DRAFT FINAL REPORT
on
GEOTECHNICAL ASSESSMENT

PROPOSED THIRD TERMINAL
PORT BOTANY

VOLUME 2
APPENDIX F - BORE LOGS

Prepared for
SYDNEY PORTS CORPORATION

Project 35224
OCTOBER 2002

APPENDIX F
Relevant Bore Logs

Port Botany Third Terminal - Summary of Test Bores												
Bore	Easting	Northing	RL	Depth	Description	Top of dense sands		Top of peats & clays		Top of bedrock		Terminates
			(ISLW)	(m)		Depth	RL	Depth	RL	Depth	RL	at RL
124	333870	6239215	-7.3	16.8	August 1968	Dredged to	-16.6	8.2	-15.5	15.2	-22.5	-24.1
132	334123	6239613	-5.9	22.6	July 1968	0.0	-5.9					-28.5
207	333395	6238790	-7.00	18.56	February 1969	Dredged to	-18.2	10.5	-17.5	16.5	-23.5	-25.6
208	333455	6239260	-7.16	13.24	February 1969	Dredged to	-13.7	9.3	-16.5	11.7	-18.9	-20.4
209	333155	6239300	-6.86	15.21	February 1969	1.0	-7.9	10.3	-17.2	13.5	-20.4	-22.1
210	332855	6239345	-6.40	15.90	February 1969	0.0	-6.4	12.0	-18.4	14.5	-20.9	-22.3
211	333825	6239660	-7.00	19.60	March 1969	Dredged to	-20.8	18.3	-25.3			-26.6
212	333523	6239703	-6.86	19.84	March 1969	0.0	-6.9	11.9	-18.8			-26.7
213	333230	6239745	-6.55	20.73	February 1969	0.0	-6.6	14.5	-21.1			-27.3
214	332925	6239790	-6.10	17.00	February 1969	1.5	-7.6	11.4	-17.5	15.4	-21.5	-23.1
215	332650	6239635	-5.79	14.30	January 1969	0.0	-5.8	12.2	-18.0	12.2	-18.0	-20.1
217	333845	6240106	-3.35	21.40	March 1969	Dredged to	-10.0	16.8	-20.2			-24.8
218	333595	6240153	-4.27	20.20	March 1969	0.0	-4.3	12.2	-16.5			-24.5
219	333293	6240197	-5.41	20.00	March 1969	1.9	-7.3	14.0	-19.4	18.2	-23.6	-25.4
220	332990	6240245	-5.41	18.00	1969	0.0	-5.4	12.1	-17.5	16.5	-21.9	-23.4
221	332690	6240290	-5.33	13.30	January 1969	0.0	-5.3	10.4	-15.7	11.6	-16.9	-18.6
223	332760	6240740	-3.65	12.20	January 1969	0.9	-4.6	4.6	-8.3	10.5	-14.2	-15.9
224	334230	6240230	-3.20	20.90	April 1969	1.7	-4.9	12.3	-15.5	19.5	-22.7	-24.1
225	333655	6240528	-2.36	22.20	May 1969	0.0	-2.4					-24.6
226	333360	6240682	-1.83	22.90	May 1969	0.0	-1.8	17.0	-18.8	21.3	-23.1	-24.7
227	333080	6240825	-2.59	22.90	January 1969	0.0	-2.6	12.3	-14.9			-25.5
338	333875	6239235	-7.50	21.0	May 1974	Dredged to	-16.8	9.5	-17.0	18.0	-25.5	-28.5
339	333810	6239070	-6.75	13.0	April 1974	Dredged to	-15.0	10.0	-16.8	12.0	-18.8	-19.8
341	333680	6239315	-7.25	17.5	May 1974	Dredged to	-15.0	11.5	-18.8	14.5	-21.8	-24.8
342	333620	6239150	-6.75	13.0	April 1974	Dredged to	-15.7	9.5	-16.3	12.0	-18.8	-19.8
343	333598	6239103	-7.25	15.0	Apr 1974	Dredged to	-15.5	11.0	-18.3	13.5	-20.8	-22.3
344	333500	6239395	-7.25	18.0	April 1974	0.0	-7.3	9.5	-16.8	13.0	-20.3	-25.3
345	333425	6239230	-7	13.0	April 1974	Dredged to	-15.0	11.0	-18.0	11.5	-18.5	-20.0
346	333420	6239185	-7	15.0	May 1974	Dredged to	-16.2	11.5	-18.5	12.0	-19.0	-22.0
420	334435	6239575	-4.25	59.1	April 1975	7.3	-11.6	29.5	-33.8	56.7	-61.0	-63.4
422	334340	6239545	-4.65	45.45	May 1975	Dredged to	-15.6	27.4	-32.1			-50.1
424	334240	6239520	-6.15	66	February 1975	Dredged to	-15.0	30.0	-36.2	63.5	-69.7	-72.2
425	334275	6239393	-7	16.35	August 1975	Dredged to	-22.0	13.9	-20.9			-23.4
605	334420	6239630	-4.7	47.7	February 1975	0.0	-4.7	31.0	-35.7	46.8	-51.5	-52.4
901	334157	6239565	-6.4	57.75	November 1975	2.0	-8.4	27.5	-33.9	55.2	-61.6	-64.2
902	334067	6239605	-6.6	68.75	November 1975	2.0	-8.6	24.9	-31.5	66.9	-73.5	-75.4

Bore	Easting	Northing	RL	Depth	Description	Top of dense sands		Top of peats & clays		Top of bedrock		Terminates
			(ISLW)	(m)		Depth	RL	Depth	RL	Depth	RL	at RL
903	333975	6239650	-6.7	59.62	December 1975	Dredged to	-15.0	15.2	-21.9	56.0	-62.7	-66.3
904	333885	6239690	-6.7	47	January 1976	Dredged to	-22.0	19.0	-25.7	43.9	-50.6	-53.7
905	333795	6239735	-6.6	38	January 1976	Dredged to	-20.5	18.0	-24.6	35.0	-41.6	-44.6
906	333615	6239820	-6.45	46.5	February 1976	2.0	-8.5	15.8	-22.2	44.1	-50.6	-53.0
907	333435	6239900	-6.25	36.5	February 1976	3.0	-9.3	18.1	-24.3	33.8	-40.1	-42.8
908	333350	6239945	-6.2	32.5	February 1976	2.5	-8.7	19.6	-25.8	29.7	-35.9	-38.7
909	333240	6239970	-6.1	29.3	March 1976	2.0	-8.1	16.7	-22.8	25.6	-31.7	-35.4
910	333327	6240650	-2.1	26.25	March 1976	1.8	-3.9	16.9	-19.0	22.9	-25.0	-28.4
911	333610	6240515	-2.55	45.5	March 1976	1.5	-4.1	20.6	-23.2	42.4	-44.9	-48.1
912	333890	6240387	-7.55	55.5	March 1976	2.0	-9.6	18.6	-26.2	52.4	-60.0	-63.1
913	333845	6240115	-3.6	35	April 1976	Dredged to	-15.6	18.2	-21.8	32.5	-36.1	-38.6
914	333970	6239990	-3.9	54	May 1976	1.8	-5.7	19.4	-23.3	50.8	-54.7	-57.9
915	334198	6239645	-4.7	43	July 1976	2.0	-6.7	20.2	-24.9	38.8	-43.5	-47.7
916	334110	6239690	-5	57	July 1976	1.3	-6.3	16.8	-21.8	54.1	-59.1	-62.0
917	334020	6239738	-5.4	58.6	June 1976	2.0	-7.4	19.6	-25.0	58.5	-63.9	-64.0
918	333932	6239780	-5.7	68.1	June 1976	Dredged to	-15.0	29.3	-35.0	65.0	-70.7	-73.8
919	333840	6239825	-5.85	55	May 1976	Dredged to	-21.9	22.0	-27.9	51.5	-57.4	-60.9
DM2	332780	6240696	-4.21	10.35	Dames & Moore Jan 1991	0.00	-4.2	10.2	-14.4	10.15	-14.4	-14.6
DM3	332843	6240400	-4.76	13.5	Dames & Moore Jan 1991	0.0	-4.8	13.0	-17.8			-18.3
DM4	332900	6240160	-5.47	15.65	Dames & Moore Jan 1991	0.0	-5.5	11.4	-16.9			-21.1
DM5	332963	6239913	-5.85	19.22	Dames & Moore Feb 1991	0.0	-5.9	11.2	-17.1	18.7	-24.6	-25.1
DM6	333019	6239673	-6.07	17.01	Dames & Moore Feb 1991	0.0	-6.1	10.3	-16.4	16.9	-22.9	-23.1
DM7	333075	6239425	-6.35	13.54	Dames & Moore Feb 1991	0.0	-6.4	10.7	-17.1	13.4	-19.7	-19.9
DM8	333133	6239184	-6.35	14.4	Dames & Moore Feb 1991	2.6	-9.0	10.7	-17.1	14.2	-20.6	-20.8
DM20	332839	6239109	-7.15	15.11	Dames & Moore Feb 1991	3.2	-10.3	11.2	-18.4			-22.3
DM46	333860	6239460	-7.13	15.32	DP March 1992	0.0	-7.1	12.3	-19.4			-22.5
DM67	333780	6240865	-2.88	13.69	Dames & Moore May 1991	4.2	-7.1	9.0	-11.9	13.3	-16.2	-16.6
DM68	332849	6240560	-4.54	11.54	Dames & Moore May 1991	0.0	-4.5	10.6	-15.1	11.3	-15.8	-16.1
DM69	332912	6240311	-5.14	14.06	Dames & Moore May 1991	0.0	-5.1	12.1	-17.2	13.9	-19.0	-19.2
DM71	333033	6239826	-5.99	20.15	Dames & Moore May 1991	3.3	-9.2	8.9	-14.8	20.1	-26.1	-26.1
DM73	333138	6239343	-6.45	13.15	Dames & Moore May 1991	2.5	-9.0	9.7	-16.2	13.0	-19.5	-19.6
CP1	333527	6240705	-1.65	37.00	Coffey 1998 - cored bore	2.0	-3.7	19.8	-21.5	34.0	-35.7	-38.7
CP2	333580	6240571	-2.46	35.90	Coffey 1998 - cored bore	1.0	-3.5	19.6	-22.1	35.7	-38.1	-38.4
CP3	333627	6240433	-15.10	33.20	Coffey 1998 - cored bore	1.5	-16.6	7.8	-22.9	31.8	-46.9	-48.3
CP4	333672	6240285	-18.35	38.70	Coffey 1998 - cored bore	0.4	-18.8	7.5	-25.9	36.6	-54.9	-57.1
CP5	333712	6240149	-18.40	43.47	Coffey 1998 - cored bore	3.2	-21.6	4.0	-22.4	41.9	-60.3	-61.9
CP6	333753	6239986	-19.75	42.05	Coffey 1998 - cored bore	0.8	-20.6	0.8	-20.6	40.4	-60.2	-61.8
CP7	333797	6239856	-21.80	41.60	Coffey 1998 - cored bore	4.0	-25.8	4.0	-25.8	40.6	-62.4	-63.4
CP8	333850	6239711	-21.95	24.65	Coffey 1998 - cored bore	0.7	-22.7	2.0	-24.0	23.0	-45.0	-46.6
CP9	333906	6239580	-21.25	14.85	Coffey 1998 - cored bore	0.5	-21.8	4.0	-25.3	13.5	-34.8	-36.1
CP10	333945	6239429	-15.95	26.15	Coffey 1998 - cored bore	0.8	-16.8	4.0	-20.0	23.5	-39.5	-42.1
CP11	334060	6239463	-11.40	54.75	Coffey 1998 - cored bore	0.3	-11.7	8.2	-19.6	53.3	-64.7	-66.2

Bore	Easting	Northing	RL	Depth	Description	Top of dense sands		Top of peats & clays		Top of bedrock		Terminates
			(ISLW)	(m)		Depth	RL	Depth	RL	Depth	RL	at RL
CP12	334175	6239508	-11.70	63.80	Coffey 1998 - cored bore	0.6	-12.3	11.5	-23.2	62.1	-73.8	-75.5
CP13	333879	6240590	-6.05	21.60	Coffey 1998 - washbore	6.0	-12.1	17.5	-23.6			-27.7
CP14	333991	6240248	-2.95	27.55	Coffey 1998 - washbore	3.3	-6.3	26.0	-29.0			-30.5
CP15	334049	6240063	-3.30	24.75	Coffey 1998 - washbore	6.0	-9.3	23.5	-26.8			-28.1
CP16	334094	6239898	-0.20	33.60	Coffey 1998 - washbore	4.7	-4.9	32.5	-32.7			-33.8
CP17	333702	6240676	-1.55	22.30	Coffey 1998 - washbore	0.5	-2.1	20.8	-22.4			-23.9
CP18	333757	6240492	-15.00	9.45	Coffey 1998 - washbore	0.5	-15.5	9.0	-24.0			-24.5
CP19	333817	6240305	-14.75	11.20	Coffey 1998 - washbore	0.4	-15.2	9.7	-24.5			-26.0
CP20	333448	6240465	-2.80	18.70	Coffey 1998 - washbore	2.0	-4.8	17.2	-20.0			-21.5
CP21	333534	6240191	-4.35	18.50	Coffey 1998 - washbore	0.5	-4.9	17.0	-21.4			-22.9
CP22	333635	6239893	-6.45	17.15	Coffey 1998 - washbore	3.7	-10.2	15.0	-21.5			-23.6
CP23	333730	6239587	-10.27	11.42	Coffey 1998 - washbore	1.4	-11.7	10.2	-20.5			-21.7
CP24	333265	6240595	-2.30	17.40	Coffey 1998 - washbore	2.0	-4.3	16.0	-18.3			-19.7
CP25	333370	6240257	-4.75	17.05	Coffey 1998 - washbore	0.5	-5.3	14.5	-19.3			-21.8
CP26	333535	6239755	-6.70	17.65	Coffey 1998 - washbore	0.5	-7.2	16.5	-23.2			-24.4
CP27	333635	6239446	-7.05	13.75	Coffey 1998 - washbore	0.5	-7.6	8.5	-15.6			-20.8
S1	333378	6240823	-2.0	0.3	Coffey 1998 - surface sample							-2.3
S2	333565	6240783	-2.2	0.3	Coffey 1998 - surface sample							-2.5
S3	333440	6240620	-3.0	0.3	Coffey 1998 - surface sample							-3.3
S4	333638	6240575	-3.0	0.3	Coffey 1998 - surface sample							-3.3
S5	333503	6240415	-4.9	0.3	Coffey 1998 - surface sample							-5.2
S6	333716	6240365	-4.2	0.3	Coffey 1998 - surface sample							-4.5
S7	333570	6240208	-6.0	0.3	Coffey 1998 - surface sample							-6.3
S8	333760	6240170	-6.0	0.3	Coffey 1998 - surface sample							-6.3
S9	333630	6240015	-6.5	0.3	Coffey 1998 - surface sample							-6.8
S10	333804	6239960	-8.0	0.3	Coffey 1998 - surface sample							-8.3
S11	333690	6239820	-7.0	0.3	Coffey 1998 - surface sample							-7.3
S12	333850	6239750	-10.5	0.3	Coffey 1998 - surface sample							-10.8
S13	333760	6239612	-7.0	0.3	Coffey 1998 - surface sample							-7.3
CW7	334513	6239645	3.65	60.15	Connell Wagner Dec 2000	Filled	-16	40.5	-36.9	60.15	-56.5	-56.5
CW8	334710	6239718	3.65	44.7	Connell Wagner Dec 2000	Filled	?	37.7	-34.1	43.5	-39.9	-41.1

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 40.

Location: Botany Bay North
Bore No.: B.N. 12A — Sheet No.: 1
Date of Boring: August, 1968

Fld. Test	E.L.M.
Lab Test	P.J.C.
Checked	A.J.T.

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft. Unconfined Compr.: Undist.	Remould	Triaxial: Undrain.	Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
-20																		Depths from L.S.L.W.
		24'0" Seabed																Bore Coordinates:
		Loose brown f.&m. SAND with some shell fragments.																Coal Whf. Tower 68°38'
-30		32'0"																Bomb Ehce. 19°55'
																		Silk Handwick Reservoir
-40		Loose to compact brown silty f.&m. SAND with pieces of decomposed wood.																
-50																		
		51'0" Stiff black sand, charcoal PEAT.																
		53'0"																
		56'0" Dark brown silty f.&m. SAND.	57'0"	82	7	11												
-60																		
		Dense grey clayey f.&m. SAND.	64'6"	82	9	9												
		66'0"	66'6"	50	21	21												
-70		Stiff grey sandy silty CLAY.																
		74'0"																
		Medium hard grey brown medium SANDSTONE with seams																Core drilling 74'6" — 79'0"
-80		79'0" weathered joints.																Recovered: 4'2"
																		Drilling ceased at -79'0"

The Maritime Services Board of N.S.W. Preservation & Research Sub-Branch	Engineering Branch	BORE RECORD Laboratory Test Series No. 40	Location: Botany Bay North Bore No.: B.N. 132 Sheet No.: 1 Date of Boring: July, 1960	Fld. Test: E.L.W. Lab Test: P.J.C. Checked: A.J.T.

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft.: Unconfined Compr.: Undist.	Remould	Triaxial: Undrain.	Cell P.S.	S.P.T. Blows for 6 ins. of Penetration	Remarks
-10																		Depths from I.S.L.W.
																		Bore Coordinates:
																		Rear Lead 94° 18'
-20		19'6" Seabed.																
		Loose grey silty f.&m. SAND with																Pine Tree 37° 49'
		23'0" shell (approx. 10% to 1").																Bunnerong Water Tower
-30																		
-40																		
		Loose to compact brown f.&m.																
-50		SAND.	50'–51'6"														3.4.10	
-60																		
-70																		

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 40

Location: Botany Bay North.
Bore No.: BN 192. Sheet No.: 2.
Date of Boring: July, 1968.

Fld. Test: E.L.M.
Lab Test: R.T.C.
Checked: A.J.T.

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft.: Unconfined Compr. Undist.	Remould	Triaxial Undrain.	ϕ	S.P.T. Blows for 6 ins. of Penetration	Remarks
-70		Loose to compact brown fine SAND																
-80		80'0"																
		Compact to dense brown silty fine SAND with pieces of decomposed wood 93' to 97'																
-90																		
		93'2"																Drilling ceased at -93'2"
-100																		

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Botany Bay North
Bore No.: 207 — Sheet No.: 1
Date of Boring: 19-2-68

Fld. Test	J.S.
Lab Test	P.C.
Checked	A.J.T.

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft. Unconfined Compr.: Undist.	Remould	Triaxial: Undrain.	Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
-20																		Depths below I.S.L.W.
		23'0" Seabed																Bore Coordinates
																		Back Lead 65°11'
-30																		Boral Flare
		Loose to compact grey slightly																
-40		silty fine & medium SAND																
		(Approx. 5% shell to ½" at seabed)																
-50																		
		57'6"																
-60		Stiff grey organic sandy	59'0"	20	44	36	17	51	34	96·5	123·0	27·7	3,000	700				
		silty CLAY with lenses	62'0"	9	38	53	20	72	52	98·9	123·9	25·3	2,300	850	1,800	20		
		of clayey sand	63'9"				83	160	77									
		67'0"	68'0"	86	3	11												
-70																		
		Dense grey clayey fine and																
		medium SAND																
		77'0"																
-80		Medium hard grey & brown																
		med. SANDSTONE with numerous																
		83'11" weathered joints																Drilling Ceased -83'11"
																		Core drilling 78'11"-83'11"
																		Recovered 4'9"

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Botany Bay North
Bore No.: 208 — Sheet No.: 1
Date of Boring: 24-2-68.

Fld. Test	J.S.
Lab Test	P.C.
Checked	A.J.T.

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft.: Unconfined Compr. Undist.	Remould	Triaxial Undrain.	Triaxial C-ll P.S.J.	S.P.T. Blows for 6 ins. of Penetration	Remarks
																		Depths below I.S.L.W.
-20																		Bore Coordinates
		23'6" Seabed																Back Lead 34° 05'
		Loose grey fine & med SAND																Front Lead 65° 40'
		28'0" with some fine shell																Borel Flare
-30																		
		Compact brown slightly																
-40		silty fine & med SAND																
-50																		
		54'0" Very stiff black sandy																
		55'0" charcoal PEAT	54'9"	28	42	30	36	80	44		102·2		3,500	800				
		Grey silty fine & med SAND																
-60		59'6"																
	///	62'0" Very stiff grey sandy CLAY																
		Medium hard grey & brown med																
		SANDSTONE with occ weathered	65'10"							123·5	139·0	12·5	6,900					
		67'1" joints																Drilling ceased at -67'1"
-70																		
																		Core drilling 62'1" - 67'1"
																		Recovered 3'6"

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Botany Bay North
Bore No.: 209
Date of Boring: 13-2-69
Sheet No.: 1

Fld. Test	J. S.
Lab Test	P. C.
Checked	A. J. T.

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft.: Unconfined Compr. Undist.	Remould	Triaxial Undrain.	Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
																		Depths below I.S.L.W.
-20																		Bore Coordinates
		22'6" Seabed																Back Lead 43°57'
		26'0" Loose fawn fine & med SAND																Front Lead 47°39'
-30																		Boral Flare
		Compact fawn silty fine and medium SAND with peat lens at 26'0"	35'4"	81	11	8												
-40																		
		42'0"																
		Compact brown slightly silty fine & med. SAND																
-50																		
		56'6" Very stiff black sandy charcoal	56'8"	5	50	45				103·5	125·6	21·3		400				
		57'6" PEAT								66·1	100·0	51·2			3,250	15		
-60		61'0" Compact gy. silty f&m SAND	62'4"	53	25	22				124·3	139·6	12·3	5,750		5250	20		
		with seams of org. silty clay	64'8"	63	22	15				125·1	141·0	12·7	5200					
		Very stiff grey & brown sand																
		67'0" Weathered to med hard grey																
-70		brown fine & med SANDSTONE																
		with occ seams of weathered																
		72'5" siltstone to 69'6"																Drilling ceased at -72'5"
																		Core drilling 67'3" – 72'5"
																		Recovered 5'1"

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Botany Bay North
Bore No.: 210 — Sheet No.: 1
Date of Boring: 5-?-69

Fld. Test	J.S.
Lab Test	P.C.
Checked	A.J.T.

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft: Unconfined Compr. Undist.	Remould	Triaxial Undrain.	Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
																		Depths below L.S.L.W.
																		Bore Coordinates
-20																		Coal Whf Tower 64°16'
		21'0" Seabed																La Perouse Monument 24°07'
																		Kurnell Flag Staff
-30																		
		Loose to compact grey slightly silty fine & med.																
-40		SAND with numerous leases																
		of sandy peat																
-50																		
-60																		
		60'6"	61'6"							121·0	138·0	14·0	7400					
		Very stiff grey & brown silty CLAY																
-70		68'6" Weathered to med hard grey fine SANDSTONE with numerous 73'2" fractured joints to 71'0"																Drilling ceased at -73'2"
																		Core drilling 68'6" - 73'2" Recovered 4'5"

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Botany Bay North
Bore No.: 211 — Sheet No.: 1
Date of Boring: 15-3-69

Fld. Test	J.S.
Lab Test	P.C.
Checked	A.J.T.

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft.: Unconfined Compr. Undist.	Remould	Triaxial Undrain.	Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
-20																		Depths below LSLW.
		23'0" Seabed																Bore Coordinates
		Loose grey silty f & m																
		27'0" SAND with Shell																Coal Whf. Tower 72°06'
-30																		
																		Boral Flare 29°38'
		Loose to compact brown																La Perouse Monument
		slightly silty fine & med.																
		SAND																
-40																		
		43'																
-50																		
		Compact to dense fawn																
-60		to grey fine & med. SAND																
-70																		
-80																		
			83'11"								119·3							
		83'	84'5"	3	43	54	25	80	55									
	///	Stiff dark grey silty CLAY	86'6"	15	49	36	13	45	32		132·1							
	///	87'4"	87'0"	2	47	20	21	90	50	102·7	120·0	17			5550	0·5		

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Botany Bay North
Bore No.: 212 — Sheet No.: 1
Date of Boring: 12-3-69

Fld. Test	J. S.
Lab Test	P. C.
Checked	A. J. T.

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft.: Unconfined Compr. Undist.	Remould	Triaxial Undrain.	Cell P.S.I.	S.P.T. Blows for 6ins. of Penetration	Remarks
-20																		Depths below I.S.L.W.
		22'6" Seabed																Bore Coordinate
		Loose to compact grey slightly silty fine & med. SAND																Coal Whf. 81'21'
-30																		La Perouse Monument 24'08'
																		Kurnell Flag Staff
		35'0"																
-40		Compact fawn to grey fine & med. SAND																
-50																		
-60																		
		61'6"																
		Stiff to very stiff dark grey silty CLAY	68'9"	16	64	20												
-70																		
			73'9"	3	66	31	25	76	51									
			78'3"							123·7	133·8	8·2						
-80			79'0"	14	51	35					130·2				3,750	25		
		83'0" Compact grey silty clayey fine & med SAND with	86'9"	82	12	6												
		87'0" shell																Drilling ceased at −87'6"

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Botany Bay North
Bore No.: 213 — Sheet No.: 1
Date of Boring: 27-2-69

Fld. Test	J.S.
Lab Test	P.C.
Checked	A.J.T.

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft. Unconfined Compr.: Undist.	Remould	Triaxial: Undrain.	Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
																		Depths below I.S.L.W.
																		Bore Coordinates
																		Coal Whf Tower 17'43'
-20		21'6" Seabed																Front Lead 24'05'
																		Boral Flore
-30		Loose to compact grey slightly silty fine & med SAND																
-40			44'4"							92·8	118·3	27·4	700.					
-50		5[illegible]'0"																
-60		Compact to dense grey fine & med SAND																
			68'0"	52	26	22												
-70		69'0" Stiff dark grey silty 72'0" CLAY																

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Botany Bay North
Bore No.: 213 — Sheet No.: 2
Date of Boring: 27-2-69

Fld. Test	
Lab Test	
Checked	

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft. Unconfined Compr.: Undist.	Remould	Triaxial: Undrain.	Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
-60		Compact to dense grey fine & med SAND																
-70		69'0"																
		72'0" Stiff dark grey silty CLAY																
-80		Dense grey silty clayey fine & medium SAND																
		84'0"																
		Stiff grey sandy silty CLAY																
-90		89'6"																Drilling ceased at -89'6"

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Botony Bay North
Bore No.: 214 — Sheet No.: 1
Date of Boring: 3-2-69

Fld. Test	J.S.
Lab Test	P.C.
Checked	A.J.T.

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density: Dry lbs/c.f.	Density: Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft.: Unconfined Compr. Undist.	Unconfined Compr. Remould	Triaxial Undrain.	Triaxial Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
																		Depths below I.S.L.W.
																		Bore Coordinates
-20		20'0" Seabed																Bock Lead 81°04'
		Loose grey fine & med SAND with shell fragments																Boral Flare 45°58'
		25'0" (approx 5% to 8")																Kurnell Flag Staff
-30		Loose to compact fawn slightly silty fine & medium SAND																
-40		42'0"																
		43'6" Stiff bk sandy charcoal PEAT	43'2"							92·8	118·3	27·4						
			44'6"	90	6	4												
			45'8"	97	0	3												
-50		Compact fawn slightly silty fine & med SAND																
		57'6" Very stiff black sandy	58'11"							48·2	85·8	78·0			6,200	20		
-60		59'6" charcoal PEAT	59'2"	58	31	11				48·3	86·5	79·0	3,000	2,000				
		Dense grey clayey fine & medium SAND	63'2"	49	11	40				123·0	138·3	12·6	2,400					
		67'6"	68'3"							118·4	136·1	15·0						
-70		Very stiff grey silty	68'6"							119·0	136·8	14·8	8,000					
		70'6" CLAY Medium hard grey																
		75'9" interlaminated SILTSTONE and shale with numerous fractured zones and Weathered joints																Drilling ceased at -75'9" Core drilling 70'9"-75'9" Recovered 4'3"

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Borony Boy North
Bore No.: 215 — Sheet No.: 1
Date of Boring: 20-1-69

Fld. Test	J.S.
Lab Test	P.C.
Checked	A.J.T.

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density: Dry lbs/c.f.	Density: Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft.: Unconfined Compr. Undist.	Unconfined Compr. Remould	Triaxial Undrain.	Triaxial Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
-10																		Depths below I.S.L.W.
																		Bore Coordinates
-20		19'0" Seabed																Kurnell Flag Staff 54°55'
																		Front Lead 52°09'
																		Back Lead
		Loose to compact grey slightly silty fine & med. SAND with occ. shell																
-30																		
-40		39'0" Soft to firm black org. sandy silty CLAY	40'0"	37	32	31	19	64	45	76·6	111·0	45·1	1150	400				
			42'0"	81	12	7				83·4	113·0	35·5	300					
		Compact grey slightly silty fine & med. SAND with peat lens 55' to 56'																
-50																		
-60		59'0"																
		Weathered grey brown interlaminated SHALE and																
		65'10" siltstone with numerous fractured joints																Drilling ceased at -65'10"
-70																		Core drilling 61'2" - 65'10"
																		Recovered 3'4"

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Botany Bay North
Bore No.: 216 — Sheet No.: 1
Date of Boring: 14-1-69

Fld. Test	J.S.
Lab Test	P.C.
Checked	A.J.T.

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft.: Unconfined Compr. Undist.	Unconfined Compr. Remould	Triaxial Undrain.	Triaxial Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
																		Depths below I.S.L.W.
-10																		Bore Coordinates
																		Rear Lead 40°17'
-20		18'6" Seabed																Front Lead 29°02'
		Loose grey fine & med																Monument La Perouse
		23'0" SAND with shell (approx 20% to 1")																
		Compact grey sl. silty	23'6"-25'0"														N=2,3,5	
		28'0" fine & med SAND																
-30																		
		Compact to dense grey slightly clayey fine & med SAND	38'6"-40'0"														N=7,13,21	
-40																		
-50																		
		51'0"																
		Very stiff grey fissured silty CLAY	52'4"	1	42	57				114	134·2	17·6	5,800					
			56'9"	9	71	20												
		57'0" Grey interlaminated SHALE	57'1"							135·0	146·9	8·2	4,900					
-60		and siltstone with weathered and fractured joints																
		62'3"																Drilling ceased at -62'3"
																		Core drilling 57'3"-62'3"
-70																		Recovered 3'8"

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Botany Bay North
Bore No.: 217 — Sheet No.: 1
Date of Boring: 19-3-69

Fld. Test	J. S.
Lab Test	P.C.
Checked	A. J. T.

