

# Appendix F Point load test results



# Point Load Strength Index Test Results

Client	<b>MAUNSELL / AECOM</b>	Office	<b>UNANDERRA</b>
Principal	<b>ROADS AND TRAFFIC AUTHORITY</b>	Date	<b>13/4/07</b>
Project	<b>GEOTECH INVESTIGATION - PRINCES HWY, PHASE 1</b>	By	<b>CA</b>
Location	<b>GERRINGONG TO BOMADERRY</b>	Checked	<b>JT</b>

Test Method	<i>AS 4133.4.1 - 1993 Methods of Testing Rocks for Engineering Purposes, Determination of Point Load Strength Index</i>	Sampling Technique	<i>Selected from boreholes</i>	Sampling Date	<i>8/03/2007</i>
Test Machine	<i>Green Impell Tester</i>	Storage History	<i>Coffey UNAN office indoor core storage area</i>	Testing Date	<i>14/03/2007</i>
Calibration Date	<i>2/9/2004</i>	Moisture Condition	<i>Natural</i>	Tested By	<i>CA</i>
		Loading Rate	<i>&lt; 30 seconds</i>		

Rock Type	Location	Depth (m)	Diametral Tests					Axial, Block, and Irregular Lump Tests					Strength Classification		
			D (mm)	L (mm)	P (kN)	I <sub>s(50)</sub> (MPa)	Failure Mode	W (mm)	D (mm)	L (mm)	P (kN)	I <sub>s</sub> (MPa)		I <sub>s(50)</sub> (MPa)	Failure Mode
SILTSTONE	<b>CBH 1</b>	<b>4.93-5.53</b>	45	60	2.55	<b>1.2</b>	<i>Parallel to bedding</i>	45	40		7.16	3.12	<b>3.06</b>	<i>Through substance</i>	<b>H / VH</b>
SILTSTONE	<b>CBH 1</b>	<b>6.0-6.08</b>	45	80	3.05	<b>1.44</b>	<i>Parallel to bedding</i>	45	40		6.21	2.71	<b>2.66</b>	<i>Along defect</i>	<b>H</b>
SILTSTONE	<b>CBH 1</b>	<b>8.47-8.54</b>	45	70	3.68	<b>1.73</b>	<i>Along defect</i>	45	35		7.48	3.73	<b>3.55</b>	<i>Along defect</i>	<b>H / VH</b>
SILTSTONE	<b>CBH 1</b>	<b>9.80-9.93</b>	45	13	8.11	<b>3.82</b>	<i>Parallel to bedding</i>	45	30		13.8	8.03	<b>7.38</b>	<i>Through substance</i>	<b>VH</b>

# Point Load Strength Index Test Results

Client	<b>MAUNSELL / AECOM</b>	Office	<b>UNANDERRA</b>
Principal	<b>ROADS AND TRAFFIC AUTHORITY</b>	Date	<b>13/4/07</b>
Project	<b>GEOTECH INVESTIGATION - PRINCES HWY, PHASE 1</b>	By	<b>CA</b>
Location	<b>GERRINGONG TO BOMADERRY</b>	Checked	<b>JT</b>

Test Method	<i>AS 4133.4.1 - 1993 Methods of Testing Rocks for Engineering Purposes, Determination of Point Load Strength Index</i>	Sampling Technique	<i>Selected from boreholes</i>	Sampling Date	<i>15/03/2007</i>
Test Machine	<i>Green Impell Tester</i>	Storage History	<i>Coffey UNAN office indoor core storage area</i>	Testing Date	<i>11/04/2007</i>
Calibration Date	<i>2/9/2004</i>	Moisture Condition	<i>Natural</i>	Tested By	<i>CA</i>
		Loading Rate	<i>&lt; 30 seconds</i>		

Rock Type	Location	Depth (m)	Diametral Tests					Axial, Block, and Irregular Lump Tests						Strength Classification	
			D (mm)	L (mm)	P (kN)	I <sub>s(50)</sub> (MPa)	Failure Mode	W (mm)	D (mm)	L (mm)	P (kN)	I <sub>s</sub> (MPa)	I <sub>s(50)</sub> (MPa)		Failure Mode
SANDY SILTSTONE	<b>CBH 2</b>	<b>10.05-10.16</b>	45	110	3.05	<b>1.44</b>	Parallel to bedding	45	30		6.21	3.61	<b>3.32</b>	Along defect	<b>H / VH</b>
SANDY SILTSTONE	<b>CBH 2</b>	<b>11.90-12.0</b>	45	100	3.68	<b>1.73</b>	Parallel to bedding	45	35		9.37	4.67	<b>4.45</b>	Through substance	<b>H / VH</b>
SANDY SILTSTONE	<b>CBH 2</b>	<b>13.87-14.0</b>	45	130	4.32	<b>2.03</b>	Parallel to bedding	45	35		11.27	5.62	<b>5.35</b>	Through substance	<b>H / VH</b>
SANDY SILTSTONE	<b>CBH 2</b>	<b>15.05-15.21</b>	45	160	4.95	<b>2.33</b>	Parallel to bedding	45	40		10.64	4.64	<b>4.55</b>	Through substance	<b>H / VH</b>

# Point Load Strength Index Test Results

Client	<b>MAUNSELL / AECOM</b>	Office	<b>UNANDERRA</b>
Principal	<b>ROADS AND TRAFFIC AUTHORITY</b>	Date	<b>13/4/07</b>
Project	<b>GEOTECH INVESTIGATION - PRINCES HWY, PHASE 1</b>	By	<b>CA</b>
Location	<b>GERRINGONG TO BOMADERRY</b>	Checked	<b>JT</b>

