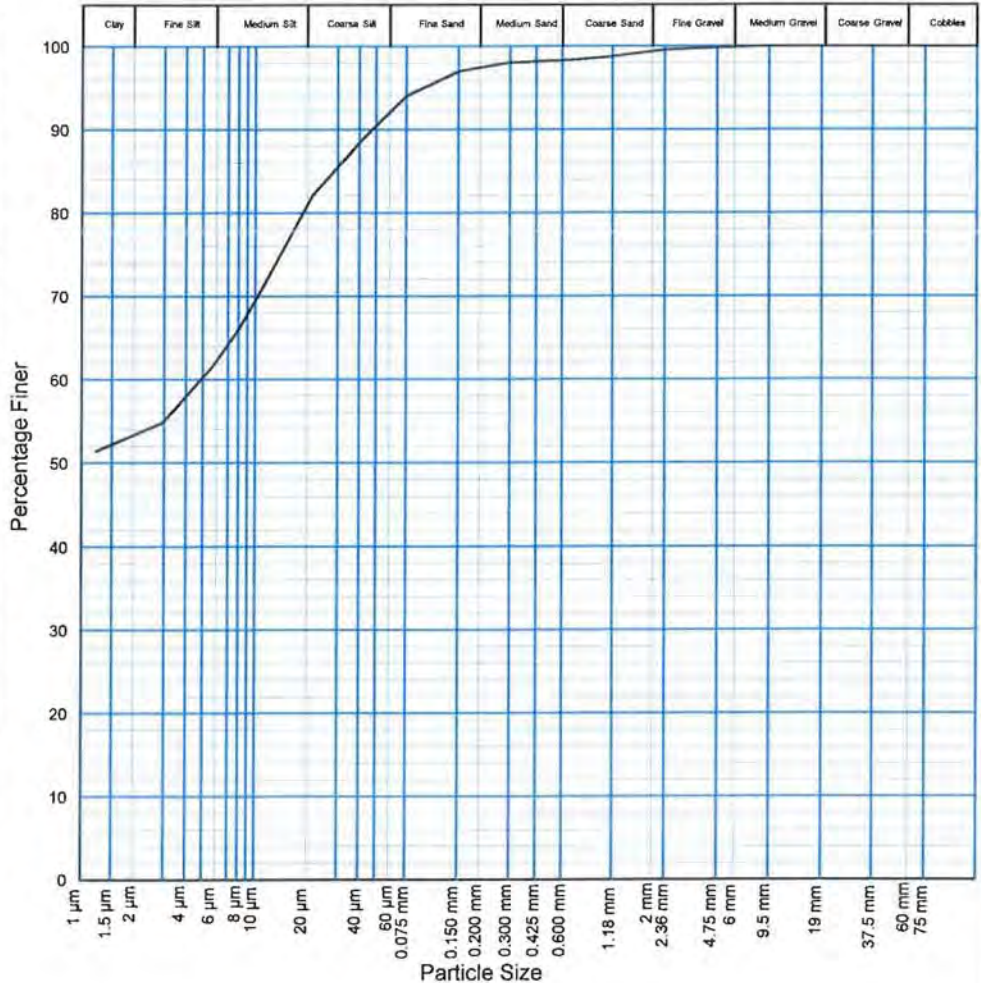
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**PARTICLE SIZE DISTRIBUTION BY HYDROMETER**

Client :	Ports North	Report No. :	R16144
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303497
Location/Sample ID :	BH2 002 (2.10 - 2.50m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726

Particle Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	100.0
4.75	99.8
2.36	99.5
1.18	98.8
0.600	98.3
0.425	98.2
0.300	98.1
0.150	97.0
0.075	94.1
Particle Size (Microns)	Percent Passing
41.9	89.0
30.0	85.6
21.5	82.2
11.1	71.1
8.0	65.9
5.7	61.7
4.1	58.3
2.9	54.8
1.2	51.4



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a) assumed particle density used b) testing up to 24 hours			
Prepared by : <i>nt</i>		Checked by : <i>gll</i>	

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Senior Technical Officer  
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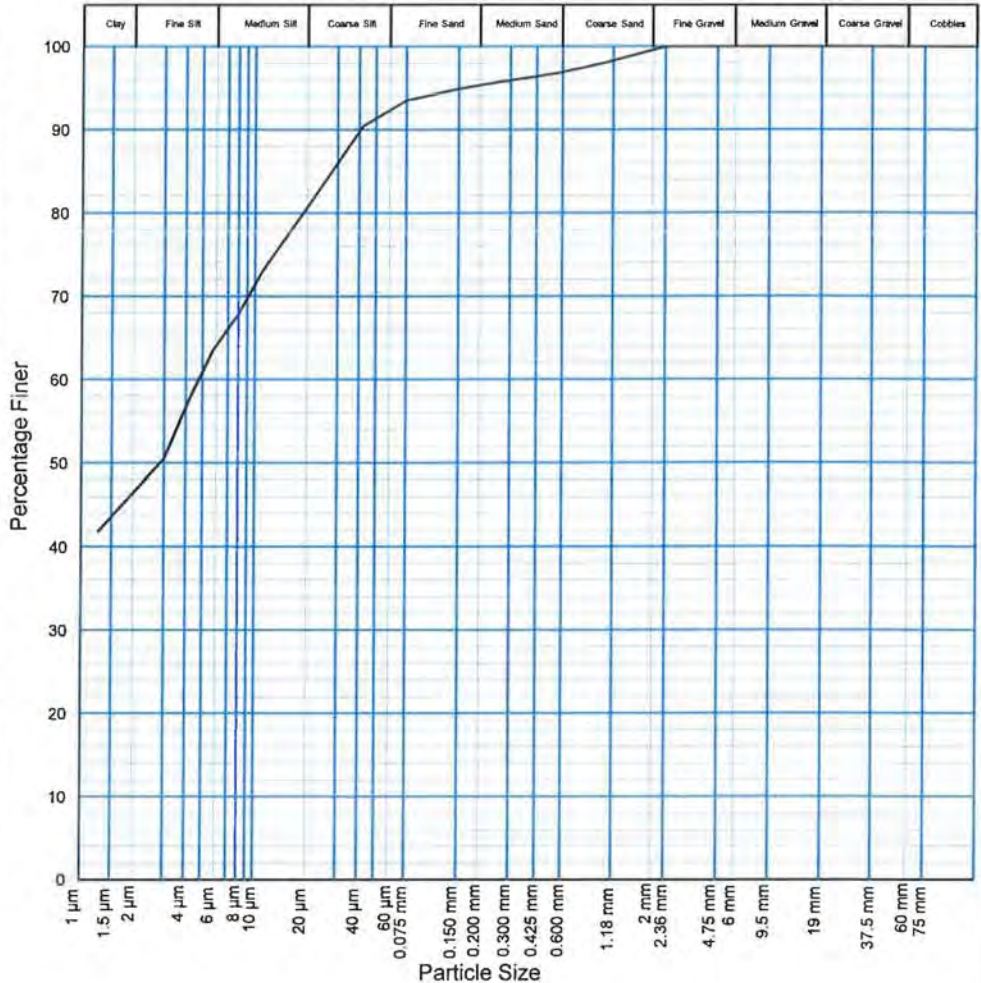
ABN 64 006 107 857  
28 Bank Street, West End QLD 4101  
PO Box 3427 Sth Brisbane BC QLD 4101  
Phone : (07) 3840 9500  
Email : bnelab@golder.com.au

**PARTICLE SIZE DISTRIBUTION BY HYDROMETER**

Client :	Ports North	Report No. :	R16145
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303498
Location/Sample ID :	BH2 003 (3.10 - 3.55m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726

Particle Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	98.3
0.600	96.9
0.425	96.4
0.300	95.9
0.150	94.9
0.075	93.5
Particle Size (Microns)	Percent Passing
41.9	90.4
30.1	86.1
21.7	81.8
11.1	73.1
8.0	67.9
5.7	63.6
4.1	57.5
3.0	50.5
1.3	41.9



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a) assumed particle density used b) testing up to 24 hours			
Prepared by : <i>nk</i>		Checked by : <i>GH</i>	

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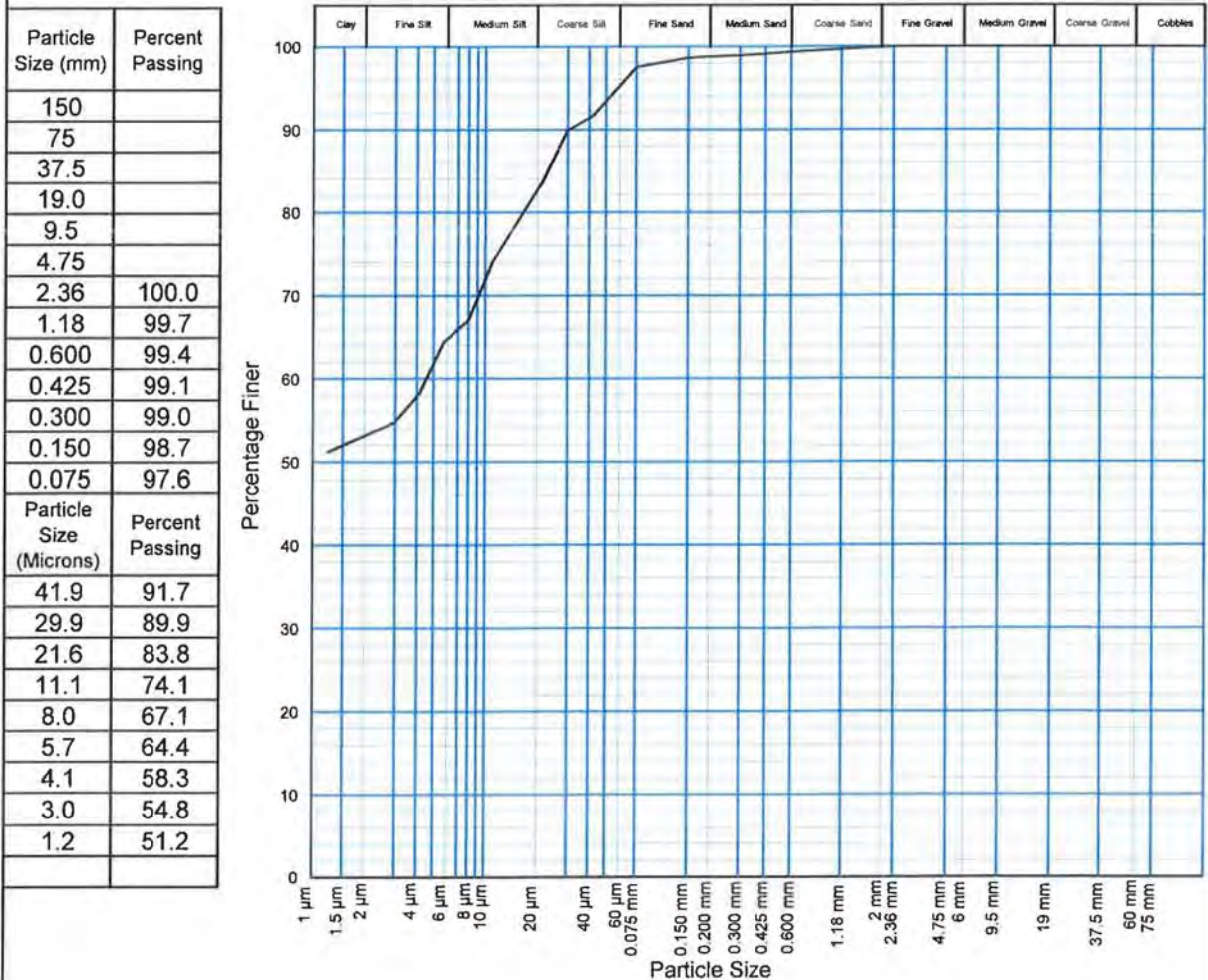
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**PARTICLE SIZE DISTRIBUTION BY HYDROMETER**