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft. Unconfined Compr. Undist.	Remould	Triaxial Undrain.	Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
																		Depths from I.S.L.W.
																		Bore Coordinates
-10																		
		11'0" Seabed																Coal Whf. Tower 58°25'
		Loose to compact grey sl. silty fine & med SAND with shell fragments (approx. 40% to 1" at seabed)																Boral Flare 25°57'
-20																		Monument LaPerouse
		24'0"																
		25'0" Very stiff bk. sandy chor. PEAT	25'0"								79·0							
-30																		
-40																		
		Compact grey fine & med SAND																
-50																		
-60																		
		66'0"																
-70																		

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Botany Bay North
Bore No.: 217 — Sheet No.: 2
Date of Boring: 19-3-69

Fld. Test	
Lab Test	
Checked	

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft. Unconfined Compr.: Undist.	Remould	Triaxial: Undrain.	Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
		Compact grey fine & med SAND																
-60																		
			66'5"				17	58	41						3,250	20		
		66'0"	67'8"							99.2	125.9				3,250	20		
-70			71'9"				23	73	50									
			72'0"				22	69	47	96.2	122.4	27.3			4,350	25		
		Stiff dark grey silty CLAY	72'4"								122.9							
			77'3"							114.8	139.8	21.8			3,550	25		
			77'7"	3	19	68	18	68	50		121.3							
-80			80'11"							107.9	129.7	20.2			4,100	30		
		81'4"	81'3"								138.1							Drilling Ceased at -81'4"
-90																		

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Borany Bay North
Bore No.: 218 — Sheet No.: 1
Date of Boring: 25-3-69

Fld. Test	J.S.
Lab Test	P.C.
Checked	A.J.T.

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density: Dry lbs/c.f.	Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft.: Unconfined Compr. Undist.	Remould	Triaxial Undrain.	Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
																		Depths below I.S.L.W.
																		Bore Coordinates
-10																		Front Lead 48'35'
		14'0" Seabed																Cool Whf. Tower 34'4'
																		Water Tank
		Loose to compact grey																
-20		fine & med SAND with																
		shell fragments (approx.																
		20% to ½ of seabed																
		26'0"																
-30																		
		Compact fawn fine																
-40		& medium SAND																
-50																		
		54'0"																
			56'3"	32	60	8												
		Compact to dense grey																
-60		slightly clayey fine & med																
		SAND with occasional peat																
		and charcoal fragments																
-70		69'0"																

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Borony Bay North
Bore No.: 218 — Sheet No.: 2
Date of Boring: 25-3-69

Fld. Test	
Lab Test	
Checked	

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft.: Unconfined Compr. Undist.	Remould	Triaxial Undrain.	Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
-60		Compact to dense grey slightly clayey fine & med. SAND with occasional peat and charcoal fragments																
-70		69'0"																
			70'3"								92.3							
		Stiff black clayey PEAT and silty clay																
			77'7"								118.2							
-80			79'10"	7	56	37					83.0							
		80'2"																Drilling ceased at -80'2"
-90																		

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Botany Bay North
Bore No.: 219 — Sheet No.: 1
Date of Boring: 27-3-69

Fld. Test	J.S.
Lab Test	P.C.
Checked	A.J.T.

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft. Unconfined Compr.: Undist.	Remould	Triaxial: Undrain.	Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
																		Depths below I.S.L.W.
-10																		Bore Coordinates
																		Cool Whf. Tower 48°04'
		17'9" Seabed																Front Lead 23°46'
-20		Loose grey silty fine & med SAND with fine																Kurnell Flag Staff
		24'0" shell fragments																
-30																		
		Loose to compact grey fine & med SAND with occ peat fragments																
-40																		
		46'0"																
-50																		
		Compact fawn fine & med SAND																
-60		60'0"																
		Compact grey f & m SAND																
		64'0" with occ peat fragments																
-70																		

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Botany Bay North
Bore No.: 219 — Sheet No.: 2
Date of Boring: 27-3-69

Fld. Test	
Lab Test	
Checked	

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft.: Unconfined Compr. Undist.	Remould	Triaxial Undrain.	Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
-60		60'0" Compact grey f&m SAND with occ. peat fragments	65'6"								98·9							
-70		Stiff grey silty CLAY becoming shelly below 73'	71'9"	7	41	52					126·9							
-80		77'6" Weathered grey & brown medium SANDSTONE																Drilling ceased at -83'3"
-90		83'3"																Core drilling 79'9" - 83'3" Recovered 2'0"

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Borony Bay North
Bore No.: 220 — Sheet No.: 1
Date of Boring:

Fld. Test	J.S.
Lab Test	P.C.
Checked	A.J.T.

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft. Unconfined Compr.: Undist.	Remould	Triaxial: Undrain.	Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
-10																		Depths below I.S.L.W.
																		Bore Coordinates
		17'9" Seabed																Back Lead 59° 06'
-20			20'6"-22'	95	3	2											N = 2.2.2.	
		Loose to compact grey and brown silty fine & medium SAND (peaty)																Coal Whf Tower 33°21' Front Lead
-30		30'0"																
-40		Compact grey fine and medium SAND with some peat and charcoal fragments																
-50																		
		57'6" Very stiff black sandy	58'8"							35·6	78·8	121·5			5,300	20		
-60		59'0" charcoal PEAT	58'9"	5	40	55	86	98	12									
		Compact grey clayey fine	58'11"							68·5	102·3	49·7						
		64'0" and medium SAND	65'11"							121·1	137·8	13·8			4,800	20		
			66'2"	63	13	24				121·2	138·0	13·9						
		Very stiff grey sandy silty CLAY	70'8"	43	31	26				123·8	141·0	14·0	6,400					
-70		72'0"																Core drilling 72'-76'10"
		Medium hard grey & brown med SANDSTONE with weathered																Recovered 4'10"
		77'10"																

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Botany Bay North
Bore No.: 221 — Sheet No.: 1
Date of Boring: 22-1-69

Fld. Test	J.S.
Lab Test	P.C.
Checked	A.J.T.

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft. Unconfined Compr.: Undist.	Remould	Triaxial: Undrain.	Coll P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
																		Depths below I.S.L.W.
																		Bore Coordinates
-10																		Back Lead 31°19'
																		Cool Whf. Tower 24°29'
																		Front Lead
		17'6" Seabed																
-20																		
		Loose to compact grey fine & medium SAND with																
		some fine shell and occ.																
-30		lenses of peat & charcoal																
		37'0"																
-40		Compact grey clayey fine & medium SAND																
		43'0"																
		Compact grey fine & med SAND with occ. lenses of																
-50		peat and charcoal																
		51'6"	52'6"							101·2	125·1	23·6				2,250	15	
		Stiff grey sandy silty CLAY	52'9"	28	27	45				101·0	126·0	24·5	1950	1100				
		55'6" with decayed roots																
		Med hard grey fine																
-60		SANDSTONE interlaminated																
		61'3" with shale seams below 58'																Drilling ceased at -61'3"
																		Core drilling 56'2"-61'3"
																		Recovered 5'1"

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. A1

Location: Botany Bay North
Bore No.: 223 — Sheet No.: 1
Date of Boring: 24-1-69

Fld. Test	J. S.
Lab Test	P. C.
Checked	A. J. T.

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft. Unconfined Compr.: Undist.	Remould	Triaxial: Undrain.	Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
																		Depths below L.S.L.W.
																		Bore Coordinates
																		Coal Whf. Tower 27°30'
-10																		
		12'0" Seabed																Front Lead 17°01'
		Loose grey fine & medium																Kurnell Flag Staff
		15'0" SAND with shell (approx 5% to 5%)																
			15'-16'6"														N = 3.3.4.	
-20		Compact grey silty fine & med. SAND with seams of peat and org silty clay																
		27'0"	28'0"							116.2	133.9	15.2			2,750	10		
-30			28'3"	77	18	15				118.0	135.0	14.6	1500					
		Dense grey slightly clayey fine & medium SAND with occ. seams of organic silty clay	33'-34'6"														N = 4.10.18	
-40			43'2"	35	35	30				83.3	113.4	36.3	1400					
			43'11"	86	6	8				113.8	131.8	15.8	300					
		46'6" Highly weathered grey & brown SILTSTONE and shale with numerous decomp.																
-50		52'2" zones																Drilling ceased at -52'2"
																		Core drilling 47'2"-52'2" Recovered 4'1"

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Botany Bay North
Bore No.: 224 — Sheet No.: 1
Date of Boring: 30-4-69

Fld. Test	J.S.
Lab Test	P.C.
Checked	A.J.T.

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Soil Size: Silt	Soil Size: Clay	Index. Props.: P.L.	Index. Props.: L.L.	Index. Props.: P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft.: Unconfined Compr. Undist.	Unconfined Compr. Remould	Triaxial Undrain.	Triaxial Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
																		Depths below I.S.L.W.
																		Bore Coordinates
																		Back Lead 59°51'
-10		10'6" Seabed																Coal Whf. Tower 89°46'
		Loose grey fine & med.																Lone Pine Tree
		SAND with shell fragments																
		16'0" and some wood fibre																
-20																		
-30		Compact grey fine & med.																
		SAND with some fragments																
		of peat																
-40																		
-50																		
		51'0"																
			53'2"				17	65	48		123·8							
		Very stiff dark grey silty																
-60		CLAY with lenses of	59'0"				22	73	51		114·8							
		peaty clay																

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Botany Bay North
Bore No.: 224 — Sheet No.: 2
Date of Boring: 30-4-69

Fld. Test	
Lab Test	
Checked	

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft. Unconfined Compr.: Undist.	Remould	Triaxial: Undrain.	Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
-50																		
		5'10"																
		Very stiff dark grey silty																
-60		CLAY with lenses of peaty																
		clay																
		6'8"																
-70		Stiff grey sandy CLAY																
		7'6" Medium hard grey & brown																
		med. SANDSTONE with																
-80		79'2" some fractured joints																Drilling ceased at -79'2"
																		Core drilling 74'8" - 79'2"
																		Recovered 4'5"

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. A1

Location: Botany Bay North
Bore No.: 225 — Sheet No.: 1
Date of Boring: 6-5-69

Fld. Test	J. S.
Lab Test	P. C.
Checked	A.J.T.

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Soil Size: Silt	Soil Size: Clay	Index. Props.: P.L.	Index. Props.: L.L.	Index. Props.: P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft.: Unconfined Compr. Undist.	Unconfined Compr. Remould	Triaxial Undrain.	Triaxial C' lbs/sq.ft.	S.P.T. Blows for 6 ins. of Penetration	Remarks
																		Depths below I.S.L.W.
0																		Bore Coordinates
																		Boral Flare 21'41'
		7'9" Seabed																
-10																		Monument La Perouse 19'41'
		Loose to compact grey fine & medium SAND with shell & peat fragments and wood fibre																Kurnell Flag Staff
-20		20'0"																
-30																		
		Compact to dense fawn fine & medium SAND with occasional peat lenses																
-40																		
-50																		
-60																		

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Botany Bay North
Bore No.: 225 — Sheet No.: 2
Date of Boring: 6-5-69

Fld. Test	
Lab Test	
Checked	

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Soil Size: Silt	Soil Size: Clay	Index. Props.: P.L.	Index. Props.: L.L.	Index. Props.: P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft.: Unconfined Compr. Undist.	Unconfined Compr. Remould	Triaxial Undrain.	Triaxial Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
-60																		
		Compact to dense fawn fine & medium SAND with occasional peat lenses																
-70																		
-80																		
		80'9"																Drilling ceased at -80'9"

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Barony Boy North
Bore No.: 226 — Sheet No.: 1
Date of Boring: 10-5-69

Fld. Test	J. S.
Lab Test	P. C.
Checked	A. J. T.

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft.: Unconfined Compr. Undist.	Remould	Triaxial Undrain.	Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
0																		Depths below I.S.L.W.
																		Bore Coordinates
		6'0" Seabed																
		Loose grey fine & medium																Cool Whf. Tower 14°56'
-10		SAND with shell fragments																
		12'0" (approx 40% to 2" of seabed)																Nth Tank Trig 30°01'
																		Kurnell Flag Staff
		Compact fawn f&m SAND																
		18'6"	19'7"–19'10"								126·9							
-20		19'6" Stiff bk. sandy char. PEAT																
-30																		
		Compact fawn fine and																
-40		medium SAND with occ.																
		peat fragments																
-50																		
			58'6"												2,950	30		
-60																		
		62'0"																
		Stiff black sandy and	63'0"	7	51	42												
		clayey PEAT																

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Botany Bay North
Bore No.: 226 — Sheet No.: 2
Date of Boring: 10-5-69

Fld. Test	
Lab Test	
Checked	

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft.: Unconfined Compr. Undist.	Remould	Triaxial Undrain.	Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
-60		62'0"																
		Stiff black sandy and clayey PEAT	63'0"	7	51	42					91·6							
		68'0"													2,950	30		
-70		Stiff grey silty CLAY	68'6"	7	40	53	28	73	45		119·2							
		73'6"	73'0"	4	56	40												
		76'0" Grey clayey fine SAND																
		Medium hard grey & brown																
-80		medium SANDSTONE																
		81'1"																Drilling ceased at -81'1"
																		Core drilling 77' - 81'1"
																		Recovered 4'11"

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Botany Bay North
Bore No.: 227 — Sheet No.: 1
Date of Boring: 27-1-69

Fld. Test	J. S.
Lab Test	P. C.
Checked	A. J. T.

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft.: Unconfined Compr. Undist.	Remould	Triaxial Undrain.	Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
0																		Depths below I.S.L.W.
																		Bore Coordinates
																		Coal Whf. Tower 22°04'
-10		8'6" Seabed																Monument La Perouse
		Loose to compact grey sl silty f-m SAND with																18°11' Kurnell Flag Staff
		15'0" shell fragments																
-20																		
-30		Compact to dense grey to brown fine and medium SAND with some peat fragments																
-40																		
-50		49'0"	50'2"							49·0	90·0	83·0			1,350	20		
		Stiff black sandy charcoal PEAT	50'5"	18	62	20	30	123	73	47·5	88·8	87·0	1600	550				
		56'0"	58'0"							97·8	123·3	26·2			4,100	25		
			56'4"				13	34	21									
-60		Stiff grey silty CLAY	58'3"	43	28	29	15	44	29	100·4	125·7	25·0	1750	800				
		64'0"																

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 41

Location: Botany Bay North
Bore No.: 227 — Sheet No.: 2
Date of Boring: 27-1-69

Fld. Test	
Lab Test	
Checked	

Depth in feet	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Dry lbs/c.f.	Density Wet lbs/c.f.	M.C. %	Max Shear Strength lbs/sq.ft. Unconfined Compr.: Undist.	Remould	Triaxial: Undrain.	Cell P.S.I.	S.P.T. Blows for 6 ins. of Penetration	Remarks
-60		Stiff grey silty CLAY																
		64'0"	64'7"							113·3	133·2	17·4			3,350	30		
			64'10"	24	19	57				117·4	136·0	15·8	2,600	1,500				
		Stiff grey sandy silty CLAY																
-70																		
		72'0"																
			72'11"	77	9	14				126·7	137·0	13·9	600					
		Dense light grey clayey fine and medium SAND																
-80																		
		83'7"																Drilling ceased at -83'7"

ENG. 521

Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No.

Location: BOTANY BAY
Bore No.: 338
Date of Boring: 21.5.74
Sheet No.:

Fld. Test	AE
Lab Test	RH
Checked	BP

Profile	Description	Test or Sample R.L.	Soil Size: Sand	Soil Size: Silt	Soil Size: Clay	Index. Props.: P.L.	Index. Props.: L.L.	Index. Props.: P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Max Shear Strength KPa: Unconfined Compr. Remould	Triaxial: C	Triaxial: ϕ	S.P.T. N Value	Remarks
																Depths from I.S.L.W.
	7.5 Seabed, dark brown organic medium and fine SAND															
		9.5	100													
		11.5	100													
		13.5	100													
	14.5 Brown medium and fine SAND															
		15.5	100													
	17.0 Grey silty clayey SAND															
		17.5	100													
		19.5	85	15												
	20.5 Grey clayey SAND	20.5	93	7												
	21.3 Brown, medium & fine silty SAND	21.5	97	3												
	23.5 Firm grey CLAY															
	24.0 Grey silty clayey SAND															
	25.5 Soft grey SANDSTONE															
	27.3 Hard grey SANDSTONE															
	28.5															Drilling ceased

ENG. 526

Time Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No.

Location: BOTANY BAY
Bore No.: 338A — Sheet No.:
Date of Boring: 24.5.74

Fld. Test	AE
Lab Test	RH
Checked	BP

Profile	Description	Test or Sample R.L	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Remould	Triaxial C	ϕ	S.P.T. N Value	Remarks
																Depths from I.S.L.W.
	8.0 Seabed, brown medium & fine organic SAND															
		10.0-10.5													3,3,4,4,6,6	
		12.0-12.5													1,2,3,5,7,8	
		14.0-14.5													3,2,4,3,6,6	
		16.0-16.5													4,8,9,9,10,11	
	17.0 Grey, medium & fine silty SAND															
		18.0-18.5													2,3,5,6,5,6	
	18.5 Grey sandy CLAY															
																Rig blown off hole and extensively damaged
																Hole abandoned

ENG. 528

:ime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No.

Location: BOTANY BAY
Bore No.: 339 — Sheet No.:
Date of Boring: 27.4.74

Fld. Test	AE
Lab Test	RH
Checked	BP

rafile	Description	Test or Sample R.L.	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet		M.C. %	Max Shear Strength Unconfined Compr.: Undist.	Remould	KPa Triaxial: C	ϕ	S.P.T. N Value	Remarks
																	Depths from I.S.L.W.
	6.75 Dark brown, medium & fine sand with traces of peat	8.75-7.25														1-3-4-3-6-7	
		10.75-11.25														2-4-5-6-8-8	
		12.75-13.25														3-5-9-10-10-11	
	13.25 Light brown, medium & fine sand layers of peat	14.75-15.25														6-8-12-13-13-15	
	16.75 Grey silty sand with thin /	16.75-17.25														2-3-4-4-5-6	
	18.25 Grey, clayey sand	17.75-18.10							1200	2100	75.8			0	30.5		
	18.75 Soft sandstone with thin clay seams 19.75																Drilling ceased

ENG. 52

Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No.

Location: BOTANY BAY
Bore No.: 340 — Sheet No.:
Date of Boring: 29.4.74

Fld. Test	AE
Lab Test	RH
Checked	BP

Profile	Description	Test or Sample R.L.	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Remould	Triaxial C	Triaxial ϕ	S.P.T. N Value	Remarks
																Depths from I.S.L.W.
	7.25 Seabed, brown medium and fine sand	7.25-7.75													1-2-3-4-4-5	
		11.25-11.75													2-3-5-6-7-7	
		13.25-13.75													3-5-8-9-10-11	
		15.25-15.75													3-6-8-9-10-12	
		17.25-17.75													4-8-9-10-11-13	
	18.75 Grey silty sand	19.25-19.75													3-2-3-3-2-3	
	20.25 Soft sugary sandstone with layers of clay	20.75-20.81													9-50	
	21.75 Hard sandstone															
	22.75															Drilling ceased

ENG. 520

Sydney Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No.

Location: BOTANY BAY
Bore No.: 341 — Sheet No.:
Date of Boring: 20.5.74

Fld. Test	AE
Lab Test	RH
Checked	BP

Profile	Description	Test or Sample R.L.	Soil-Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet		M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Remould	Triaxial C	φ	S.P.T. N Value	Remarks
																	Depths from I.S.L.W.
	7.25 Seabed, dark grey and brown organic silty sand															-	
	12.75 Brown, medium and fine SAND with traces of peat																
	18.75 Grey silty SAND with layers of peat																
	21.75 Soft grey SANDSTONE																
	22.75 Grey and brown SANDSTONE with soft layers																
	24.75																Drilling Ceased

ENG. 528

time Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No.

Location: BOTANY BAY
Bore No.: 342 — Sheet No.:
Date of Boring: 26.4.74

Fld. Test	AE
Lab Test	RM
Checked	BP

vofile	Description	Test or Sample R.L	Soil Size: Sand	Silt	Clay	Index. Props.: P.L	L.L.	P.I.	Density Kg/M³ Dry/Wet		M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Remould	Triaxial C	ϕ	S.P.T. N Value	Remarks
																	Depths from I.S.L.W.
	6.75 Seabed brown medium and fine SAND with thick seams of peat																
	8.25 Brown medium and fine sand with traces of peat	8.75-9.25														3-5-6-2-3-3	
		10.75-11.25														4-5-8-6-8-9	
		12.75-13.25														3-4-3-6-6-8	
		14.75-15.25														4-4-5-6-7-7	
		16.75-17.25														6-8-6-5-8-7	
	16.25 Grey silty SAND with thin layers of peat and grey sandy clay																
	18.75 SANDSTONE	18.25-18.75														4-3-3-4-3-3	
	19.75																Drilling ceased

ENG. 5

Maritime Services Board of N.S.W. — Engineering Branch

Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No.

Location: BOTANY BAY
Bore No.: 343 — Sheet No.:
Date of Boring: 30.4.74

Fld. Test	AE
Lab Test	RM
Checked	BP

Profile	Description	Test or Sample R.L.	Soil Size: Sand	Silt	Clay	Index Props.: P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Remould	Triaxial C	ϕ	S.P.T. N Value	Remarks
																Depths from I.S.L.W
	7.25 Seabed brown medium and fine SAND with traces of peat															
		9.25-9.75													1-1-3-3-4-4	
		11.25-11.75													3-4-4-5-6-8	
		13.25-13.75													1-4-3-5-6-6	
		15.25-15.75													3-5-8-8-9-10	
	18.25 Grey medium and fine silty SAND	17.25-17.75													4-6-8-9-9-10	
	20.75 Soft SANDSTONE with clay seams	19.25-19.75													2-3-3-4-3-4	
	21.75 Hard SANDSTONE	21.25-21.50													5-25-50	
	22.25															Drilling ceased

ENG. 526

Time Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No.

Location: BOTANY BAY
Bore No.: 344 — Sheet No.:
Date of Boring: 15.4.74

Fld. Test	AE
Lab Test	RH
Checked	BP

rofile	Description	Test or Sample R.L.	Soil Size			Index. Props.			Density Kg/M³		M.C. %	Max Shear Strength KPa				S.P.T.	Remarks
			Sand	Silt	Clay	P.L.	L.L.	P.I.	Dry	Wet		Unconfined Compr. Undist.	Unconfined Compr. Remould	Triaxial C	Triaxial ϕ	N Value	
																	Depths from I.S.L.W.
	7.25 Seabed, dense brown medium and fine SAND																
	16.75 Grey, Silty medium & fine SAND																
	18.75 Grey clayey SAND with traces of peat																
	20.25 Soft grey SANDSTONE																
	23.25 Grey & brown SANDSTONE with seams of soft grey sandstone																
	25.25																Drilling ceased

ENG. 528

me Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No.

Location: BOTANY BAY
Bore No.: 345 — Sheet No.:
Date of Boring: 24.4.74

Fld. Test	AE
Lab Test	RH
Checked	BP

ofile	Description	Test or Sample R.L.	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet		M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Remould	Triaxial C	ϕ	S.P.T. N Value	Remarks
																	Depths from I.S.L.W.
	7.0 Seabed, dark brown medium & fine SAND with traces of peat																
		9.0-9.5														3-4-5-6-6-7	
		11.0-11.5														3-6-8-8-9-12	
		13.0-13.5														6-8-9-9-11-12	
	15.0 Brown medium and fine SAND	15.0-15.5														5-6-7-8-9-11	
		17.0-17.5														6-7-8-10-11-12	
	18.0 Grey silty clayey SAND	18.0-18.5														4-5-5-5-4-4	
	18.5 Soft SANDSTONE within seams of																
	20.0 clay																Drilling ceased

ENG. 52

Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No.

Location: BOTANY BAY
Bore No.: 346
Date of Boring: 13.5.74
Sheet No.:

Fld. Test	AE
Lab Test	RH
Checked	BP

Profile	Description	Test or Sample R.L.	Soil Size: Sand	Soil Size: Silt	Soil Size: Clay	Index. Props.: P.L.	Index. Props.: L.L.	Index. Props.: P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Max Shear Strength KPa: Unconfined Compr. Remould	Triaxial: C	Triaxial: ϕ	S.P.T. N Value	Remarks
																Depths from I.S.L.W.
	7.0 Seabed, dark brown organic medium & fine SAND															
		9.0-9.5													1-4-5-5-6-8	
		11.0-11.5													3-2-3-4-5-5	
	12.5 Brown medium & fine SAND	13.0-13.5													5-6-8-9-9-10	
		15.0-15.5													6-7-8-9-9-9	
		17.0-17.5													5-6-6-8-8-8	
	18.5 Dark Grey med. & fine SAND, traces of Peat															
	19.0 Soft Grey SANDSTONE	19.0-19.25													8-35-36	
	20.0 Grey soft and hard SANDSTONE															
	22.0															Drilling ceased

Coffey & Hollingsworth Pty. Limited

engineering log – borehole

borehole no: 420

sheet 1 of 9

office and job no: Sydney 5515/3

project: Maritime Services Board of N.S.W.
Botany Bay North Development

borehole location: Botany Bay

hole commenced: 4th April, 1975
hole completed: 14th April, 1975
supervised by: GHD
log checked by: RW

drill model and mounting: Pioneer – Barge
hole diameter: 100 mm

slope: 90 deg. bearing:– deg.

R.L. surface –4.25 m
datum: ISLW

method	penetration 1 2 3	support	water	notes samples, tests, etc.	R.L. depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency, rel. density	hand penetrometer (100 200 300 400 kPa)	structure and additional observations
CT		C		D	1.0		SP	SHELL AND SAND, shell to coarse gravel sized fragments. SAND, fine to medium grained, brown. Percentage of shell decreasing with depth.	W	L		
				D	2.0		SP	SAND, fine to medium grained, dark brown, with finely divided carbonaceous material and some shell fragments to fine gravel size.		MD		
				17,35,– N*>50	3.0			Decrease in shell fragments.				
WR					4.0							
				14,37,– N*>50	5.0		Pt	PEAT, black, fibrous.		S		
							SP	SAND, fine to medium grained, brown.		VD		
					6.0			SAND, as above, with bands of soft, black, fibrous peat at approximately 30–50 cm intervals, occasional pieces of carbonaceous material.				
				2,17,44 N*>50	7.0		OL	ORGANIC CLAY, low plasticity, black, with some fibrous material.		S		
							SP	SAND, fine to medium grained, black, with some carbonaceous material.		D		
								SAND, as above, brown.		VD		
					8.0							

Key

method
AS auger screwing*
AD auger drilling*
R roller/tricone
W washbore
CT cable tool
* bit shown by suffix:
B blank bit
V "V" bit
T TC bit
e.g. ADT

support
C casing
M mud

penetration
1 2 3 no resistance ranging to refusal

water
10 Oct, 73 water level on date shown
water inflow
water outflow

notes – samples and tests
U50 – undisturbed sample 50 mm diameter
D – disturbed sample
N – standard penetration test:figure = result
N* – SPT+ sample
Nc – cone penetrometer

classification symbols and soil description
based on unified classification system

moisture
D – dry
M – moist
W – wet

consistency/relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
Vl very loose
L loose
MD moderately dense
D dense
VD very dense

T74—001

Coffey & Hollingsworth Pty. Limited

engineering log – borehole

borehole no. 420

sheet 2 of 9

office and job no Sydney 5515/3

project	Maritime Services Board of N.S.W. Botany Bay North Development	hole commenced	4th April, 1975
borehole location	Botany Bay	hole completed	14th April, 1975
		supervised by	GHD
		log checked by	RW

drill model and mounting	Pioneer – Barge	slope: 90	deg	R.L. surface	–4.25
hole diameter	100 mm	bearing:–	deg.	datum	ISLW

method	penetration 1 2 3	support	water	notes samples tests, etc	R.L. depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency rel. density	hand penetrometer (kPa)	structure and additional observations
WR		C	WT	24,40,– N>50	9.0		SP	SAND, as above, with some layers of peat.	W	VD		
								SAND, predominantly fine grained, brown.				
				27,45,– N>50	10.0			SAND, fine to medium grained, pale brown.				
				19,44,– N>50	11.0							
					12.0							
					13.0							
					14.0							
				23,45,– N>50	15.0							
					16.0							

key

method
AS auger screwing*
AD auger drilling*
R roller/tricone
W washbore
CT cable tool
* bit shown by suffix:
B blank bit
V "V" bit
T TC bit
e.g. ADT

support
C casing
M mud

penetration
1 2 3 – no resistance ranging to refusal

water
10 Oct, 73 water level on date shown
water inflow
water outflow

notes – samples and tests
U50 – undisturbed sample 50 mm diameter
D disturbed sample
N standard penetration test:figure = result
N* SPT + sample
Nc cone penetrometer

classification symbols and soil description
based on unified classification system

moisture
D dry
M moist
W – wet

consistency
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD [illegible]
D dense
VD very dense

T74 – 001

Coffey & Hollingsworth Pty. Limited

engineering log – borehole

borehole no. 420

sheet 3 of 9

office and job no: Sydney 5515/3

project: Maritime Services Board of N.S.W. Botany Bay North Development

borehole location: Botany Bay

hole commenced: 4th April, 1975
hole completed: 14th April, 1975
supervised by: GHD
log checked by: RW

drill model and mounting: Pioneer – Barge
hole diameter: 100 mm
slope: 90 deg.
bearing: – deg.
R.L. surface: –4.25 m
datum: ISLW

method	penetration 1 2 3	support	water	notes samples, tests, etc.	R.L. depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency, rel. density	hand penetrometer 100 200 300 400	structure and additional observations
WT		C		35,–,– N>50	17.0		SP	SAND, as above.	W	VD		
					18.0							
				35,–,– N>50	19.0							
					20.0							
				40,–,– N>50	21.0							
					22.0							
				31,–,– N>50	23.0							
					24.0							

key

method
AS auger screwing*
AD auger drilling*
R roller/tricone
W washbore
CT cable tool
* bit shown by suffix:
B blank bit
V – "V" bit
T – TC bit
e.g. ADT

support
C casing
M mud

penetration
1 2 3 no resistance ranging to refusal

water
10 Oct, 73 water level on date shown
water inflow
water outflow

notes
U50 – undisturbed sample 50 mm diameter
D – disturbed sample
N – standard penetration test:figure = result
N* – SPT + sample
Nc – cone penetrometer

classification symbols and soil description
based on unified classification system

moisture
D – dry
M – moist
W – wet

consistency (relative density)
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD – moderately dense
D – dense
VD very dense

174–001

Coffey & Hollingsworth Pty. Limited

borehole no. 420

sheet 4 of 9

engineering log – borehole

office and job no. Sydney 5515/3

project: Maritime Services Board of N.S.W.
Botany Bay North Development

borehole location: Botany Bay

hole commenced: 4th April, 1975
hole completed: 14th April, 1975
supervised by: GHD
log checked by RW

drill model and mounting: Pioneer – Barge
hole diameter: 100 mm

slope: 90 deg.
bearing:– deg.