Test Method	<i>AS 4133.4.1 - 1993 Methods of Testing Rocks for Engineering Purposes, Determination of Point Load Strength Index</i>	Sampling Technique	<i>Selected from boreholes</i>	Sampling Date	<i>12/03/2007</i>
Test Machine	<i>Green Impell Tester</i>	Storage History	<i>Coffey UNAN office indoor core storage area</i>	Testing Date	<i>14/03/2007</i>
Calibration Date	<i>2/9/2004</i>	Moisture Condition	<i>Natural</i>	Tested By	<i>CA</i>
		Loading Rate	<i>&lt; 30 seconds</i>		

Rock Type	Location	Depth (m)	Diametral Tests					Axial, Block, and Irregular Lump Tests						Strength Classification	
			D (mm)	L (mm)	P (kN)	I <sub>s(50)</sub> (MPa)	Failure Mode	W (mm)	D (mm)	L (mm)	P (kN)	I <sub>s</sub> (MPa)	I <sub>s(50)</sub> (MPa)		Failure Mode
SILTSTONE - SW	<b>CBH 3</b>	<b>6.28-6.40</b>	45	120	1.79	<b>0.84</b>	Along defect	45	30		4.32	2.51	<b>2.31</b>	Through substance	<b>M / H</b>
SILTSTONE - SW	<b>CBH 3</b>	<b>7.87-8.00</b>	45	130	1.79	<b>0.84</b>	Parallel to bedding	45	25		3.37	2.35	<b>2.07</b>	Through substance	<b>M / H</b>
SILTSTONE - SW	<b>CBH 3</b>	<b>8.19-8.26</b>	45	70	3.05	<b>1.44</b>	Parallel to bedding	45	35		4.95	2.47	<b>2.35</b>	Along defect	<b>H</b>
SILTSTONE - SW-MW	<b>CBH 3</b>	<b>9.24-9.34</b>	45	100	2.74	<b>1.29</b>	Along defect	45	40		4.32	1.88	<b>1.85</b>	Through substance	<b>H</b>
SANDY SILTSTONE - SW	<b>CBH 3</b>	<b>10.88-11.00</b>	45	120	0.52	<b>0.25</b>	Parallel to bedding	45	35		6.84	3.41	<b>3.25</b>	Along defect	<b>L / VH</b>
SANDY SILTSTONE - SW	<b>CBH 3</b>	<b>14.89-15.00</b>	45	110	2.42	<b>1.14</b>	Parallel to bedding	45	44		5.26	2.09	<b>2.09</b>	Along defect	<b>H</b>

# Point Load Strength Index Test Results

Client	<b>MAUNSELL / AECOM</b>	Office	<b>UNANDERRA</b>
Principal	<b>ROADS AND TRAFFIC AUTHORITY</b>	Date	<b>13/4/07</b>
Project	<b>GEOTECH INVESTIGATION - PRINCES HWY, PHASE 1</b>	By	<b>CA</b>
Location	<b>GERRINGONG TO BOMADERRY</b>	Checked	<b>JT</b>

Test Method	<i>AS 4133.4.1 - 1993 Methods of Testing Rocks for Engineering Purposes, Determination of Point Load Strength Index</i>	Sampling Technique	<i>Selected from boreholes</i>	Sampling Date	<i>13/03/2007</i>
Test Machine	<i>Green Impell Tester</i>	Storage History	<i>Coffey UNAN office indoor core storage area</i>	Testing Date	<i>14/03/2007</i>
Calibration Date	<i>2/9/2004</i>	Moisture Condition	<i>Natural</i>	Tested By	<i>CA</i>
		Loading Rate	<i>&lt; 30 seconds</i>		

Rock Type	Location	Depth (m)	Diametral Tests					Axial, Block, and Irregular Lump Tests						Strength Classification	
			D (mm)	L (mm)	P (kN)	I <sub>s(50)</sub> (MPa)	Failure Mode	W (mm)	D (mm)	L (mm)	P (kN)	I <sub>s</sub> (MPa)	I <sub>s(50)</sub> (MPa)		Failure Mode
SILTSTONE - HW	<b>CBH 4</b>	<b>7.86-7.94</b>	45	60	2.92	<b>1.38</b>	Through substance	45	25		2.48	1.73	<b>1.53</b>	Along defect	<b>H</b>
SILTSTONE - HW	<b>CBH 4</b>	<b>9.6-9.24</b>	45	60	1.47	<b>0.69</b>	Parallel to bedding	45	40		1.72	0.75	<b>0.74</b>	Through substance	<b>M</b>
SILTSTONE - HW	<b>CBH 4</b>	<b>10.3-10.25</b>	45	110	1.79	<b>0.84</b>	Through substance	45	40		1.72	0.75	<b>0.74</b>	Through substance	<b>M</b>
SILTSTONE - FR	<b>CBH 4</b>	<b>11.54-11.6</b>	45	65	7.16	<b>3.37</b>	Parallel to bedding	45	30		15.06	8.76	<b>8.05</b>	Through substance	<b>VH</b>
SILTSTONE - FR	<b>CBH 4</b>	<b>12.80-13</b>	45	180	5.58	<b>2.63</b>	Parallel to bedding	45	40		10.32	4.5	<b>4.42</b>	Through substance	<b>H / VH</b>
SILTSTONE - FR	<b>CBH 4</b>	<b>14.88-15</b>	45	120	3.68	<b>1.73</b>	Parallel to bedding	45	35		6.21	3.1	<b>2.95</b>	Through substance	<b>H</b>