Client :	Ports North	Report No. :	R16146
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303499
Location/Sample ID :	BH3 001 (0.40 - 0.80m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a) assumed particle density used b) testing up to 24 hours			
Prepared by : <i>mf</i>		Checked by : <i>Lili</i>	

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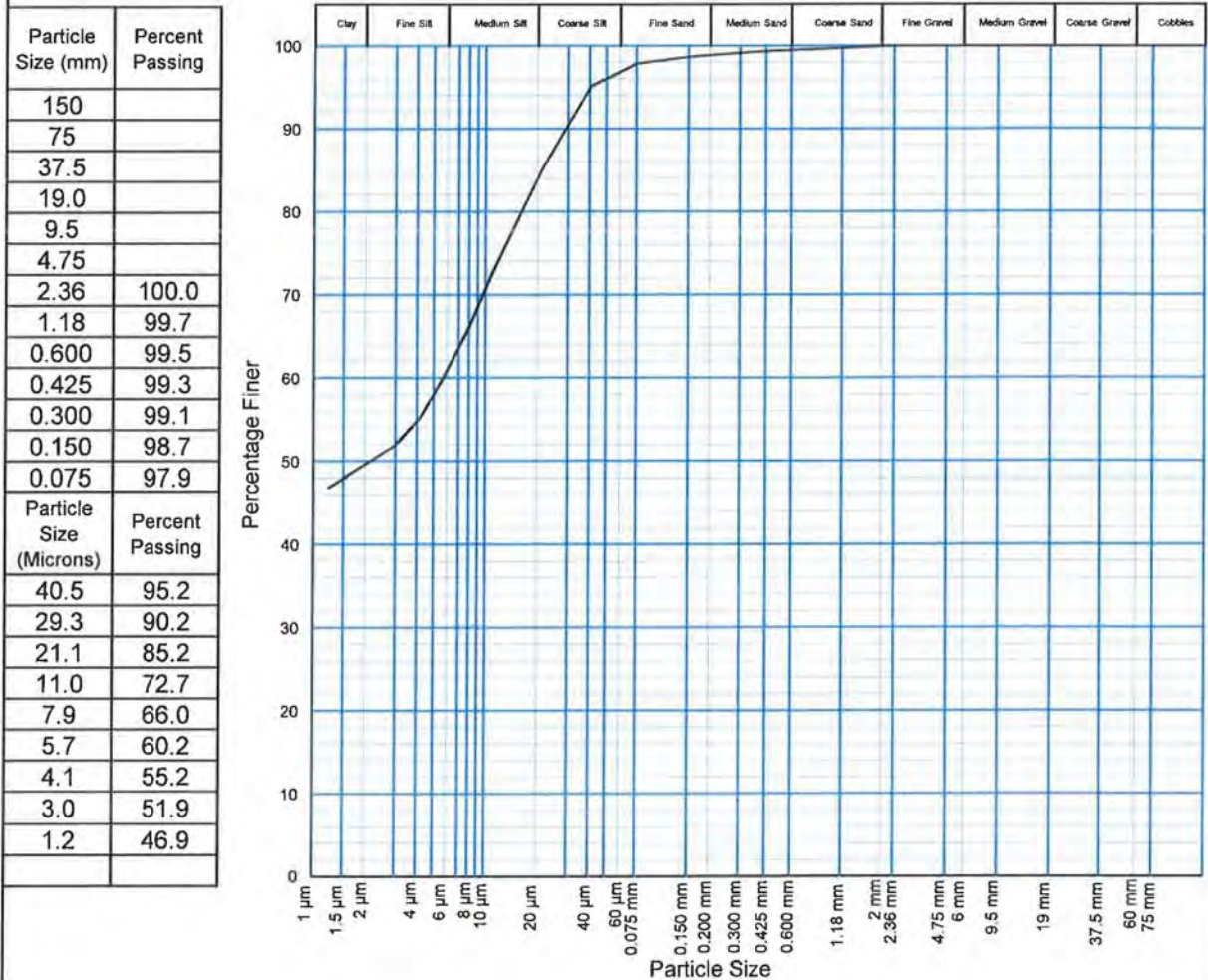
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**PARTICLE SIZE DISTRIBUTION BY HYDROMETER**

Client :	Ports North	Report No. :	R16147
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303500
Location/Sample ID :	BH3 002 (1.40 - 1.80m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a) assumed particle density used b) testing up to 24 hours			
Prepared by : <i>MF</i>		Checked by : <i>CFH</i>	

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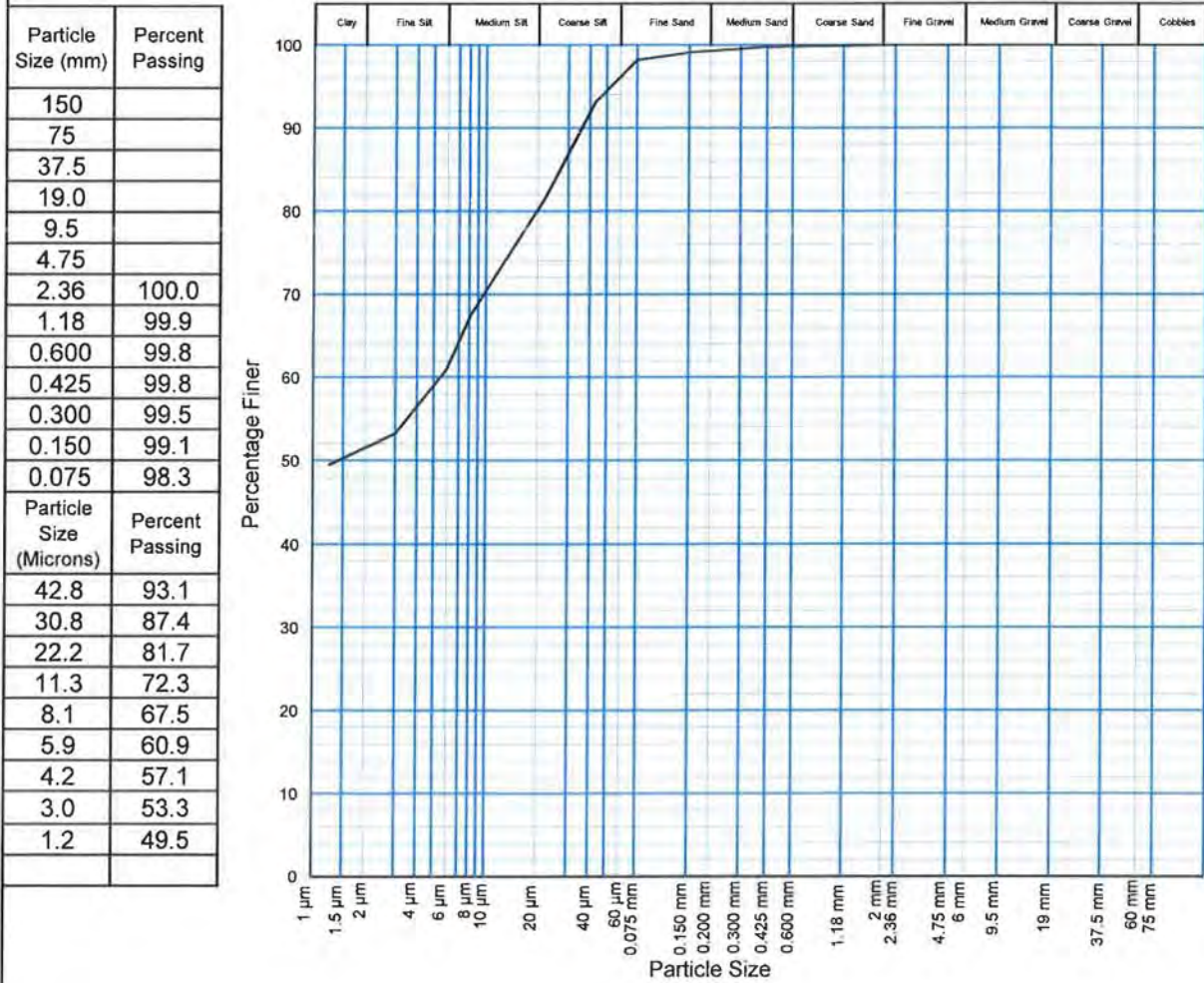
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Client :	Ports North	Report No. :	R16149
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303502
Location/Sample ID :	BH3 003 (2.40 - 2.63m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a)assumed particle density used b) testing up to 24 hours			
Prepared by : <i>nt</i>		Checked by : <i>lit</i>	

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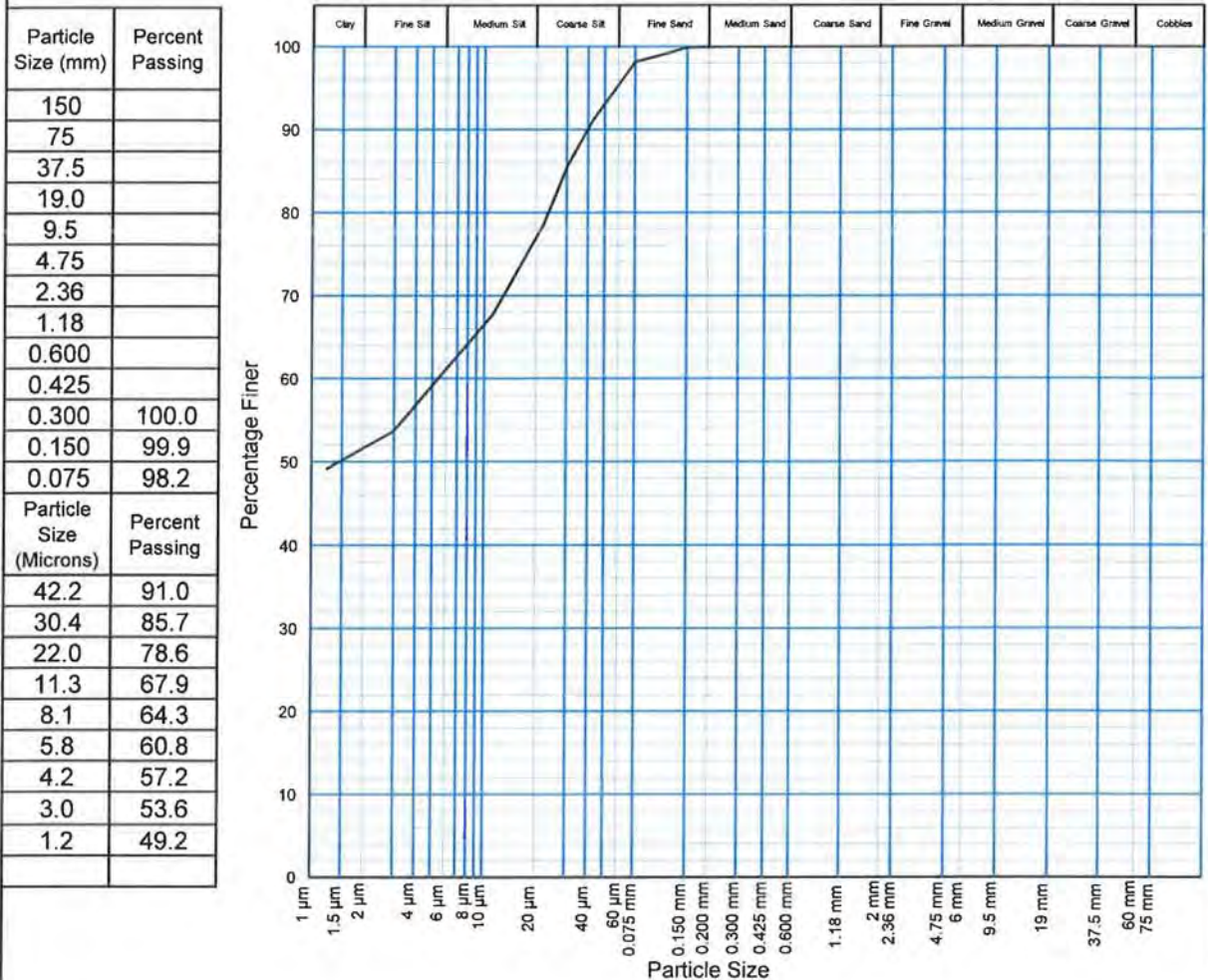
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**PARTICLE SIZE DISTRIBUTION BY HYDROMETER**