R.L. surface: –4.25 m
datum: ISLW

method	penetration 1 2 3	support	water	notes samples, tests, etc.	R.L. depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency, rel. density	hand penetrometer kPa 100 200 300 400	structure and additional observations
WT		C		31, N>50	25.0		SP	SAND, as above.	W	VD		
WT		C		36, N>50	27.0							
WT		C		33, N>50	29.0							
CT				U75			Pt	PEAT, black.	M	H		>500 Lignite
WT				U75	30.0		CH	CLAY, high plasticity, dark grey.	M> PL	VSt	×	
CT				U75			Pt	PEAT, black, fibrous.	M	H		>500 Lignite
CT		M		U75								>500
CT		M		U75	31.0		CH	CLAY, high plasticity, dark grey to black.	M> PL	VSt– H	×	
CT		M		U75				CLAY, as above, with numerous sand lenses.				>500
CT		M		U75	32.0						×	

key

method
AS auger screwing*
AD auger drilling*
R roller/tricone
W washbore
CT cable tool
* bit shown by suffix:
B blank bit
V – "V" bit
T – TC bit
e.g. ADT

support
C casing
M mud

penetration
1 2 3 – no resistance ranging to refusal

water
10 Oct, 73 water level on date shown
water inflow
water outflow

notes – samples and tests
U50 – undisturbed sample 50 mm diameter
D – disturbed sample
N – standard penetration test figure = result
N* – SPT + sample
Nc – cone penetrometer

classification symbols and soil description
based on unified classification system

moisture
D – dry
M – moist
W – wet

consistency / relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD moderately dense
D dense
VD very dense

174–001

Coffey & Hollingsworth Pty. Limited

borehole no. 420

sheet 5 of 9

engineering log – borehole

office and job no: Sydney 5515/3

project: Maritime Services Board of N.S.W.
Botany Bay North Development

borehole location: Botany Bay

hole commenced: 4th April, 1975
hole completed: 14th April, 1975
supervised by: GHD
log checked by: RW

drill model and mounting: Pioneer – Barge
hole diameter: 100 mm

slope: 90 deg. bearing: – deg.

R.L. surface –4.25 m
datum: ISLW

method	penetration 1 2 3	support	water	notes samples, tests, etc.	R.L. depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency, rel. density	hand penetrometer kPa 100 200 300 400	structure and additional observations
CT		C		U75			CH	AS ABOVE	M>PL	VSt		
				U75			OH	ORGANIC CLAY high plasticity, dark brown.				
				U75								
				U75	33.0		CH	CLAY, high plasticity, dark grey-brown.				
				U75								
				U75				CLAY, as above, with light brown mottling.		H		>500
				U75	34.0							>500
				U75								>500
				U75				CLAY, as above, dark grey to black.		H–Fb		>500
				U75	35.0			CLAY, as above, dark grey-brown, with a trace of shell fragments.		H		>500
				U75				SHELLY CLAY, high plasticity, dark grey, shell fragments to 80 mm.				
				U75	36.0			SANDY CLAY, high plasticity, dark grey, sand consists of fine shell fragments.				>500
		M		U75				CLAY, high plasticity, dark grey, with occasional shell fragments.				
				U75	37.0							
				U75				Shell fragments less frequent.				
				U75								
				U75	38.0							
				U75				CLAY, as above, dark grey.				
				U75								>500
				U75	39.0			CLAY, as above, with black mottling.				>500
				U75								
WT				U75	40.0			CLAY, as above, dark grey-brown.		VSt–H		>500

key

method
AS auger screwing*
AD auger drilling*
R roller/tricone
W washbore
CT cable tool

* bit shown by suffix:
B blank bit
V – "V" bit
T – TC bit
e.g. ADT

support
C casing
M mud

penetration
1 2 3 no resistance ranging to refusal

water
10 Oct, 73 water level on date shown
water inflow
water outflow

notes – samples and tests
U50 – undisturbed sample 50 mm diameter
D – disturbed sample
N – standard penetration test:figure = result
N* – SPT + sample
Nc – cone penetrometer

classification symbols and soil description
based on unified classification system

moisture
D – dry
M – moist
W – wet

consistency, rel. density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD moderately dense
D dense
VD very dense

Coffey & Hollingsworth Pty. Limited

borehole no 420

sheet 6 of 9

engineering log – borehole

office and job no: Sydney 5515/3

project: Maritime Services Board of N.S.W.
Botany Bay North Development

borehole location: Botany Bay

hole commenced: 4th April, 1975
hole completed 14th April, 1975
supervised by: GHD
log checked by: RW

drill model and mounting: Pioneer –Barge
hole diameter: 100 mm

slope: 90 deg. bearing: — deg.

R L surface –4.25 m
datum: ISLW

method	penetration 1 2 3	support	water	notes samples, tests, etc.	R.L. depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency, rel. density	hand penetrometer 100 200 300 400 kPa	structure and additional observations
WT		M		U75			CH	CLAY, as above.	M> PL	H		>500
				U75								>500
					41.0							
							SP	SAND, fine to medium grained, black, with some hard, fibrous, carbonaceous material.	W	VD		
				22,29,28 N*=67	42.0							
							CH	SANDY CLAY, high plasticity, black, sand predominantly fine grained, some fibrous carbonaceous matter.	M> PL	VSt	x	
				U50	43.0							
							SP–SC	SAND, fine to medium grained, black, with layers of clayey sand.	W	VD		
							SP	SAND, fine to medium grained, black, with some fine carbonaceous matter and small bands of lignite.				
				16,25,– N>50	44.0			SAND, as above, grey				
					45.0		CH	SANDY CLAY, high plasticity, dark grey to black, sand fine to medium grained, becoming more sandy with depth.	M> PL	St		
					46.0		CL–SC	SANDY CLAY–CLAYEY SAND, sand fine to medium grained, clay of medium plasticity, grey, some fine gravel sized shell fragments.		St–D		
					47.0							
					48.0							

key

method
AS auger screwing*
AD auger drilling*
R roller/tricone
W washbore
CT cable tool

* bit shown by suffix:
B blank bit
V "V" bit
T TC bit
e.g. ADT

support
C casing
M mud

penetration
1 2 3
no resistance
ranging to
refusal

water
10 Oct, 73 water level on date shown
water inflow
water outflow

notes – samples and tests
U50 – undisturbed sample 50 mm diameter
D – disturbed sample
N – standard penetration test:figure = result
N* – SPT + sample
Nc – cone penetrometer

classification symbols and soil description
based on unified classification system

moisture
D – dry
M – moist
W – wet

consistency relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD moderately dense
D dense
VD very dense

Coffey & Hollingsworth Pty. Limited

borehole no. 420

sheet 7 of 9

engineering log – borehole

office and job no: Sydney 5515/3

project: Maritime Services Board of N.S.W.
Botany Bay North Development

borehole location: Botany Bay

hole commenced: 4th April, 1975
hole completed: 14th April, 1975
supervised by: GHD
log checked by: RW

drill model and mounting: Pioneer – Barge
hole diameter: 100 mm
slope: 90 deg. bearing:– deg.
R.L. surface: –4.25 m
datum: ISLW

method	penetration 1 2 3	support	water	notes samples, tests, etc.	R.L. depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency, rel density	hand penetrometer kPa	structure and additional observations
WT		M					CL–SC	SANDY CLAY–CLAYEY SAND, as above.	M> PL	St–D		
				13,23,– N*>50	49.0		SP	SAND, predominantly fine grained, grey, with some silty clay fines and some fine sand sized shell fragments.	W	VD		
					50.0			SAND, as above, with 5–10 cm layers of clayey sand and sandy clay, at intervals varying between .3 m and .7 m.				
					51.0							
					52.0							
					53.0			SHELLEY SAND, fine to medium grained, grey, shell fragments range up to fine gravel size.				
					54.0		SP–SC	SHELLY SAND, as above, with layers of dark grey, CLAYEY SAND, clay of medium sand, fine.				
					55.0							
				U50			CH	CLAY, high plasticity, black.	M> PL	VSt		
					56.0		SP	SAND, fine to medium grained, yellow-brown.	W	VD		

key

method
AS auger screwing*
AD auger drilling*
R roller/tricone
W washbore
CT cable tool
* bit shown by suffix:
B – blank bit
V – "V" bit
T – TC bit
e.g. ADT

support
C casing
M mud

penetration
1 2 3 no resistance ranging to refusal

water
10 Oct, 73 water level on date shown
water inflow
water outflow

notes – samples and tests
U50 – undisturbed sample 50 mm diameter
D – disturbed sample
N – standard penetration test: figure = result
N* – SPT + sample
Nc – cone penetrometer

classification symbols and soil description
based on unified classification system

moisture
D – dry
M – moist
W – wet

consistency/relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fr friable
VL very loose
L loose
MD – moderately dense
D dense
VD very dense

T74 – 001

Coffey & Hollingsworth Pty. Limited

engineering log – borehole

borehole no. 420

sheet 8 of 9

office and job no: Sydney 5515/3

project: Maritime Services Board of N.S.W. Botany Bay North Development

borehole location: Botany Bay

hole commenced: 4th April, 1975
hole completed: 14th April, 1975
supervised by: GHD
log checked by: RW

drill model and mounting: Pioneer – Barge
hole diameter: 100 mm

slope: 90 deg.
bearing:– deg.

R.L. surface: –4.25 m
datum: ISLW

method	penetration 1 2 3	support	water	notes samples, tests, etc.	R.L. depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency, rel. density	hand penetrometer kPa 100 200 300 400	structure and additional observations
WT		M			56.70		SP	SAND, fine to medium grained, grey.	W	VD		Extremely weathered sandstone.
								See Engineering Log – Cored Borehole Sheet 9				

key

method
AS auger screwing*
AD auger drilling*
R roller/tricone
W washbore
CT cable tool
* bit shown by suffix:
B blank bit
V "V" bit
T TC bit
e.g. ADT

support
C casing
M mud

penetration
1 2 3
no resistance
ranging to
refusal

water
10 Oct, 73 water level on date shown
water inflow
water outflow

notes
– samples and tests
U50 – undisturbed sample 50 mm diameter
D – disturbed sample
N – standard penetration test:figure = result
N* – SPT + sample
Nc – cone penetrometer

classification symbols and soil description
based on unified classification system

moisture
D – dry
M – moist
W – wet

consistency relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fr friable
VL very loose
L loose
MD moderately dense
D dense
VD very dense

Coffey & Hollingsworth Pty. Limited

borehole no 420

sheet 9 of 9

engineering log — cored borehole

office and job no: Sydney 5515/3

project: Maritime Services Board of N.S.W. Botany Bay North Development

borehole location: Botany Bay

hole commenced: 4th April, 1975
hole completed: 14th April, 1975
supervised by: GHD
log checked by: RW

drill model and mounting: Pioneer — Barge slope: 90 deg.
barrel type and length: TT NMLC 3.05 fluid Mud bearing: — deg.

R. L. surface: −4.25 m
datum: ISLW

drilling information				rock substance				rock mass defects	
method	case-lift	water	R.L. depth metres	graphic log core loss	substance description rock type: grain characteristics, colour, structure, minor components.	weathering	strength Is (50) EL VL L M H VH EH	defect spacing mm 30 100 300 1000 3000 >3000	defect description thickness, type, inclination, planarity, roughness, coating. particular / general
					See Pages 1–8, Engineering Log Borehole				
NMLC			57.0		SANDSTONE, medium grained, pale grey, poorly developed bedding.				joints, 20°, planar, clean to rough clay seams to 25 mm joints, 10°, planar rough, clean Broken, coated with carbonaceous material Partings from 0°–30°, generally planar and clean, some clay seams
			58.0						
			59.0						
			59.10		NO CORE				
					END OF BOREHOLE 420 @ 59.10 m				
			60.0						

key

method

AS	auger screwing
AD	auger drilling
R	roller/tricone
W	washbore
NMLC	NMLC core drilling

case-lift
- casing used
- barrel withdrawn

water
- 10 Oct, 73 water level date shown
- water inflow
- partial drilling water loss
- complete drilling water loss

graphic log/core loss
- core recovered (hatching indicates material)
- no core recovered

weathering

Fr	—	fresh
SW	—	slightly weathered
MW	—	moderately weathered
HW	—	highly weathered
EW	—	extremely weathered

strength (indirect tensile strength)

EL	—	extremely low
VL	—	very low
L	—	low
M	—	medium
H	—	high
VH	—	very high
EH	—	extremely high

Coffey & Hollingsworth Pty. Limited

borehole no 422

sheet 1 of 6

engineering log – borehole

office and job no: Sydney 5515/4

project: Maritime Services Board of N.S.W. Botany Bay North Development

borehole location: Botany Bay

hole commenced: 23rd May, 1975
hole completed: 31st May, 1975
supervised by: GHD
log checked by: RW

drill model and mounting: Pioneer – Barge
hole diameter: 100 mm
slope: 90 deg. bearing:– deg.
R.L. surface –4.65
datum: I.S.L.W.

method	penetration 1 2 3	support	water	notes samples, tests, etc.	R.L. depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency, rel. density	hand penetrometer kPa 100 200 300	structure and additional observations
CT		C					GP	SHELL AND SHELL FRAGMENTS, to coarse gravel size, with some fine to medium grained sand.	W	VL		
					1.0		SP–GP	SAND AND SHELL FRAGMENTS, sand fine to medium grained, brown, shell fragments to fine gravel size.		L		
					2.0		SP	SAND, fine to medium grained, dark brown with high percentage of finely divided carbonaceous matter.		MD–D		
				SPT N* = 28 4,13,15	3.0		Pt–SP	PEAT, black with interlayers of sand.	M	H		Lignite
WR							SP	SAND, fine to medium grained, brown.	W	D		
					4.0			SAND, as above with 50 mm layers of lignite.				
				N* = 18 3,8,10	5.0							
					6.0			SAND, as above with a trace of carbonaceous material.				
WT				N*>50 14,49,–	7.0			SAND, as above, fine to medium grained, pale brown.		VD		
					8.0							

key

method
- AS auger screwing*
- AD auger drilling*
- R roller/tricone
- W washbore
- CT cable tool

* bit shown by suffix:
- B – blank bit
- V – "V" bit
- T – TC bit

e.g. ADT

support
- C casing
- M mud

penetration
1 2 3 no resistance ranging to refusal

water
10 Oct, 73 water level on date shown
water inflow
water outflow

notes – samples and tests
- U50 – undisturbed sample 50 mm diameter
- D – disturbed sample
- N – standard penetration test:figure = result
- N* – SPT + sample
- Nc – cone penetrometer

classification symbols and soil description
based on unified classification system

moisture
- D – dry
- M – moist
- W – wet

consistency, relative density
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fr friable
- VL very loose
- L loose
- MD moderately dense
- D dense
- VD very dense

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Coffey & Hollingsworth Pty. Limited

borehole no. 422

sheet 2 of 6

engineering log – borehole

office and job no. Sydney 5515/4

project: Maritime Services Board of N.S.W.
Botany Bay North Development

borehole location: Botany Bay

hole commenced: 23rd May, 1975
hole completed: 31st May, 1975
supervised by GHD
log checked by: MAA

drill model and mounting: Pioneer – Barge
hole diameter: 100 mm

slope: 90 deg.
bearing: – deg.

R.L. surface: –4.65 m
datum: I.S.L.W.

method	penetration 1 2 3	support	water	notes samples, tests, etc.	R.L. depth metres	graphic log	classification symbol	material soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency, rel. density	hand penetrometer kPa 100 200 300 400	structure and additional observations
WT		C		N*>50 17,25,–	9.0		SP	SAND, as before.	W	VD		
M				N*>50 21,25,–	10.0							
					11.0							
				N*>50 21,25,–	12.0							
					13.0							
					14.0							
				N*>50 22,30,–	15.0							
					16.0							

key

method

AS	auger screwing*
AD	auger drilling*
R	roller/tricone
W	washbore
CT	cable tool

* bit shown by suffix:
B – blank bit
V – "V" bit
T – TC bit
e.g. ADT

support
C casing
M mud

penetration
1 2 3
no resistance
ranging to
refusal

water
10 Oct, 73 water level on date shown
water inflow
water outflow

notes – samples and tests
U50 – undisturbed sample 50 mm diameter
D – disturbed sample
N – standard penetration test:figure = result
N* – SPT + sample
Nc – cone penetrometer

classification symbols and soil description
based on unified classification system

moisture
D – dry
M – moist
W – wet

consistency/relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	moderately dense
D	dense
VD	very dense

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Coffey & Hollingsworth Pty. Limited

borehole no 422

sheet 3 of 6

engineering log – borehole

office and job no: Sydney 5515/4

project: Maritime Services Board of N.S.W.
Botany Bay North Development

borehole location: Botany Bay

hole commenced: 23rd May, 1975
hole completed: 31st May, 1975
supervised by: GHD
log checked by: MAA

drill model and mounting: Pioneer – Barge
hole diameter: 100 mm

slope: 90 deg.
bearing: — deg.

R.L. surface: –4.65 m
datum: I.S.L.W.

method	penetration 1 2 3	support	water	notes samples, tests, etc.	R.L. depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency, rel. density	hand penetrometer kPa 100 200 300 400	structure and additional observations
WT		M		N*>50 26,–,–	17.0		SP	SAND, as before.	W	VD		
				N*>50 26,–,–	18.0							
					19.0							
				N*>50 33,–,–	20.0							
					21.0							
				N*>50 26,–,–	22.0							
					23.0							
					24.0							

key

method
AS auger screwing*
AD auger drilling*
R roller/tricone
W washbore
CT cable tool
* bit shown by suffix:
B – blank bit
V – "V" bit
T – TC bit
e.g. ADT

support
C casing
M mud

penetration
1 2 3
no resistance
ranging to
refusal

water
10 Oct, 73 water level on date shown
water inflow
water outflow

notes – samples and tests
U50 – undisturbed sample 50 mm diameter
D – disturbed sample
N – standard penetration test:figure = result
N* – SPT + sample
Nc – cone penetrometer

classification symbols and soil description
based on unified classification system

moisture
D – dry
M – moist
W – wet

consistency/relative density
VS – very soft
S – soft
F – firm
St – stiff
VSt – very stiff
H – hard
Fb – friable
VL – very loose
L – loose
MD – moderately dense
D – dense
VD – very dense

Coffey & Hollingsworth Pty. Limited

engineering log – borehole

Borehole no. 422

sheet 4 of 6

office and job no. Sydney 5515/4

project: Maritime Services Board of N.S.W.
Botany Bay North Development

borehole location: Botany Bay

hole commenced 28th May, 1975
hole completed 31st May, 1975
supervised by GHD
log checked by MAA

drill model and mounting: Pioneer — Barge
hole diameter: 100 mm
slope: 90 deg. bearing:— deg.
R.L. surface –4.65
datum I.S.L.W.

method	penetration 1 2 3	support	water	notes samples, tests, etc.	R.L. depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency, rel. density	hand penetrometer kPa	structure and additional observations
							SP	SAND, as before.	W	VD		
				N*>50 25.—	25.0			SAND, as above, pale grey.				
					26.0							
				N*>50 26.—	27.0			SAND, as above, grey, trace of fines.				
							SP–Pt	SAND, as above with bands of lignite.				
					28.0		Pt	PEAT, black.	M	H		Lignite
							OH	ORGANIC CLAY, high plasticity, dark brown, some carbonaceous material.		VSt		
				U75	29.0		OH–Pt	ORGANIC CLAY TO PEAT, black, fibrous with layers of black lignite.		H		>500
					30.0		SP	SAND, fine to medium grained, brown with some carbonaceous matter.	W	VD		
							OH–Pt	ORGANIC CLAY TO PEAT, black, fibrous, with layers of lignite, dark brown and black.	M	H		
				U75	31.0		SP	SAND, fine to medium grained, grey, with a trace of fines.	W	VD		
					32.0							

WT

M

key

method
AS auger screwing
AD auger drilling
R roller/tricone
W washbore
CT cable tool
bit shown by suffix
B blank bit
V "V" bit
T TC bit
e.g. ADT

support
C casing
M mud

penetration
1 2 3
no resistance
ranging to
refusal

water
10 Oct, 73 water level on date shown
water inflow
water outflow

notes – samples and tests
U50 undisturbed sample 50 mm diameter
D – disturbed sample
N – standard penetration test: figure = result
N* – SPT + sample
Nc – cone penetrometer

classification symbols and soil description
based on unified classification system

moisture
D – dry
M – moist
W – wet

consistency, relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

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Coffey & Hollingsworth Pty. Limited

engineering log – borehole

borehole no. 422

sheet 5 of 6

office and job no: Sydney 5515/4

project: Maritime Services Board of N.S.W. Botany Bay North Development

borehole location: Botany Bay

hole commenced: 23rd May, 1975

hole completed: 31st May, 1975

supervised by: GHD

log checked by: MAA

drill model and mounting: Pioneer – Barge

hole diameter: 100 mm

slope: 90 deg. bearing:– deg.

R.L. surface –4.65 m

datum: I.S.L.W.

method	penetration 1 2 3	support	water	notes samples, tests, etc.	R.L. depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency, rel. density	hand penetrometer kPa 100 200 300 400	structure and additional observations
					33.0		CH	CLAY, high plasticity, brown to dark brown.	M> PL	VSt– H		
				U75								>500
					34.0							
					35.0		CH	SHELLY SANDY CLAY, medium to high plasticity, dark grey, sand is fine grained, fine sand sized shell fragments, some shell fragments to medium gravel size.	M> PL	H		
				U75								>500
					36.0			SANDY CLAY, as above, shell content decreasing with depth.				
					37.0			CLAY, high plasticity, grey to dark grey.			X	
				U75								
					38.0							
					39.0			CLAY, as above, dark grey, with occasional lenses of calcareous matter.			X	
				U75								
					40.0							

WT

M

key

method

AS auger screwing*
AD auger drilling*
R roller/tricone
W washbore
CT cable tool

* bit shown by suffix:
B – blank bit
V – "V" bit
T – TC bit
e.g. ADT

support

C casing
M mud

penetration

1 2 3 – no resistance ranging to refusal

water

10 Oct, 73 water level on date shown
water inflow
water outflow

notes – samples and tests

U50 – undisturbed sample 50 mm diameter
D – disturbed sample
N – standard penetration test:figure = result
N* – SPT + sample
Nc – cone penetrometer

classification symbols and soil description

based on unified classification system

moisture

D – dry
M – moist
W – wet

consistency/relative density

VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD moderately dense
D dense
VD very dense

Coffey & Hollingsworth Pty. Limited

engineering log – borehole

borehole no 422

sheet 6 of 6

office and job no: Sydney 5515/4

project: Maritime Services Board of N.S.W.
Botany Bay North Development
borehole location: Botany Bay

hole commenced: 23rd May, 1975
hole completed: 31st May, 1975
supervised by: GHD
log checked by: RW

drill model and mounting: Pioneer – Barge
hole diameter: 100 mm

slope: 90 deg.
bearing: – deg.

R.L. surface: –4.65 m
datum: I.S.L.W.

method	penetration 1 2 3	support	water	notes samples, tests, etc.	R.L. depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency, rel. density	hand penetrometer kPa 100 200 300 400	structure and additional observations
							CH	CLAY, as before.	M> PL	H		
				N*>50 25,–,–	41.0		SP	SAND, fine to medium grained, dark grey, with some silty fines.	W	VD		
					42.0			SAND, as above, with layers of clayey sand and sandy clay.				
WT		M					CH	CLAY, high plasticity, grey to dark grey, with some fine grained sand.	M> PL	VSt		
				U75	43.0			SANDY CLAY, high plasticity, dark grey to black, sand is fine grained and increasing content with depth.		H		
					44.0		SM–SC	SILTY CLAYEY SAND, fine to medium grained, grey, silty clay, fines of low plasticity, some shell fragments.	W	D–VD		
				N* = 32 6,9,23	45.0							
								END OF BOREHOLE 422 @ 45.45 m				

key

method
AS auger screwing*
AD auger drilling*
R roller/tricone
W washbore
CT cable tool

* bit shown by suffix:
B – blank bit
V – "V" bit
T – TC bit
e.g ADT

support
C casing
M mud

penetration
1 2 3
no resistance
ranging to
refusal

water
10 Oct, 73 water level on date shown
water inflow
water outflow

notes – samples and tests
U50 – undisturbed sample 50 mm diameter
D – disturbed sample
N – standard penetration test:figure = result
N* – SPT + sample
Nc – cone penetrometer

classification symbols and soil description
based on unified classification system

moisture
D – dry
M – moist
W – wet

consistency (relative density)
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD moderately dense
D dense
VD very dense

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THE MARITIME SERVICES BOARD OF N.S.W. — Engineering Branch Design Office

BOTANY BAY NTH FORESHORE DEVELOPMENT — P — A

The Maritime Services Board of N.S.W. — Engineering Branch.

Preservation & Research Sub-Branch.

SCALE

BORE RECORD.

Laboratory Test Series No

Location: BOTANY BAY

Bore No. 424

Date of Boring: 17.2.75 to 2.3.75

Sheet No 1

Fld Test

Lab Test

Checked. B.

Depth in Metres	Profile	Description.	Test or Sample Depth.	Soil Size: Sand	Silt	Clay	Index Props: P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet	M.C %	Max Shear Strength. KPa. Unconfined Compr. Undist	Remould	Triaxial C.	Ø	S P T Blows for 75 MM. of Penetration.	Remarks
0																	Depths from datum
5																	
		6.15 Seabed grey silty sand with some shell															
		7.65 Peat	7.65													4 6 6 6 10 12	
		7.90 Peaty sand															
		8.15 Fine brown sand	9.65													6 10 12 19 20 25	
10																	
			11.65													7 10 16 20 23 25	
			13.65													7 10 15 22 36	
15			15.65													6 10 16 22 27	
			17.65													6 10 16 21 26	
			19.65													6 12 19 28	
20																	
			21.65													5 10 14 20 22 34	
			23.65													7 18 20 43	
25			25.65													10 24 30	
			27.65													5 18 25 43	
			29.65													7 14 23 36	
30																	
		31.15 Grey sand	31.65													6 21 35	
			33.65													9 26 39	

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The Maritime Services Board of N.S.W. Engineering Branch.
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BORE RECORD.

Laboratory Test Series No

Location: BOTANY BAY.
Bore No: 424 Sheet No 2
Date of Boring 17-2-75 to 2-3-75

Fld Test | Lob Test | Checked: B

SCALE

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index Props: P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength. KPa. Unconfined Compr.: Undist.	Remould.	Triaxial: C.	φ	S.P.T Blows for 75MM. of Penetration.	Remarks
35			35·65													8-14-23-50	
		36·15 Peat.															
		36·65 Grey clay.															
40																	
		44·15 Grey silty sand.															
45			45·50													7-11-16 20-31	
		47·90 Grey clayey sand	47·15													9-10-12-14-18-18	
			49·15													6-10-11-12-15-16	
50		50·65 Light grey sand with some shell	51·15													5-6-10-11-14-19	
			53·15													11-15-23-29	
55			55·15													10-12-15-19-31	
		57·15 Grey clayey sand.															
60			61·15													4-6-6-9-16-18	
		62·15 Grey clay with shell															
65																	
		68·65 Grey clayey sand															
		69·65 Soft weathered grey sandstone															

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BOTANY BAY NTH FORESHORE DEVELOPMENT P

A

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BORE RECORD.

Laboratory Test Series No

Location: BOTANY BAY.
Bore No. 424 Sheet No: 3
Date of Boring: 17-2-75 to 2-3-75

SCALE

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index Props: P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet	M.C %	Max Shear Strength. Unconfined Compr. Undist.	Remould.	KPa Triaxial. C.	ϕ	S.P.T Blows for 75 MM. of Penetration.	
70		69.90 Soft & hard weathered grey sandstone															
		72.15															Drilling c
75																	

THE MARITIME SERVICES BOARD OF N.S.W. Engineering Branch Design Office

BOTANY BAY Nth FORESHORE DEVELOPMENT P

A

Senior Design Engr.

Princ. Asst. Engr. P. & D.

Engineer-in-Chief

Coffey & Hollingsworth Pty. Limited

borehole no: 485

sheet 1 of 3

engineering log – borehole

office and job no: Sydney 5515

project:	Maritime Services Board of N.S.W. Botany Bay North Development	hole commenced:	21st August, 1975
borehole location:	Botany Bay	hole completed:	25th August, 1975
		supervised by:	RW
		log checked by:	MAA
drill model and mounting:	Pioneer – Barge	slope: 90 deg.	R.L. surface: –7.00 m
hole diameter:	100 mm	bearing: – deg.	datum: ISLW

method	penetration 1 2 3	support	water	notes samples, tests, etc.	R.L. depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency, rel. density	hand penetrometer kPa 100 200 300 400	structure and additional observations
CT		C			0.0		CL – Pt	SANDY CLAY & PEAT BANDS Sandy Clay of low plasticity, grey, sand is fine grained. Peat is slightly fibrous, some sand, black, Some shells to 20 mm.	W	F		
					1.0		SP	SHELLY SAND. Fine to medium grained grey, shells to 10mm, some silt.		L		
R					2.0							
				6, 8, 10 N* = 18	3.0			SAND. Predominantly fine grained, pale grey brown, occasional thin clayey sand bands.		VD		
					4.0							
								SAND. Fine to medium grained, pale grey brown.				
				15, 30, > 30 N* > 50	5.0							
					6.0							
WT								SAND. As above, fine grained.				
		M			7.0							
				17, > 30, - N > 50	8.0							

key

method

AS	auger screwing*
AD	auger drilling*
R	roller/tricone
W	washbore
CT	cable tool

* bit shown by suffix: B – blank bit; V – "V" bit; T – TC bit; e.g. ADT

support: C casing; M mud

penetration: 1 2 3 — no resistance ranging to refusal

water: 10 Oct, 73 water level on date shown; water inflow; water outflow

notes – samples and tests

U50	undisturbed sample 50 mm diameter
D	disturbed sample
N	standard penetration test: figure = result
N*	SPT + sample
Nc	cone penetrometer

classification symbols and soil description: based on unified classification system

moisture: D – dry; M – moist; W – wet

consistency/relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	moderately dense
D	dense
VD	very dense

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Coffey & Hollingsworth Pty. Limited

borehole no: 435

sheet 2 of 3

engineering log – borehole

office and job no: Sydney 5515

project: Maritime Services Board of N.S.W.
Botany Bay North Development

borehole location: Botany Bay

hole commenced: 21st August, 1975
hole completed: 25th August, 1975
supervised by: RW
log checked by: MAA

drill model and mounting: Pioneer–Barge
hole diameter: 100 mm

slope: 90 deg.
bearing: – deg.