# Point Load Strength Index Test Results

Client **MAUNSELL / AECOM**

Office **UNANDERRA**

Principal **ROADS AND TRAFFIC AUTHORITY**

Date **13/4/07**

Project **GEOTECH INVESTIGATION - PRINCES HWY, PHASE 1**

By **CA**

Location **GERRINGONG TO BOMADERRY**

Checked **JT**

Test Method	<i>AS 4133.4.1 - 1993 Methods of Testing Rocks for Engineering Purposes, Determination of Point Load Strength Index</i>	Sampling Technique	<i>Selected from boreholes</i>	Sampling Date	<i>21/03/2007</i>
Test Machine	<i>Green Impell Tester</i>	Storage History	<i>Coffey UNAN office indoor core storage area</i>	Testing Date	<i>27/03/2007</i>
Calibration Date	<i>2/9/2004</i>	Moisture Condition	<i>Natural</i>	Tested By	<i>CA</i>
		Loading Rate	<i>&lt; 30 seconds</i>		

Rock Type	Location	Depth (m)	Diametral Tests					Axial, Block, and Irregular Lump Tests						Strength Classification	
			D (mm)	L (mm)	P (kN)	I <sub>s(50)</sub> (MPa)	Failure Mode	W (mm)	D (mm)	L (mm)	P (kN)	I <sub>s</sub> (MPa)	I <sub>s(50)</sub> (MPa)		Failure Mode
SANDSTONE COBBLE	<b>CBH 5</b>	<b>8.35-8.50</b>	50	150	> 18.85	<b>&gt; 7.54</b>	N/A	50	45		> 18.85	> 6.58	<b>&gt; 6.79</b>	N/A	<b>VH</b>
SANDSTONE COBBLE	<b>CBH 5</b>	<b>9.57-9.68</b>	50	110	10.64	<b>4.25</b>	Through substance								<b>VH</b>
SANDSTONE COBBLE	<b>CBH 5</b>	<b>10.0-10.06</b>	50	60	> 18.85	<b>&gt; 7.54</b>	N/A	50	49		16.96	5.44	<b>5.71</b>	Through substance	<b>VH</b>
SANDSTONE COBBLE	<b>CBH 5</b>	<b>11.45-11.53</b>	50	80	> 18.85	<b>&gt; 7.54</b>	N/A	50	49		17.59	5.64	<b>5.93</b>	Through substance	<b>VH</b>

# Point Load Strength Index Test Results

Client	<b>MAUNSELL / AECOM</b>	Office	<b>UNANDERRA</b>
Principal	<b>ROADS AND TRAFFIC AUTHORITY</b>	Date	<b>13/4/07</b>
Project	<b>GEOTECH INVESTIGATION - PRINCES HWY, PHASE 1</b>	By	<b>CA</b>
Location	<b>GERRINGONG TO BOMADERRY</b>	Checked	<b>JT</b>

Test Method	<i>AS 4133.4.1 - 1993 Methods of Testing Rocks for Engineering Purposes, Determination of Point Load Strength Index</i>	Sampling Technique	<i>Selected from boreholes</i>	Sampling Date	<i>15/03/2007</i>
Test Machine	<i>Green Impell Tester</i>	Storage History	<i>Coffey UNAN office indoor core storage area</i>	Testing Date	<i>10/04/2007</i>
Calibration Date	<i>2/9/2004</i>	Moisture Condition	<i>Natural</i>	Tested By	<i>CA</i>
		Loading Rate	<i>&lt; 30 seconds</i>		

Rock Type	Location	Depth (m)	Diametral Tests					Axial, Block, and Irregular Lump Tests						Strength Classification	
			D (mm)	L (mm)	P (kN)	I <sub>s(50)</sub> (MPa)	Failure Mode	W (mm)	D (mm)	L (mm)	P (kN)	I <sub>s</sub> (MPa)	I <sub>s(50)</sub> (MPa)		Failure Mode
CLAYSTONE	<b>CBH 6</b>	<b>5.76-5.86</b>	45	100	0.52	<b>0.25</b>	Along defect	45	30		0.52	0.3	<b>0.28</b>	Through substance	<b>L</b>
SILTY CLAYSTONE	<b>CBH 6</b>	<b>8.83-8.93</b>	45	100	0.52	<b>0.25</b>	Through substance	45	33		0.52	0.28	<b>0.26</b>	Through substance	<b>L</b>
SANDY SILTSTONE	<b>CBH 6</b>	<b>11.75-11.86</b>	45	110	1.15	<b>0.54</b>	Parallel to bedding	45	38		1.79	0.82	<b>0.8</b>	Through substance	<b>M</b>

# Point Load Strength Index Test Results

Client	<b>MAUNSELL / AECOM</b>	Office	<b>UNANDERRA</b>
Principal	<b>ROADS AND TRAFFIC AUTHORITY</b>	Date	<b>13/4/07</b>
Project	<b>GEOTECH INVESTIGATION - PRINCES HWY, PHASE 1</b>	By	<b>CA</b>
Location	<b>GERRINGONG TO BOMADERRY</b>	Checked	<b>JT</b>

Test Method	<i>AS 4133.4.1 - 1993 Methods of Testing Rocks for Engineering Purposes, Determination of Point Load Strength Index</i>	Sampling Technique	<i>Selected from boreholes</i>	Sampling Date	<i>8/03/2007</i>
Test Machine	<i>Green Impell Tester</i>	Storage History	<i>Coffey UNAN office indoor core storage area</i>	Testing Date	<i>14/03/2007</i>
Calibration Date	<i>2/9/2004</i>	Moisture Condition	<i>Natural</i>	Tested By	<i>CA</i>
		Loading Rate	<i>&lt; 30 seconds</i>		