Client :	Ports North	Report No. :	R16148
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303501
Location/Sample ID :	BH3 006 (4.80 - 5.25m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a)assumed particle density used b) testing up to 24 hours			
Prepared by : <i>nr</i>		Checked by : <i>GN</i>	

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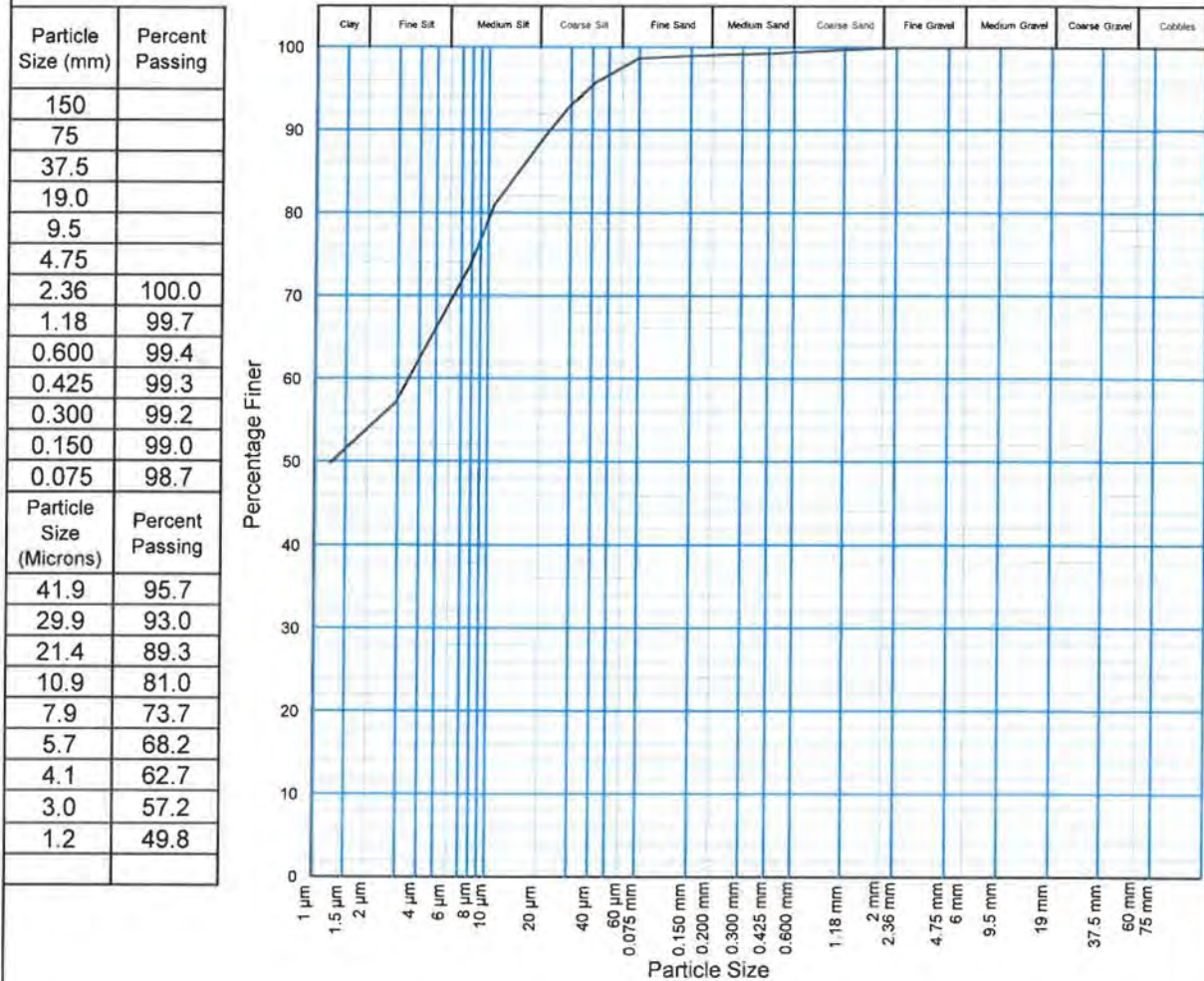
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Client :	Ports North	Report No. :	R16150	
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000	
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303503	
Location/Sample ID :	BH4 001 (2.40 - 2.80m)	Senders No. :		
		Date Received :	12/08/2013	
Remarks :	This replaces the report dated 26/08/2013		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a) assumed particle density used b) testing up to 24 hours			
Prepared by :		Checked by :	

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Mike Sandilands Laboratory Manager  
Approved Signatory NATA Accred. No. : 1961



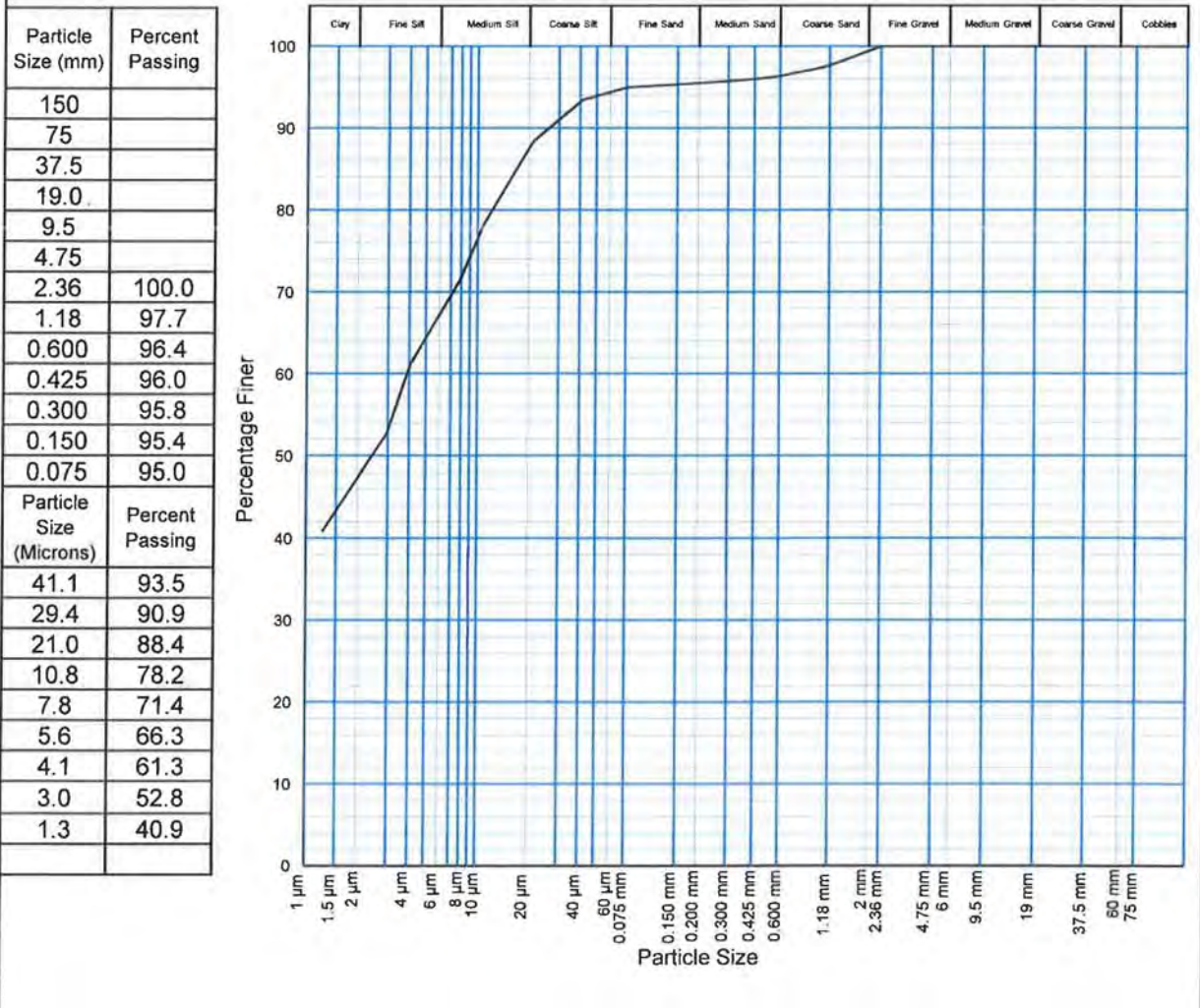
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Client :	Ports North	Report No. :	R16151
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303504
Location/Sample ID :	BH4 002 (3.40 - 3.80m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a)assumed particle density used b) testing up to 24 hours			
Prepared by : <i>MF</i>		Checked by : <i>CH</i>	