R.L. surface: –7.00 m
datum: ISLW

method	penetration 1 2 3	support	water	notes samples, tests, etc.	R.L. depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency, rel. density	hand penetrometer kPa 100 200 300 400	structure and additional observations
W	1 2 3	M	W	16, >30, N >50	9.0		SP	SAND. As before	W	VD		
				>30–, – N* >50	10.0							
					11.0							
					12.0							
				25, >30, N >50	13.0							
					14.0							
				28, >30, N* >50	15.0							
					16.0							

key

method
- AS auger screwing*
- AD auger drilling*
- R roller/tricone
- W washbore
- CT cable tool

* bit shown by suffix:
- B – blank bit
- V – "V" bit
- T – TC bit

e.g. ADT

support
- C casing
- M mud

penetration
1 2 3 – no resistance ranging to refusal

water
- 10 Oct, 73 water level on date shown
- water inflow
- water outflow

notes
- U50 – undisturbed sample 50 mm diameter
- D – disturbed sample
- N – standard penetration test:figure = result
- N* – SPT + sample
- Nc – cone penetrometer

classification symbols and soil description
based on unified classification system

moisture
- D – dry
- M – moist
- W – wet

consistency/relative density
- VS – very soft
- S – soft
- F – firm
- St – stiff
- VSt – very stiff
- H – hard
- Fb – friable
- VL – very loose
- L – loose
- MD – moderately dense
- D – dense
- VD – very dense

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Coffey & Hollingsworth Pty. Limited

borehole no 425

sheet 3 of 3

engineering log – borehole

office and job no: Sydney 5515

project: Maritime Services Board of N.S.W. Botany Bay North Development

borehole location: Botany Bay

hole commenced: 21st August, 1975
hole completed: 25th August, 1975
supervised by: RW
log checked by: MAA

drill model and mounting: Pioneer – Barge
hole diameter: 100 mm
slope: 90 deg. bearing: – deg.
R.L. surface: –7.00 m datum: ISLW

method	penetration 1 2 3	support	water	notes samples, tests, etc.	R.L. depth metres	graphic log	classification symbol	material: soil type, plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency, rel. density	hand penetrometer 100 200 300 400 kPa	structure and additional observations
WT		C					SP	SAND. As before	W	VD		
				21, >30, N* >50	17.0							
					18.0							
					19.0							
					20.0							
					21.0		Pt	PEAT, black	M	H		
				U75			CH	CLAY, High Plasticity, grey	M > PL			>500 KPa
					22.0		Pt	PEAT, Black	M			Lignite
							Pt – CH	PEAT & CLAY BANDED. Peat & Clay as above				
							CH	CLAY. High plasticity, grey	M> PL			
				U75	23.0		SP – Pt	PEATY SAND. fine grained black	W	D		
							SP	SAND. Fine, grey, some clay.				
								Hole terminated at 23.35m.				

key

method
AS auger screwing*
AD auger drilling*
R roller/tricone
W washbore
CT cable tool
* bit shown by suffix:
B – blank bit
V – "V" bit
T – TC bit
e.g. ADT

support
C casing
M mud

penetration
1 2 3
no resistance
ranging to
refusal

water
10 Oct, 73 water level on date shown
water inflow
water outflow

notes – samples and tests
U50 – undisturbed sample 50 mm diameter
D – disturbed sample
N – standard penetration test: figure = result
N* – SPT + sample
Nc – cone penetrometer

classification symbols and soil description
based on unified classification system

moisture
D – dry
M – moist
W – wet

consistency/relative density
VS – very soft
S – soft
F – firm
St – stiff
VSt – very stiff
H – hard
Fb – friable
VL – very loose
L – loose
MD – moderately dense
D – dense
VD – very dense

T74 – 001

Coffey & Hollingsworth Pty. Limited

borehole no. 605

sheet 1 of 7

engineering log – borehole

office and job no: Sydney 5515

	Maritime Services Board of N.S.W.	hole commenced:	10th Feb, 1975
project:	Botany Bay North Development	hole completed:	24th Feb, 1975
borehole location:	Botany Bay	supervised by:	RCHD
		log checked by:	MAA
drill model and mounting:	Dunstan – Barge	slope: 90 deg.	R.L. surface: –4.7 m
hole diameter:	75 mm	bearing: – deg.	datum: ISLW

method	penetration 1 2 3	support	water	notes samples, tests, etc.	R.L. depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency, rel. density	hand penetrometer 100 200 300 400 kPa	structure and additional observations
W		C	W	4, 5, 6 N = 11	1		SP	SAND, fine to medium grained, light brown, some shell fragments.	W	D		
					2							
					3					VD		
		M		10,18,20 N* = 38	4			Some pockets of peat.				
					5		Pt	PEAT, black	M	S		
				7, 20,– N* > 50	6		SP	SAND, fine to medium grained, light brown.	W	VD		
								SAND, fine to medium grained, black, some pockets of peat.		MD		
				U50	7							
					8							

key

method
- AS auger screwing*
- AD auger drilling*
- R roller/tricone
- W washbore
- CT cable tool

* bit shown by suffix:
- B – blank bit
- V – "V" bit
- T – TC bit

e.g. ADT

support
- C casing
- M mud

penetration
1 2 3 — no resistance ranging to refusal

water
- 10 Oct, 73 water level on date shown
- water inflow
- water outflow

notes – samples and tests
- U50 – undisturbed sample 50 mm diameter
- D – disturbed sample
- N – standard penetration test: figure = result
- N* – SPT + sample
- Nc – cone penetrometer

classification symbols and soil description
based on unified classification system

moisture
- D – dry
- M – moist
- W – wet

consistency/relative density
- VS – very soft
- S – soft
- F – firm
- St – stiff
- VSt – very stiff
- H – hard
- Fb – friable
- VL – very loose
- L – loose
- MD – moderately dense
- D – dense
- VD – very dense

T74 – 001

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 901
Date of Boring: 20.11.75
Sheet No.: 1 of 2

Fld. Test	McDermot
Lab Test	JP & JG
Checked	JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size Sand	Soil Size Silt	Soil Size Clay	Index. Props. P.L.	Index. Props. L.L.	Index. Props. P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa Unconfined Compr. Undist.	Max Shear Strength KPa Unconfined Compr. Remould	Triaxial C	Triaxial ø	S.P.T. N Value	Remarks
0																	
-2																	
-4																	
-6		-6.4 Seabed															
		Shell & Sand															
-8		-7.4 Peaty Medium Sand	-7.65	95	-	-											
		-8.4	-8.4	99	-	-										24	300mm
-10		Medium Dense Sand															
		-10.4	-10.4													61	300mm
-12																	
			-12.4													65	300mm
-14																	
			-14.4													36R	150mm
-16																	
			-16.4	98	-	-										50R	150mm
-16																	
		Very Dense Sand	-18.4													50R	150mm
-20																	
			-20.4													30R	150mm
-22																	
			-22.4	99	-	-										50R	150mm
-24																	
			-24.4													34R	150mm
-26																	
			-26.4													50R	150mm
-28																	
			-28.4	99	-	-										31R	150mm
-30																	
			-30.4													50R	150mm
-32																	
			-32.4	98	-	-										44R	150mm

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 901
Date of Boring: 20.11.75
Sheet No.: 2 of 2

Fld. Test	McDermott
Lab Test	JP & JG
Checked	JP. & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size Sand	Soil Size Silt	Soil Size Clay	Index. Props. P.L.	Index. Props. L.L.	Index. Props. P.I.	Density Kg/M³ Dry/Wet		M.C. %	Max Shear Strength Unconfined Compr. Undist.	Max Shear Strength Unconfined Compr. Remould	KPa Triaxial C′	KPa Triaxial ϕ′	S.P.T. N Value	Remarks
-34		-33.9 Peat																
		-34.2 to 34.4 Stiff fissured clay																
-35		-34.4 to -35.9 Peat																
-36																		
		Gray very stiff fissured clay																
-40												28			70	24°		
-42			-41.4	2	-	-	22	60	38	1.47	1.91	34			32	21°		Fissure Index 13
		-42.4 Non plastic silt	-42.4				NP	NP	NP									
-44		-43.65 Dense clayey sand	-43.65															Fissure Index 15
		-44.4 with shell																
-46			-45.4	94	-	-											35R	150mm
-48		V/dense sand	-47.4														40R	150mm
-50			-49.4														40R	150mm
		V/dense sand + 12%																
-52		limestone nodules	-52.4	93	-	-											54	300mm
-54																		
		-54.9																
-56		Dense clayey sand with shell	-55.4														30	300mm
		-56.9																
-58																		
		Grey clay with some shell	-58.8															Fissure Index 14
-60		-59.9																
		Grey silty sand and clay																
-62		-61.55- 61.65 soft weathered sandstone																
-64		Med.-Hard sandstone																
		-64.15 Finish																
-66																		
-68																		

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 902 — Sheet No.: 1 of 3
Date of Boring: 28.11.75

Fld. Test	McDermott
Lab Test	JP & JG
Checked	RH & JP

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size Sand	Silt	Clay	Index. Props. P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa Unconfined Compr. Undist.	Remould	Triaxial C	ϕ	S.P.T. N Value	Remarks
0																	
-2																	
-4																	
-6																	
		6.6 Seabed															
-8		Silty Sand with Shell	-7.6	99	-	-											
		8.6															
-10		Medium Sand	-9.6	99	-	-										12	300mm
		10.35															
-12			-11.6													49	300mm
-14			-13.6	99												36R	150mm
-16			-15.6													35R	150mm
-18			-17.6													44R	150mm
-20		Dense Sand	-19.6	99												46R	150mm
-22			-21.6													32R	150mm
-24			-23.6													32R	150mm
-26			-25.6	99												23R	150mm
-28			-27.6													30R	150mm
-30			-29.6	99													
-32		31.5 to 31.8 Fissured Peat	-31.6														Fissure Index 13

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 902 — Sheet No.: 2 of 3
Date of Boring: 28.11.75

Fld. Test	M_cD
Lab Test	JP & JG
Checked	RH & JP

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size: Sand	Soil Size: Silt	Soil Size: Clay	Index. Props.: P.L.	Index. Props.: L.L.	Index. Props.: P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Max Shear Strength KPa: Unconfined Compr. Remould	Triaxial: C'	Triaxial: φ'	S.P.T. N Value	Remarks
-34		Organic Fissured Clay	-33.6														Fissure Index 13
-36		-35.6 Clayey Silt	-35.6														Fissure Index 12
																	Horizontal Fissures
-38			-37.6	12	-	-	26	41	15		34			50	25°		C' & Φ' (effective stress)
			-37.6	23	-	-	15	39	24		22			10	18.5°		Failed on Fissure
-40		Clay	-39.6	5	-	-	21	57	36		33			50	25°		No fissures
-42		41.6 Medium Sand	-41.6	95	-	-										27R	150mm
		42.6															
-44		Sand with	-43.6													28R	150mm
		Limestone nodules															
-46			-45.6													26R	150mm
		47.1															
-48			-47.6	51	-	-	12	27	15							38	300mm
-50																	
		Clayey sand & shell	-50.6	62	-	-	12	24	12							25R	150mm
-52																	
-54		53.6	-53.6	13	-	-	18	57	39							29	300mm
		Silty clay															
-55		55.1															
		Medium Sand	-56.6	98												27R	150mm
-58																	
-60		59.6	-59.6	26	-	-	18	36	18							30	300mm
		Peaty Clay															
-62																	
		62.6	-62.6	94	-	-										25R	150mm
-64																	
-65			-65.6													23R	150mm
		Medium Clayey Sand															
-66																	

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BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 902 — Sheet No.: 3 of 3
Date of Boring: 28.11.75

Fld. Test	McD
Lab Test	JP & JG
Checked	RR & JP

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size Sand	Silt	Clay	Index Props. P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa Unconfined Compr. Undist.	Remould	Triaxial C	ø	S.P.T. N Value	Remarks
70																	
		Medium Clayey Sand & Charcoal															
72			-71.6	65	–	–	12	21	9							29	300mm
		-73.5 Soft Weathered Sandstone															
74		-74.1															
		Grey Sandstone															
76		-75.35															
78																	
80																	

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The Maritime Services Board of N.S.W. — Engineering Branch
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BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 903 — Sheet No.: 1 of 2
Date of Boring: 10.12.75

Fld. Test	McDermott
Lab Test	J.P. & J.C.
Checked	J.P. & R.H.

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size % Sand	Silt	Clay	Index. Props. P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa Unconfined Compr. Undist.	Remould	Triaxial C′	ϕ′	S.P.T. N Value	Remarks
0																	
-2																	
-4																	
-6																	
		-6.7															
-8		-7.7 Silty Sand & Shell															
		Loose Silty Sand	-9.2													10	300mm
-10		-9.95															
			-11.2													45	300mm
-12																	
			-13.2													24R	150mm
-14																	
			-15.2	99	-	-										12R	150mm
-16		Medium to Dense SAND															
			-17.2													23R	150mm
-18																	
-20																	
			-21.2													24R	150mm
-22		-21.9															
			-23.2													26R	150mm
-24		Medium Sand & Peat															
			-25.2													27R	150mm
-26		-25.9															
		Medium Peaty Sand	-27.2	99	-	-										23R	150mm
-28		-28.0															
		Clay	-29.2								105						Non fissured
-30		-29.55- -30.1 Peat															
-32		Non Plastic Clay	-31.2	2	-	-	N.P.	N.P.	N.P.		65			25	20°		
		-33.45															

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 903 — Sheet No.: 2 of 2
Date of Boring: 10.12.75

Fld. Test	McDermott
Lab Test	J.P. & JC.
Checked	J.P. & R.R.

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size Sand	Soil Size Silt	Soil Size Clay	Index. Props. P.L.	Index. Props. L.L.	Index. Props. P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa Unconfined Compr. Undist.	Unconfined Compr. Remould	Triaxial C′	Triaxial φ′	S.P.T. N Value	Remarks
-34		Non plastic fissured clay	-33.2	2	-	-	N.P.	N.P.	N.P.								Large vert. fissure
			-35.2								24						Fissure Index 14
-36		-36.2															
		Medium Sand	-37.2	96	-	-										29R	150mm
-38																	
		-38.7	-39.2													23R	150mm
-40																	
		Medium Sand with traces of clay	-41.2	93	-	-										24	300mm
-42																	
			-43.2													24R	150mm
-44		-43.7															
		Silty Clay	-45.0								13						
-46		-45.7															
			-47.2													25R	150mm
-48																	
		Medium Sand															
-50			-49.2	94	-	-										26R	150mm
			-51.2													28R	150mm
-52																	
-54		-53.7															
		Sandy Clay	-54.2	30	-	-	15	39	24							27R	150mm
-56		-56.0															
			-56.7	5	-	-	25	60	35		40			18	21°		Fissure Index 13
-58		Fissured Clay															
-60			-60.2								12						
		-61.0	-60.3								30						Fissure Index 14
-62		Sand	-61.0	96	-	-											
		-62.7															
-64		-64.32 Soft Weathered Sandstone															
		Grey Sandstone															
-66		-66.32															
-68																	

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 904 — Sheet No.: 1 of 2
Date of Boring: 8.1.76

Fld. Test	McDermott
Lab Test	JP & JG
Checked	JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size: Sand	Soil Size: Silt	Soil Size: Clay	Index. Props.: P.L.	Index. Props.: L.L.	Index. Props.: P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa: Unconfined Compr.: Undist.	Max Shear Strength KPa: Unconfined Compr.: Remould	Triaxial: C	Triaxial: ø	S.P.T. N Value	Remarks
0																	
-2																	
-4																	
-6		Seabed															
		-5.7 Silty clayay Sand and shell															
-8		-7.7															
		-9.2 Grey silty sand															
-10			-9.7													11	300mm
		Medium sand															
-12			-11.7													24R	150mm
-14			-13.7													19R	150mm
-16			-15.7													48R	150mm
		Very dense to dense sand															
-18			-17.7													50R	150mm
-20			-19.7	99	-	-										12R	150mm
-22			-21.7													41R	150mm
-24			-23.7													38R	150mm
		-25.7 Stiff Peat															
-26		-26.0	-25.7													35R	150mm
		Very dense peaty sand															
-28		-27.8 Clay	-27.7	38	-	-	15	28	13							32	300
		-28.1 Peat															
-30		-28.2 Stiff fissured CLAY	-29.7														
		-31.0 Grey sandy clay and shell															
-32		-31.7	-31.7	22	-	-	16	44	28								
		Grey clay															

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 904 — Sheet No.: 2 of 2
Date of Boring: 8.1.76

Fld. Test	McDermott
Lab Test	JP & JG
Checked	JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size			Index. Props.			Density Kg/M³ Dry/Wet		M.C. %	Max Shear Strength Unconfined Compr.		KPa Triaxial		S.P.T. N Value	Remarks
				Sand	Silt	Clay	P.L.	L.L.	P.I.				Undist.	Remould	c′	φ′		
-34		-33.7 Clayey Sand	-33.7	79	-	-	N.P	N.P.	N.P.						0	37°		
		-34.0																
-36		Medium Sand	-35.7	97	-	-											25R	150mm
-38		-37.1	-37.7	17	-	-	16	43	27	1.67	2.05	24			49	25°		
		Grey Clay																
-40		-40.0	-39.7	29	-	-	18	41	23	1.66	2.04	23			48	29°		
-42			-41.7														25	300mm
-44		Medium Sand	-43.7	97	-	-											15	300mm
-46			-45.7														21	300mm
-48			-47.7														27	300mm
-50			-49.7														26	300mm
		-50.6 Soft weathered Sandstone																
-52		-51.7																
		Sandstone																
-54		-53.7																
-56																		
-58																		
-60																		

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: BOTANY BAY
Bore No.: 905 — Sheet No.: 1 of 2
Date of Boring: 20.1.76

Fld. Test: McDermott
Lab Test: JP & JG
Checked: JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size: Sand	Soil Size: Silt	Soil Size: Clay	Index. Props.: P.L.	Index. Props.: L.L.	Index. Props.: P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Max Shear Strength KPa: Unconfined Compr. Remould	Triaxial: C′	Triaxial: φ′	S.P.T. N Value	Remarks
0																	
-2																	
-4																	
-6		-6.6 Seabed															
		SAND & SHELL															
-8		-8.6															
		MEDIUM SAND	-9.6													17	300mm
-10		-10.85															
			-11.6													34R	150mm
-12																	
			-13.6	98	-	-										30R	150mm
-14																	
			-15.6													18R	150mm
-16																	
		MEDIUM TO DENSE SAND	-17.6													22R	150mm
-18																	
			-19.6													27R	150mm
-20																	
			-21.6													32R	150mm
-22																	
			-23.6	98	-	-										25R	150mm
-24																	
		-24.6 Grey Clay															
-26		-25.8 Peat															
		-26.3															
-28																	
		FISSURED ORGANIC SILT	-29.6	3	-	-	N.P.	N.P.	N.P.	·97	1·56	69			240	24°		FISSURE INDEX 11
-30																	
		-30.8	-31.6	53	-	-	17	27	10							24R	150mm
-32		MEDIUM CLAYEY SAND & SHELL															

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 905
Date of Boring: 20.1.76
Sheet No.: 2 of 2

Fld. Test	McDermott
Lab Test	JP & JG
Checked	JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size			Index. Props.			Density Kg/M³ Dry/Wet		M.C. %	Max Shear Strength Unconfined Compr.		KPa Triaxial		S.P.T. N Value	Remarks
				Sand	Silt	Clay	P.L.	L.L.	P.I.				Undist.	Remould	C′	φ′		
-34		-33.4																
-36		Stiff fissured clay																
			-37.6															Fissure index 9
-38		-37.95																
		Fissured sandy clay	-39.6	37	-	-	17	36	19	1.59	1.87	29			36	34°		Fisaure index 17
-40																		
-42		-41.6 Soft weathered sandstone																
		-42.6 Soft and hard weathered sandstone																
-44																		
-46		-44.6																

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 906
Date of Boring: 5.2.76
Sheet No.: 1 of 2

Fld. Test: M. Dermott
Lab Test: JP & JG
Checked: JP & RF

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size: Sand	Soil Size: Silt	Soil Size: Clay	Index. Props.: P.L.	Index. Props.: L.L.	Index. Props.: P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Max Shear Strength KPa: Unconfined Compr. Remould	Triaxial: C′	Triaxial: φ′	S.P.T. N Value	Remarks
0																	
-2																	
-4																	
-6																	
		-6.45 Seabed															
-8		Silty Sand & Shell															
		-8.45															
-10		Silty Sand	-10.45													42	300mm
-12		-11.8 Soft Peat															
		-12.15	-12.45	95	-	-										29R	150
-14																	
			-14.45													26R	150
-16		Dense fine sand															
			-16.45													33R	150
-18																	
			-18.45	99	-	-										30R	150
-20																	
			-20.45	98	-	-										22R	150
-22		-22.2 Peat															
		-22.65 Sand															
-24		-24.35	-23.45	99	-	-											
		Organic fissured Silt	-24.85	6	-	-	27	40	13		38			20	29°		Fissure Index 13
-26		Fissured Clay	-24.90	9	-	-	19	40	21	1·49	1·96	29		2	33°		Fissure Index 13
			-26.85									37					Fissure Index 11
-28		-27.95 Shell with Clay															
		-29.70 Fissured Clay															
-30		-30.70 Sandy Clay with some shell	-30.65														Fissure Index 14
		-31.20 Clayey Sand															
-32		-32.35															
		Stiff fissured Clay	-32.45	10	-	-	24	56	32	1·59	1·98	32		15	27°		Fissure Index 17

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No.

Location: Botany Bay
Bore No.: 906
Date of Boring: 5.2.76
Sheet No.: 2 of 2

Fld. Test: Mc Dermott
Lab Test: TP + JG
Checked: JP + KH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size: Sand	Soil Size: Silt	Soil Size: Clay	Index. Props.: P.L.	Index. Props.: L.L.	Index. Props.: P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength Unconfined Compr.: Undist.	Max Shear Strength Unconfined Compr.: Remould	KPa Triaxial: c′	KPa Triaxial: φ′	S.P.T. N Value	Remarks
-34		-33.95															
		Clayey Sand															
-36		-36.3 Stiff Clay	-36.45								15.6						
		-36.7 Clayey Sand	-36.5								11.7						
-38		-37.45															
		Slightly clayey Sand	-38.45	91	-	-										15R	150mm
-40		-39.5															
		Clayey Sand	-40.45	68	-	-	10	29	19							30R	150mm
-42		-42.2 Stiff fissured Clay															
		-43.2 Clayey Sand	-42.45	8	-	-	22	72	50	1·65	2·02	26			32	18°		Fissure Index 12
-44		-43.95	-44.45														Fissure Index 17
-46		Stiff fissured Clay	-46.45														Fissure Index 16
-48		-47.95 Dense Silty Sand															
		-49.70 Stiff Clay	-48.45													38R	150mm
-50		-50.55 Soft grey sandstone	-50.45													25R	150mm
		-50.7															
-52		Hard & soft grey Sandstone															
		-52.95															
-54																	

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay V.L.C.C.
Bore No.: 907 — Sheet No.: 1 of 2
Date of Boring: 19.2.76

Fld. Test	
Lab Test	
Checked	

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size: Sand	Soil Size: Silt	Soil Size: Clay	Index. Props.: P.L.	Index. Props.: L.L.	Index. Props.: P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Max Shear Strength KPa: Unconfined Compr. Remould	Triaxial: C′	Triaxial: φ′	S.P.T. N Value	Remarks
0																	
-2																	
-4																	
-6		-6.25 Seabed															
		-7.5 Silty Sand + Shell															
-8		Silty Sand															
		-9.25															
-10			-10.25													18R	150mm
-12			-12.25													27R	150mm
-14			-14.25	98	-	-										10R	150mm
-16		Dense Sand	-16.25													16R	150mm
-18			-18.25													22R	150mm
-20			-20.25	99	-	-										12R	150mm
-22			-22.25													37R	150mm
		-24.3 Peat															
-24		-24.5	-24.5													44	300mm
		-25.5 Sand															
-26		-26.15 Clay	-26.5	6	-	-	Just	Plastic		.73	1.38	90			37	34		Fissure Index 8
		-26.4 Organic Fissured Silt															
-28		-27.75 Clay															
		-28.5 Clayey Sand															
-30		-29.4 Silty Sand with Shell	-30.25									17					Fissure Index 14
		-31.75 Stiff fissured Clay															
-32																	
		Clayey Sand															

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay V.L.C.C.
Bore No.: 907 — Sheet No.: 2 of 2
Date of Boring: 19.2.76

Fld. Test | Lab Test | Checked

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index Props.: P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Remould	Triaxial C′	φ′	S.P.T. N Value	Remarks
-34		-33.95 Clay	-34.25								34						
		-35.35															
-36		-35.75 Sandy Clay with some shell															
-38		Slightly sandy fissured Clay	-38.25	13	-	-	20	47	27	1.51	1.87	31			59	35°		Fissure Index 14
		with some shell															
-40		-40.05															
		Hard Sandstone with some															
-42		-42.75 clay coated joints															

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The Maritime Services Board of N.S.W. — Engineering Branch
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BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 908
Date of Boring: 25.2.76
Sheet No.: 1 of 2

Fld. Test: Mc Dermott
Lab Test: JP + JG
Checked: JP + KH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size: Sand	Soil Size: Silt	Soil Size: Clay	Index Props.: P.L.	Index Props.: L.L.	Index Props.: P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Unconfined Compr. Remould	Triaxial: c′	Triaxial: φ′	S.P.T. N Value	Remarks
0																	
-2																	
-4																	
-6		-6.2 Seabed															
		-7.45 Slightly clayey SAND with Shell															
-8		-7.8 Peaty CLAY															
		-8.7 Peaty SAND															
-10		Very Dense Silty SAND	-10.2													57	300m
		-11.2															
-12			-12.2													42R	150mm
-14		Dense SAND	-14.2	98	-	-										20R	150mm
-16			-16.2													15R	150mm
-18			-18.2													12R	150mm
-20			-20.2													8R	150mm
-22			-22.2	99	-	-										10R	150mm
-24			-24.2													38R	150mm
		-25.8 Organic fissured Silt (oL)															
-26		-26.45	-26.2	5	-	-	32	46	14	1·15	1·71	45			12	17°		Fissure Index 8
		Dense clayey SAND															
-28		-28.5 CLAY	-28.2													42	300mm
		-29.2 Sandy CLAY with some seams of sand															
-30		-30.3															
		Slightly sandy dense CLAY															
-32		-32.35 CLAY	-32.2	20	-	-	23	43	20								
		-33.2 Clayey SAND & shell with traces peat															

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The Maritime Services Board of N.S.W. — Engineering Branch
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BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 908 — Sheet No.: 2 of 2
Date of Boring: 25.2.76

Fld. Test	Mr. Dermott
Lab Test	JP + JG
Checked	JP + RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size: Sand	Soil Size: Silt	Soil Size: Clay	Index Props.: P.L.	Index Props.: L.L.	Index Props.: P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Max Shear Strength KPa: Unconfined Compr. Remould	Triaxial: C	Triaxial: φ	S.P.T. N Value	Remarks
-34		-34.6															
		Clayey SAND															
-36		-35.9 Weathered SANDSTONE															
		-36.2 Hard SANDSTONE															
-38		-38.7															

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The Maritime Services Board of N.S.W. — Engineering Branch
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BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 909
Date of Boring: 8/3/76
Sheet No.: 1 of 2

Fld. Test: Mc Dermott
Lab Test: JP & JG
Checked: JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index Props.: P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet		M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Remould	Triaxial C'	φ'	S.P.T. N Value	Remarks
0																		
-2																		
-4																		
		Seabed																
-6		-6.1 Silty sand with shell																
		-7.6 Peaty clay																
-8		-8.1																
		Dense silty sand	-9.1														30 R	150mm
-10		-10.1																
			-11.1														42 R	150mm
-12																		
		Dense fine sand	-13.1	99	-	-											25 R	150mm
-14																		
			-15.1														40 R	150mm
-16																		
			-17.1														28 R	150mm
-18																		
			-19.1	99	-	-											20 R	150mm
-20																		
			-21.1														22 R	150mm
-22		-22.8 Fissured stiff sandy clay																
		-23.8 Peat	-23.1									14						Fissured Index 17
-24		-24.1 Clay																
		-25.2																
-26																		
			-27.1	63	-	-	13	30	17	1.88	2.15	16			20	31°		
-28		Dense clayey sand																
			-29.1									20						
-30																		
		-31.65 Soft weathered sandstone	-31.1														20 R	150mm
-32		-32.35																

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 909
Date of Boring: 8/3/76
Sheet No.: 2 of 2

Fld. Test	McDermott
Lab Test	JP & JG
Checked	JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size			Index. Props.			Density Kg/M³ Dry/Wet		M.C. %	Max Shear Strength KPa Unconfined Compr. Undist.	Remould	Triaxial C	Triaxial φ	S.P.T. N Value	Remarks
				Sand	Silt	Clay	P.L.	L.L.	P.I.									
-34		Weathered sandstone with																
		-35.4 clay coated joints																
-36																		

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The Maritime Services Board of N.S.W. — Engineering Branch
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BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 910
Date of Boring: 12/3/76
Sheet No.: 1 of 1

Fld. Test	McDermott
Lab Test	JP & JG
Checked	JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size % Sand	Silt	Clay	Index Props. P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet		M.C. %	Max Shear Strength KPa Unconfined Compr. Undist.	Remould	Triaxial C′	ϕ′	S.P.T. N Value	Remarks
-0																		
-2		-2.1 Seabed																
		-3.85 Shell & Sand															38	300mm
-4			-4.1															
		Medium to dense sand															17	300mm
-6		-6.1	-6.1															
		-6.7 Peat															42	300mm
-8			-8.1	98	-	-												
		Dense sand															42	300mm
-10		-10.65 Slightly indurated sand	-10.1															
		-11.2															20 R	150mm
-12			-12.1	99	-	-												
																	18 R	150mm
-14		Medium sand with some shell	-14.1															
																	6 R	150mm
-16			-16.1	99	-	-												
																	12 R	150mm
-18			-18.1															
		-18.95 Peat																
-20		-19.5 Peaty clay	-20.1	9	-	-	21	42	21	1·17	1·75	50			32	26°		
		-21.1 Clay																
-22		-22.25																
		Dense clayey sand with seams															34	300mm
-24		of clay	-24.1	94	-	-												
		-24.95 Soft weathered sandstone																
-26		-25.8																R.Q.D. 88%
		Weathered sandstone																
-28		-28.35																
-30																		

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 911 — Sheet No.: 1 of 2
Date of Boring: 16/3/76

Fld. Test	McDermott
Lab Test	JP & JG
Checked	JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size Sand	Silt	Clay	Index. Props. P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet		M.C. %	Max Shear Strength KPa Unconfined Compr. Undist.	Remould	Triaxial c'	ϕ'	S.P.T. N Value	Remarks
0																		
-2		-2.55 Seabed																
		Sand with shell																
-4		-4.05 Medium ssilty sand	-4.55														15	300mm
		-5.3																
-6			-6.55	96	-	-											31 R	150mm
-8			-8.55														56	300mm
-10			-10.55	99	-	-											37 R	150mm
-12		Medium to dense sand	-12.55														42 R	150mm
-14			-14.55	99	-	-											9 R	150mm
-16			-16.55														12 R	150mm
-18			-18.55	99	-	-											18 R	150mm
-20			-20.55														14 R	150mm
-22			-22.55	100	-	-											11 R	150mm
		-23.15 Peat																
-24		-23.8	-24.55									31						Fissure Index 16
-26		Slightly sandy fissured clay	-26.55	11	-	-	19	59	40	1.55	1.99	33			20	26°		Fissure Index 17
-28																		
		-29.9 Peat																
-30		-29.05 Peaty clay	-30.55	4	-	-	39	49	10	.94	1.52	68			119	26°		Fissure Index 8
		-29.35 Organic fissured silt																
-32		-31.05 Medium slightly silty sand with some shell	-32.55	80	-	-	15	17	2							-	17	300mm

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 911
Date of Boring: 16/3/76
Sheet No.: 2 of 2

Fld. Test	McDermott
Lab Test	JP & JG
Checked	JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size: Sand	Soil Size: Silt	Soil Size: Clay	Index. Props.: P.L.	Index. Props.: L.L.	Index. Props.: P.I.	Density Kg/M³ Dry/Wet		M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Max Shear Strength KPa: Unconfined Compr. Remould	Triaxial: C′	Triaxial: φ′	S.P.T. N Value	Remarks
-34		-33.55 Silty sand with some peat	-34.55														12 R	150mm
		-35.4 Sandy clay																
-36		-36.55 Clayey sand																
		-37.3																
-38		Slightly sandy fissured clay with some shell	-38.55	16	-	-	26	56	30	1·43	1·86	40			36	24°		Fissure Index 11
-40		-39.55	-40.55									32						Fissure Index 14
		Fissure clay with traces of shell																
-42			-42.55									34						Fissure Index 14
		-43.55 Sandy clay with shell																
-44		-44.9 Soft weathered sandstone	-44.55	27	-	-	21	43	22								30 R	150mm
		-45.05																
-46																		
		Weathered sandstone																R.Q.D. 69%
-48.0		-48.05																