Rock Type	Location	Depth (m)	Diametral Tests					Axial, Block, and Irregular Lump Tests						Strength Classification	
			D (mm)	L (mm)	P (kN)	I <sub>s(50)</sub> (MPa)	Failure Mode	W (mm)	D (mm)	L (mm)	P (kN)	I <sub>s</sub> (MPa)	I <sub>s(50)</sub> (MPa)		Failure Mode
SILTSTONE - HW	<b>CBH 7</b>	<b>4.0 - 4.07</b>	45	60	0.52	<b>0.25</b>	Parallel to bedding	45	44		1.79	0.71	<b>0.71</b>	Along defect	<b>L / M</b>
SILTSTONE - HW	<b>CBH 7</b>	<b>5.00-5.07</b>	45	65	0.84	<b>0.4</b>	Parallel to bedding	45	30		2.1	1.22	<b>1.12</b>	Along defect	<b>M / H</b>
SILTSTONE - HW	<b>CBH 7</b>	<b>6.59-6.67</b>	45	70	2.29	<b>1.08</b>	Parallel to bedding	45	35		1.79	0.89	<b>0.85</b>	Through substance	<b>M / H</b>
SILTSTONE - HW	<b>CBH 7</b>	<b>7.82-7.89</b>	45	55	0.84	<b>0.4</b>	Through substance	45	30		1.28	0.75	<b>0.69</b>	Along defect	<b>M</b>
SILTSTONE - SW	<b>CBH 7</b>	<b>8.00-8.06</b>	45	60	1.47	<b>0.69</b>	Through substance	45	30		1.79	1.04	<b>0.96</b>	Through substance	<b>M</b>
SILTSTONE - SW	<b>CBH 7</b>	<b>9.79-9.85</b>	45	65	3.05	<b>1.44</b>	Parallel to bedding	45	40		9.37	4.09	<b>4.01</b>	Through substance	<b>H / VH</b>



# Point Load Strength Index Test Results

Client	<b>MAUNSELL / AECOM</b>	Office	<b>UNANDERRA</b>
Principal	<b>ROADS AND TRAFFIC AUTHORITY</b>	Date	<b>13/4/07</b>
Project	<b>GEOTECH INVESTIGATION - PRINCES HWY, PHASE 1</b>	By	<b>CA</b>
Location	<b>GERRINGONG TO BOMADERRY</b>	Checked	<b>JT</b>

Test Method	<i>AS 4133.4.1 - 1993 Methods of Testing Rocks for Engineering Purposes, Determination of Point Load Strength Index</i>	Sampling Technique	<i>Selected from boreholes</i>	Sampling Date	<i>12/03/2007</i>
Test Machine	<i>Green Impell Tester</i>	Storage History	<i>Coffey UNAN office indoor core storage area</i>	Testing Date	<i>14/03/2007</i>
Calibration Date	<i>2/9/2004</i>	Moisture Condition	<i>Natural</i>	Tested By	<i>CA</i>
		Loading Rate	<i>&lt; 30 seconds</i>		

Rock Type	Location	Depth (m)	Diametral Tests					Axial, Block, and Irregular Lump Tests						Strength Classification	
			D (mm)	L (mm)	P (kN)	I <sub>s(50)</sub> (MPa)	Failure Mode	W (mm)	D (mm)	L (mm)	P (kN)	I <sub>s</sub> (MPa)	I <sub>s(50)</sub> (MPa)		Failure Mode
SILTSTONE - MW	<b>CBH 9</b>	<b>6.28-6.34</b>	45	47	1.28	<b>0.6</b>	Parallel to bedding	45	25		1.15	0.81	<b>0.71</b>	Through substance	<b>M</b>
SILTSTONE - MW	<b>CBH 9</b>	<b>8.65-8.80</b>	45	120	1.15	<b>0.54</b>	Along defect	45	35		1.15	0.58	<b>0.55</b>	Along defect	<b>M</b>
SILTSTONE - MW	<b>CBH 9</b>	<b>9.68-9.78</b>	45	100	0.52	<b>0.25</b>	Through substance	45	20		2.42	2.11	<b>1.77</b>	Along defect	<b>L / H</b>

# Point Load Strength Index Test Results

Client	<b>MAUNSELL / AECOM</b>	Office	<b>UNANDERRA</b>
Principal	<b>ROADS AND TRAFFIC AUTHORITY</b>	Date	<b>13/4/07</b>
Project	<b>GEOTECH INVESTIGATION - PRINCES HWY, PHASE 1</b>	By	<b>CA</b>
Location	<b>GERRINGONG TO BOMADERRY</b>	Checked	<b>JT</b>

Test Method	<i>AS 4133.4.1 - 1993 Methods of Testing Rocks for Engineering Purposes, Determination of Point Load Strength Index</i>	Sampling Technique	<i>Selected from boreholes</i>	Sampling Date	<i>22/03/2007</i>
Test Machine	<i>Green Impell Tester</i>	Storage History	<i>Coffey UNAN office indoor core storage area</i>	Testing Date	<i>27/03/2007</i>
Calibration Date	<i>2/9/2004</i>	Moisture Condition	<i>Natural</i>	Tested By	<i>CA</i>
		Loading Rate	<i>&lt; 30 seconds</i>		