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 Nick Farrer Senior Technical Officer  
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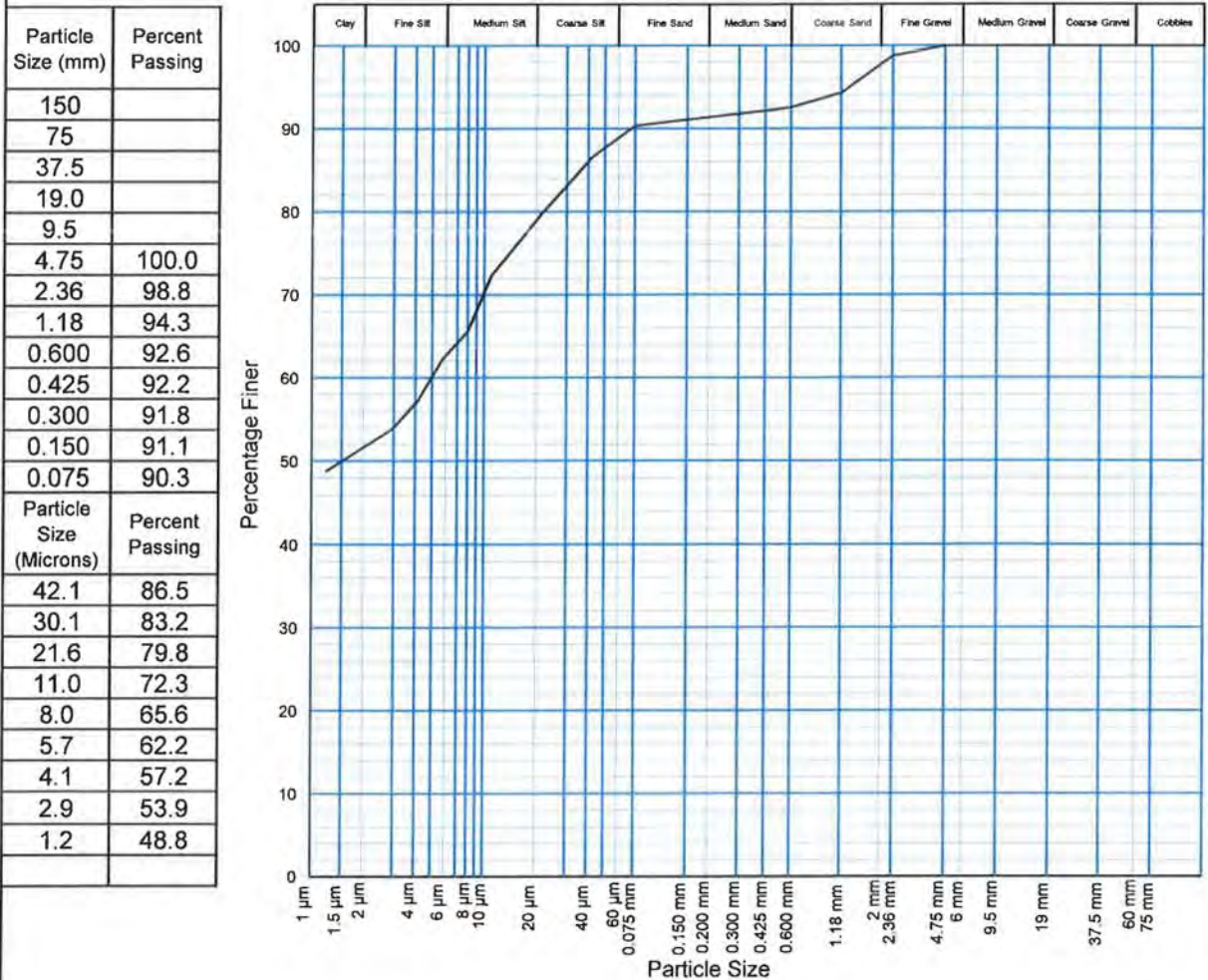
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**PARTICLE SIZE DISTRIBUTION BY HYDROMETER**

Client :	Ports North	Report No. :	R16152
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303505
Location/Sample ID :	BH4 003 (4.40 - 4.80m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a) assumed particle density used b) testing up to 24 hours			
Prepared by : <i>MF</i>		Checked by : <i>GA</i>	

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*Mhm 26/8/13*  
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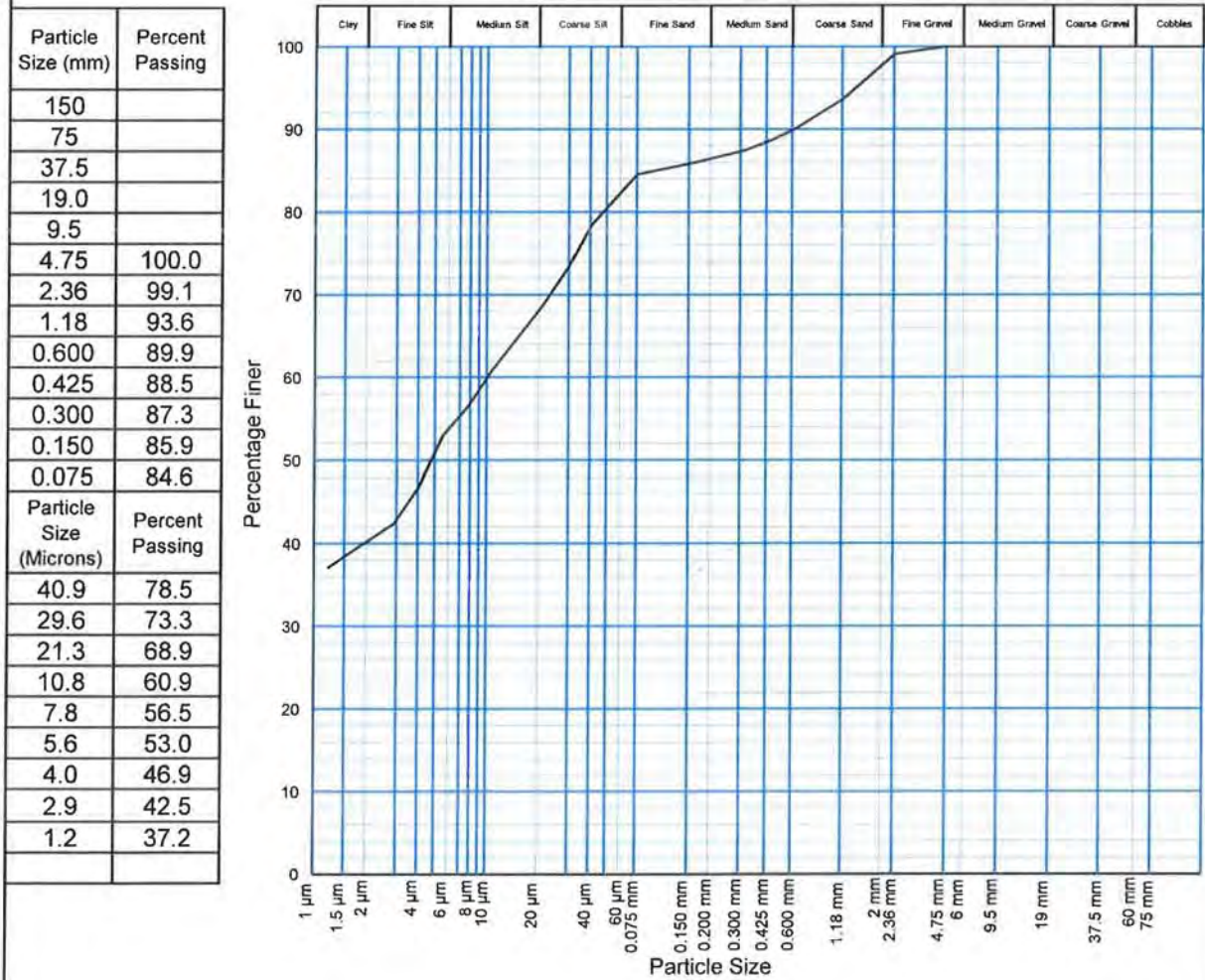
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Client :	Ports North	Report No. :	R16153
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303506
Location/Sample ID :	BH4 004 (5.40 - 5.85m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a) assumed particle density used b) testing up to 24 hours			
Prepared by : <i>mk</i>		Checked by : <i>Cit</i>	

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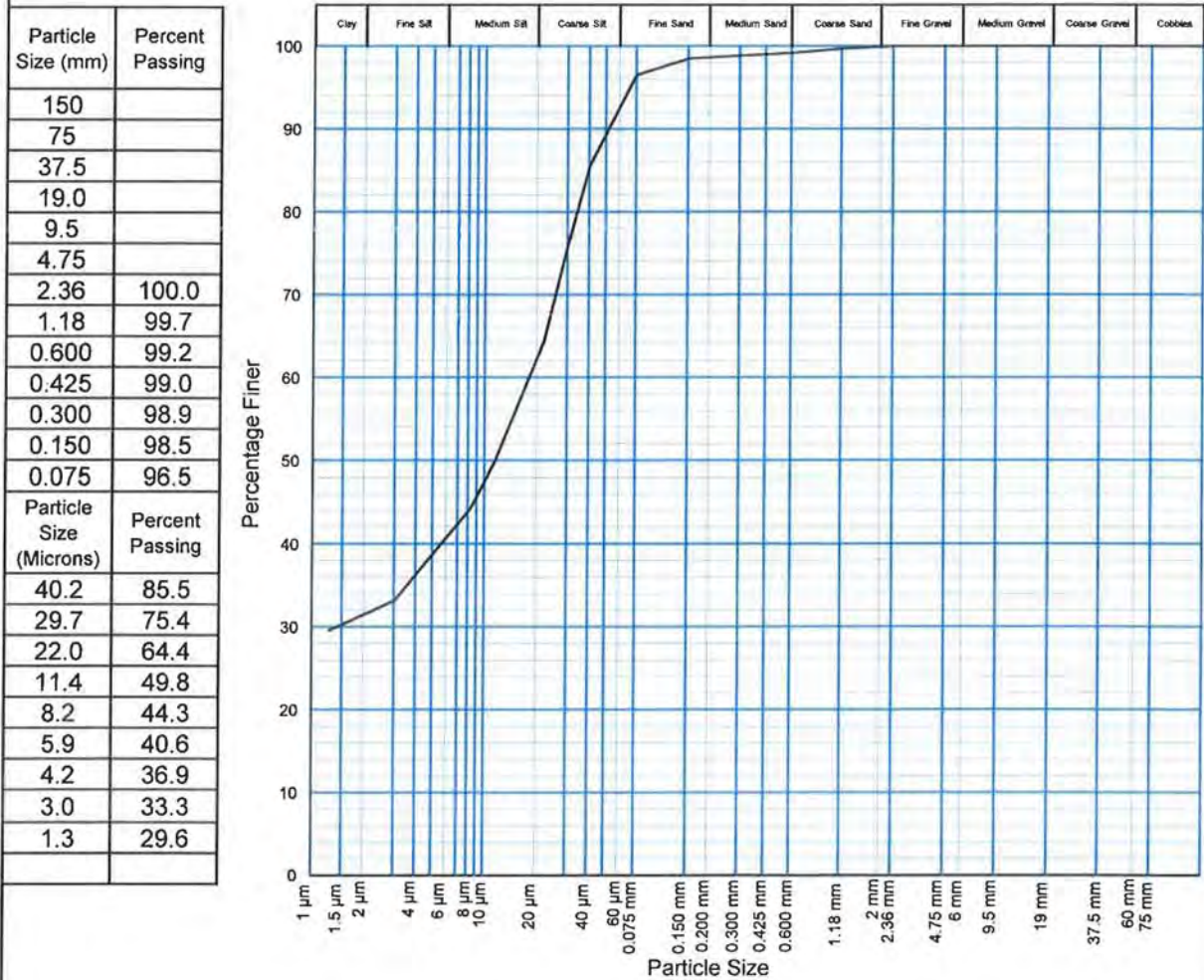
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Client :	Ports North	Report No. :	R16154
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303507
Location/Sample ID :	BH5 001 (2.40 - 2.80m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a) assumed particle density used b) testing up to 24 hours			
Prepared by : <i>mt</i>		Checked by : <i>C.H.</i>	