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 912 — Sheet No.: 1 of 2
Date of Boring: 23/3/76

Fld. Test	McDermott
Lab Test	JP & JG
Checked	JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size % Sand	Silt	Clay	Index. Props. P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa Unconfined Compr. Undist.	Remould	Triaxial C	ϕ	S.P.T. N Value	Remarks
0																	
-2																	
-4																	
-6		Seabed															
		-7.55 Silty sand with shell															
-8		-8.8 Black marine silt															
		-9.55															
-10		Silty sand															
		-11.05	-11.55	99	-	-										41	300mm
-12																	
			-13.55													29 R	150mm
-14																	
			-15.55	98	-	-										32 R	150mm
-16		Medium sand with shells															
			-17.55													28 R	150mm
-18																	
			-19.55	99	-	-										20 R	150mm
-20																	
			-21.55													10 R	150mm
-22		-22.45 Peat															
		-22.55	-23.55	97	-	-										30 R	150mm
-24		Dense sand with some peat															
			-25.55													30 R	150mm
-26		-26.15 Peat															
		-26.45 Fissured peaty clay	-27.55								35						Fissure Index 13
-28		-28.25 Peat															
		-28.45															
-30		Stiff clay															
		-31.95	-31.55													16	150mm
-32		-32.05 Peat															
			-33.55	5	-	-	26	47	21								

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 912
Date of Boring: 23/3/76
Sheet No.: 2 of 2

Fld. Test	McDermott
Lab Test	JP & JG
Checked	JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size: Sand	Soil Size: Silt	Soil Size: Clay	Index. Props.: P.L.	Index. Props.: L.L.	Index. Props.: P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Max Shear Strength KPa: Unconfined Compr. Remould	Triaxial: C	Triaxial: ϕ	S.P.T. N Value	Remarks
-34																	
		Fissured peaty clay	-35.8								63						Fissure Index 10
-36																	
		-37.55															
-38		Medium to dense slightly clayey sand															
			-39.55													20 R	150mm
-40																	
		-41.85	-41.55	89	-	-										36	300mm
-42		Clay															
		-43.05 Dense clayey sand	-43.55													40	300mm
-44		-43.95															
		Dense sand	-45.55	96	-	-										34 R	150mm
-46																	
		-47.3	-47.55													6	300mm
-48		Loose silty sand															
		-49.05	-49.55													38 R	150mm
-50		Dense sand with a cemented															
		band at -50.45m	-51.55													43 R	150mm
-52																	
		-52.95	-53.55	93	-	-										11 R	150mm
-54																	
			-55.55													31 R	150mm
-56		Medium to dense slightly clayey sand															
-58																	
		-59.45 Very dense sand	-59.55													50 R	150mm
-60		-59.95															
-62		Sandstone															R.Q.D. 84%
		-63.05															
-64																	

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The Maritime Services Board of N.S.W. — Engineering Branch
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BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 913
Date of Boring: 23/4/76
Sheet No.: 1 of 2

Fld. Test	McDermott
Lab Test	JP & JG
Checked	JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size: Sand	Soil Size: Silt	Soil Size: Clay	Index. Props.: P.L.	Index. Props.: L.L.	Index. Props.: P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa: Unconfined Compr.: Undist.	Unconfined Compr.: Remould	Triaxial: C	Triaxial: φ	S.P.T. N Value	Remarks
0																	
-2																	
		-3.6 Seabed															
-4		Sand with shell															
		-5.1	-5.6													10	300mm
-6		Loose to medium sand															
		-7.15 Peat	-7.6	99	-	-										55	300mm
-8		-7.3 Very dense sand with seams of peat															
		-9.1 Dense sand	-9.6													39 R	150mm
-10		-10.6 Peat															
		-10.8	-11.6	98	-	-										50 R	150mm
-12																	
			-13.6													50 R	150mm
-14		Dense to very dense sand															
		with some shell	-15.6	97	-	-										50 R	150mm
-16																	
			-17.6													50 R	150mm
-18																	
			-19.6	98	-	-										50 R	150mm
-20																	
		-21.75 Peat	-21.6													55	300mm
-22		-22.7															
		Stiff peaty clay															
-24		-23.9 Peat															
		-24.6															
-26		Soft clay															
		-27.0 Fissured peaty clay	-27.6								70						Fissure Index 18
-28		-27.85 Stiff peat															
		-28.2 Peaty clay	-29.6														Fissure Index 12
-30		-29.1 Fissured clay															
		-30.35 Medium to dense	-31.6													25	300mm
		silty sand with shell															
			-33.6	67	-	-	25	26	1							39	300mm

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 913
Date of Boring: 23/4/76
Sheet No.: 2 of 2

Fld. Test	McDermott
Lab Test	JP & JG
Checked	JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size % Sand	Soil Size % Silt	Soil Size % Clay	Index. Props. P.L.	Index. Props. L.L.	Index. Props. P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa Unconfined Compr. Undist.	Unconfined Compr. Remould	Triaxial C	Triaxial ϕ	S.P.T. N Value	Remarks
-34		-33.75 Peaty sand with shell															
		-34.35 Dense silty sand	-35.6													31 R	150mm
-36		-36.1															
		Sandstone															R.Q.D. 95%
-38		-38.6															
-40																	

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 914
Date of Boring: 3/5/76
Sheet No.: 1 of 2

Fld. Test	McDermott
Lab Test	JP & JG
Checked	JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size Sand	Silt	Clay	Index. Props. P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet		M.C. %	Max Shear Strength KPa Unconfined Compr. Undist.	Remould	Triaxial c′	φ′	S.P.T. N Value	Remarks
0																		
-2																		
		-3.9 Seabed																
-4		Sand with shell																
		-5.65																
-6			-5.9	97	-	-											33	300mm
-8			-7.9														70	300mm
-10			-9.9	97	-	-											41	300mm
		Dense to very dense																
-12		sand with shell	-11.9	97													48 R	150mm
-14			-13.9														50 R	150mm
-16			-15.9	99													48 R	150mm
-18			-17.9														50 R	150mm
-20			-19.9														50 R	150mm
-22			-21.9	99	-	-											48 R	150mm
		-23.25																
-24		Dense sand with some peat	-23.9														42 R	150mm
		-25.4																
-26		Dense peaty sand	-25.9	97	-	-											41 R	150mm
		-27.0 Peat																
-28		-27.3 Fissured clay	-27.9									29						Fissure Index 17
		-29.05 Peat																
-30		-29.4 Fissured peaty clay	-29.9									31						Fissure Index 12
		-30.15																
-32		Fissured clay	-31.9	7	-	-	18	48	30	1.59	1.95	28			35	20°		

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 914 — Sheet No.: 2 of 2
Date of Boring: 3/5/76

Fld. Test	McDermott
Lab Test	JP & JG
Checked	JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size: Sand	Silt	Clay	Index. Props.: P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Remould	Triaxial c′	φ′	S.P.T. N Value	Remarks
-34			-33.9	2	-	-	N.P.	N.P.	N.P.	·94 / 1·52	62			18	13°		Fissure Index 9
		-35.0															
-36		Very dense silty sand	-35.9													71	300mm
		-37.2															
-38		Fissured sandy clay	-37.9								23						Fissure Index 13
		-38.9															
-40		Slightly sandy clay with some shell	-39.9				21	54	33		27						
		-41.65															
-42			-41.9								25						Fissure Index 14
		Fissured clay															
-44			-43.9								40						Fissure Index 11
		-45.4															
-46			-45.9								30						
-48		Sandy clay with some shell	-47.9								32						
-50			-49.9								27						
		-50.9															
-52		Clay															
		-53.4 Dense silty sand															
-54		-54.65	-53.9													33 R	150mm
-56		Sandstone															R.Q.D. 71%
-58		-57.9															

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 915 — Sheet No.: 1 of 2
Date of Boring: 29/7/76

Fld. Test	McDermott
Lab Test	JP & JG
Checked	JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Sizes: Sand	Silt	Clay	Index Props.: P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Remould	Triaxial C	ϕ	S.P.T. N Value	Remarks
0																	
-2																	
-4		-4.7 Seabed															
		Sand with shells															
-6		-6.2 Clay															
		-6.65	-6.7	97	-	-										17	300mm
-8																	
			-8.7													41	300mm
-10																	
			-10.7	97	-	-										45 R	150mm
-12																	
		Dense sand with some shells	-12.7													48 R	150mm
-14																	
			-14.7	96	-	-										50 R	150mm
-16																	
			-16.7													50 R	150mm
-18																	
			-18.7	97	-	-										50 R	150mm
-20																	
			-20.7													50 R	150mm
-22																	
			-22.7	96	-	-										50 R	150mm
-24		-24.85 Peat															
		-25.6	-24.7													46	300mm
-26		Clay															
		-27.7 Peaty clay with seams of peat	-26.7								37						
-28		-28.6															
-30			-30.7								32						Fissure Index 12
		Fissured organic silt															
-32			-32.7								50						Fissure Index 11

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Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 915 — Sheet No.: 2 of 2
Date of Boring: 29/7/76

Fld. Test	McDermott
Lab Test	JP & JG
Checked	JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size Sand	Silt	Clay	Index. Props. P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet		M.C. %	Max Shear Strength KPa Unconfined Compr. Undist.	Remould	Triaxial C′	ϕ′	S.P.T. N Value	Remarks
-34			-34.7	1	-	-	33	48	15	1·11	1·68	53			0	24°		Fissure Index 8
		Fissured organic silt																
-36																		
-38		-38.95	-38.7									34						
		Dense silty sand with some shell																
-40			-40.7														34 R	150mm
		-41.45																
-42		Dense sand	-42.7														39 R	150mm
		-43.5 Soft weathered sandstone																
-44		-43.7 Sandstone																
		-44.0 Soft clayey sandstone																
-46		-45.15 Weathered sandstone with some																
		-47.45 seams of shale																
-48		-47.45-47.7 Sandstone																

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 916
Date of Boring: 20/7/76
Sheet No.: 1 of 2

Fld. Test: McDermott
Lab Test: JP & JG
Checked: JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size % Sand	Silt	Clay	Index. Props. P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet		M.C. %	Max Shear Strength KPa Unconfined Compr. Undist.	Remould	Triaxial c′	ϕ′	S.P.T. N Value	Remarks
0																		
-2																		
-4		Seabed																
		-5.0 Shell and sand																
-6		-6.25 Sand																
		-7.4 Peat																
-8		-7.5	-7.75	98	-	-											39	300mm
-10			-10.0														42 R	150mm
-12		Dense sand with some shell	-12.0	99	-	-											50 R	150mm
-14			-14.0														50 R	150mm
-16			-16.0	96	-	-											50 R	150mm
-18			-18.0														50 R	150mm
-20			-20.0	99	-	-											50 R	150mm
		-21.8 Peat																
-22		-21.9	-22.0									30						Fissure Index 14
		Fissured clay																
-24			-24.0									168						Fissure Index 11
		-24.2 Peat																
-26		-25.0 Fissured clay	-26.0									34						Fissure Index 11
		-26.7																
-28		Fissured organic slightly sandy silt	-28.0	15	-	-	N.P.	N.P.	N.P.	·84	1·44	86			45	48°		
-30			-30.0	3	-	-	41	60	19	1·01	1·53	45			0	16°		Fissure Index 9
		-31.7 Fissured peat	-30.2	3	-	-	27	52	25	1·13	1·66	42			17	41°		
-32		-32.0 Clay	-32.0	0.2	-	-	N.P.	N.P.	N.P.	·70	1·37	106			90	24°		Fissure Index 14
		-33.0																

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 916 — Sheet No.: 2 of 2
Date of Boring: 20/7/76

Fld. Test	McDermott
Lab Test	JP & JG
Checked	JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size Sand	Silt	Clay	Index. Props. P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet		M.C. %	Max Shear Strength KPa Unconfined Compr. Undist.	Remould	Triaxial c′	φ′	S.P.T. N Value	Remarks
-34			-34.0									68						Fissure Index 9
		Fissured organic silt																
-36			-36.0	0.2	-	-	37	52	15	1·04	1·63	59			14	26°		Fissure Index 7
		-37.0																
-38			-38.0									34						
		Fissured clay with shell																
-40		and seams of sandy clay	-40.0									33						Fissure Index 13
-42		-42.45 Clayey sand with shell	-42.0									16						
		-42.5																
-44			-44.0														42	300mm
		Silty sand																
-46			-46.0	91	-	-											39 R	150mm
		-47.0																
-48		Dense sand with shell	-48.0														50 R	150mm
-50			-50.0														55	300mm
		-51.5																
-52		Dense silty sand with some shell	-52.0	89	-	-											46	300mm
		-53.25 Clay																
-54		-54.2 Sandy clay																
		-54.75 Clayey sand with shell																
-56		-56.35	-56.0														35	300mm
		Fissured clay																
-58		-59.5 Silty sand with shell	-58.0									18						Fissure Index 14
		-59.1 Soft weathered sandstone																
-60		-59.5																
		Weathered sandstone																
-62		-62.0																

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Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 917 — Sheet No.: 1 of 2
Date of Boring: 28/6/76

Fld. Test: McDermot
Lab Test: JP & JG
Checked: JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size: Sand	Soil Size: Silt	Soil Size: Clay	Index. Props.: P.L.	Index. Props.: L.L.	Index. Props.: P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Max Shear Strength KPa: Unconfined Compr. Remould	Triaxial: c'	Triaxial: φ'	S.P.T. N Value	Remarks
0																	
-2																	
-4		Seabed															
		-5.4 Sand and shell															
-6		-6.9 Peaty sand															
		-7.4	-7.65													31	300mm
-8		Dense sand															
																35 R	150mm
-10		-9.2 Peat	-9.4	98	-	-										31 R	150mm
		-9.35	-11.4														
-12																50 R	150mm
			-13.4	99	-	-											
-14																50 R	150mm
			-15.4														
-16																50 R	150mm
		Dense sand	-17.4	98	-	-											
-18																50 R	150mm
			-19.4														
-20																46 R	150mm
			-21.4	99	-	-											
-22																48 R	150mm
			-23.4														
-24																20	300m
		-25.0 Medium silty sand	-25.4														
-26		-25.55															
		Fissured clay	-27.4				15	31	16		29						Fissure Index 10
-28		-28.0															
		Fissured peaty clay	-29.4								28						Fissure Index 9
-30																	
		-31.55 Peat	-31.4	3	-	-	N.P.	N.P.	N.P.	.73	1.39 80			172	25°		
-32		-32.15															

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 917
Date of Boring: 28/6/76
Sheet No.: 2 of 2

Fld. Test	McDermott
Lab Test	JP & JG
Checked	JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size Sand	Silt	Clay	Index. Props. P.L.	L.L.	P.I.	Density Kg/M³ Dry/Wet		M.C. %	Max Shear Strength KPa Unconfined Compr. Undist.	Remould	Triaxial c′	ϕ′	S.P.T. N Value	Remarks
-34		Clay																
		-35.15 Dense silty sand	-35.4	87	-	-											38 R	150mm
-36		-36.1																
		Fissured slightly sandy clay	-37.4	14	-	-	18	48	30	1·64	2·01	26			37	27°		Fissure Index 17
-38																		
		-39.0 Dense clayey sand with shell	-39.4	87	-	-											50	300mm
-40		-40.4																
			-41.4														34 R	150mm
-42																		
		Dense sand	-43.4	98	-	-											44 R	150mm
-44																		
		-44.9 Medium clayey sand	-45.4														29 R	150mm
-46		-46.4																
			-47.4	83	-	-											50	300mm
-48																		
		Very dense sand with shell	-49.4														61	300mm
-50																		
			-51.4	97	-	-											52	300mm
-52																		
		-53.15	-53.4														35 R	150mm
-54		Dense clayey sand																
		-55.15																
-56																		
		Sandy clay	-57.4									17					50 R	150mm
-58																		
		-58.9	-59.4														50 R	150mm
-60																		
		Dense sand with traces	-61.4	99	-	-											38 R	150mm
-62		of peat																
			-63.4															
-64		-63.9 Sandstone																
		-64.0																Unable to core any further due to caving hole.

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 918
Date of Boring: 7/6/76
Sheet No.: 1 of 3

Fld. Test: McDermott
Lab Test: JP & JG
Checked: JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size Sand	Soil Size Silt	Soil Size Clay	Index. Props. P.L.	Index. Props. L.L.	Index. Props. P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa Unconfined Compr. Undist.	Max Shear Strength KPa Unconfined Compr. Remould	Triaxial C	Triaxial ϕ	S.P.T. N Value	Remarks
0																	
-2																	
-4		Seabed															
		-5.7 Sand with shell															
-6		-6.7															
-8			-8.7													54	300mm
-10			-10.7	99	-	-										80	300mm
-12			-12.7													39 R	150mm
-14		Dense to very dense sand	-14.7	100	-	-										41 R	150mm
-16			-16.7													42 R	150mm
-18			-18.7	97	-	-										50 R	150mm
-20			-20.7													39 R	150mm
-22		-22.7	-22.7	97	-	-										12 R	150mm
		Medium sand															
-24		-24.7	-24.7													16 R	150mm
-26		Dense sand	-26.7	96	-	-										46 R	150mm
-28			-28.7													50 R	150mm
-30		-30.45															
-32		Silty sand															

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 918
Date of Boring: 7/6/76
Sheet No.: 2 of 3

Fld. Test	McDermott
Lab Test	JP & JG
Checked	JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size: Sand	Soil Size: Silt	Soil Size: Clay	Index. Props.: P.L.	Index. Props.: L.L.	Index. Props.: P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Max Shear Strength KPa: Unconfined Compr. Remould	Triaxial: c'	Triaxial: φ'	S.P.T. N Value	Remarks
-34		Silty sand	-34.7	80	-	-	N.P.	N.P.	N.P.	1.63 1.93	20			15	36°		
		-34.95 Clayey sand with shell															
-36		-36.6	-36.7	10	-	-	22	51	29	1.59 2.00	29			28	24°		Fissure Index 16
		Fissured slightly sandy clay	-36.9	9	-	-	21	51	30	1.69 2.07	27			19	22°		Fissure Index 16
-38		-38.3 Clayey sand with shell															
		-39.7															
-40		Dense sand	-40.7	95	-	-										50 R	150mm
		-41.8 Sandy clay															
-42		-42.5															
-44		Medium to dense sand with shell	-44.7	98	-	-										50	300mm
-46			-46.7													28	300mm
		-46.85 Clayey sand															
-48		-47.05 Clay	-48.7													30	300mm
		-48.3 Medium clayey sand															
-50		-48.8 Sandy clay															
		-51.7															
-52																	
		Fissured silt															
-54			-54.7				33	48	15		53						Fissure Index 9
-56			-56.7								43						Fissure Index 17
		-57.7															
-58																	
		Fissured clay with some shell															
-60			-60.7														Fissure Index 14
-62		-61.95	-62.7													21	300mm
		Clay with some sand															
-64																	
		-64.95 Sand with some clay															
-66		-66.2	-66.7													70	300mm
		Dense to very dense clayey															
		sand with some peat	-68.7													50 R	150mm

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The Maritime Services Board of N.S.W. — Engineering Branch
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BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 918
Date of Boring: 7/6/76
Sheet No.: 3 of 3

Fld. Test	McDermott
Lab Test	JP & JG
Checked	JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size			Index. Props.			Density Kg/M³		M.C. %	Max Shear Strength KPa				S.P.T.	Remarks
				Sand	Silt	Clay	P.L.	L.L.	P.I.	Dry	Wet		Unconfined Compr. Undist.	Remould	Triaxial C	Triaxial φ	N Value	
-70		-70.7 Soft clayey weathered sandstone																
		-71.7 Soft weathered sandstone																
-72		-73.8																
-74																		

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The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 919
Date of Boring: 14/5/76
Sheet No.: 1 of 2

Fld. Test: McDermot
Lab Test: JP & JG
Checked: JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size: Sand	Soil Size: Silt	Soil Size: Clay	Index. Props.: P.L.	Index. Props.: L.L.	Index. Props.: P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Max Shear Strength KPa: Unconfined Compr. Remould	Triaxial: C'	Triaxial: φ'	S.P.T. N Value	Remarks
0																	
-2																	
-4																	
-6		-5.85 Seabed															
		Sand with shell															
-8		-8.1															
		Loose to medium silty sand	-8.85													10	300mm
-10		-10.1															
			-10.85	98	-	-										67	300mm
-12																	
			-12.85													43 R	150mm
-14																	
			-14.85	99	-	-										50 R	150mm
-16		Dense to very dense sand with some shell															
			-16.85													50 R	150mm
-18																	
			-18.85	98	-	-										50 R	150mm
-20																	
			-20.85													44 R	150mm
-22																	
			-22.85	100	-	-										41 R	150mm
-24																	
			-24.85													50 R	150mm
-26																	
			-26.85	98	-	-										50 R	150mm
-28		-27.85 Peaty sand															
		-28.75 Clay															
-30		-30.3 Peat															
		-30.7 Peaty clay															
-32		-31.85															
		Silty sand with shells	-32.85	66	-	-	15	18	3	1·64	2·10			4	37°		

ENG. 528

The Maritime Services Board of N.S.W. — Engineering Branch
Preservation & Research Sub-Branch

BORE RECORD

Laboratory Test Series No. 57

Location: Botany Bay
Bore No.: 919
Date of Boring: 14/5/76
Sheet No.: 2 of 2

Fld. Test	McDermott
Lab Test	JP & JG
Checked	JP & RH

Depth in Metres	Profile	Description	Test or Sample Depth	Soil Size: Sand	Soil Size: Silt	Soil Size: Clay	Index. Props.: P.L.	Index. Props.: L.L.	Index. Props.: P.I.	Density Kg/M³ Dry/Wet	M.C. %	Max Shear Strength KPa: Unconfined Compr. Undist.	Unconfined Compr. Remould	Triaxial: C′	Triaxial: φ′	S.P.T. N Value	Remarks
-34			-34.85	27	-	-	15	41	26	1·70	2·06	22			56	28°		
		-34.6 Sandy clay	-35.05	28	-	-	14	37	23	1·65	2·02	22			50	27°		
-36		-36.1																
		Dense clayey sand	-36.85														45 R	150mm
-38																		
		-39.35	-38.85	93	-	-											50 R	150mm
-40		Fissured clay																
			-40.85	3	-	-	22	75	53	1·43	1·90	32			17	21°		Fissure Index 15
-42		-42.35 Medium clayey sand																
		-42.95 Sandy clay	-42.85														28	300mm
-44		-44.1																
			-44.85														50 R	150mm
-46		Dense to very dense silty																
		sand with some shell	-46.85														65	300mm
-48																		
		-49.1	-48.85														51	300mm
-50		Clay																
		-51.6																
-52																		
			-52.85															Fissure Index 13
-54		Fissured clay with some shell	-53.85															Fissure Index 12
-56																		
		-56.95 Silty sand with traces of peat																
-58		-57.35 Soft weathered sandstone																
		-57.8																
-60		Weathered sandstone																
		-60.85																
-62																		

Engineering Log Borehole

DAMES & MOORE

Borehole No.: BH2
Sheet 1 of 2

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT Job No. : 18534-007-70

Date Drilled : 22-1-91 Drill Type : GEMCO 210 B Bore Size : 100mm RL Surface : -5.15m AHD
Logged by : MCW Driller : ENG. EXPL. Drilling Fluid : BIOGEL Ch/Coords : 33278E 240696N

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
BUT. BIT WASHBORING	HW		0			SAND (SP), grey to dark grey, fine to medium grained, some broken shell fragments. Occasional wood fragments and peaty clay layers to 20mm thick.		VL	SPT Sample 1	.5 - .95	1,0,1 N=1
			2.0						SPT No rec.	2.2 - 2.65	0,1,1 N=2
			3.3			Clayey SAND (SC), dark brown to light grey, fine to medium grained.		MD-D	D Sample 3a	3.3 - 3.5	5,16,16 N=32
			4.0						SPT Sample 3	3.95	
									SPT Sample 4	5.0 - 5.45	4,6,6 N=12
			6.0						SPT Sample 5	6.5 - 6.95	6,7,7 N=14
			7.6			SAND (SP), grey, fine to medium grained.		MD-D	SPT Sample 6	7.8 - 8.25	10,11,26 N=37
			8.0								
									SPT Sample 7	9.3 - 9.75	22,18,8 N=26
			10.0			Peat fragments in borehole risings. 9.7-10m					

Engineering Log
Borehole

DAMES & MOORE

Borehole No.: BH2
Sheet 2 of

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT
Job No. : 18534-007-70

Date Drilled : 22-1-91 Drill Type : GEMCO 210 B Bore Size : 100mm RL Surface : -5.15m AHD
Logged by : MCW Driller : ENG. EXPL. Drilling Fluid : BIOGEL Ch/Coords : 33278E 240696N

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
			10.15			SILTSTONE, grey, highly to extremely weothered, low strength.			SPT Sample 8	10.15 10.35	19,30 for 50mm (N=180)
						END OF BOREHOLE AT 10.35m					

12.0
14.0
16.0
18.0
20.0

Engineering Log Borehole

DAMES & MOORE

Borehole No.: BH3
Sheet 1 of 2

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT
Job No. : 18534-007-70

Date Drilled : 18-1-91 Drill Type : GEMCO 210 B Bore Size : 100mm RL Surface : -5.70m AHD
Logged by : MCW/ICL Driller : ENG. EXPL. Drilling Fluid : BIOGEL Ch/Coords : 332843E 240400N

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
BUCKET AUGER/WASHBORING	HW		2.0			SAND (SP), grey, fine to medium grained, trace of silt, some broken shell fragments, occasional decomposed wood fragments.		VL	SPT Sample 1	.7 1.15	1,1,1 N=2
						SAND (SP), dark brown, fine to medium grained, slightly organic, occasional peat lenses to 20mm Decomposed wood fragments in peaty sand, 2.0-2.1m		MD	SPT Sample 2	2.0 2.45	5,11,13 N=24
			3.0			SAND (SP), light brown becoming light grey with depth, trace of carbonaceous frogments		MD	SPT Sample 3	3.6 4.05	5,11,17 N=28
			4.0					VD	SPT Sample 4	5.0 5.45	9,22,30 N=52
			6.0						SPT Sample 5	6.5 6.77	24,30 blows for 120mm (N=75)
			8.0						SPT Sample 6	8.0 8.215	31,30 blows for 65mm (N=138)
			10.0						SPT Sample 7	9.4 9.8	13,27,30 blows for 100mm (N=72)

Engineering Log
Borehole

DAMES & MOORE

Borehole No.: BH3
Sheet 2 of

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT
Job No. : 18534-007-70

Date Drilled : 18-1-91 Drill Type : GEMCO 210 B Bore Size : 100mm RL Surface : -5.70m AHD
Logged by : MCW/ICL Driller : ENG. EXPL. Drilling Fluid : BIOGEL Ch/Coords : 332843E 240400N

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
BUTTON B WASHBORING						SAND (SP) As sheet 1		VD			
			12.0			Occasional dark wisps in borehole risings, 11-13m.					
			13.0			SAND (SP), light grey, fine to medium grained, with occasional fragments of black peaty clay.					
						END OF BOREHOLE AT 13.5m					
			14.0								
			16.0								
			18.0								
			20.0								

Engineering Log
Borehole

DAMES & MOORE

Borehole No.: BH4
Sheet 1 of 2

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT
Job No. : 18534-007-70

Date Drilled : 23-1-91 Drill Type : GEMCO 210 B Bore Size : 100mm RL Surface : -6.41m AHD
Logged by : MCW Driller : ENG. EXPL. Drilling Fluid : BIOGEL Ch/Coords : 332900E 240160N

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
BIT WASHBORING	HW		0.0			SAND (SP), grey to dark grey, fine to medium grained, some shell fragments. Occasional black clayey sond layers to 30mm thick.		VL	SPT Sample 1	.5 .95	1,1,0 N=1
			2.0						SPT No rec.	2.0 2.45	3,4,6 N=10
			2.2			SAND (SP), brown to dark brown, fine to medium grained, trace of peat and decomposed wood fragments, organic odour.		MD			
			4.0						SPT Sample 3	3.5 3.95	5,4,8 N=12
			4.6			SAND (SP), light grey, fine to medium grained, occasional bands of dark grey sand with clay laminae to 20mm thick. Occasional peat lenses.		D	SPT Sample 4	4.6 5.05	19,28,20 N=48
			6.0								
			6.1			SAND (SP), brown to dark brown, fine to medium grained.		MD	SPT Sample 5	6.15 6.6	3,7,9 N=16
			7.7								
			8.0			SAND (SP), light grey, fine to medium grained.		VD	SPT Sample 6	7.7 8.11	14,26,32 for 110mm (N=66)
									SPT Sample 7	9.2 9.46	18,30 for 115mm (N=81)
			10.0								

Engineering Log Borehole

DAMES & MOORE

Borehole No.: BH4
Sheet 2 of 2

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT
Job No. : 18534-007-70

Date Drilled : 23-1-91 Drill Type : GEMCO 210 B Bore Size : 100mm RL Surface : -6.41m AHD
Logged by : MCW Driller : ENG. EXPL. Drilling Fluid : BIOGEL Ch/Coords : 332900E 240160N

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
BUTTON BIT WASHBOR						SAND (SP), As sheet one			SPT Sample 8	10.7 - 10.96	20,30 for 110mm (N=70)
			11.4			Organic CLAY (OH), black		St-Vst			
			11.6			Sandy CLAY (CH), grey, interbedded clayey sand and peaty clay laminae to 20mm thick.		St-Vst	U50 Sample 9	11.5 - 11.8	
			12.0			Sand band, 13.0-13.2m			U50 Sample 10	13.0 - 13.3	
			13.2			Sandy CLAY (CL), grey, sand fine to medium grained.		St-Vst	SPT Sample 11	13.7 - 14.15	4,9,16 N=25
			14.0								
			15.2			CLAY (CL), grey with quartz pebbles and ironstone fragments (RESIDUAL SOIL).			SPT Sample 12	15.2 - 15.65	9,9,10 N=19
						END OF BOREHOLE AT 15.65m					
			16.0								
			18.0								
			20.0								

Engineering Log Borehole

DAMES & MOORE

Borehole No.: BH5
Sheet 1 of 2

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT
Job No. : 18534-007-70

Date Drilled : 4-5/2/91 Drill Type : GEMCO 210 B Bore Size : 100mm RL Surface : -6.79m AHD
Logged by : MCW Driller : ENG EXPL. Drilling Fluid : BIOGEL Ch/Coords : 332963E 239913N