Rock Type	Location	Depth (m)	Diametral Tests					Axial, Block, and Irregular Lump Tests					Strength Classification		
			D (mm)	L (mm)	P (kN)	I <sub>s(50)</sub> (MPa)	Failure Mode	W (mm)	D (mm)	L (mm)	P (kN)	I <sub>s</sub> (MPa)		I <sub>s(50)</sub> (MPa)	Failure Mode
CLAYSTONE - SW	<b>CBH 10</b>	5.5-5.56	50	60	3.05	<b>1.22</b>	Parallel to bedding	50	30		4.95	2.59	<b>2.44</b>	Through substance	<b>H</b>
CLAYSTONE - SW	<b>CBH 10</b>	6.6-6.69	50	90	4.32	<b>1.73</b>	Along defect	50	45		6.21	2.17	<b>2.24</b>	Through substance	<b>H</b>
SILTSTONE - FR	<b>CBH 10</b>	7.67-7.74	50	70	1.79	<b>0.71</b>	Parallel to bedding	50	35		6.21	2.79	<b>2.72</b>	Through substance	<b>M / H</b>
SILTSTONE - FR	<b>CBH 10</b>	8.92-9.00	50	80	6.84	<b>2.74</b>	Parallel to bedding	50	25		8.11	5.09	<b>4.6</b>	Through substance	<b>H / VH</b>
SILTSTONE - FR	<b>CBH 10</b>	11.88-11.97	50	90	6.84	<b>2.74</b>	Along defect	50	45		11.27	3.93	<b>4.06</b>	Through substance	<b>H / VH</b>
SILTY SANDSTONE	<b>CBH 10</b>	14.86-14.97	50	110	8.74	<b>3.5</b>	Along defect	50	40		14.43	5.67	<b>5.69</b>	Through substance	<b>VH</b>
SILTY SANDSTONE	<b>CBH 10</b>	17.0-17.11	50	110	9.37	<b>3.75</b>	Parallel to bedding	50	49		16.33	5.23	<b>5.5</b>	Through substance	<b>VH</b>

# Point Load Strength Index Test Results

Client	<b>MAUNSELL / AECOM</b>	Office	<b>UNANDERRA</b>
Principal	<b>ROADS AND TRAFFIC AUTHORITY</b>	Date	<b>13/4/07</b>
Project	<b>GEOTECH INVESTIGATION - PRINCES HWY, PHASE 1</b>	By	<b>CA</b>
Location	<b>GERRINGONG TO BOMADERRY</b>	Checked	<b>JT</b>

Test Method	<i>AS 4133.4.1 - 1993 Methods of Testing Rocks for Engineering Purposes, Determination of Point Load Strength Index</i>	Sampling Technique	<i>Selected from boreholes</i>	Sampling Date	<i>29/03/2007</i>
Test Machine	<i>Green Impell Tester</i>	Storage History	<i>Coffey UNAN office indoor core storage area</i>	Testing Date	<i>3/04/2007</i>
Calibration Date	<i>2/9/2004</i>	Moisture Condition	<i>Natural</i>	Tested By	<i>CA</i>
		Loading Rate	<i>&lt; 30 seconds</i>		

Rock Type	Location	Depth (m)	Diametral Tests					Axial, Block, and Irregular Lump Tests					Strength Classification		
			D (mm)	L (mm)	P (kN)	I <sub>s(50)</sub> (MPa)	Failure Mode	W (mm)	D (mm)	L (mm)	P (kN)	I <sub>s</sub> (MPa)		I <sub>s(50)</sub> (MPa)	Failure Mode
SILTY SANDSTONE - FR	<b>CBH 12</b>	6.79-7.00	45	210	5.58	<b>2.63</b>	Parallel to bedding	45	35		4.95	2.47	<b>2.35</b>	Through substance	<b>H</b>
SILTY SANDSTONE - FR	<b>CBH 12</b>	9.70-10.00	45	310	5.77	<b>2.72</b>	Parallel to bedding	45	42		9.37	3.89	<b>3.86</b>	Along defect	<b>H / VH</b>
SILTY SANDSTONE - FR	<b>CBH 12</b>	11.92-12.00	45	80	8.11	<b>3.82</b>	Parallel to bedding	45	43		13.17	5.34	<b>5.33</b>	Through substance	<b>VH</b>
SILTY SANDSTONE - FR	<b>CBH 12</b>	14.23-14.30	45	70	5.58	<b>2.63</b>	Along defect	45	35		11.27	5.62	<b>5.35</b>	Along defect	<b>H / VH</b>

# Point Load Strength Index Test Results

Client	<b>MAUNSELL / AECOM</b>	Office	<b>UNANDERRA</b>
Principal	<b>ROADS AND TRAFFIC AUTHORITY</b>	Date	<b>13/4/07</b>
Project	<b>GEOTECH INVESTIGATION - PRINCES HWY, PHASE 1</b>	By	<b>CA</b>
Location	<b>GERRINGONG TO BOMADERRY</b>	Checked	<b>JT</b>

Test Method	<i>AS 4133.4.1 - 1993 Methods of Testing Rocks for Engineering Purposes, Determination of Point Load Strength Index</i>	Sampling Technique	<i>Selected from boreholes</i>	Sampling Date	<i>12/03/2007</i>
Test Machine	<i>Green Impell Tester</i>	Storage History	<i>Coffey UNAN office indoor core storage area</i>	Testing Date	<i>10/04/2007</i>
Calibration Date	<i>2/9/2004</i>	Moisture Condition	<i>Natural</i>	Tested By	<i>CA</i>
		Loading Rate	<i>&lt; 30 seconds</i>		

Rock Type	Location	Depth (m)	Diametral Tests					Axial, Block, and Irregular Lump Tests						Strength Classification	
			D (mm)	L (mm)	P (kN)	I <sub>s(50)</sub> (MPa)	Failure Mode	W (mm)	D (mm)	L (mm)	P (kN)	I <sub>s</sub> (MPa)	I <sub>s(50)</sub> (MPa)		Failure Mode
SILTY SANDSTONE	<b>CBH 13</b>	<b>5.54-5.61</b>	45	70	4.95	<b>2.33</b>	Parallel to bedding	45	35		3.05	1.52	<b>1.45</b>	Along defect	<b>H</b>
SILTY SANDSTONE	<b>CBH 13</b>	<b>8.0-8.12</b>	45	120	3.68	<b>1.73</b>	Parallel to bedding	45	37		5.58	2.63	<b>2.54</b>	Along defect	<b>H</b>