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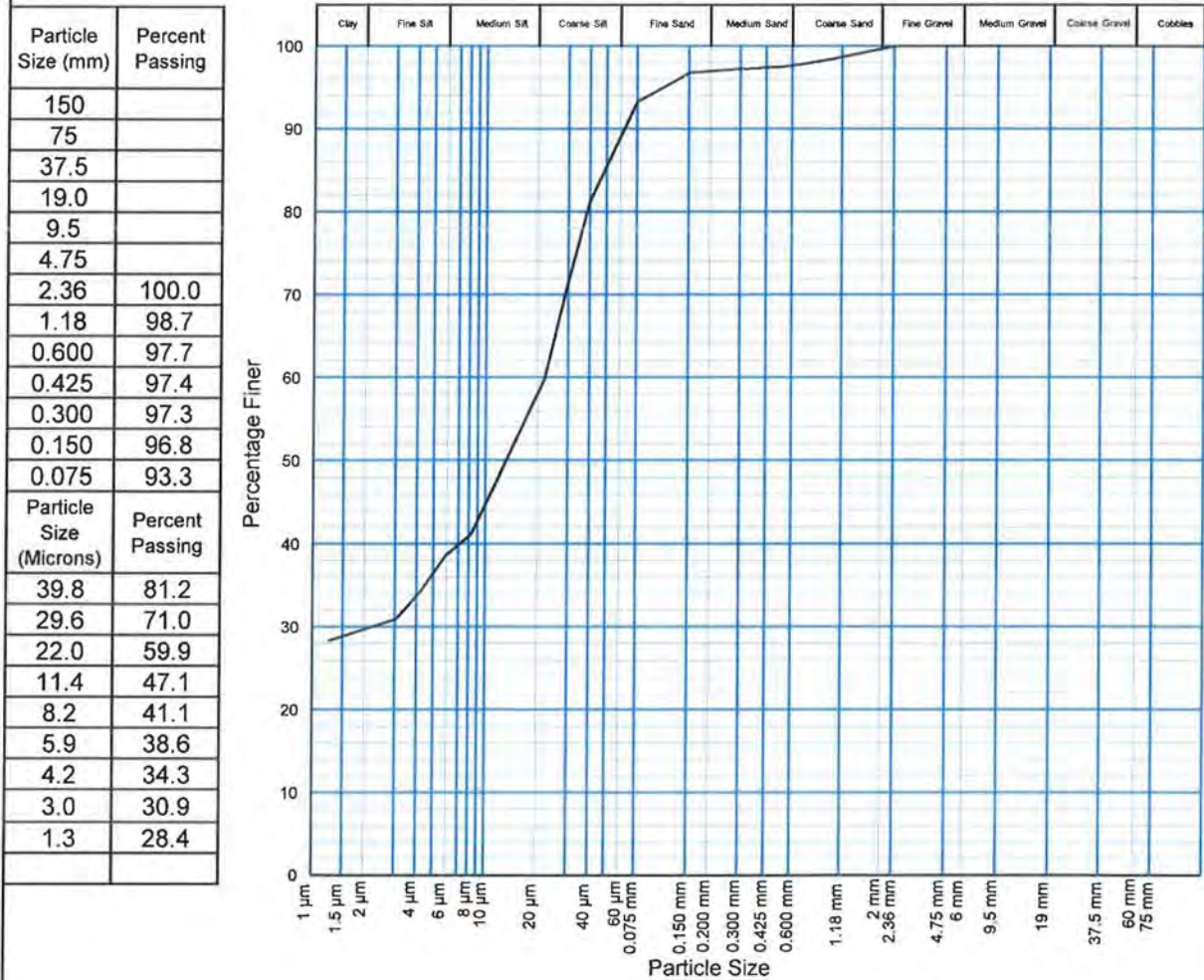
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Client :	Ports North	Report No. :	R16155
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303508
Location/Sample ID :	BH5 003 (4.40 - 4.80m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a) assumed particle density used b) testing up to 24 hours			
Prepared by : <i>NF</i>		Checked by : <i>GH</i>	

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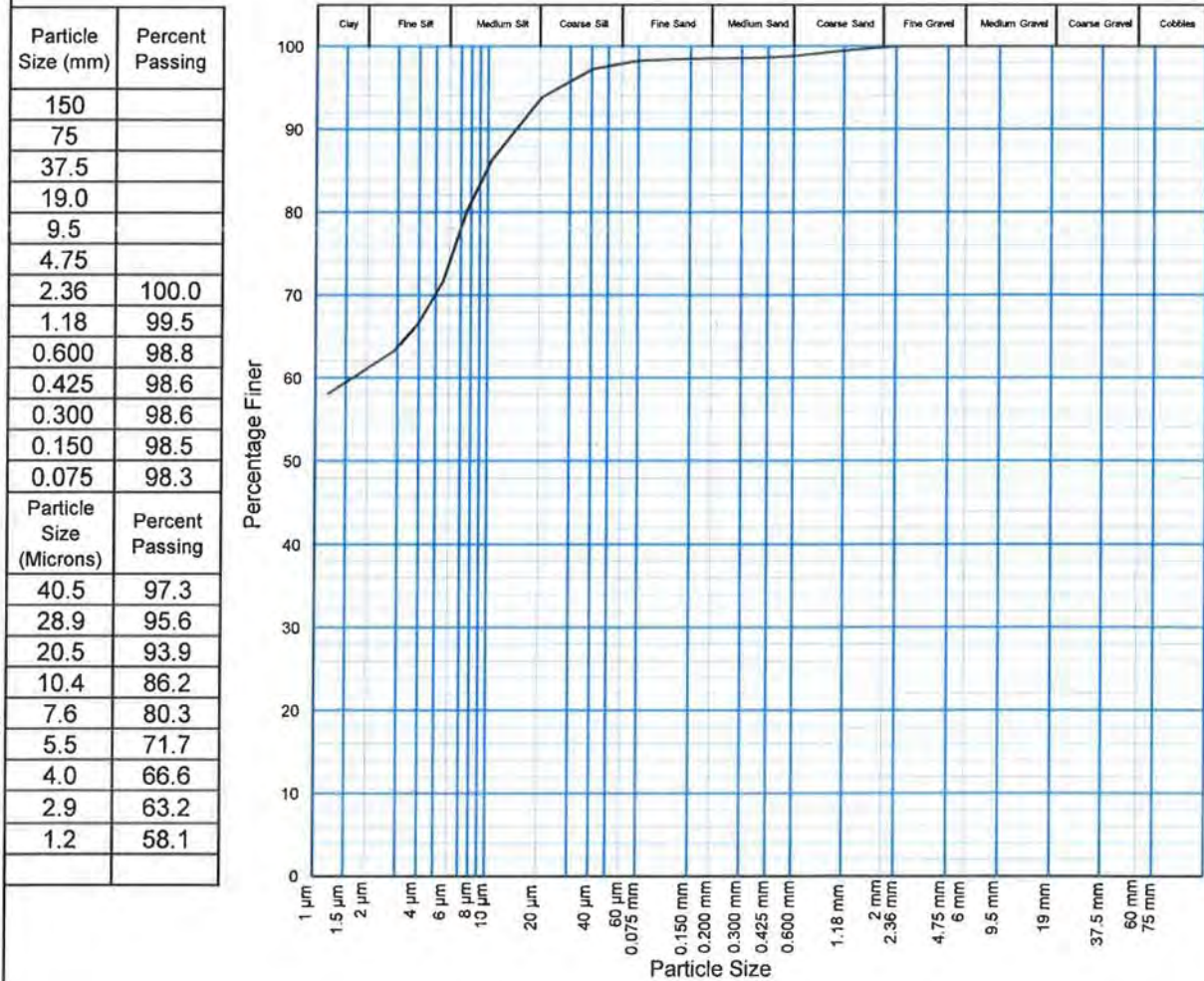
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Client :	Ports North	Report No. :	R16156
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303509
Location/Sample ID :	BH5 006 (7.40 - 7.90m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a) assumed particle density used b) testing up to 24 hours			
Prepared by : <i>mt</i>		Checked by : <i>GH</i>	

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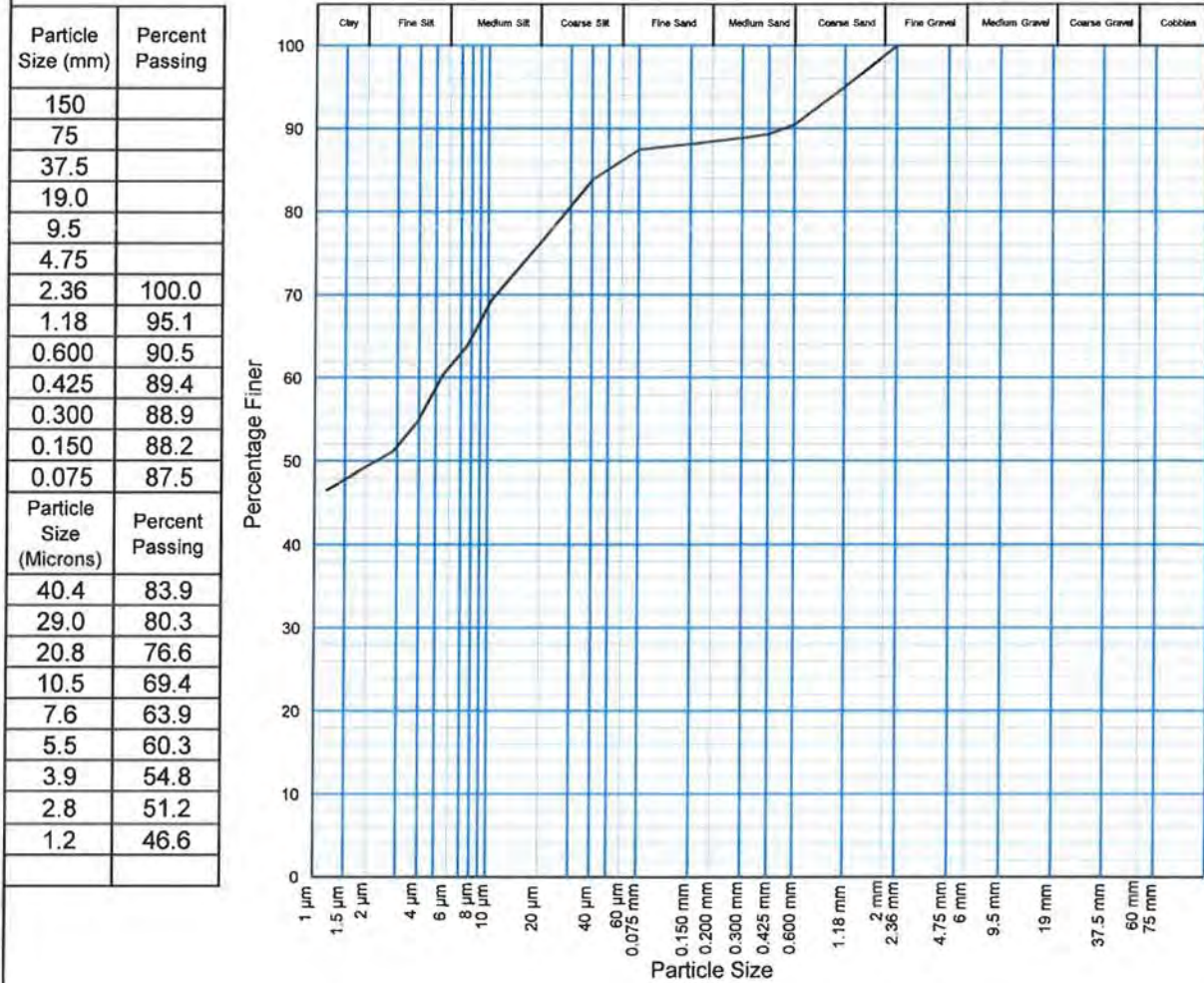
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Client :	Ports North	Report No. :	R16157
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303510
Location/Sample ID :	BH5 009 (10.40 - 10.80m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a) assumed particle density used b) testing up to 24 hours			
Prepared by : <i>MF</i>		Checked by : <i>GT</i>	