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
BUT JIT WASHBORING	HW		2.0			SAND (SP), grey to dark grey, fine to medium grained, trace of silt, trace of shell fragments		VL	SPT No rec.	.35 1.15	Rods sank under self weight N=0
			4.0			SAND (SP), grey-brown becoming lighter with depth, fine to medium grained		MD	SPT No rec.	2.3 2.6	10,14 (N=28)
						Occasional thin organic CLAY bands indicated by small particles in drill risings from 3.6-4.6m.			SPT Sample 1	3.55 4.0	8,11,11 N=22
			6.0			SAND (SP), as above, light grey to grey			SPT Sample 2	5.1 5.55	7,8,5 N=13
						Thin interbedded bands of black, silty SAND, organic from 5.7 to 7.6m		VD	SPT Sample 3	6.75 7.02	16,34 for 120mm (N=85)
			8.0						SPT Sample 4	8.1 8.25	40 for 150mm (N=80)
			10.0						SPT Sample 5	9.7 9.92	21,30 for 70mm (N=128)

Engineering Log Borehole

DAMES & MOORE

Borehole No.: BH5 Sheet 2 of

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT
Job No. : 18534-007-70

Date Drilled : 4-5/2/91 Drill Type : GEMCO 210 B Bore Size : 100mm RL Surface : -6.79m AHD
Logged by : MCW Driller : ENG EXPL. Drilling Fluid : BIOGEL Ch/Coords : 332963E 239913N

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
						SAND (SP), as sheet 1					
			11.20			PEAT (Pt), black, becoming clayey PEAT at 11.45m		St	SPT Sample 6	11.2 - 11.65	4,6,7 N=13
			12.10			SAND (SP), dark grey, fine to medium grained, trace of silt		MD	U50 Sample 7	12.0 - 12.25	
			13.60			Clayey SAND (SC), light grey, fine to medium grained, interbedded with SAND (SP) light grey, fine to medium grained		MD	U50 No rec.	13.6 - 13.9	
			14.0						U50 Sample 8	14.35 - 14.65	
			16.0						U50 Sample 9	15.85 - 16.15	
			17.0			CLAY (CL), grey with orange mottles, some sand, fine to medium grained		VSt	U50 Sample 10	17.4 - 17.7	
			18.0								
			18.7			SANDSTONE, white, moderately to extremely weathered			SPT Sample 11	19.1 - 19.22	30 blows for 110mm (N=81)
						END OF BOREHOLE AT 19.22m					
			20.0								

UTTON BIT WASHBORING

Engineering Log
Borehole

DAMES & MOORE

Borehole No.: BH6
Sheet 1 of 2

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT
Job No. : 18534-007-70

Date Drilled : 13/14-2-91 | Drill Type : GEMCO 210 B | Bore Size : 100mm | RL Surface : -7.01m AHD
Logged by : MCW | Driller : ENG. EXPL. | Drilling Fluid : BIOGEL | Ch/Coords : 333019E 239673N

Drilling: Method – BIT WASHBORING; Casing – HW (to 4.0 m)

Depth (m) 1:50	Soil Description	Consistency / Rel. Density	Sample Type & No.	Depth (m)	Field Records
0.0	SAND (SP), brown, fine to medium grained, trace of shell fragments	VL–MD	SPT No rec.	.5 – 1.1	Rods sank under self weight N=0
2.0			SPT No rec.	2.05 – 2.5	5,6,8 N=14
3.0	SAND (SP), brown, fine to medium grained, trace of silt	MD	SPT Sample 1	3.15 – 3.6	3,5,8 N=13
4.95	Sandy CLAY layer, grey, 50mm thick.				
	SAND (SP), brown to black, fine to medium grained, trace to some silt, interbedded with layers of PEAT, black, stiff with wood fragments and organic CLAY, black, to 150mm thick.	MD	SPT Sample 2	4.9 – 5.35	3,9,15 N=24
			SPT Sample 3	6.45 – 6.9	4,5,7 N=12
8.1	SAND (SP) grey to light grey, fine to medium grained. Petrified wood layer, 10mm thick @ 8.3m.	VD	SPT Sample 4	8.1 – 8.55	11,27,36 N=63
10.0			SPT Sample 5	9.6 –	12,25,35 N=60

Engineering Log Borehole

DAMES & MOORE

Borehole No.: BH6
Sheet 2 of 2

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT
Job No. : 18534-007-70

Date Drilled : 13/14-2-91 Drill Type : GEMCO 210 8 Bore Size : 100mm RL Surface : -7.01m AHD
Logged by : MCW Driller : ENG. EXPL. Drilling Fluid : BIOGEL Ch/Coords : 333019E 239673N

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
BUTTON BIT WASHBORING			10.3			SAND (SP), grey to dark grey, fine to medium grained, interbedded with PEAT, black, layers to 100mm thick.		MD	SPT Sample 6	10.05 11.1 11.55	5,11,11 N=22
			12.0								
			12.55			Clayey SAND (SC), light grey with dark grey mottles (decreasing with depth), sand fine to medium grained		MD	SPT Sample 7	12.5 12.95	7,10,14 N=24
			14.0						SPT Sample 8	14.0 14.45	8,13,10 N=23
			15.4			CLAY (CL), grey with orange mottles, some sand.		V. St			
			16.0						U50 Sample 9	15.85 16.03	
			16.85			SILTSTONE, extremely weathered.				16.95	
						END OF BOREHOLE AT 17.01m			SPT Sample 10	17.01	30 blows for 60mm (N=150)
			18.0								
			20.0								

Engineering Log
Borehole

DAMES & MOORE

Borehole No.: BH7
Sheet 1 of 2

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT
Job No. : 18534-007-70

Date Drilled : 18-2-91 Drill Type : GEMCO 210 B Bore Size : 100mm RL Surface : -7.29m AHD
Logged by : MCW Driller : ENG. EXPL. Drilling Fluid : BIOGEL Ch/Coords : 333075E 239425N

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
BUTTON BIT WASHBORING			2.0			SAND (SP), grey, fine to medium grained, some shell.		VL	SPT Sample 1	.5 - 1.2	1 blow for 0.7m N=0
								L	SPT Sample 2 Low rec.	1.5 - 1.95	4,3,3 N=6
						Possibly interbedded organic CLAY layers from 1.95 to 3.2m.		D	SPT No rec.	2.75 - 3.2	9,15,18 N=33
			3.2								
			3.4			ORGANIC CLAY (OH), black, interbedded with PEAT, black with wood fragments.		F	SPT Sample 3	3.68 - 4.13	4,14,13 N=27
			3.8 4.0			SAND (SP), grey becoming light brown to light grey @ 5.2m, fine to medium grained. Interbedded with organic CLAY, black from 4.1 to 4.4m		MD			
									SPT Sample 4	5.2 - 5.65	7,11,14 N=25
			6.0								
								D	SPT Sample 5	6.7 - 7.15	8,14,22 N=36
			8.0						SPT Sample 6	8.2 - 8.65	10,17,21 N=38
			10.0						SPT Sample 7	9.65	10,21,35 N=56

Engineering Log
Borehole

DAMES & MOORE

Borehole No.: BH7
Sheet 2 of

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT Job No. : 18534-007-7(

Date Drilled : 18-2-91 Drill Type : GEMCO 210 B Bore Size : 100mm RL Surfoce : -7.29m AHD
Logged by : MCW Driller : ENG. EXPL. Drilling Fluid : BIOGEL Ch/Coords : 333075E 239425N

Drilling Method	Drilling Casing	Drilling Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
BUTTON BIT WASHBORING										10.15	
			10.7			PEAT (Pt), black, with wood fragments, and organic CLAY, black, interbedded with SAND, grey, fine to medium grained.		F			
			11.15			SANDY CLAY (CL), grey, fine to medium grained sand.		F	SPT Sample 8	11.05 11.5	10,4,5 N=9
			12.0			CLAY (CL), light grey with yellow orange mottles, some sand fine to medium grained.		St	U50 Sample 9	12.55 12.85	
			13.35			SANDSTONE, brown, highly weathered.			SPT Sample 10	13.45 13.54	30 blows for 90mm (N=100)
						END OF BOREHOLE AT 13.54m					
			14.0								
			16.0								
			18.0								
			20.0								

Engineering Log
Borehole

DAMES & MOORE

Borehole No.: BH8
Sheet 1 of 2

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT
Job No. : 18534-007-70

Date Drilled : 19-2-91 Drill Type : GEMCO 210 B Bore Size : 100mm RL Surface : -7.29m AHD
Logged by : MCW Driller : ENG. EXPL. Drilling Fluid : BIOGEL Ch/Coords : 333133E 239184N

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
BUTTON BIT WASHBORING			2.0			SAND (SP), grey, fine to medium grained, trace of shell, trace of silt, interbedded with layers of PEAT, black, soft with wood and organic fragments and organic CLAY, black, soft.		VL	SPT Sample 1	.5 .95	0,0,2 N=2
								MD	SPT Sample 2	1.1 1.55	2,6,5 N=11
			2.6			SAND (SP), light brown to orange brown, fine to medium grained.		MD-VD	SPT Sample 3	2.6 3.05	7,8,10 N=18
			4.0						SPT Sample 4	4.05 4.5	8,19,30 N=49
			4.8						SPT Sample 5 Low rec.	4.8 5.25	15,23,30 for 135mm (N=56)
			6.0						SPT Sample 6	6.35 6.8	6,10,13 N=23
			8.0						SPT Sample 7	7.8 8.25	8,15,25 N=40
			10.0						SPT Sample 8	9.35 9.8	12,17,32 for 130mm (N=53)

Engineering Log
Borehole

DAMES & MOORE

Borehole No.: BH8
Sheet 2 of

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT
Job No. : 18534-007-70

Date Drilled : 19-2-91 Drill Type : GEMCO 210 B Bore Size : 100mm RL Surface : -7.29m AHD
Lagged by : MCW Driller : ENG. EXPL. Drilling Fluid : BIOGEL Ch/Coords : 333133E 239184N

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
BUTTON BIT WASHBORING			10.7			SAND (SP), As sheet 1					
			12.0			Sandy CLAY/Clayey SAND (CH/SC), olive green to black, trace of organics, sand fine to medium grained		F-St	U50 Sample 9	10.85 11.15	
			12.4			Sandy CLAY (CL), grey, sand fine to medium groined.		St			
			12.9			CLAY (CL), light grey with orange mottles, same sand, fine to medium grained.		St	U50 Sample 10	12.75 13.05	
			14.0								
			14.2			SANDSTONE, light grey with thin orange layers, extremely weathered.			SPT Sample 11	14.2 14.4	23,30 blows for 50mm (N=180)
						END OF BOREHOLE AT 14.4m					
			16.0								
			18.0								
			20.0								

Engineering Log
Borehole

DAMES & MOORE

Borehole No.: BH20
Sheet 1 of

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT
Jab No. : 18534-007-70

Dote Drilled : 21-2-91 Drill Type : GEMCO 210 B Bore Size : 100mm RL Surfoce : -8.09m AHD
Logged by : MCW Driller : ENG. EXPL. Drilling Fluid : BIOGEL Ch/Coords : 332839N 239109E

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
BUTTON BIT WASHING						SAND (SP) grey, fine to medium grained trace of shell.		L		.5	
			.95			SAND, (SP) black to grey interbedded with organic CLAY, black ond PEAT, black with arganic matter and silty SAND.		MD	SPT Sample 1	.95 1.4	Sank 450mm under self weight 5.9.6 N=15
			2.0			PEAT layer 100mm thick @ 0.95m			SPT Somple 2	2.1 2.55	9,11,9 N=20
			3.15			SAND, (SP), brown to orange brown, fine to medium grained becaming light grey at 8.0m.		D-VD	SPT Sample 3	3.15 3.6	9,15,22 N=37
			4.0						SPT Sample 4	4.7 5.12	11,20,30 in 130mm (N=55)
			6.0						SPT Sample 5	6.45 6.9	9.16.27 N=43
			8.0						SPT Sample 6	7.75 8.2	10,16,30 N=46
			10.0						SPT sample 7	9.5 9.89	11,27,30 for 90m. (N=77)

Engineering Log Borehole

DAMES & MOORE

Borehole No.: BH20
Sheet 2 of 2

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT Job No. : 18534-007-70

Date Drilled : 21-2-91 Drill Type : GEMCO 210 B Bore Size : 100mm RL Surface : -8.09m AHD
Logged by : MCW Driller : ENG. EXPL. Drilling Fluid : BIOGEL Ch/Coords : 332839N 239109E

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
BUTTON BIT WASH			11.2			SAND (SP), As sheet 1			SPT Sample 8	11.0 11.45	13,17,10 N=27
			12.0			Sandy CLAY (CL), dark grey, interbedded with SAND, light grey and Clayey SAND, light grey, fine to medium grained		F-St	U50 No rec.	12.5 12.7	
			12.9			CLAY (CL), light grey, with orange mottles some sand, fine to medium grained.		St	SPT Sample 8	12.75 13.2	6,7,10 N=17
			14.0						U50 Sample 10	14.1 14.4	
			15.0			SILTSTONE, grey, extremely weathered.			SPT Sample 11	15.0 15.11	30 blows for 110mm (N=82)
						END OF BOREHOLE AT 15.11m					
			16.0								
			18.0								
			20.0								

TEST BORE REPORT

CLIENT CONDRECO PTY LTD
DATE 12.3.92
BORE No 46
PROJECT THIRD RUNWAY
PROJECT No 14711
LOCATION BOTANY BAY
SURFACE LEVEL SEABED RL -7.13M

Depth m	Description of Strata	Sample Type	Core Rec. %	RQD %	Test Results & Comments
0.00	SEA BED				
	SAND - brown fine to medium grained sand with some shell fragments up to 5mm				
2.0		S			1.87 - 2.23 12,17,31 N=48
4.0		S			3.87 - 4.17 13,31/150
5.87					
6.0	SAND - dense to very dense light grey brown fine to medium grained sand	S			5.87 - 6.23 13,22,35 N=57
8.0		S			7.87 - 8.17 22,50/150
		U_{75}			8.87 - 9.17
10.0					
		S			10.87 - 11.17 18,41/150
12.0					
12.27	PEAT - stiff black peat				
12.97	SAND - very dense grey medium grained sand, dark grey silty clay in parts	S			12.87 - 13.87 26,47/150
14.0					
14.57	SILTY CLAY - stiff dark grey silty clay with some organic fragments				14.87 - 15.32 7,10,12 N=22
15.32		S			
16.0	BORE DISCONTINUED AT 15.32 METRES				
18.0					

Graphic Log

Soil — Cohesive: Very Soft, Soft, Firm, Stiff, Very Stiff, Hard; Non-Cohesive: Very Loose, Loose, Mod. Dense, Dense, Very Dense

Rock Strength: Ex. Low, Very Low, Low, Medium, High, Very High, Ex. High

Sampling & In Situ Testing

RIG Pioneer P160 DRILLER Lamb LOGGED Curran CASING HW to 3.30m

TYPE OF BORING Rotary drilling with mud circulation from sea bed to 15.32m

WATER OBSERVATIONS

REMARKS Sea bed level to hydrographic datum

SAMPLING & IN SITU TESTING

A auger sample
B bulk sample
C core drilling
PL point load strength $I_s(50)$(MPa)
S standard penetration test
Ux x mm dia. tube

D.J. Douglas & Partners

Engineering Log
Borehole

DAMES & MOORE

Borehole No.: BH67
Sheet 1 of

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT
Job No. : 18534-007-70

Date Drilled : 16.5.91 | Drill Type : GEMCO 210 B | Bore Size : 100mm | RL Surface : -3.82m AHD.
Logged by : MCW | Driller : ENG. EXPL. | Drilling Fluid : BIOGEL | Ch/Coords : 333780mE 240865mN

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
BUTTON BIT WASHBORING	HW		2.0			Shelly SAND (SP), grey, fine to medium grained, shell in fragments to >50mm		VL	SPT Sample 1	0.5 0.8 1.7 2.1	Sunk under self wt to 0.8m 1,1,0 N=1 Overdriv to 1.7m 1 blow at 1.7m for 400mm
			2.4			SAND (SP), black, fine to medium grained, some silt, organic odour		MD	SPT Sample 2	2.4 2.85	3,6,6 N=12
			2.85 4.0			Clayey SAND (SC), black to brown, fine to medium grained, organic odour at 2.85m		MD	SPT Sample 3	3.9 4.35	12,8,22 N=30
			4.2			SAND (SP), light grey, fine to medium grained		MD	SPT Sample 4	5.3 5.75	8,10,15 N=25
			6.0			Becoming SAND (SP), light grey, fine to medium grained, with some clay, at 6.75m			SPT Sample 5	6.75 7.2	9,11,9 N=20
			8.0						SPT Sample 6	8.7 9.15	3,2,3 N=5
			9.0			CLAY (CH), dark grey, with some sand and interbedded sand layers		VSt			
			10.0								

Engineering Log Borehole

DAMES & MOORE

Borehole No.: BH67
Sheet 2 of 2

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT Job No. : 18534-007-70

Date Drilled : 16.5.91 Drill Type : GEMCO 210 B Bore Size : 100mm RL Surface : -3.82m AHD
Logged by : MCW Driller : ENG. EXPL. Drilling Fluid : BIOGEL Ch/Coords : 333780mE 240865mN

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
BUTTON BIT ~IBORING						CLAY (CH), As sheet 1 Sand layer, grey at 10.5m			U50 Sample 7	10.2 10.5	
			11.6			CLAY (CL), light grey, low plasticity, trace of sand, fine to medium grained		VSt	U50 Sample 8	11.85 12.15	
			13.3			SANDSTONE, light grey to white, highly to extremely weathered.			SPT Sample 9	13.6 13.69	30 blows for 90mm (N=100)
						END OF BOREHOLE AT 13.69m					
			14.0								
			16.0								
			18.0								
			20.0								

Engineering Log Borehole

DAMES & MOORE

Borehole No.: BH68
Sheet 1 of 2

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT
Job No. : 18534-007-70

Date Drilled : 18.5.91 | Drill Type : GEMCO 210 B | Bore Size : 100mm | RL Surface : -5.48m AHD
Logged by : MCW | Driller : ENG. EXPL. | Drilling Fluid : BIOGEL | Ch/Coords : 332849mE 240560mN

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
BUTT'N BIT WASHBORING	HW		0			SAND (SP), grey, fine to medium grained, some shell fragments to 20mm		VL		.5	Sunk under self wt. to 1.1m
						Black SAND layers with some silt at 1.1-1.5m			SPT Sample 1	1.1 1.55	1,0,2 N=2
			1.75			SAND (SP), brown, fine to medium grained		VL	SPT Sample 2	1.75 2.25	1,1,1 N=2 Overdriven to 2.5m in 7 blows
			2.45			SAND (SP)/Organic CLAY (OH). Interbedded layers of SAND, grey to black and organic CLAY, black, trace of SAND		L-MD		2.5	
			3.43			SAND (SP), light grey, fine to medium grained		D-VD	SPT Sample 3	3.4 3.85	9,15,22 N=37
			4.0						SPT Sample 4	4.88 5.25	16,25,30 for 100mm (N=70)
			6.0						SPT Sample 5	6.7 6.97	16,30 for 120mm (N=75)
			8.0						SPT Sample 6	8.7 8.95	27,30 for 100mm (N=90)
			10.0								

Engineering Log
Borehole

DAMES & MOORE

Borehole No.: BH68
Sheet 2 of 2

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT Job No. : 18534-007-70

Date Drilled : 18.5.91 Drill Type : GEMCO 210 B Bore Size : 100mm RL Surface : -5.48m AHD
Logged by : MCW Driller : ENG. EXPL. Drilling Fluid : BIOGEL Ch/Coords : 332849mE 240560mN

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
B.WASHBORING						SAND (SP), As sheet 1					
						Organic CLAY, black 10.5-10.6m					
			10.6			CLAY (CH), light grey with orange mottles, some sand, fine to medium grained, high plasticity					
			11.3			SILTSTONE, grey-brown, moderately to extremely weathered			D Sample 7A SPT No.Rec	11.2 11.5	30 blows for 40mm (N=225)
						END OF BOREHOLE AT 11.54m				11.54	
			12.0								
			14.0								
			16.0								
			18.0								
			20.0								

Engineering Log
Borehole

DAMES & MOORE

Borehole No.: BH69
Sheet 1 of

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT   Job No. : 18534-007-70

Date Drilled : 20.5.91   Drill Type : GEMCO 210 B   Bore Size : 100mm   RL Surface : -6.08m AHD.
Logged by : MCW   Driller : ENG. EXPL.   Drilling Fluid : BIOGEL   Ch/Coords : 332912mE 240311mN

Drilling: Method: BUTTON BIT WASHBORING; Casing: HW; Water: –

Depth (m) 1:50	Soil Description	Consistency Rel. Density	Sample Type & No.	Sample Depth (m)	Field Records
0.0–2.0	SAND (SP), grey, fine to medium grained, some shell fragments. (Based on remnants in SPT sample)	VL	SPT No rec.	1.2–1.65	Sank under self wt. to 1.2m 2,1,3 N=4
2.1–5.1	SAND (SP), brown, fine to medium grained, interbedded with organic CLAY layers, black with some sand, fine to medium grained Organic CLAY layer at 2.3m, 100mm thick Clayey SAND layers 3.5–4.0m, black, organic rich.	L–D	SPT Sample 1	2.1–2.55	3,2,7 N=9
			SPT Sample 2	3.55–4.0	12,19,20 N=39
5.1–6.4	SAND (SP), grey, fine to medium grained, with occasional interbedded organic CLAY layers, black	MD	SPT Sample 3	5.1–5.55	9,12,11 N=23
6.4–7.3	Clayey SAND (SC), dark grey, fine to medium grained	MD–D	SPT Sample 4	7.05–7.5	13,18,21 N=39
7.3–10.0	SAND (SP), light grey to dark grey, fine to medium grained Organic CLAY layer, black at 9.4–9.5m	MD–VD	SPT Sample 5	9.05–9.5	15,12,11 N=23

Depth scale marks: 2.0, 4.0, 6.0, 8.0, 10.0

Engineering Log
Borehole

DAMES & MOORE

Borehole No.: BH69
Sheet 2 of 2

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT Job No. : 18534-007-70

Date Drilled : 20.5.91 Drill Type : GEMCO 210 B Bore Size : 100mm RL Surface : -6.08m AHD
Logged by : MCW Driller : ENG. EXPL. Drilling Fluid : BIOGEL Ch/Coords : 332912mE 240311mN

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
BUTTON BIT WORING			12.0			SAND (SP), As sheet 1			SPT Sample 6	11.05 - 11.5	18,30 for 130mm (N=69)
			12.1			Organic CLAY (OH), black with peaty fragments		VSt-H	U50 Sample 7	12.15 - 12.3	UCS= 400kPa
			12.9			CLAY (CH), grey with orange mottles, some sand, fine to medium grained, high plasticity		St-VSt			
			13.85 14.0			SANDSTONE, light grey with thin yellow-brown ironstained layers, fine to coarse grained, highly to extremely weathered		VD	SPT Sample 8	13.85 - 14.06	28,30 for 60mm (N=150)
						END OF BOREHOLE AT 14.06m					
			16.0								
			18.0								
			20.0								

Engineering Log
Borehole

DAMES & MOORE

Borehole No.: BH71
Sheet 1 of

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT Job No. : 18534-007-70

Date Drilled : 24.5.91 Drill Type : GEMCO 210 B Bore Size : 100mm RL Surface : -6.93m AHD
Logged by : MCW Driller : ENG. EXPL. Drilling Fluid : BIOGEL Ch/Coords : 333033mE 239826mN

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
BUTTON BIT WASHBORING	HW					Clayey SAND (SC), dark grey, fine to medium grained with interbedded layers of clayey SILT, dark grey, with some sand, fine to medium groined, to 200mm thick		VL	SPT Sample 1	.4 .9	Sank under self wt. to 0.9m. 1,1,0 N=1 Overdriven 450mm. 5 blows
			2.0			Silty CLAY, brown, with wood fragments and organic matter at 1.9m, firm.				1.8 1.9	
			2.3			SAND (SP), brown, with organic CLAY layers, black		L	SPT Sample 2	2.1 2.6	Sank to 2.1m 6,7,3 N=10 Overdriven 100mm
			3.25			SAND (SP), light grey, fine to medium grained		D-VD	SPT Sample 3	3.25 3.7	11,20,22 N=42
			4.0			SAND (SP), grey, fine to medium grained with a troce of clay and occasional interbedded clayey SAND and organic CLAY bands to 6.8m			SPT Sample 4	4.8 5.25	9,10,17 N=27
			6.0			SAND (SP), brown to dark brown, fine to medium grained			SPT Sample 5	6.8 7.22	10,22,30 for 120mm (N=60)
			8.0								
			8.85			SAND (SP), black to grey, fine to medium grained with interbedded PEAT (PT)/organic CLAY bands		MD	SPT Sample 6	8.85 9.3	9,10,8 N=18
			10.0								

Engineering Log
Borehole

DAMES & MOORE

Borehole No.: BH71
Sheet 2 of 3

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT Job No. : 18534-007-70

Date Drilled : 24.5.91 Drill Type : GEMCO 210 B Bore Size : 100mm RL Surface : -6.93m AHD.
Logged by : MCW Driller : ENG. EXPL. Drilling Fluid : BIOGEL Ch/Coords : 333033mE 239826mN

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
BUTTON BIT WASHBORING						SAND (SP), As sheet 1					
						PEAT/organic CLAY layer, black at 10.2m, 300mm thick					
						Sandy PEAT, black at 10.8-10.9m		D	SPT Sample 7	10.8 11.25	10,15,17 N=32
			11.9 12.0			Organic CLAY (OH)/PEAT (Pt) black, with wood fragments		VSt	U50 Sample 8	12.0 12.3	
			12.7			Clayey SAND (SC)/Sandy CLAY (CL), grey, sand fine to medium grained, interbedded		MD	U50 No.Rec	13.5 13.8	
			14.0			Clayey SAND at 14.2-14.45m			SPT Sample 9	14.0 14.45	4,12,16 N=26
			15.4			SAND (SP), grey, fine to medium grained with trace to some silt		VD			
			16.0						SPT Sample 10	16.0 16.29	18,30 for 140mm (N=64)
			18.0						SPT Sample 11	18.0 18.45	16,27,33 N=60
			19.0			CLAY (CH), light grey with orange mottles, some sand, fine to medium grained.		St-VSt			
			20.0								

Engineering Log Borehole

DAMES & MOORE

Borehole No.: BH71
Sheet 3 of

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT Job No. : 18534-007-70

Date Drilled : 24.5.91 Drill Type : GEMCO 210 B Bore Size : 100mm RL Surface : -6.93m AHD
Logged by : MCW Driller : ENG. EXPL. Drilling Fluid : BIOGEL Ch/Coords : 333033mE 239826mN

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
			20.1			SANDSTONE, light grey to yellow brown, fine to coarse grained, highly to extremely weothered			SPT Sample 12.	20.1 20.15	30 blows for 50mm (N=180)
						END OF BOREHOLE AT 20.15m					
			22.0								
			24.0								
			26.0								
			28.0								
			30.0								

Engineering Log Borehole

DAMES & MOORE

Borehole No.: BH73
Sheet 1 of 2

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT Job No. : 18534-007-70

Date Drilled : 29.5.91 Drill Type : EDSON 3000 Bore Size : 100mm RL Surface : -7.39m AHD.
Logged by : TDM Driller : ENG. EXPL. Drilling Fluid : BIOGEL Ch/Coards : 333138mE 239343mN

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
WASHBORING	HW					SAND (SP), dark brown, fine to medium grained, some whole to broken shell fragments		VL-VD	SPT No.Rec	.5 .95	Sank 300mm under self wt. 3 (N=3)
			2.0						SPT No.Rec	2.0 2.3	23,30 for 150mm pen. (N=60)
			2.5			SAND (SP), brown, fine to medium grained		VD-D			
									SPT No.Rec	3.5 3.575	30 for 150mm pen. (N=60)
			4.0								
									SPT Sample 1	5.0 5.45	5,12,24 N=36
			6.0								
						Trace of peat from 7.2m to 8.5m			SPT Sample 2	7.0 7.45	6,15,25 N=40
			8.0								
									SPT Sample 3	9.0 9.45	5,12,30 N=42
			9.2			SAND (SP), dark brown, fine to medium grained, trace of clay from 9.5m		D			
			9.7					VSt-H			
			10.0			CLAY (CL), As sheet 2					

Engineering Log
Borehole

DAMES & MOORE

Borehole No.: BH73
Sheet 2 of

Client : FEDERAL AIRPORTS CORPORATION
Project : THIRD RUNWAY PROJECT
Location : SYDNEY (KINGSFORD-SMITH) AIRPORT Job No. : 18534-007-70

Date Drilled : 29.5.91 Drill Type : EDSON 3000 Bore Size : 100mm RL Surface : -7.39m AHD.
Logged by : TDM Driller : ENG. EXPL. Drilling Fluid : BIOGEL Ch/Coords : 333138mE 239343mN

Drilling: Method	Drilling: Casing	Drilling: Water	Depth (m) 1:50	Interpreted Profile	Graphic Log	Soil Description	Moisture Condition	Consistency Rel. Density	Samples/Tests: Sample Type & No.	Samples/Tests: Depth (m)	Field Records
WASH BORING			12.0			CLAY (CL), grey, some fine to medium sand		Vst - H	U50 Sample 4	11.0 11.3	UCS= 400kPa
			12.8			Sandy CLAY (SC), brown to grey, high plasticity			SPT Sample 5	13.0 13.15	40 for 150mm pen. (N=80)
			13.0			SANDSTONE, orange, brown to yellow. Extremely weothered					
						END OF BOREHOLE AT 13.15m					
			14.0								
			16.0								
			18.0								
			20.0								

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP1/1A
sheet 1 of 6

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	13/7/1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	23/7/1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240705N 0333527E (CP1A)	checked by:	
drill model and mounting:	EDSDN 3000 - BARGE	slope:	-90 DEG
hole diameter:	100mm	bearing:	
R.L. Surface:	-1.65 m	datum:	ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C			-2	1		SP	SAND: fine to medium grained, brown, trace of silt.	W	L		UNIT 1C
		C		22 , 15 , 17 N*= 32	-4	2		SP	SAND: fine to medium grained, brown, trace of silt.	W	D		UNIT 2
		C		10 , 25 , 26 N*= 51	-5	3		SM	SILTY SAND: fine to medium grained, dark brown, some peat fragments.		VD		
		M		8 , 15 , 22 N*= 37	-6	4							
				0 , 1 , 1 N*= 2	-7	5							
				7 , 12 , 18 N*= 30	-8	6		SP	SAND: fine to medium grained, light brown, trace of silt.		VL		6.25m: SPT possible disturbance of base of borehole.
					-9	7					D		
						8							

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support
C casing
W mud

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured
0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

COFBORE VERSION B3.1 5/2/99 17:4.54 syd

T87-230

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP1/1A
sheet 2 of 6

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	13/7/1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	23/7/1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240705N 0333527E (CP1A)	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -1.65 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W					-10	9		SP	SAND: fine to medium grained, light brown, trace of silt.	M	D		UNIT 2
				30,30, N*=R	-11	10					VD		
					-12								
						11		SP	SAND: fine to medium grained, light grey-brown, trace to some silt.				
					-13								
						12							
					-14								
				23,33, N*>60		13							
					-15								
						14							
				9,40, N*>80	-16								
						15							
					-17								
						16							

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured D none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP1/1A
sheet. 3 of 6

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	13/7/1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	23/7/1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240705N 0333527E (CP1A)	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -1.65 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa	structure and additional observations
	1 2 3 4			9 ,21 ,32 N*= 53	-18	17		SP	SAND: fine to medium grained, light grey-brown, trace to some silt.	M	D	100 200 300 400	UNIT 2
					-19								
					-20	18		SP	SAND: fine to medium grained, light grey.				
				36 . . N*=R	-21	19					VD		
BB						20		CH	CLAY: high plasticity, grey, mottled light grey, some peaty clay.	>Wp	VSt		UNIT 3B
					-22								
					-23	21							
				U50		22		CH	CLAY: high plasticity, grey, mottled light grey.				
					-24								
						23							
					-25			OH	SILTY CLAY: medium to high plasticity, dark grey-black.				
						24							

COFBORE VERSION B3.1 syd 17 : 5 :6 5/ 2/99

METHOD
- AS auger screwing*
- AD auger drilling*
- RR roller/tricone
- W washbore
- CT cable tool
- HA hand auger
- DT diatube
- *bit shown by suffix
- B blank bit
- Y V bit
- T TC bit
- e.g. ADT

SUPPORT
- Nil no support
- M mud
- C casing

PENETRATION
1 2 3 4 little resistance ranging to very slow progress

WATER
- * not measured
- 0 none observed
- water level
- water outflow
- water inflow

SAMPLES, TESTS, ETC
- U undisturbed sample (mm)
- D disturbed sample
- Bs bulk sample
- E environmental sample
- N standard penetration test:
- N* SPT + sample recovered
- Nc SPT with solid cone
- VS vane shear
- PM pressuremeter
- DP dynamic penetrometer
- WS water sample
- PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

CONSISTENCY/DENSITY INDEX

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP1/1A
sheet 4 of 6

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	13/7/1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	23/7/1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240705N 0333527E (CP1A)	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -1.65 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration	support	water	samples, tests, etc	R.L. / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa	structure and additional observations
NMLC	1 2 3 4			U63	-26 / 25 / -27		OH	SILTY CLAY: medium to high plasticity, dark grey-black.	>Wp	VSt	100 200 300 400	UNIT 3B
					26 / -28							Possibly 1.2m thick sand horizon at 26.6m.
					27 / -29							No recovery of U63 at 27.35m (sand?).
				8 , 11 , 13 N*= 24	28 / -30		CH	SILTY CLAY: high plasticity, light grey-green, traces of fine sand and shell fragments.	>Wp	VSt		UNIT 4A
					29 / -31							
					30 / -32							
				D	31		SP	SAND: medium to coarse grained, light grey, some clay and traces of subrounded gravel to 5mm.	W	VD		UNIT 4B
				D			SC	CLAYEY SAND: medium to coarse grained, light grey, strongly cemented.				U63 at 30.75m refusal in sand at 31m - placed in sample bag
					-33 / 32		CH	CLAY: high plasticity, light grey mottled light brown.	<Wp	H		UNIT 4A
												Core run from 31-34.00m -1.70m recovery, bag samples taken.