# Point Load Strength Index Test Results

Client	<b>MAUNSELL / AECOM</b>	Office	<b>UNANDERRA</b>
Principal	<b>ROADS AND TRAFFIC AUTHORITY</b>	Date	<b>13/4/07</b>
Project	<b>GEOTECH INVESTIGATION - PRINCES HWY, PHASE 1</b>	By	<b>CA</b>
Location	<b>GERRINGONG TO BOMADERRY</b>	Checked	<b>JT</b>

Test Method	<i>AS 4133.4.1 - 1993 Methods of Testing Rocks for Engineering Purposes, Determination of Point Load Strength Index</i>	Sampling Technique	<i>Selected from boreholes</i>	Sampling Date	<i>19/03/2007</i>
Test Machine	<i>Green Impell Tester</i>	Storage History	<i>Coffey UNAN office indoor core storage area</i>	Testing Date	<i>10/04/2007</i>
Calibration Date	<i>2/9/2004</i>	Moisture Condition	<i>Natural</i>	Tested By	<i>CA</i>
		Loading Rate	<i>&lt; 30 seconds</i>		

Rock Type	Location	Depth (m)	Diametral Tests					Axial, Block, and Irregular Lump Tests					Strength Classification		
			D (mm)	L (mm)	P (kN)	I <sub>s(50)</sub> (MPa)	Failure Mode	W (mm)	D (mm)	L (mm)	P (kN)	I <sub>s</sub> (MPa)		I <sub>s(50)</sub> (MPa)	Failure Mode
SILTY SANDSTONE	<b>CBH 14</b>	<b>10.0-10.07</b>	45	70	6.21	<b>2.93</b>	Parallel to bedding	45	38		16.96	7.79	<b>7.55</b>	Through substance	<b>H / VH</b>
SILTSTONE	<b>CBH 14</b>	<b>13.87-13.98</b>	45	110	8.74	<b>4.12</b>	Parallel to bedding	45	38		13.17	6.05	<b>5.86</b>	Through substance	<b>VH</b>
SILTY SANDSTONE	<b>CBH 14</b>	<b>14.43-14.50</b>	45	70	6.53	<b>3.07</b>	Parallel to bedding	45	40		11.9	5.19	<b>5.09</b>	Through substance	<b>VH</b>
CONGLOMERATE	<b>CBH 14</b>	<b>16.0-16.10</b>	45	100	4.95	<b>2.33</b>	Along defect	45	42		9.37	3.89	<b>3.86</b>	Through substance	<b>H / VH</b>
SILTY SANDSTONE	<b>CBH 14</b>	<b>18.0-18.16</b>	45	160	10.64	<b>5.01</b>	Along defect	45	35		11.27	5.62	<b>5.35</b>	Through substance	<b>VH</b>
SANDSTONE	<b>CBH 14</b>	<b>21.0-21.15</b>	45	150	7.48	<b>3.52</b>	Parallel to bedding	45	40		10.64	4.64	<b>4.55</b>	Through substance	<b>VH</b>
SANDSTONE	<b>CBH 14</b>	<b>21.89-22.0</b>	45	110	11.27	<b>5.31</b>	Parallel to bedding	45	30		12.53	7.29	<b>6.7</b>	Through substance	<b>VH</b>
SANDSTONE	<b>CBH 14</b>	<b>25.59-25.68</b>	45	90	13.48	<b>6.35</b>	Through substance	45	32		16.96	9.25	<b>8.63</b>	Through substance	<b>VH</b>
SILTY SANDSTONE	<b>CBH 14</b>	<b>30.0-30.08</b>	45	80	14.43	<b>6.8</b>	Through substance	45	40		9.37	4.09	<b>4.01</b>	Through substance	<b>VH</b>

# Point Load Strength Index Test Results

Client	<b>MAUNSELL / AECOM</b>	Office	<b>UNANDERRA</b>
Principal	<b>ROADS AND TRAFFIC AUTHORITY</b>	Date	<b>13/4/07</b>
Project	<b>GEOTECH INVESTIGATION - PRINCES HWY, PHASE 1</b>	By	<b>CA</b>
Location	<b>GERRINGONG TO BOMADERRY</b>	Checked	<b>JT</b>

Test Method	<i>AS 4133.4.1 - 1993 Methods of Testing Rocks for Engineering Purposes, Determination of Point Load Strength Index</i>	Sampling Technique	<i>Selected from boreholes</i>	Sampling Date	<i>23/03/2007</i>
Test Machine	<i>Green Impell Tester</i>	Storage History	<i>Coffey UNAN office indoor core storage area</i>	Testing Date	<i>27/03/2007</i>
Calibration Date	<i>2/9/2004</i>	Moisture Condition	<i>Natural</i>	Tested By	<i>CA</i>
		Loading Rate	<i>&lt; 30 seconds</i>		