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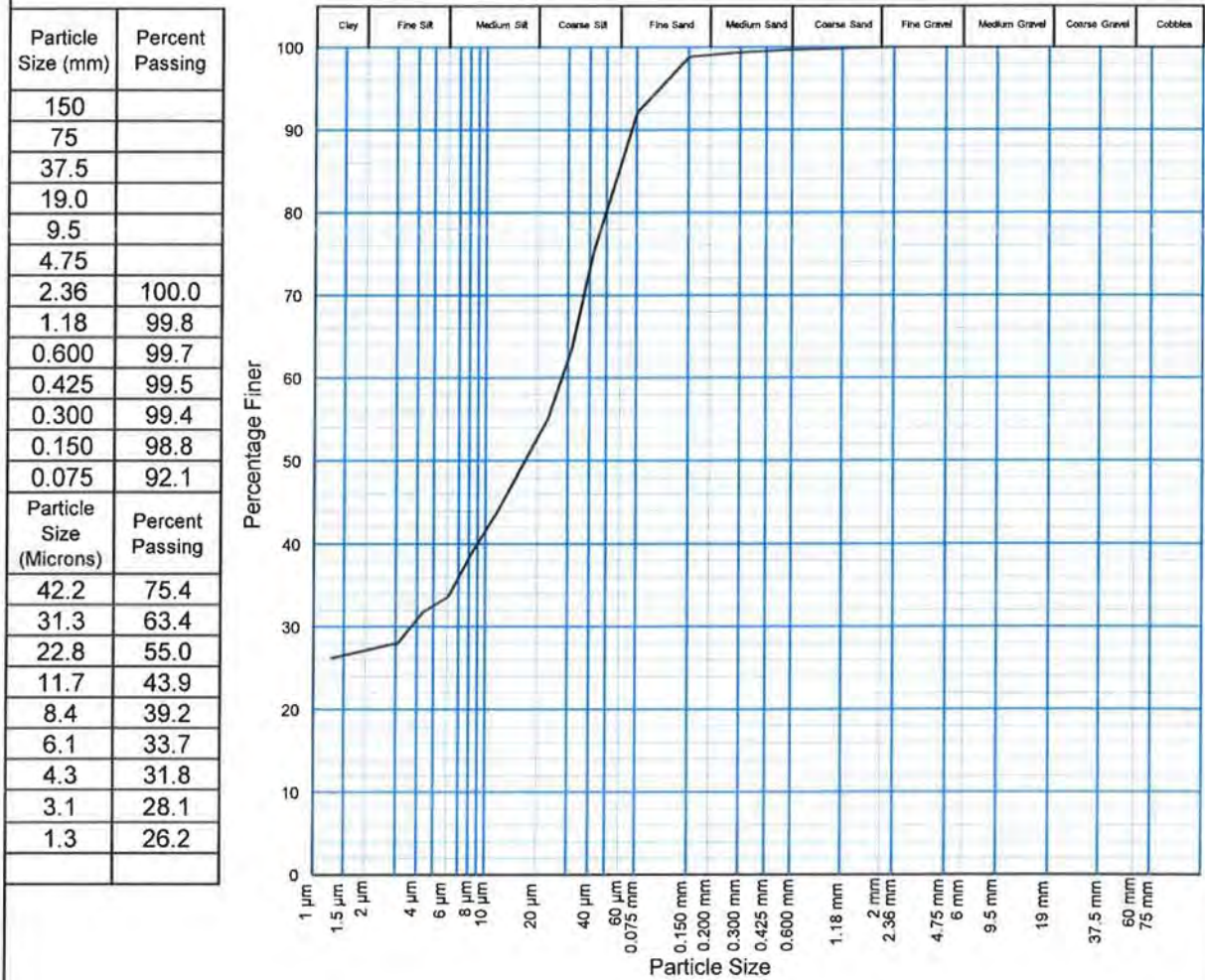
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Client :	Ports North	Report No. :	R16158
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303511
Location/Sample ID :	BH6 001 (0.00 - 0.40m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a) assumed particle density used b) testing up to 24 hours			
Prepared by : <i>MP</i>		Checked by : <i>CB</i>	

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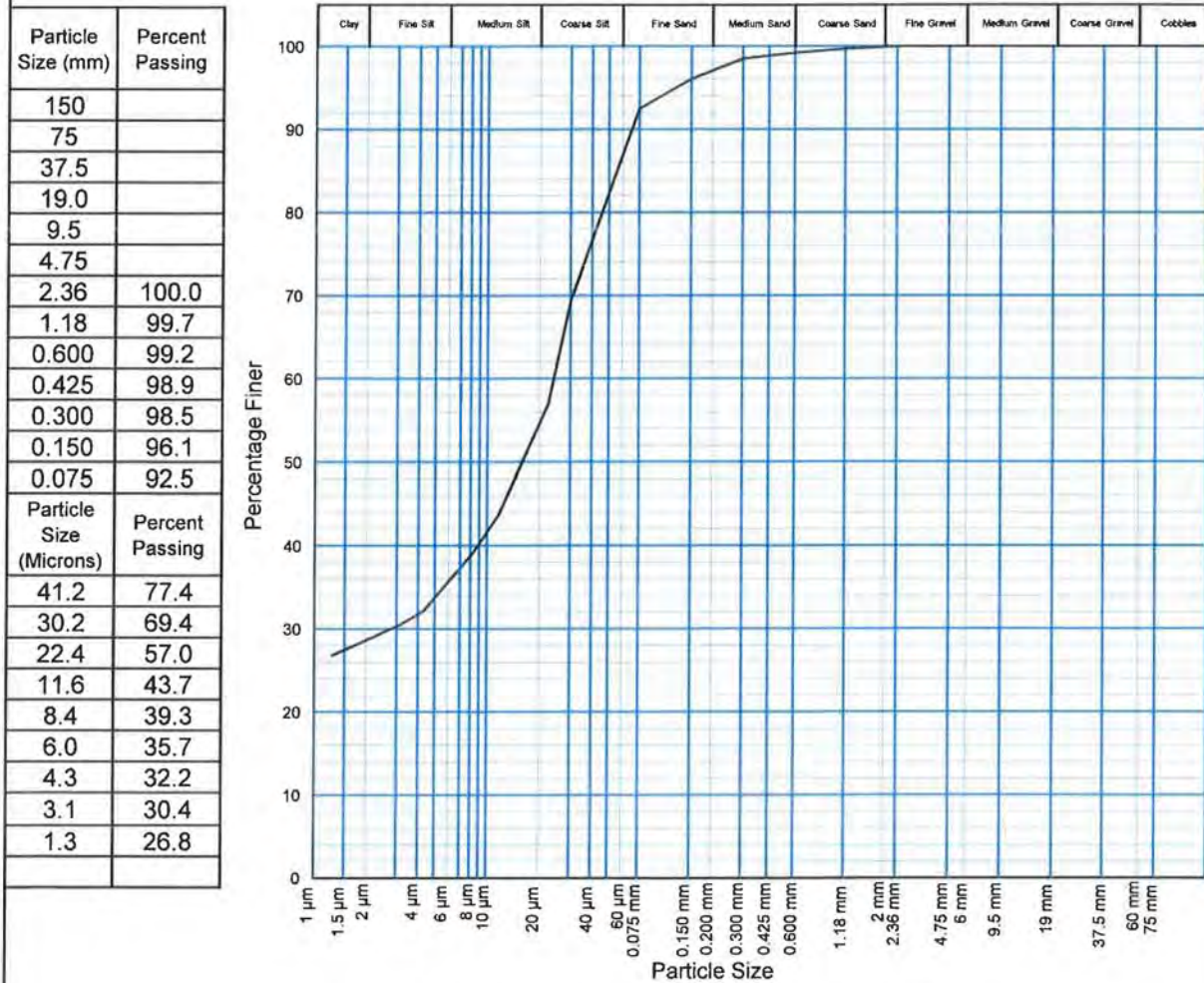
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Client :	Ports North	Report No. :	R16159
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303512
Location/Sample ID :	BH6 003 (2.00 - 2.40m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a)assumed particle density used b) testing up to 24 hours			
Prepared by : <i>nt</i>		Checked by : <i>uo</i>	

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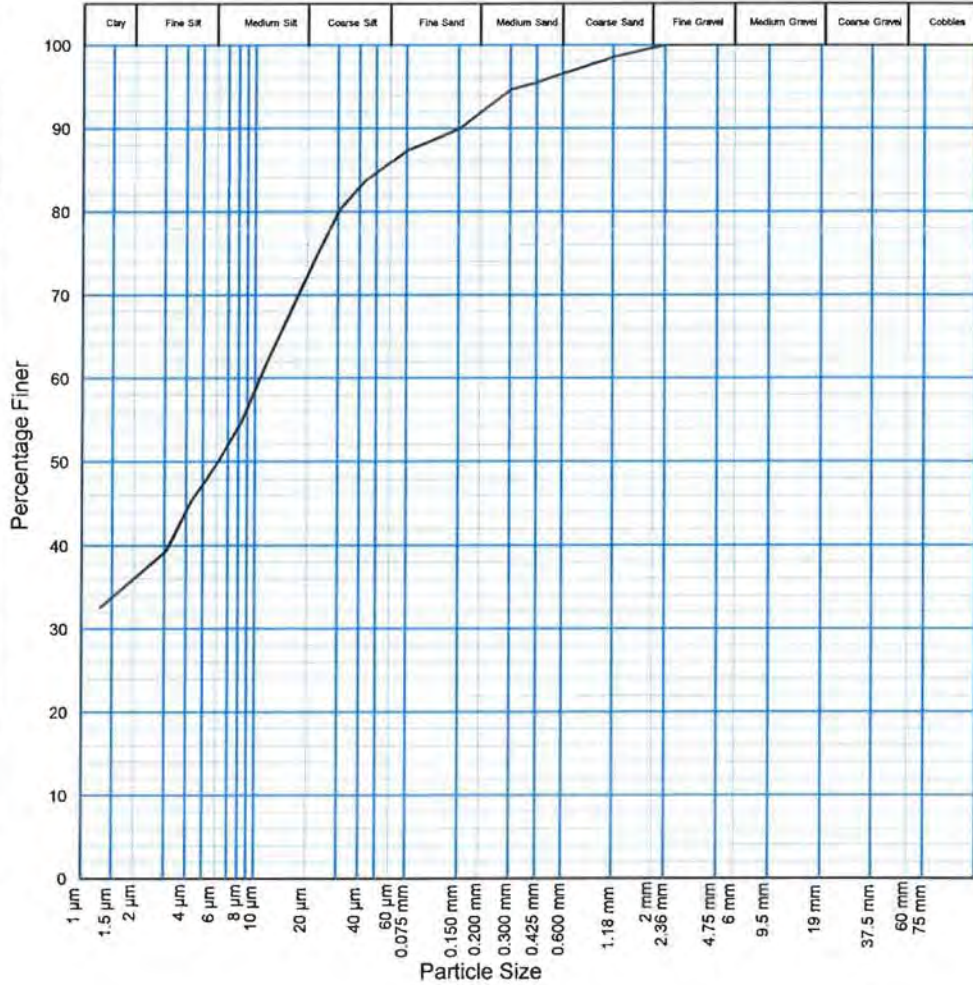
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Email : bnelab@golder.com.au