B3.1 COREBORE VERSION syd 5/ 2/99 17 : 5 :10

METHOD
AS auger screwing*
AD auger drilling*
AR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP1/1A
sheet 5 of 6

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	13/7/1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	23/7/1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240705N 0333527E (CP1A)	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope:	-90 DEG
hole diameter:	100mm	bearing:	
		R.L.Surface:	-1.65 m
		datum:	ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L. / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
NMLC				D	-34 / 33 / -35		CH	CLAY: high plasticity, light grey mottled light brown.	<Wp	H	×	UNIT 4A
					34		SC	CLAYEY SAND: medium to coarse grained, light grey, cemented (EW SANDSTONE)	W	VD		UNIT 5
					-36 / 35 / -37 / 36 / -38 / 37 / -39 / 38 / -40 / 39 / -41 / 40			Continued as cored borehole from 34.00 m				

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

COREBORE VERSION B3.1 5/ 2/99 17 : 5 :14 syd

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - cored borehole

borehole no: CP1/1A
sheet 6 of 6

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	13/7/1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	23/7/1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240705N 0333527E (CP1A)	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -1.65 m
barrel type and length:	NMLC - 3m	fluid: MUD/WATER	bearing: datum: ISLW

drilling information					rock substance				rock mass defects		
method	case-lift	water	R.L.	depth metres	graphic log / core loss	substance description: rock type: grain characteristics, colour, structure, minor components	weathering	Est. Strength (EL VL L M H VH EH)	point load test Is(50) MPa	RQD %	defect spacing mm (30 100 300 1000 3000)	defect description: type, inclination planarity, roughness, coating, thickness; unless otherwise noted defects follow general description below
			-34	33		Continued from non-core borehole						
			-35									
NMLC			-36	34		NO CORE:	SW					UNIT 6
				35		SANDSTONE: medium to coarse grained, light grey, becoming mottled & banded light brown & light grey, distinct bedding, becoming indistinct bedding, 0-25deg.			D A 0.54 0.75			34.0-37.0m bedding partings
			-37				MW			95		1mm clay SW
				36					D A 0.66 0.87			7mm broken SW
			-38									20mm EW SM
				37					D A 0.76 0.86			
			-39			Borehole CP1/1A Terminated at 37.00m						
				38		NOTE: 50mm P.V.C installed in BHCP1A from 34.8m to 1m above S.B. capped both ends and float on top cap. Removing HQ casing - lifted P.V.C to 2.5m above S.B.						
			-40									
				39								
			-41									
				40								

General Defect Description:
34.00-37.00m Bedding Partings

METHOD		WATER		POINT LOAD TEST	WEATHERING	STRENGTH	DEFECTS
DT	diatube		water level	D -diametral I -irregular	FR -fresh	EL -extremely low	JT -joint
AS	auger screwing		water inflow	A -axial	SW -slightly	VL -very low	PT -parting
AD	auger drilling	D	none observed	GRAPHIC LOG/CORE LOSS	MW -moderately	L -low	SM -seam
RR	roller/tricone	*	not measured	core recovered (hatching indicates material)	HW -highly	M -medium	PL -planar
NMLC	core drilling		Drilling Water partial loss	no core recovered	EW -extremely	H -high	CV -curved
NQ, HQ, PQ	core drilling		complete loss			VH -very high	IR -irregular
	casing used					EH -extremely high	RO -rough
	barrel withdrawn						SO -smooth
							SL -slickensided

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP2
sheet 1 of 6

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	23/7/1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	28/7/1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF/GAH
borehole location:	6240571N 0333580E	checked by:	
drill medel and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -2.46 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C				0		SP	SAND: fine to medium grained, light brown, some shell fragments and a trace of silt.	W	L		UNIT 1C
		C		5 ,6 ,4 N*= 10		1		SP	SAND: fine to medium grained, light brown, some shell fragments and a trace of silt.	W	MD		UNIT 2
		C		8 ,20 ,20 N*= 40		2		SP	SAND: fine to medium grained, light brown, some shell fragments and a trace of silt.		VD		
		M		21 ,33 , N*> 60		3		SP	SAND: fine to medium grained, light brown-brown with trace black, traces of silt and shell fragments.				
				16 ,30 ,31 N*= 61		4							
				20 ,40 ,45 N*> 85		5			Becoming light brown-brown with a trace of black from 7.60m.				
						6							
						7							
						8							

COFBORE VERSION B3.1 syd 5/2/99 14:32:50

T87-230

METHOD
- AS auger screwing*
- AD auger drilling*
- RR roller/tricone
- W washbore
- CT cable tool
- HA hand auger
- DT diatube
- *bit shown by suffix
- B blank bit
- V V bit
- T TC bit
- e.g. ADT

SUPPORT
- Nil no support
- M mud
- C casing

PENETRATION
1 2 3 4 — little resistance ranging to very slow progress

WATER
- * not measured
- D none observed
- water level
- water outflow
- water inflow

SAMPLES, TESTS, ETC
- U undisturbed sample (mm)
- D disturbed sample
- Bs bulk sample
- E environmental sample
- N standard penetration test:
- N* SPT + sample recovered
- Nc SPT with solid cone
- VS vane shear
- PM pressuremeter
- DP dynamic penetrometer
- WS water sample
- PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

CONSISTENCY/DENSITY INDEX
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP2
sheet 2 of 6

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	23/7/1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	28/7/1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF/GAH
borehole location:	6240571N 0333580E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -2.46 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
					-11	9		SP	SAND: fine to medium grained, light brown-brown with trace black, traces of silt and shell fragments.	W	VD		UNIT 2
				40 , ' N*=R	-12	10							SPT hammer bouncing
				30 , 20 , N*=R	-13	11		SP	SAND: fine to medium grained, light grey-brown, traces of silt and shell fragments and with occasional traces of peat from 11.5m.				SPT hammer bouncing
				30 , ' N*=R	-14	12							
				40 , ' N*=R	-15	13							
					-16	14							
				40 , ' N*=R	-17	15							SPT hammer bouncing
					-18	16							

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION 1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured N none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP2
sheet 3 of 6

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	23/7/1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	28/7/1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF/GAH
borehole location:	6240571N 0333580E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -2.46 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W					-19	17		SP	SAND: fine to medium grained, light grey-brown, traces of silt, shell fragments and peat	W	VD		UNIT 2
					-20	18							
				30, Nx=R	-21				Becoming grey.				
						19							
					-22			CI	PEATY CLAY: low to medium plasticity, dark brown-black, some shell fragments and fine grained sand.	>Wp	VSt		UNIT 3A
						20		CH	CLAY: high plasticity, grey-dark grey, some silt.				UNIT 3B
					-23								
						21							
				U50	-24								
						22							
					-25								
						23							
					-26			CH	SILTY CLAY: high plasticity, dark grey, some peaty lenses with a trace of fine sand.				
						24							

COFBORE VERSION 83.1 syd 14:33 :4 5/ 2/99

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured N none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP2
sheet 4 of 6

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	23/7/1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	28/7/1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF/GAH
borehole location:	6240571N 0333580E	checked by:	
drill model and mounting:	EOSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -2.46 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L. / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W				U70	-27 / 25		CH	SILTY CLAY: high plasticity, dark grey, some peaty lenses with a trace of fine sand.	>Wp	VSt		UNIT 3B Possible sand lense 0.2m thick at 25m.
					-28 / 26							
				U63	-29 / 27		SP	SAND: fine to medium grained, grey, traces of shell fragments.	W	VD		UNIT 4B U63 was attempted @ 28.25m, refusal after 300 mm penetration.
					-30 / 28							
					-31 / 29							
					-32 / 30		CH	CLAY: high plasticity, mixed grey & brown, some fine to coarse grained sand, some clayey sand, sandy clay & shelly lenses.	>Wp	VSt		UNIT 4A
				U50	-33 / 31							
					-34 / 32							

COREBORE VERSION 83.1 syd 5/ 2/99 14 :33 :9

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

TB7-230

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP2
sheet 5 of 6

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	23/7/1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	28/7/1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF/GAH
borehole location:	6240571N 0333580E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -2.46 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L. / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W					-35 / 33		CH	CLAY: high plasticity, mixed grey & brown, some fine to coarse grained sand, some clayey sand, sandy clay & shelly lenses.	>Wp	VSt		UNIT 4A
					-36 / 34		CH	SANDY CLAY: high plasticity, mixed grey & brown, sand is fine to medium grained.				
					-37 / 35		SP	CLAYEY SAND: fine grained, light grey with some grey laminations, clay is highly plastic.	W	D / VD		UNIT 5 Refusal with blade bit at 35.65m.
				D	-38							
					36			Continued as cored borehole from 35.65 m				
					-39 / 37							
					-40 / 38							
					-41 / 39							
					-42 / 40							

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing
PENETRATION 1 2 3 4 — little resistance ranging to very slow progress
WATER
X not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system
MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - cored borehole

borehole no: CP2
sheet 6 of 6

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	23/7/1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	28/7/1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF/GAH
borehole location:	6240571N 0333580E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -2.46 m
barrel type and length:	NMLC - 3m	fluid: QUICK-MUD	bearing: datum: ISLW

drilling information					rock substance						rock mass defects		
method	case-lift	water	R.L.	depth metres	graphic log / core loss	substance description: rock type, grain characteristics, colour, structure, minor components	weathering	Est. Strength	point load test Is(50) MPa	RQD %	defect spacing mm	defect description: type, inclination, planarity, roughness, coating, thickness; unless otherwise noted defects follow general description below
			-35	33								
			-36	34								
			-37	35								
			-38			Continued from non-core borehole			A			
NMLC						SANDSTONE: medium grained, light grey, some cross bedding @ 0-20deg	SW		D 0.4 0.26 0.43	0		PT 0deg 120mm PL JT 85deg PL RO 80mm 2 x PT 15deg PL RO UNIT 6
			-39	36		Borehole CP2 Terminated at 35.90m						
			-40	37								
			-41	38		HQ casing reamed to 35.65m from 30m for Geophysical logging upon completion of hole.						
			-42	39								
				40								

General Defect Description:

METHOD		WATER		POINT LOAD TEST		WEATHERING		STRENGTH		DEFECTS	
DT	diatube		water level	D -diametral	I -irregular	FR	-fresh	EL	-extremely low	JT	-joint
AS	auger screwing		water inflow	A -axial		SW	-slightly	VL	-very low	PT	-parting
AD	auger drilling	0	none observed	GRAPHIC LOG/CORE LOSS		MW	-moderately	L	-low	SM	-seam
RR	roller/tricone	X	not measured			HW	-highly	M	-medium	PL	-planar
NMLC	core drilling		Drilling Water partial loss		core recovered (hatching indicates material)	EW	-extremely	H	-high	CV	-curved
NQ,HQ,PQ	core drilling		complete loss		no core recovered			VH	-very high	IR	-irregular
	casing used							EH	-extremely high	RO	-rough
	barrel withdrawn									SO	-smooth
										SL	-slickensided

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP3
sheet 1 of 6

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	30/7/98
principal:	SYDNEY PORTS CORPORATION	hole completed:	4/8/98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	GAH/JAF
borehole location:	6240433N 0333627E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -15.10 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification SYMBOL	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		0 ,0 ,0 Nk= 0	-16	1		ML	SANDY SILT: low liquid limit, dark grey, sand is fine grained, some organics.	W	VL		UNIT 1B SPT attempted on seabed fell 1m under weight of 18m 18m of NW rods.
		C		7 ,18 ,25 Nk= 43	-17	2		SP	SAND: fine to medium grained, brown, with a trace of silt and shell fragments.	W	VD		UNIT 2
		C		7 ,15 ,19 Nk= 34	-18	3							
					-19	4							High water pressures and slow drilling resulted in U70 tube attempted @ 4.55m in possible clay but with no recovery. Further drilling showed that U70 was attempted in sand.
		C		14 ,30 ,30 Nk> 60	-20	5							
		M		11 ,40 , Nk=R	-21	6							
					-22	7							
				U70	-23	8		SP	SAND: fine to medium grained, dark brown.				
								PT	PEAT: black, some dark brown, some wood fragments.	W	H		UNIT 3A

METHOD
AS auger screwing*
AD auger drilling*
AR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured N none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nk SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

COFFEY

borehole no: CP3

sheet 2 of 6

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	30/7/98
principal:	SYDNEY PORTS CORPORATION	hole completed:	4/8/98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	GAH/JAF
borehole location:	6240433N 0333627E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -15.10 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
								PT	PEAT: black, some dark brown, some wood fragments.	M	H		UNIT 3A
DB					-24	9		CH	SILTY CLAY: high plasticity, grey-dark grey.	>Wp	VSt		UNIT 3B
				U70				PT	PEAT: black-dark brown.	W	H		UNIT 3A
					-25	10		CH	SILTY CLAY: high plasticity, mixed grey & dark grey, some organic clay lenses.	>Wp	VSt/ H		UNIT 3B
				U70	-26	11							
					-27	12		CI	PEATY CLAY: medium plasticity, dark brown-black.				UNIT 3A
				U70	-28	13							
					-29	14							
				U70	-30	15		SM-PT	SANDY PEAT: PEATY SAND: fine to medium grained, dark grey-black, some silt and clay.	W	VD		UNIT 3C
					-31	16							

COFBORE VERSION B3.1

5/ 2/99 15 :13 :19 syd

METHOD

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
*bit shown by suffix	
B	blank bit
V	V bit
T	TC bit
e.g.	ADT

SUPPORT

Nil no support M mud
C casing

PENETRATION

1 2 3 4 — little resistance ranging to very slow progress

WATER

N not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC

U	undisturbed sample (mm)
D	disturbed sample
Bs	bulk sample
E	environmental sample
N	standard penetration test:
Nx	SPT + sample recovered
Nc	SPT with solid cone
VS	vane shear
PM	pressuremeter
DP	dynamic penetrometer
WS	water sample
PZ	piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION

based on unified classification system

MOISTURE

D	dry
M	moist
W	wet
Wp	plastic limit
Wl	liquid limit

CONSISTENCY/DENSITY INDEX

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP3
sheet 3 of 6

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	30/7/98
principal:	SYDNEY PORTS CORPORATION	hole completed:	4/8/98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	GAH/JAF
borehole location:	6240433N 0333627E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope:	-90 DEG
hole diameter:	100mm	bearing:	
		R.L.Surface:	-15.10 m
		datum:	ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB					-15.32	17		CH	CLAY: high plasticity, light grey-grey, some sand and some 100mm bands of clayey sand, sand fine to medium grained, traces of shell fragments.	>Wp	VSt		UNIT 4A
				4 , 8 , 12 N*= 20	-15.33	18							
					-15.34	19		CH	CLAY: high plasticity, mottled light grey & light grey-green, some sand and lenses of clayey sand, sand fine to medium grained.		H		
					-15.35	20		CH	CLAY: high plasticity, mottled light grey & light grey-green, some fine sand.				
				U70	-15.36	21							
					-15.37	22							
					-15.38	23							
				11 , 12 , 15 N*= 37	-15.39	24							

COFBORE VERSION B3.1 syd 5/ 2/99 15 :13 23

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance
ranging to
very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP3
sheet 4 of 6

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	30/7/98
principal:	SYDNEY PORTS CORPORATION	hole completed:	4/8/98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	GAH/JAF
borehole location:	6240433N 0333627E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -15.10 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB								CH	CLAY: high plasticity, mottled light grey & light grey-green, some fine sand.	>Wp	H		UNIT 4A
					-40	25		CH	CLAY: medium to high plasticity, light grey-green, some shells and shell fragments, some silt.				
					-41	26							
				U70	-42	27							
					-43	28							
				7 ,17 ,26 N*= 43	-44	29		SC	CLAYEY SAND: fine to medium grained, mottled light brown & light grey, with some 50mm bands of sandy clay.	W	MD		UNIT 4B
					-45	30							
					-46	31			SANDSTONE: medium to coarse grained, mottled light grey & light brown.	W	D		UNIT 5 - HIGHLY TO MODERATELY WEATHERED SANDSTONE
					-47	32			Continued as cored borehole from 31.75m				

COREBORE VERSION B3.1 syd 5/2/99 15:13:25

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured D none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - cored borehole

borehole no: CP3
sheet 5 of 6

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	30/7/98
principal:	SYDNEY PORTS CORPORATION	hole completed:	4/8/98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240433N 0333627E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: +5.10 m
barrel type and length:	NMLC 3m fluid: MUD	bearing:	datum: ISLW

drilling information					rock substance			rock mass defects		
method	casing	water	R.L.	depth metres	graphic log core loss	substance description: rock type, grain characteristics, colour, structure, minor components	weathering	Est. Strength (EL VL L M H VH EH)	point load test Is(50) MPa	RQD %	defect spacing mm (30 100 300 1000 3000)	defect description: type, inclination planarity, roughness, coating, thickness; unless otherwise noted defects follow general description below
			+40	25								
			+41	26								
			+42	27								
			+43	28								
			+44	29								
			+45	30								
			+46	31								
						Continued from non-core borehole						
NLC			+47	32		SANDSTONE: medium to coarse grained, light grey, some grey banding, distinct bedding @ 0-10deg.	SW		D A 0.58 1.27			UNIT 6 31.75-33.2m bedding partings

General Defect Description:
31.75-33.20m Bedding Partings

METHOD		WATER		POINT LOAD TEST		WEATHERING		STRENGTH		DEFECTS	
DT	diatube		water level	D -diametral	I -irregular	FR	-fresh	EL	-extremely low	JT	-joint
AS	auger screwing		water inflow	A -axial		SW	-slightly	VL	-very low	PT	-parting
AD	auger drilling	D	none observed	GRAPHIC LOG/CORE LOSS		MW	-moderately	L	-low	SM	-seam
RR	roller/tricone	*	not measured		core recovered (hatching indicates material)	HW	-highly	M	-medium	PL	-planar
NMLC	core drilling		Drilling Water partial loss			EW	-extremely	H	-high	CV	-curved
NQ, HQ, PQ	core drilling		complete loss		no core recovered			VH	-very high	IR	-irregular
	casing used							EH	-extremely high	RO	-rough
	barrel withdrawn									SO	-smooth
										SL	-slickensided

T87-229

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - cored borehole

COFFEY

borehole no: CP3
sheet 6 of 6

office job no: S10526/2

client:	CORNELL WAGNER PTY LTD	hole commenced:	30/7/98
principal:	SYDNEY PORTS CORPORATION	hole completed:	4/8/98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240433N 0333627E	checked by:	

drill model and mounting:	EDSON 3000 - BARGE		slope: -90	DEG	R.L.Surface: -15.10 m
barrel type and length:	NMLC 3m	fluid: MUD	bearing:		datum: ISLW

drilling information					rock substance					rock mass defects		
method	case-iiit	water	R.L.	depth metres	graphic log core loss	substance description: rock type: grain characteristics colour, structure, minor components	weathering	Est. Strength	point load test Is(50) MPa	RQD %	defect spacing mm	defect description: type, inclination planarity, roughness, coating, thickness unless otherwise noted defects follow general description below
NMLC			-48	33		SANDSTONE: medium to coarse grained, light grey, some grey banding, distinct bedding, @ 0-10deg.	SW		D 0.56 A 1.02	70		UNIT 6 60mm EW SM 05mm EW SM JT 60deg IR RO some sand infill 33.08-33.14m broken and jointed
			-49	34		Borehole CP3 Terminated at 33.20m On completion - 36m of 50mm P.V.C placed in borehole before puling casing (3m above seabed). Small float on 1m line attached to top.						
			-50	35								
			-51	36								
			-52	37								
			-53	38								
			-54	39								
			-55	40								

General Defect Description:
31.75-33.20m Bedding Partings

METHOD
DT diatube
AS auger screwing
AD auger drilling
RR roller/tricone
NMLC core drilling
NQ, HQ, PQ core drilling
casing used
barrel withdrawn

WATER
water level
water inflow
D none observed
* not measured
Drilling Water partial loss
complete loss

POINT LOAD TEST
D -diametral I -irregular
A -axial

GRAPHIC LOG/CORE LOSS
core recovered (hatching indicates material)
no core recovered

WEATHERING
FR -fresh
SW -slightly
MW -moderately
HW -highly
EW -extremely

STRENGTH
EL -extremely low
VL -very low
L -low
M -medium
H -high
VH -very high
EH -extremely high

DEFECTS
JT -joint
PT -parting
SM -seam
PL -planar
CV -curved
IR -irregular
RO -rough
SO -smooth
SL -slickensided

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP4
sheet 1 of 6

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4/8/98
principal:	SYDNEY PORTS CORPORATION	hole completed:	11/8/98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240285N 0333672E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -18.35 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		D				ML	CLAYEY SILT: low liquid limit, dark grey to black, some fine sand.	W	VL		UNIT 1B
					-19	1		SM	SILTY SAND: fine grained, mottled dark brown, brown, & light brown, some shell fragments.	W	MD		UNIT 2
				10, 19, 28 N= 47	-20						VD		
						2		SP	SAND: fine to medium grained, light grey-brown, trace of silt.				
					-21								
				15, 33, N> 60		3							
					-22								
						4							
DB		M		24, 31, N*=R	-23								
						5							
					-24								
						6							
				6, 12, 17 N*= 29	-25						D		
						7							
					-26			SW	SILTY SAND: fine to medium grained, grey, mottled dark brown, some peat and peaty clay fragments.	W	D		UNIT 3C
						8							

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4 little resistance ranging to very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

B3.1 VERSION COFBORE syd 17 : 7 :10 5/ 2/99

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP4
sheet 2 of 6

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4/8/98
principal:	SYDNEY PORTS CORPORATION	hole completed:	11/8/98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240285N 0333672E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -18.35 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L. / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
OB				3 ,10 ,27 N*= 37	-27 / 9		SM	SILTY SAND: fine to medium grained, grey, mottled dark brown, some peat and peaty clay fragments.	W	D		UNIT 3C
					-28 / 10		OH	CLAY: high plasticity, mottled grey & dark grey, banded black, contains 50-150mm bands of woody peat.	>Wp	H		UNIT 3B
				U70	-29 / 11		CH	CLAY: high plasticity, light grey, banded dark grey, some bands of dark brown-black clayey peat, black peat and organic clay, traces of fine shell fragments.				U70 at 10.05m refused at 10.20m.
				U70	-30 / 12							
					-31 / 13							
				U70	-32 / 14							
				U70	-33 / 15							Some blocky fissuring at bottom of U70 and 17.90m. Possible sand lense 0.2m thick at 15.2m.
					-34 / 16							

COREBORE VERSION B3.1 syd 5/ 2/99 17 : 7 :16

TB7-230

METHOD
AS auger screwing*
AD auger drilling*
AR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4 little resistance ranging to very slow progress

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP4
sheet 3 of 6

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4/8/98
principal:	SYDNEY PORTS CORPORATION	hole completed:	11/8/98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240285N 0333672E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L. Surface: ~18.35 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB					17	17.35		CH	CLAY: high plasticity, light grey, banded dark grey, some bands of dark brown-black clayey peat, black peat and organic clay, traces of fine shell fragments.	>Wp	H		UNIT 3B Possible sand lense 0.3m thick at 16.3m.
				U70	18	18.35							U70 at 17.90m - damaged.
					19	19.35		CH	CLAY: high plasticity, dark grey, trace to some shell fragments.	>Wp	H		UNIT 4A
				U70	20	20.35							
					21	21.35							
					22	22.35		CH	CLAY: high plasticity, dark grey, traces of shell fragments and some 100-150mm bands of clayey fine grained sand.				Possible sand lense 0.2m thick at 22.6m.
					23	23.35							U70 at 23.10m refused at 23.20m with no recovery.
					24	24.35							

COREBORE VERSION B3.1 syd 5/2/99 17:7:19

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 little resistance
2
3
4 ranging to very slow progress

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP4
sheet 4 of 6

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4/8/98
principal:	SYDNEY PORTS CORPORATION	hole completed:	11/8/98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240285N 0333672E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: ~18.35 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB				U70	-43	25		CH	CLAY: high plasticity, dark grey, traces of shell fragments and some 100-200mm bands of clayey fine grained sand.		H		UNIT 4A
					-44	26			26.25-26.40m : SAND, fine to medium grained, brown & light brown, some clay, moist				
				U70	-45	27							
					-46	28							
					-47	29							
					-48	30							
					-49	31							
					-50	32							

COFBORE VERSION 83.1
5/ 2/99 17 : 7 21 syd

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance
ranging to
very slow progress

WATER
✱ not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP4
sheet 5 of 6

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4/8/98
principal:	SYDNEY PORTS CORPORATION	hole completed:	11/8/98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240285N 0333672E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L. Surface: -18.35 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB NMLC				D	-51	33		CH	CLAY: high plasticity, dark grey, traces of shell fragments and some 100-200mm bands of clayey fine grained sand.	>Wp	H		UNIT 4A
					-52	34							
					-53	35							
					-54	36		CL	SANDY CLAY: low to medium plasticity, light grey mottled light brown, sand is fine grained.	>Wp	H	X	UNIT 5
					-55	37			Continued as cored borehole from 36.55 m				
					-56	38							
					-57	39							
					-58	40							

COREBORE VERSION B3.1 syd 17 : 7 :23 5/ 2/99

METHOD	
AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
*bit shown by suffix	
B	blank bit
V	V bit
T	TC bit
e.g.	ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION 1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured D none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC	
U	undisturbed sample (mm)
D	disturbed sample
Bs	bulk sample
E	environmental sample
N	standard penetration test:
N*	SPT + sample recovered
Nc	SPT with solid cone
VS	vane shear
PM	pressuremeter
DP	dynamic penetrometer
WS	water sample
PZ	piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE

D	dry
M	moist
W	wet
Wp	plastic limit
Wl	liquid limit

CONSISTENCY/DENSITY INDEX

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - cored borehole

borehole no: CP4
sheet 6 of 6

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4/8/98
principal:	SYDNEY PORTS CORPORATION	hole completed:	11/8/98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240285N 0333672E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -18.35 m
barrel type and length:	NMLC - 3m fluid: MUD	bearing:	datum: ISLW

drilling information					rock substance					rock mass defects		
method	case-lit	water	R.L.	depth metres	graphic log / core loss	substance description: rock type, grain characteristics, colour, structure, minor components	weathering	Est. Strength (EL VL L M H VH EH)	point load test Is(50) MPa	RQD %	defect spacing mm (30 100 300 1000 3000)	defect description: type, inclination, planarity, roughness, coating, thickness; unless otherwise noted defects follow general description below
			-51	33								
			-52	34								
			-53	35								
			-54	36		Continued from non-core borehole						
NMLC			-55	37		NO CORE: 0.15m . SANDSTONE: fine to medium grained, becoming medium to coarse grained, mottled light grey & light brown, becoming light grey, banded brown, & grey, indistinct bedding, becoming distinct bedding, 0-20deg cross bedding.	EW MW		D A 0.17 0.19 D A 0.84 0.76	0 60		UNIT 6 36.70-36.85m very broken EW with some HW fragments 40mm broken SW with EW fragments EW SW 65mm thick 37.39-37.45m very jointed 45mm EW SW with some broken HW JT 60deg IR RO infilled 2mm EW JT 45deg IR RO infilled 10mm crush SW
			-56	38			SW					
			-57			SANDSTONE: medium to coarse grained, light grey, some banded grey, distinct bedding, 0-20deg cross bedding.	FR		D A 1.33 1.33			38.60-38.70m JT 60-90deg IR RO partly closed
			-58	39		Borehole CP4 Terminated at 38.70m 42m of 50mm PVC placed in BH with 1m nylon line and float on cap.						
				40								

General Defect Description:
36.55-38.70m Bedding Partings

METHOD		WATER		POINT LOAD TEST		WEATHERING		STRENGTH		DEFECTS	
DT	diatube		water level	D -diametral	I -irregular	FR	-fresh	EL	-extremely low	JT	-joint
AS	auger screwing		water inflow	A -axial		SW	-slightly	VL	-very low	PT	-parting
AD	auger drilling	D	none observed	GRAPHIC LOG/CORE LOSS		MW	-moderately	L	-low	SM	-seam
RR	roller/tricone	*	not measured			HW	-highly	M	-medium	PL	-planar
NMLC	core drilling		Drilling Water partial loss		core recovered (hatching indicates material)	EW	-extremely	H	-high	CV	-curved
NQ, HQ, PQ	core drilling		complete loss		no core recovered			VH	-very high	IR	-irregular
	casing used							EH	-extremely high	RO	-rough
	barrel withdrawn									SO	-smooth
										SL	-slickensided