Rock Type	Location	Depth (m)	Diametral Tests					Axial, Block, and Irregular Lump Tests					Strength Classification		
			D (mm)	L (mm)	P (kN)	I <sub>s(50)</sub> (MPa)	Failure Mode	W (mm)	D (mm)	L (mm)	P (kN)	I <sub>s</sub> (MPa)		I <sub>s(50)</sub> (MPa)	Failure Mode
SANDSTONE - MW	<b>CBH 15</b>	<b>1.6-1.68</b>	50	80	2.74	<b>1.09</b>	Along defect	50	40		4.63	1.82	<b>1.83</b>	Through substance	<b>H</b>
SILTY SANDSTONE- FR	<b>CBH 15</b>	<b>1.87-1.95</b>	50	80	3.68	<b>1.47</b>	Parallel to bedding	50	35		10.07	4.52	<b>4.4</b>	Through substance	<b>H / VH</b>
SILTY SANDSTONE- FR	<b>CBH 15</b>	<b>2.94-3.0</b>	50	60	13.17	<b>5.27</b>	Parallel to bedding	50	30		12.22	6.4	<b>6.02</b>	Through substance	<b>VH</b>
SILTY SANDSTONE- FR	<b>CBH 15</b>	<b>4.0-4.11</b>	50	110	12.53	<b>5.01</b>	Along defect	50	48		16.96	5.55	<b>5.81</b>	Through substance	<b>VH</b>
SANDSTONE- FR	<b>CBH 15</b>	<b>7.0-7.08</b>	50	80	11.27	<b>4.51</b>	Along defect	50	40		15.69	6.16	<b>6.19</b>	Through substance	<b>VH</b>
SANDSTONE- FR	<b>CBH 15</b>	<b>10-10.15</b>	50	150	11.9	<b>4.76</b>	Parallel to bedding								<b>VH</b>
SANDSTONE- FR	<b>CBH 15</b>	<b>14.75-14.85</b>	50	100	16.33	<b>6.53</b>	Parallel to bedding	50	49		11.9	3.82	<b>4.01</b>	Through substance	<b>VH</b>

# Point Load Strength Index Test Results

Client	<b>MAUNSELL / AECOM</b>	Office	<b>UNANDERRA</b>
Principal	<b>ROADS AND TRAFFIC AUTHORITY</b>	Date	<b>13/4/07</b>
Project	<b>GEOTECH INVESTIGATION - PRINCES HWY, PHASE 1</b>	By	<b>CA</b>
Location	<b>GERRINGONG TO BOMADERRY</b>	Checked	<b>JT</b>

Test Method	<i>AS 4133.4.1 - 1993 Methods of Testing Rocks for Engineering Purposes, Determination of Point Load Strength Index</i>	Sampling Technique	<i>Selected from boreholes</i>	Sampling Date	<i>22/03/2007</i>
Test Machine	<i>Green Impell Tester</i>	Storage History	<i>Coffey UNAN office indoor core storage area</i>	Testing Date	<i>10/04/2007</i>
Calibration Date	<i>2/9/2004</i>	Moisture Condition	<i>Natural</i>	Tested By	<i>CA</i>
		Loading Rate	<i>&lt; 30 seconds</i>		

Rock Type	Location	Depth (m)	Diametral Tests					Axial, Block, and Irregular Lump Tests						Strength Classification	
			D (mm)	L (mm)	P (kN)	I <sub>s(50)</sub> (MPa)	Failure Mode	W (mm)	D (mm)	L (mm)	P (kN)	I <sub>s</sub> (MPa)	I <sub>s(50)</sub> (MPa)		Failure Mode
SILTSTONE	<b>CBH 16</b>	<b>6.0-6.11</b>	45	110	10.01	<b>4.71</b>	Parallel to bedding	45	44		10.64	4.22	<b>4.23</b>	Through substance	<b>VH</b>
SANDSTONE	<b>CBH 16</b>	<b>10.87-10.99</b>	45	120	10.32	<b>4.86</b>	Through substance	45	40		10.01	4.37	<b>4.28</b>	Through substance	<b>VH</b>
SANDSTONE	<b>CBH 16</b>	<b>11.85-12.0</b>	45	150	10.64	<b>5.01</b>	Parallel to bedding	45	30		8.42	4.9	<b>4.51</b>	Through substance	<b>VH</b>

# Point Load Strength Index Test Results

Client	<b>MAUNSELL / AECOM</b>	Office	<b>UNANDERRA</b>
Principal	<b>ROADS AND TRAFFIC AUTHORITY</b>	Date	<b>13/4/07</b>
Project	<b>GEOTECH INVESTIGATION - PRINCES HWY, PHASE 1</b>	By	<b>CA</b>
Location	<b>GERRINGONG TO BOMADERRY</b>	Checked	<b>JT</b>

Test Method	<i>AS 4133.4.1 - 1993 Methods of Testing Rocks for Engineering Purposes, Determination of Point Load Strength Index</i>	Sampling Technique	<i>Selected from boreholes</i>	Sampling Date	<i>13/03/2007</i>
Test Machine	<i>Green Impell Tester</i>	Storage History	<i>Coffey UNAN office indoor core storage area</i>	Testing Date	<i>11/04/2007</i>
Calibration Date	<i>2/9/2004</i>	Moisture Condition	<i>Natural</i>	Tested By	<i>CA</i>
		Loading Rate	<i>&lt; 30 seconds</i>		

Rock Type	Location	Depth (m)	Diametral Tests					Axial, Block, and Irregular Lump Tests						Strength Classification	
			D (mm)	L (mm)	P (kN)	I <sub>s(50)</sub> (MPa)	Failure Mode	W (mm)	D (mm)	L (mm)	P (kN)	I <sub>s</sub> (MPa)	I <sub>s(50)</sub> (MPa)		Failure Mode
TUFFACIOUS SANDSTO	<b>CBH 17</b>	<b>7.87-7.98</b>	45	110	3.68	<b>1.73</b>	<i>Parallel to bedding</i>	45	35		3.05	1.52	<b>1.45</b>	<i>Through substance</i>	<b>H</b>
TUFFACIOUS SANDSTO	<b>CBH 17</b>	<b>10.82-10.94</b>	45	120	8.11	<b>3.82</b>	<i>Parallel to bedding</i>	45	37		12.22	5.76	<b>5.55</b>	<i>Through substance</i>	<b>VH</b>
TUFFACIOUS SANDSTO	<b>CBH 17</b>	<b>11.60-11.71</b>	45	110	9.37	<b>4.41</b>	<i>Parallel to bedding</i>	45	39		10.64	4.76	<b>4.64</b>	<i>Through substance</i>	<b>VH</b>
TUFFACIOUS SANDSTO	<b>CBH 17</b>	<b>14.56-15.56</b>	45	100	10.64	<b>5.01</b>	<i>Parallel to bedding</i>	45	34		11.9	6.11	<b>5.78</b>	<i>Through substance</i>	<b>VH</b>