**PARTICLE SIZE DISTRIBUTION BY HYDROMETER**

Client :	Ports North	Report No. :	R16160
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303513
Location/Sample ID :	BH6 006 (5.00 - 5.40m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726

Particle Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	98.6
0.600	96.6
0.425	95.5
0.300	94.6
0.150	90.0
0.075	87.4
Particle Size (Microns)	Percent Passing
42.8	83.7
30.6	80.3
22.1	74.3
11.5	61.6
8.3	54.7
6.0	49.6
4.3	45.4
3.1	39.4
1.3	32.6



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a) assumed particle density used b) testing up to 24 hours			
Prepared by : <i>NF</i>		Checked by : <i>GF</i>	

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Approved Signatory

*Mum 26/8/13*  
Senior Technical Officer  
NATA Accred. No. : 1961



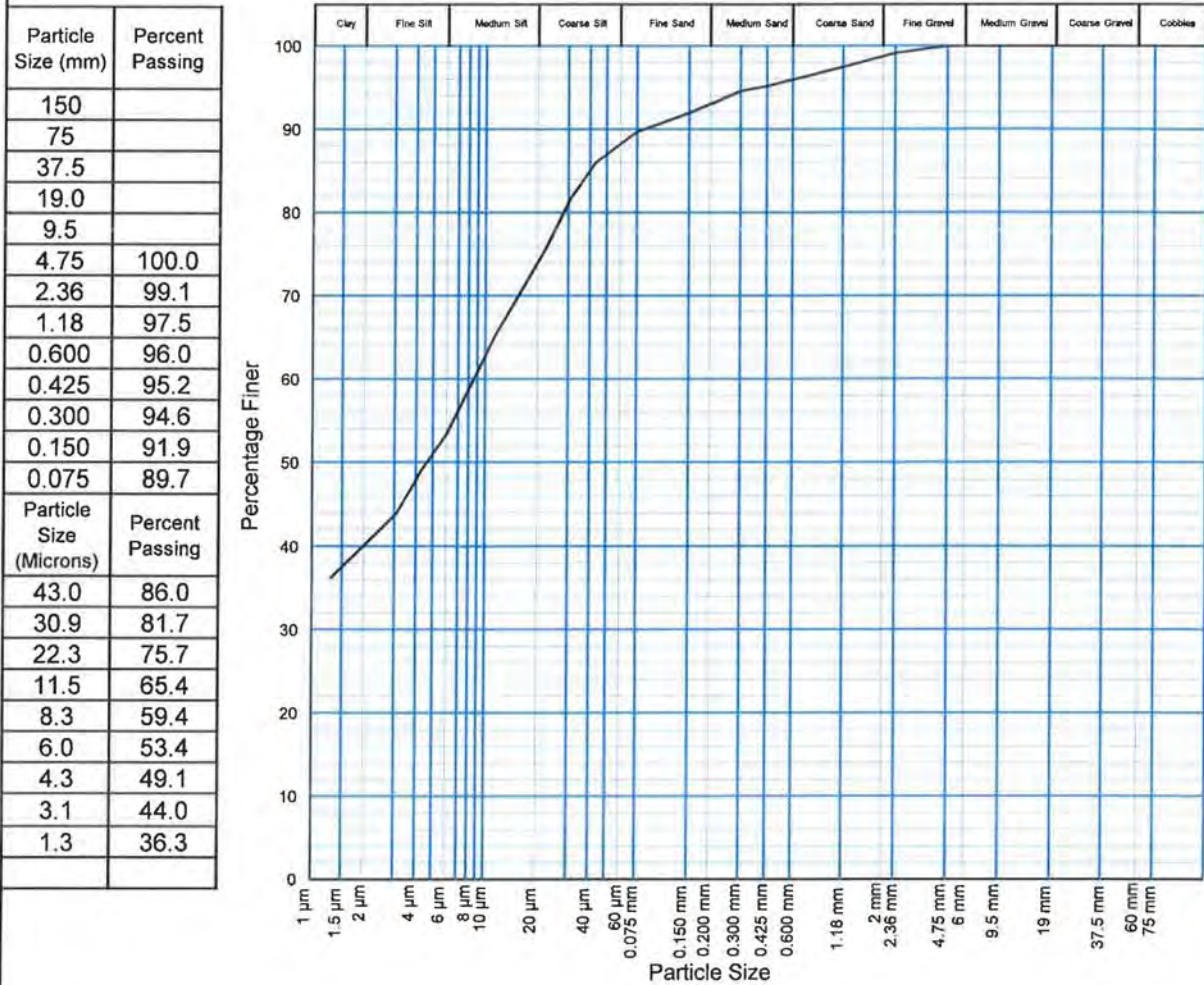
**BRISBANE  
LABORATORY**

ABN 64 006 107 857  
28 Bank Street, West End QLD 4101  
PO Box 3427 Sth Brisbane BC QLD 4101  
Phone : (07) 3840 9500  
Email : bnelab@golder.com.au

**PARTICLE SIZE DISTRIBUTION BY HYDROMETER**

Client :	Ports North	Report No. :	R16161
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303514
Location/Sample ID :	BH6 007 (6.00 - 6.40m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a)assumed particle density used b) testing up to 24 hours			
Prepared by : <i>NF</i>		Checked by : <i>Lib</i>	

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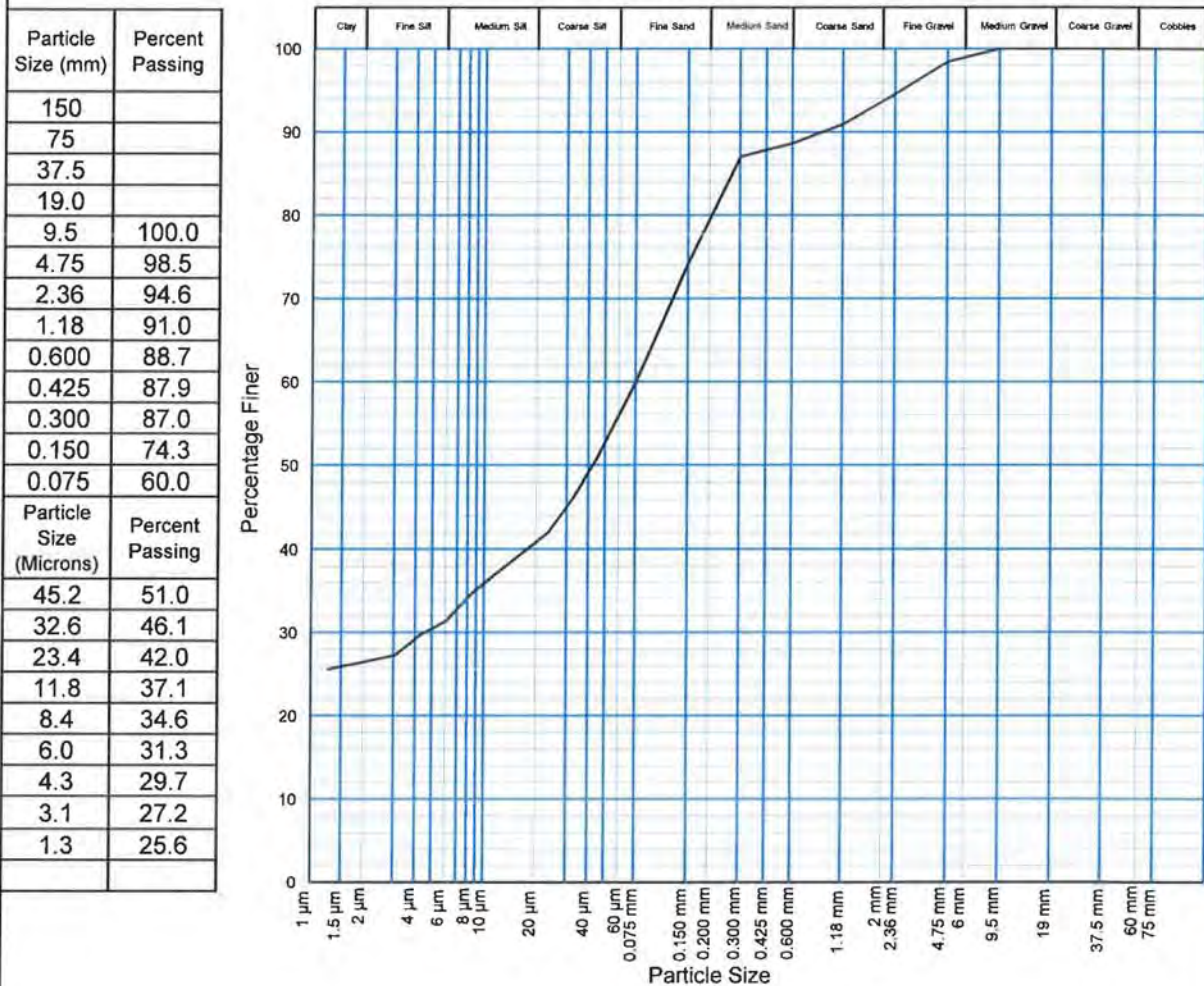
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Phone : (07) 3840 9500  
Email : bnelab@golder.com.au

**PARTICLE SIZE DISTRIBUTION BY HYDROMETER**

Client :	Ports North	Report No. :	R16162
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303515
Location/Sample ID :	BH6 009 (8.00 - 8.45m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a) assumed particle density used b) testing up to 24 hours			
Prepared by : <i>mf</i>		Checked by : <i>fb</i>	