# Point Load Strength Index Test Results

Client	<b>MAUNSELL / AECOM</b>	Office	<b>UNANDERRA</b>
Principal	<b>ROADS AND TRAFFIC AUTHORITY</b>	Date	<b>13/4/07</b>
Project	<b>GEOTECH INVESTIGATION - PRINCES HWY, PHASE 1</b>	By	<b>CA</b>
Location	<b>GERRINGONG TO BOMADERRY</b>	Checked	<b>JT</b>

Test Method	<i>AS 4133.4.1 - 1993 Methods of Testing Rocks for Engineering Purposes, Determination of Point Load Strength Index</i>	Sampling Technique	<i>Selected from boreholes</i>	Sampling Date	<i>10/04/2007</i>
Test Machine	<i>Green Impell Tester</i>	Storage History	<i>Coffey UNAN office indoor core storage area</i>	Testing Date	<i>10/04/2007</i>
Calibration Date	<i>2/9/2004</i>	Moisture Condition	<i>Natural</i>	Tested By	<i>CA</i>
		Loading Rate	<i>&lt; 30 seconds</i>		

Rock Type	Location	Depth (m)	Diametral Tests					Axial, Block, and Irregular Lump Tests						Strength Classification	
			D (mm)	L (mm)	P (kN)	I <sub>s(50)</sub> (MPa)	Failure Mode	W (mm)	D (mm)	L (mm)	P (kN)	I <sub>s</sub> (MPa)	I <sub>s(50)</sub> (MPa)		Failure Mode
SILTY SANDSTONE	<b>CBH 18</b>	<b>5.05-5.18</b>	45	130	8.74	<b>4.12</b>	Through substance	45	32		13.17	7.18	<b>6.7</b>	Through substance	<b>VH</b>
SILTY SANDSTONE	<b>CBH 18</b>	<b>7.0-7.08</b>	45	80	9.37	<b>4.41</b>	Parallel to bedding	45	40		12.53	5.47	<b>5.36</b>	Through substance	<b>VH</b>
SILTY SANDSTONE	<b>CBH 18</b>	<b>9.05-9.15</b>	45	100	6.21	<b>2.93</b>	Parallel to bedding	45	38		12.53	5.76	<b>5.58</b>	Through substance	<b>H / VH</b>
SANDSTONE	<b>CBH 18</b>	<b>1.55-11.6</b>	45	110	8.74	<b>4.12</b>	Parallel to bedding	45	32		13.8	7.53	<b>7.02</b>	Through substance	<b>VH</b>

# Point Load Strength Index Test Results

Client	<b>MAUNSELL / AECOM</b>	Office	<b>UNANDERRA</b>
Principal	<b>ROADS AND TRAFFIC AUTHORITY</b>	Date	<b>13/4/07</b>
Project	<b>GEOTECH INVESTIGATION - PRINCES HWY, PHASE 1</b>	By	<b>CA</b>
Location	<b>GERRINGONG TO BOMADERRY</b>	Checked	<b>JT</b>

Test Method	<i>AS 4133.4.1 - 1993 Methods of Testing Rocks for Engineering Purposes, Determination of Point Load Strength Index</i>	Sampling Technique	<i>Selected from boreholes</i>	Sampling Date	<i>28/03/2007</i>
Test Machine	<i>Green Impell Tester</i>	Storage History	<i>Coffey UNAN office indoor core storage area</i>	Testing Date	<i>3/04/2007</i>
Calibration Date	<i>2/9/2004</i>	Moisture Condition	<i>Natural</i>	Tested By	<i>CA</i>
		Loading Rate	<i>&lt; 30 seconds</i>		

Rock Type	Location	Depth (m)	Diametral Tests					Axial, Block, and Irregular Lump Tests							Strength Classification	
			D (mm)	L (mm)	P (kN)	I <sub>s(50)</sub> (MPa)	Failure Mode	W (mm)	D (mm)	L (mm)	P (kN)	I <sub>s</sub> (MPa)	I <sub>s(50)</sub> (MPa)	Failure Mode		
SILTSTONE	<b>CBH 20</b>	<b>1.10-1.15</b>	45	50	18.85	<b>8.88</b>	Along defect									<b>VH</b>
TUFF	<b>CBH 20</b>	<b>7.25-7.37</b>	45	120	3.05	<b>1.44</b>	Along defect	45	44		3.05	1.21	<b>1.21</b>	Through substance	<b>H</b>	
SILTSTONE	<b>CBH 20</b>	<b>9.08-9.16</b>	45	80	7.48	<b>3.52</b>	Along defect	45	30		6.21	3.61	<b>3.32</b>	Through substance	<b>VH</b>	
SANDSTONE	<b>CBH 20</b>	<b>9.50-9.70</b>	45	200	6.21	<b>2.93</b>	Parallel to bedding	45	35		3.05	1.52	<b>1.45</b>	Through substance	<b>H</b>	
SANDSTONE	<b>CBH 20</b>	<b>10.71-11.0</b>	45	290	9.37	<b>4.41</b>	Parallel to bedding	45	36		10.95	5.31	<b>5.09</b>	Through substance	<b>VH</b>	
SILTSTONE	<b>CBH 20</b>	<b>13.88-13.98</b>	45	100	12.53	<b>5.9</b>	Along defect	45	30		7.48	4.35	<b>4</b>	Through substance	<b>VH</b>	