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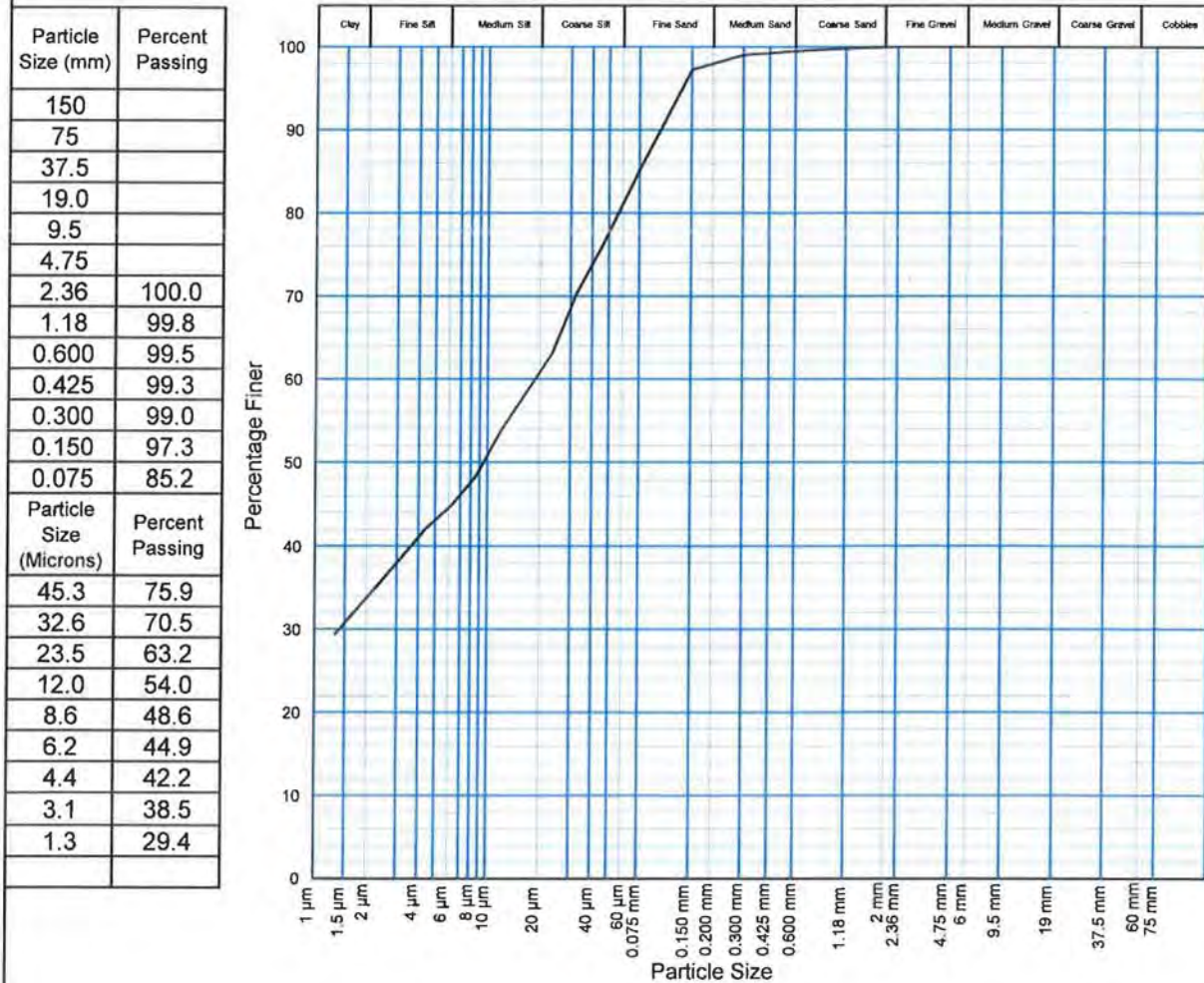
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Phone : (07) 3840 9500  
Email : bnelab@golder.com.au

**PARTICLE SIZE DISTRIBUTION BY HYDROMETER**

Client :	Ports North	Report No. :	R16163
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303516
Location/Sample ID :	BH7 002 (3.20 - 3.60m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a) assumed particle density used b) testing up to 24 hours			
Prepared by : <i>NF</i>		Checked by : <i>GH</i>	

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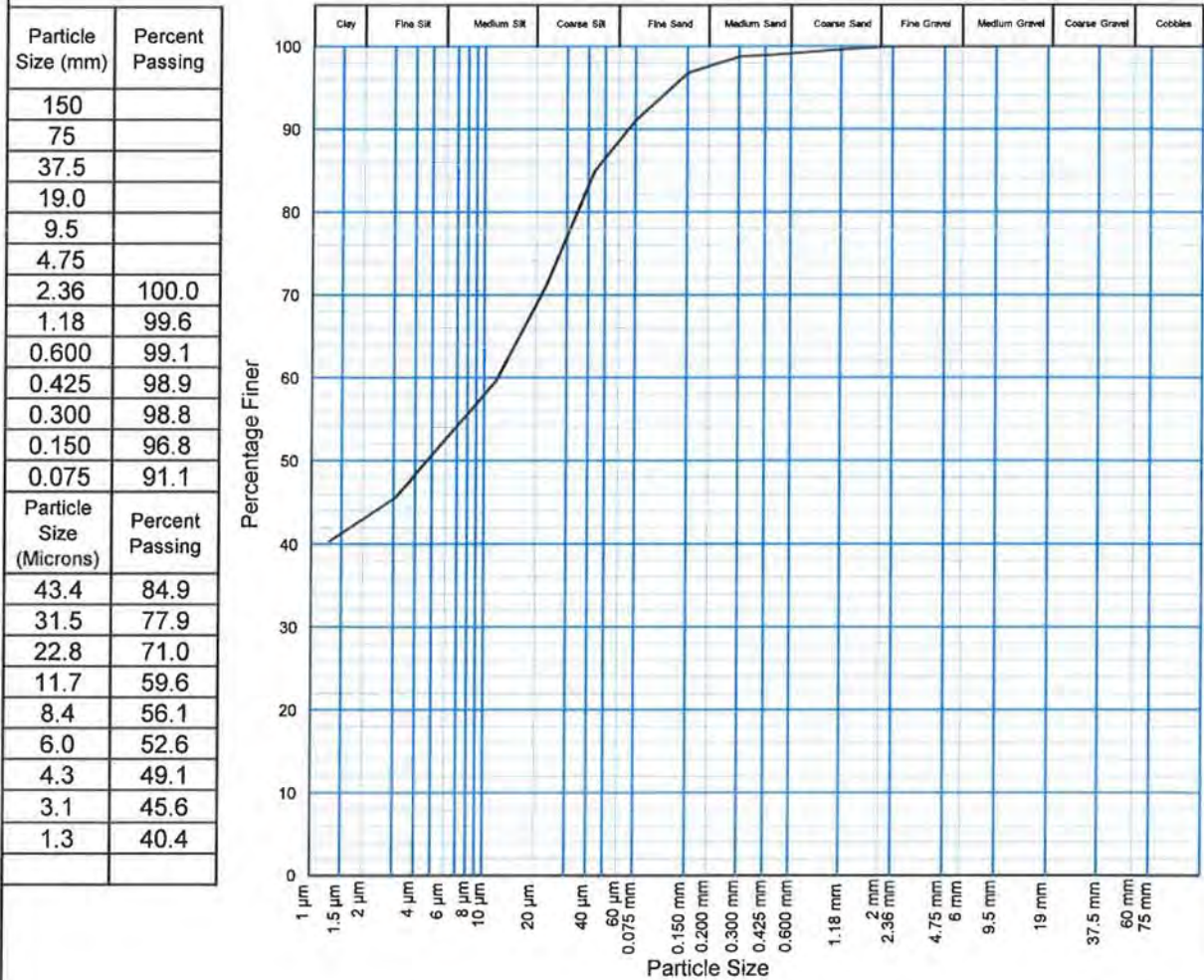
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**PARTICLE SIZE DISTRIBUTION BY HYDROMETER**

Client :	Ports North	Report No. :	R16164
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303517
Location/Sample ID :	BH7 003 (4.20 - 4.60m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a) assumed particle density used b) testing up to 24 hours			
Prepared by : <i>M</i>		Checked by : <i>GA268</i>	

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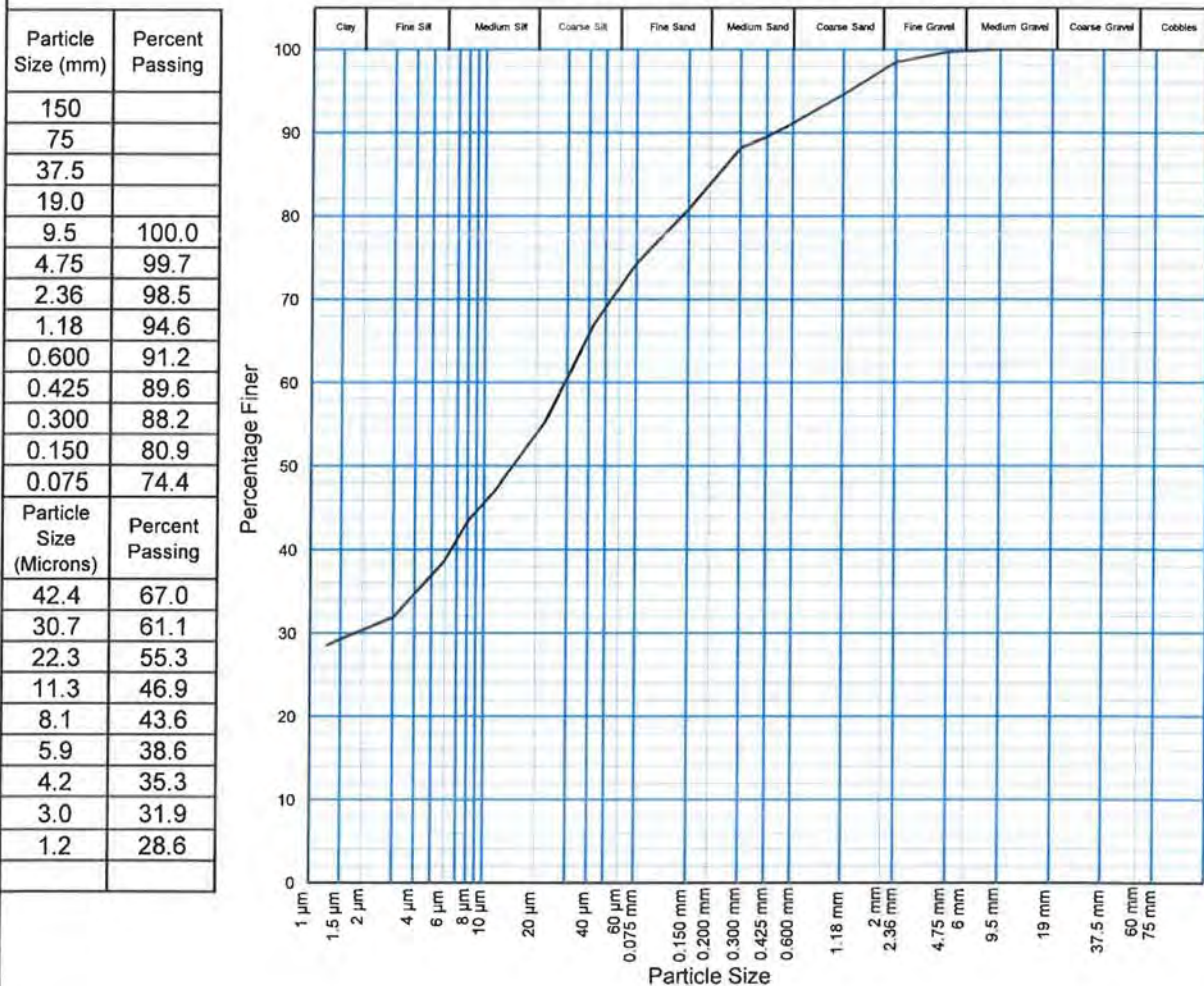
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Phone : (07) 3840 9500  
Email : bnelab@golder.com.au

**PARTICLE SIZE DISTRIBUTION BY HYDROMETER**

Client :	Ports North	Report No. :	R16165
Address :	Cnr Grafton & Hartley Streets, Cairns	Job No. :	137632122-4000
Project :	Cairns Shipping Development Project EIS	Reg'n No. :	13303518
Location/Sample ID :	BH7 004 (5.45 - 5.90m)	Senders No. :	
		Date Received :	12/08/2013
		Sampled By :	Golder

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Pretreatment	Tested as received	Soil Particle Density (assumed)	2.70 t/m <sup>3</sup>
Loss in Pretreatment (%)	-	Type of Hydrometer	ASTM E100
Method of Dispersion	Mixer		
Test Procedure : AS 1289.3.6.3 - Variations to test method a) assumed particle density used b) testing up to 24 hours			
Prepared by : <i>nr</i>		Checked by : <i>cb</i>	

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