Coffey Geosciences Pty. Ltd.
ACN 056 335 516

engineering log - borehole

borehole no: CP5
sheet 1 of 7

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	12/8/98
principal:	SYDNEY PORTS CORPORATION	hole completed:	20/8/98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240149N 0333712E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope:	-90 DEG
hole diameter:		bearing:	
R.L.Surface:	-18.40 m		
datum:	ISLW		

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		0 ,2 ,4 N*= 6	-19	1		CH	SILTY CLAY: high plasticity, dark grey	>Wp	S		UNIT 1B
								SM	SILTY SAND: fine to medium grained, grey, some clay.	W	L		UNIT 1A HW casing fell to 3.20m under own weight.
				14 ,27 , N> 50	-20	2		SM	SILTY SAND: fine to medium grained, grey, some clay.	W	VD		UNIT 2
DB				8 ,11 ,12 N*= 23	-21	3		PT	SANDY PEAT: dark grey-black, peat is woody and clayey, sand is fine to medium grained.	W	H		UNIT 3A
		W		U70	-22	4		OH	SILTY CLAY: high plasticity, dark grey-black, with some bands of woody peat.	>Wp	H		UNIT 3B
				U70	-23	5							
					-24	6							
					-25	7							
					-26	8		CH	CLAY: high plasticity, grey, occasional 20mm lenses of clayey coarse sand.		VSt		

COREBORE VERSION 84. 8/ 2/99 14 :43 :0 syd

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Geosciences Pty. Ltd.
ACN 056 335 516

engineering log - borehole

borehole no: CP5
sheet 2 of 7

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	12/8/98
principal:	SYDNEY PORTS CORPORATION	hole completed:	20/8/98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240149N 0333712E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -18.40 m
hole diameter:		bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB					-27	9		CH	CLAY: high plasticity, grey, occasional 20mm lenses of clayey coarse sand.	>Wp	VSt		UNIT 3B
				D	-28	10		PT	CLAYEY PEAT: dark grey-brown-black, woody texture.	<Wp	H		UNIT 3A U70 at 9.40m - only 50mm recovery placed in sample bag.
				U70	-30	12							
				U70	-32	14							Possible peat or sandy peat horizon 0.8m thick at 12.8m. U70 @ 14.30m damaged at ends.
				U70	-33	15							
					-34	16		CL	SILTY CLAY: low to medium plasticity, grey, traces of fine sand and shell fragments, minor bands of sandy clay.	>Wp	VSt		Possible sand, peat or sandy peat lense 0.2m thick at 15.2m UNIT 4A

COREBORE VERSION B4. 8/ 2/99 14 :43 :8 syd

METHOD
- AS auger screwing*
- AD auger drilling*
- RR roller/tricone
- W washbore
- CT cable tool
- HA hand auger
- DT diatube
- *bit shown by suffix
- B blank bit
- V V bit
- T TC bit
- e.g. ADT

SUPPORT
- Nil no support
- M mud
- C casing

PENETRATION
1 2 3 4 — little resistance ranging to very slow progress

WATER
- * not measured
- D none observed
- water level
- water outflow
- water inflow

SAMPLES, TESTS, ETC
- U undisturbed sample (mm)
- D disturbed sample
- Bs bulk sample
- E environmental sample
- N standard penetration test:
- N* SPT + sample recovered
- Nc SPT with solid cone
- VS vane shear
- PM pressuremeter
- DP dynamic penetrometer
- WS water sample
- PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

CONSISTENCY/DENSITY INDEX
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

Coffey Geosciences Pty. Ltd.
ACN 056 335 516

engineering log - borehole

COFFEY

borehole no: CP5
sheet 3 of 7

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	12/8/98
principal:	SYDNEY PORTS CORPORATION	hole completed:	20/8/98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240149N 0333712E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -18.40 m
hole diameter:		bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB				U70	-35	17		CL	SILTY CLAY: low to medium plasticity, grey, traces of fine sand and shell fragments, minor bands of sandy clay.	>Wp	VSt	×	UNIT 4A
					-36	18							
					-37	19							Possible sand horizon 0.8m thick at 18.5m.
				U70	-38	20							
					-39	21						×	
					-40	22							
					-41	23							
				U63	-42	24		SP	SAND: fine to medium grained, light grey-green, some silt.	W	VD		UNIT 4B

COFFORE VERSION B4.
8/ 2/99 14:43:12 syd

METHOD
AS auger screwing*
AO auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance
ranging to
very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Geosciences Pty. Ltd.
ACN 056 335 516

engineering log - borehole

borehole no: CP5
sheet 4 of 7

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	12/8/98
principal:	SYDNEY PORTS CORPORATION	hole completed:	20/8/98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240149N 0333712E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -18.40 m
hole diameter:		bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB					-43	25		SP	SAND: fine to medium grained, light grey-green, some silt.	W	VD		UNIT 4B
								CH	SILTY CLAY: medium to high plasticity, light grey-green, mottled light grey, some shells and shell fragments.	>Wp	VSt		UNIT 4A
				U70	-44	26							
					-45			CH	CLAY: high plasticity, dark grey-black, blocky texture with fissuring.	<Wp	H		
						27							
					-46								
						28		CH	SILTY CLAY: medium to high plasticity, grey, trace to some fine sand and a trace of shell fragments.				
					-47								
				U70		29							
					-48								
						30							
					-49								
						31							
					-50								
						32							

COREBORE VERSION B4. syd 8/2/99 14:43:16

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured N none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

T87-230

Coffey Geosciences Pty. Ltd.
ACN 056 335 516

engineering log - borehole

borehole no: CP5
sheet 5 of 7

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	12/8/98
principal:	SYDNEY PORTS CORPORATION	hole completed:	20/8/98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240149N 0333712E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -18.40 m
hole diameter:		bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L. / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB					-51 / 33		CH	SILTY CLAY: medium to high plasticity, grey, trace to some fine sand and a trace of shell fragments.	<Wp	H		UNIT 4A
					-52 / 34		CH	CLAY: high plasticity, grey-green, some 20mm lenses of dark grey-black, clayey coarse sand.	>Wp	VSt		
				U70	-53 / 35							
					-54 / 36							
					-55 / 37							
					-56 / 38							
					-57 / 39							
					-58 / 40		SP	CLAYEY SILTY SAND: fine to medium grained, light grey, friable, weakly cemented.	W	VD		UNIT 5

COFBORE VERSION B4. syd 8/ 2/99 14 :43 :20

METHOD
AS auger screwing*
AO auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance
ranging to
very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Geosciences Pty. Ltd.
ACN 056 335 516

engineering log - borehole

borehole no: CP5
sheet 6 of 7

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	12/8/98
principal:	SYDNEY PORTS CORPORATION	hole completed:	20/8/98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240149N 0333712E	checked by:	
drill model and mounting:	EOSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -18.40 m
hole diameter:		bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L. / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB				31 NX> 60	-59 / 41 -60		SP	CLAYEY SILTY SAND: fine to medium grained, light grey, friable, weakly cemented.	W	VD		UNIT 5
					-61 / 43 -62 / 44 -63 / 45 -64 / 46 -65 / 47 -66 / 48			Continued as cored borehole from 41.85m				

COREBORE VERSION B4.
8/2/99 14:43:24 syd

METHOD
AS auger screwing*
AD auger drilling*
AR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing
PENETRATION 1 2 3 4 — little resistance ranging to very slow progress
WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - cored borehole

COFFEY

borehole no: CP5

sheet 7 of 7

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	12/8/98
principal:	SYDNEY PORTS CORPORATION	hole completed:	20/8/98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240149N 0333712E	checked by:	
drill model and mounting:	EOSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -18.40 m
barrel type and length:	NMLC - 3m fluid: MUD	bearing: .	datum: ISLW

drilling information					rock substance						rock mass defects		
method	case-lift	water	R.L.	depth metres	graphic log core loss	substance description: rock type: grain characteristics colour, structure, minor components	weathering	Est. Strength: EL VL L M H VH EH	point load test Is(50) MPa	RQD %	defect spacing mm: 30 100 300 1000 3000	defect description: type, inclination planarity, roughness, coating, thickness. unless otherwise noted defects follow general description below
			-59	41								
			-60			Continued from non-core borehole						
NMLC				42		SANDSTONE: medium to coarse grained, light grey, banded grey, indistinct bedding, becoming distinct bedding, cross bedded at 0-10deg.	FR		D A 1.64 2.04	97		UNIT 6
			-61									50mm JOINTED SM
				43								PT at 0deg
									D A 2.36 2.26			
									D A 1.84 1.91			PT at 10deg
			-62			Borehole CP5 Terminated at 43.47m						
				44		45m of 50mm PVC installed in BH CP5 with nylon line and float tied to top.						
			-63									
				45								
			-64									
				46								
			-65									
				47								
			-66									
				48								

General Defect Description:

METHOD		WATER		POINT LOAD TEST		WEATHERING		STRENGTH		DEFECTS	
DT	diatube		water level	D -diametral	I -irregular	FR	-fresh	EL	-extremely low	JT	-joint
AS	auger screwing		water inflow	A -axial		SW	-slightly	VL	-very low	PT	-parting
AD	auger drilling	D	none observed	GRAPHIC LOG/CORE LOSS		MW	-moderately	L	-low	SM	-seam
RR	roller/tricone	*	not measured		core recovered (hatching indicates material)	HW	-highly	M	-medium	PL	-planar
NMLC	core drilling		Drilling Water partial loss			EW	-extremely	H	-high	CV	-curved
NQ, HQ, PQ	core drilling		complete loss		no core recovered			VH	-very high	IR	-irregular
	casing used							EH	-extremely high	RO	-rough
	barrel withdrawn									SO	-smooth
										SL	-slickensided

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP6
sheet 1 of 7

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	20.8.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	24.8.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239986N 0333753E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -19.75 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics; colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		D	-20			CH	SANDY CLAY: medium to high plasticity, dark grey-black, sand is fine grained, some silt, some roots (slurry).	W	VS	×	UNIT 1B
								CH	SANDY CLAY: As above, becoming firm	>Wp	F		
DB		C		5 ,7 ,7 N*= 14	-21	1		CH	CLAY: high plasticity, dark grey-black, some fine sand and silt.	>Wp	VSt		UNIT 3B
		W			-22	2						×	
				U70	-23	3		PT	CLAYEY PEAT: black, woody, friable, some bands of organic clay.		H		UNIT 3A
					-24	4							Possible sand or sandy peat horizon 0.6m thick at 4.0m.
				U70	-25	5		CH	CLAY: high plasticity, light grey, minor bands of organic clay.		VSt	×	UNIT 3B
					-26	6							
				U70	-27	7						×	
						8							

COFBORE VERSION B3.1 syd 5/ 2/99 17 :10 25

TB7-230

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4 little resistance ranging to very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP6
sheet 2 of 7

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	20.8.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	24.8.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239986N 0333753E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -19.75 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB					-28	9		CH	CLAY: high plasticity, light grey, minor bands of organic clay.	>Wp			UNIT 3B U70 @ 8.4m no recovery.
					-29			PT	CLAYEY PEAT: black, blocky texture, friable.		H		UNIT 3A Possible peat or sandy peat lense 0.3m thick at 9.7m.
				U70	-30	10							
					-31	11		CH	CLAY: high plasticity, grey, blocky texture, minor peat horizons.	<Wp			UNIT 3B Possible peat, sandy peat or sand lense 0.4m thick at 11.0m.
				U70	-32	12							
				U70	-33	13		SM	SILTY SAND: fine to medium grained, light grey, some shell fragments.	W	VD		UNIT 4B
				U70	-34	14		CH	CLAY: high plasticity, grey, becoming mottled grey & dark grey, blocky texture, becoming with traces of shell fragments and some sand lenses to 20mm.	<Wp	H		UNIT 4A
					-35	15							
						16							

COREBORE VERSION 83.1 syd 5/2/99 17:10 28

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance
ranging to
very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP6
sheet 3 of 7

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	20.8.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	24.8.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239986N 0333753E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -19.75 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB					-36	17		CH	CLAY: high plasticity, grey, becoming mottled grey & dark grey, blocky texture, becoming with traces of shell fragments and some sand lenses to 20mm.	<Wp	H	×	UNIT 4A
				U70	-37	18							
					-38								
						19		CH	CLAY: medium to high plasticity, mottled light grey & light grey-green, some 20mm sand lenses and a trace of shell fragments, blocky texture.				Possible sand horizon 0.9m thick at 19.2m.
					-39	20							
				U70	-40								
						21							
					-41								
						22							
					-42								
						23		SM	SILTY SAND: fine to medium grained, mottled light grey-brown & light grey, some shell fragments, weak, friable cementation.	W	VD		UNIT 4B
				U70	-43								
						24							

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
1 little resistance
2 ranging to
3 very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

COFBORE VERSION B3.1 syd 5/ 2/99 17 :10 :31

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP6
sheet 4 of 7

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	20.8.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	24.8.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239986N 0333753E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -19.75 m
hole diameter:	100mm	bearing:	datum: ISLN

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB					-44	25		CH	CLAY: high plasticity, mottled grey & brown, trace of shell fragments and some cemented nodules to 20mm.	<Wp	H		UNIT 4A
					-45								
					-46	26							
				U70									
					-47	27							
					-48	28							
								CH	CLAY: high plasticity, dark grey, trace of shell fragments becoming with some sand lenses.				
					-49	29							
				U70									
					-50	30							
					-51	31							
						32							

COFBORE VERSION B3.1 syd 5/ 2/99 17 :10 :35

METHOD
AS auger screwing*
AD auger drilling*
AR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance
ranging to
very slow progress

WATER
* not measured D none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP6
sheet 5 of 7

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	20.8.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	24.8.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239986N 0333753E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -19.75 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification Symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB					-52	33		CH	CLAY: high plasticity, dark grey, trace of shell fragments becoming with some sand lenses.	<Wp	H		UNIT 4A
					-53								
						34							
					-54								Possible sand lense 0.6m thick at 34.4m.
						35							
					-55								
				U70									
						36							
					-56								
						37							
								SC	CLAYEY SAND: fine to medium grained, light grey, some silt and shell fragments.	W	VD		UNIT 4B
					-57								
						38							
					-58								
								CH	CLAY: high plasticity, dark grey, mottled dark brown, some sand.	<Wp	H		UNIT 5
						39							
					-59								
						40							

B3.1 COREDRE VERSION 5/ 2/99 17 :10 :37 syd

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP6
sheet 6 of 7

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	20.8.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	24.8.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239986N 0333753E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -19.75 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
					-60			SC	CLAYEY SAND: fine to medium grained, light grey, cemented.	W	H		UNIT 5
DB									Continued as cored borehole from 40.40 m				
					-61	41							
					-62	42							
					-63	43							
					-64	44							
					-65	45							
					-66	46							
					-67	47							
						48							

B3.1 VERSION COFBORE syd 5/ 2/99 17 :10 :40

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance
ranging to
very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - cored borehole

borehole no: CP6
sheet 7 of 7

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	20.8.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	24.8.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239986N 0333753E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -19.75 m
barrel type and length:	NMLC - 3m fluid: MUD	bearing:	datum: ISLW

drilling information					rock substance						rock mass defects		
method	case-lift	water	R.L.	depth metres	graphic log core loss	substance description: rock type: grain characteristics colour, structure, minor components	weathering	Est. Strength	point load test Is(50) MPa	RQD %	defect spacing mm	defect description: type, inclination planarity, roughness, coating, thickness unless otherwise noted defects follow general description below
			-60			Continued from non-core borehole						
NMLC			-61	41		SANDSTONE: medium to coarse grained, light grey, some grey banding, indistinct cross bedding @ 0-10deg.	FR		D A 1.52 1.71	90		UNIT 6 40.40-40.45m Very Jointed & broken PT PT PT EW SM 15mm thick PT JT 85deg PL RO clean PT clay coated PT clay coated 15mm Jointed SM with some EW infill IR JT 25deg with some EW infills
			-62	42		Borehole CP6 Terminated at 42.05m 44m of 50mm of PVC installed in BHCP6 with float on fishing line at top.			D A 2.06 2.17			
			-63	43								
			-64	44								
			-65	45								
			-66	46								
			-67	47								
				48								

General Defect Description:

METHOD		WATER		POINT LOAD TEST		WEATHERING		STRENGTH		DEFECTS	
DT	diatube		water level	D -diametral	I -irregular	FR	-fresh	EL	-extremely low	JT	-joint
AS	auger screwing		water inflow	A -axial		SW	-slightly	VL	-very low	PT	-parting
AD	auger drilling	D	none observed	GRAPHIC LOG/CORE LOSS		MW	-moderately	L	-low	SM	-seam
RR	roller/tricone	*	not measured			HW	-highly	M	-medium	PL	-planar
NMLC	core drilling		Drilling Water partial loss	core recovered (hatching indicates material)		EW	-extremely	H	-high	CV	-curved
NQ, HQ, PQ	core drilling		complete loss	no core recovered				VH	-very high	IR	-irregular
	casing used							EH	-extremely high	RO	-rough
	barrel withdrawn									SO	-smooth
										SL	-slickensided

T87-229

Coffey Geosciences Pty. Ltd.
ACN 056 335 516

engineering log - borehole

borehole no: CP7
sheet 1 of 7

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	24.8.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	27.8.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239856N 0333797E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -21.80 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		D	-22			CH	SILTY CLAY: high plasticity, dark grey-black, trace to some fine sand. (SLURRY).	>Wl	VS		UNIT 1B SPT at 1m fell 0.20m with weight of rods and to 2.10m under weight of rods & hammer no recovery.
DB		C		D 0 ,0 ,0 N*< 1	-23	1		SC	CLAYEY SAND: dark grey-black, sand is fine to medium grained, clay component has low plasticity.	W	VL		UNIT 1A
					-24	2							
		C			-25	3							U70 at 3.50m - no recovery. (HW casing fell to 4m from 3.50m under own weight).
		C			-26	4		SP	SAND: fine to medium grained, light grey, some silt becoming with some peat.	W	VD		UNIT 3C
				19 ,37 , N*> 70	-27	5							
					-28	6							
						7		PT	CLAYEY PEAT: black, woody texture, some 100-200mm thick bands of silty sand and organic clay, friable.	<Wp	H		UNIT 3A
		H		U70	-29								
						8							

COREHOLE VERSION B4. 8/ 2/99 14 :46 :46 syd

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 little resistance
2 ranging to
3 very slow progress
4

WATER
* not measured D none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Geosciences Pty. Ltd.
ACN 056 335 516

engineering log - borehole

borehole no: CP7
sheet 2 of 7

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	24.8.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	27.8.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239856N 0333797E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -21.80 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB				U70	-30	9		PT	CLAYEY PEAT: black, woody texture, some 100-200mm thick bands of silty sand and organic clay, friable.	<Wp	H		UNIT 3A
					-31								
					-32	10							
				U70	-33			CH	CLAY: high plasticity, grey, some fine sand and traces of shell fragments, minor organic material.	<Wp	H		UNIT 4A Possible sand lense 0.3m thick at 10.8m.
					-34	11							
					-35	12							U70 @ 12.5m no recovery.
				9 ,15 ,22 N*= 37	-36	13		SM	SILTY SAND: fine to medium grained, mottled light grey & grey-green.	W	D		UNIT 4B
					-37	14							
						15		CL	SANDY CLAY: low to medium plasticity, mottled light grey & light brown, sand is fine to medium grained, some 100-200mm thick bands of clayey sand.	>Wp	H		UNIT 4A
						16							

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Geosciences Pty. Ltd.
ACN 056 335 516

engineering log - borehole

borehole no: CP7
sheet 3 of 7

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	24.8.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	27.8.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239856N 0333797E	checked by:	
drill model and mounting:	EOSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -21.80 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
AD/B					-38			CL	SANDY CLAY: low to medium plasticity, mottled light grey & light brown, sand is fine to medium grained, some 100-200mm thick bands of clayey sand.	>Wp	H		UNIT 4A
				11, 17, 33 N*=R	-39	17							
					-40	18							
					-41	19		CH	CLAY: high plasticity, mottled grey & brown, some sand and bands of dark grey clayey sand, minor thin bands of organic clay.	<Wp			
				U70	-42	20							
					-43	21							
					-44	22							
				U70	-45	23							
						24							

COFBORE VERSION 84. syd 8/ 2/99 14 :47 :0

METHOD
- AS auger screwing*
- AD auger drilling*
- AR roller/tricone
- W washbore
- CT cable tool
- HA hand auger
- DT diatube
- *bit shown by suffix
- B blank bit
- V V bit
- T TC bit
- e.g. AD/T

SUPPORT
- Nil no support
- M mud
- C casing

PENETRATION
1 2 3 4 — little resistance ranging to very slow progress

WATER
- * not measured
- O none observed
- water level
- water outflow
- water inflow

SAMPLES, TESTS, ETC
- U undisturbed sample (mm)
- D disturbed sample
- Bs bulk sample
- E environmental sample
- N standard penetration test:
- N* SPT + sample recovered
- Nc SPT with solid cone
- VS vane shear
- PM pressuremeter
- DP dynamic penetrometer
- WS water sample
- PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

CONSISTENCY/DENSITY INDEX

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Geosciences Pty. Ltd.
ACN 056 335 516

engineering log - borehole

borehole no: CP7
sheet 4 of 7

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	24.8.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	27.8.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239856N 0333797E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -21.80 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB					-46			CH	CLAY: high plasticity, mottled grey & brown, some sand and bands of dark grey clayey sand, minor thin bands of organic clay.	<Wp	H		UNIT 4A
								PT	CLAYEY PEAT: dark grey-brown-black, some lenses of sandy peat and peaty sand, sand fine grained.				
					-47	25							
				U70									
					-48	26							
					-49	27		CH	CLAY: high plasticity, mottled grey & light brown, trace to some fine sand.	>Wp			
						28							
				U70	-50								U70 at 28.25m damaged.
						29							
					-51								
						30							
					-52								
						31							
					-53								
						32							

COFBORE VERSION B4. 8/2/99 14:47:5 syd

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Geosciences Pty. Ltd.
ACN 056 335 516

engineering log - borehole

borehole no: CP7
sheet 5 of 7

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	24.8.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	27.8.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239856N 0333797E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -21.80 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB				U70	-54 / -55 / -56 / -57 / -58 / -59 / -60 / -61	33 / 34 / 35 / 36 / 37 / 38 / 39 / 40		CH	SANDY CLAY: medium to high plasticity, light grey, some light brown mottling, sand is fine grained.	>Wp	H	×	UNIT 4A

COFBORE VERSION B4. 8/2/99 14:47:9 syd

METHOD
AS auger screwing*
AD auger drilling*
AR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4 little resistance ranging to very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Geosciences Pty. Ltd.
ACN 056 335 516

engineering log - borehole

borehole no: CP7
sheet 6 of 7

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	24.8.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	27.8.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239855N 0333797E	checked by:	
drill model and mounting:	EOSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -21.80 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration (1 2 3 4)	support	water	samples, tests, etc	R.L. / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa (100 200 300 400)	structure and additional observations
DB					-62		SC	CLAYEY SAND: medium to coarse grained, light grey, mottled light brown, cemented.	M	H		UNIT 5
								Continued as cored borehole from 40.60 m				
					-63 (41)							
					-64 (42)							
					-65 (43)							
					-66 (44)							
					-67 (45)							
					-68 (46)							
					-69 (47)							
					(48)							

COFBORE VERSION 84. syd 8/2/99 14:47:18

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - cored borehole

borehole no: CP7
sheet 7 of 7

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	24.8.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	27.8.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239856N 0333797E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -21.80 m
barrel type and length:	NMLC - 3m fluid: MUD	bearing:	datum: ISLW

drilling information					rock substance						rock mass defects		
method	case-liff	water	R.L.	depth metres	graphic log core loss	substance description: rock type: grain characteristics colour, structure, minor components	weathering	Est. Strength (EL VL L M H VH EH)	point load test Is(50) MPa	RQD %	defect spacing mm (30 100 300 1000 3000)	defect description: type, inclination planarity, roughness, coating, thickness. unless otherwise noted defects follow general description below
			-62			Continued from non-core borehole						
NMLC			-63	41		SANDSTONE: medium to coarse grained, light grey, some brown & grey banding, distinct cross bedding, 0-15deg.	EW - SW		D 0.36 A 0.72	75		UNIT 6 40.60-40.80m EW SM with bands of HW PT PT PT 5mm CL SM 30mm EW SM 40mm weaker weathered SM
			-64	42		Borehole CP7 Terminated at 41.60m 43m of 50mm PVC installed in BHCP7 with 1.5m nylon line & float attached to top.			D 0.44 A 0.37			
			-65	43								
			-66	44								
			-67	45								
			-68	46								
			-69	47								
				48								

General Defect Description:

METHOD		WATER		POINT LOAD TEST		WEATHERING		STRENGTH		DEFECTS	
DT	diatube		water level	D	-diametral	FR	-fresh	EL	-extremely low	JT	-joint
AS	auger screwing		water inflow	I	-irregular	SW	-slightly	VL	-very low	PT	-parting
AD	auger drilling	0	none observed	A	-axial	MW	-moderately	L	-low	SM	-seam
RR	roller/tricone	*	not measured	GRAPHIC LOG/CORE LOSS		HW	-highly	M	-medium	PL	-planar
NMLC	core drilling		Drilling Water		core recovered (hatching indicates material)	EW	-extremely	H	-high	CV	-curved
NQ, HQ, PQ	core drilling		partial loss					VH	-very high	IR	-irregular
	casing used		complete loss		no core recovered			EH	-extremely high	RO	-rough
	barrel withdrawn									SO	-smooth
										SL	-slickensided

Coffey Partners International Pty. Ltd.
ACN 003 692 019

COFFEY

borehole no: CPB
sheet 1 of 5

engineering log - borehole

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	27.8.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	29.8.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239711N 0333850E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -21.95 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics; colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		D	-22			CH	SILTY CLAY: high plasticity, dark grey-black, trace to some fine sand (SLURRY).	>Wl	VS	×	UNIT 1B
		C		10, 34, N> 60	-23	1		SM	SILTY SAND: fine to medium grained, grey.	W	VD		UNIT 2
					-24	2		CH	CLAY: high plasticity, dark grey, banded black & dark brown, with 200mm bands of woody peat.	>Wp	St		UNIT 3B
DB		W		10, 33, N*> 60	-25	3						×	
					-26	4		CH	CLAY: high plasticity, mottled grey & dark grey, some peat fragments and organic clay.		VSt		
				U70									
					-27	5		PT	CLAYEY PEAT: dark grey-black, some woody peat bands.	W	H		UNIT 3A
				U70	-28	6						×	Possible sandy peat or peat lense 0.2m thick at 6.2m.
					-29	7							
				U70								×	
						8							

B3.1 VERSION COFBORE W01 22 / 6/99 11 :32 :6

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance
ranging to
very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

T87-230

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP8
sheet 2 of 5

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	27.8.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	29.8.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239711N 0333850E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -21.95 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB					-30			PT	CLAYEY PEAT: dark grey-black, some woody peat bands.	W	H		UNIT 3A
													U70 @ 8.7m - no recovery.
					-31	9		CL	SILTY CLAY: low to medium plasticity, light grey-green, some fine sand and a trace of shell fragments.	>Wp	H		UNIT 4A
					-32	10							
				U70									
					-33	11							
				U70									U70 @ 11.8m - no recovery.
					-34	12							
					-35	13		SP	SAND: fine to medium grained, light grey, some silt and a trace of clay.	W	MD		UNIT 4B
				6 ,8 ,11 N*= 19									
					-36	14					VD		
					-37	15							
				20 ,27 , N*> 50									
						16		CI	SANDY CLAY: medium plasticity, dark grey mottled light grey, some shell fragments, sand is fine grained.	>Wp	H		UNIT 4A

COFLOG VERSION 83.1 W01 22 / 6/99 11 :32 :7

METHOD
AS auger screwing*
AO auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance
ranging to
very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

COFFEY

borehole no: CP8

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	27.8.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	29.8.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239711N 0333850E	checked by:	

drill model and mounting:	EDSON 3000 - BARGE	slope:	-90 DEG	R.L.Surface:	-21.95 m
hole diameter:	100mm	bearing:		datum:	ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB					-38			CI	SANDY CLAY: medium plasticity, dark grey mottled light grey, some shell fragments, sand is fine grained.	>Wp	H		UNIT 4A
					-39	17							
					-40	18							
				U70								X	
					-41	19							
					-42	20							
								SP	SAND: fine to medium grained, light grey, some silt and a trace to some peat fragments.	W	VD		UNIT 4B
					-43	21							
				15, 33, N*> 60									
					-44	22							
								SP	CLAYEY SAND: medium to coarse grained, mottled light grey & light brown, cemented.	W	VD		UNIT 5
					-45	23			Continued as cored borehole from 23.00 m				
						24							

COFBORE VERSION 83.1 W01 22 / 6/99 11:32:8

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4 little resistance ranging to very slow progress

WATER
* not measured D none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

T87-230

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - cored borehole

borehole no: CP8
sheet 4 of 5

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	27.8.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	29.8.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239711N 0333580E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -21.95 m
barrel type and length:	NMLC - 3m	fluid: MUD bearing:	datum: ISLW

drilling information					rock substance				rock mass defects		
method	core-lift	water	R.L.	depth metres	graphic log core loss	substance description: rock type: grain characteristics colour, structure, minor components	weathering	Est. Strength (EL VL L M H VH EH)	point load test Is(50) MPa	RQD %	defect spacing mm (30 100 300 1000 3000)	defect description: type, inclination planarity, roughness, coating, thickness. unless otherwise noted defects follow general description below
			-38									
			-39	17								
			-40	18								
			-41	19								
			-42	20								
			-43	21								
			-44	22								
			-45	23		Continued from non-core borehole						
NMLC						SANDSTONE: medium to coarse grained, banded light grey & light brown, distinct cross bedding, 0-20deg, occasional pebbles to 5mm.	MW		D 0.51 A 1.19 D 0.56 A 0.34	55		UNIT 6 23.0-24.65m bedding partings 24.65 broken SM with some CLAY
				24								

General Defect Description:
23.00-24.65m Bedding Partings

METHOD		WATER		POINT LOAD TEST		WEATHERING		STRENGTH		DEFECTS	
DT	diatube		water level	D -diametral	I -irregular	FR	-fresh	EL	-extremely low	JT	-joint
AS	auger screwing		water inflow	A -axial		SW	-slightly	VL	-very low	PT	-parting
AD	auger drilling	D	none observed	GRAPHIC LOG/CORE LOSS		MW	-moderately	L	-low	SM	-seam
RR	roller/tricone	X	not measured		core recovered (hatching indicates material)	HW	-highly	M	-medium	PL	-planar
NMLC	core drilling		Drilling Water partial loss			EW	-extremely	H	-high	CV	-curved
NQ, HQ, PQ	core drilling		complete loss		no core recovered			VH	-very high	IR	-irregular
	casing used							EH	-extremely high	RO	-rough
	barrel withdrawn									SO	-smooth
										SL	-slickensided

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - cored borehole

borehole no: CP8
sheet 5 of 5

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	27.8.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	29.8.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239711N 0333580E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -21.95 m
barrel type and length:	NMLC - 3m fluid: MUD	bearing:	datum: ISLW

drilling information					rock substance					rock mass defects		
method	case-lift	water	R.L.	depth metres	graphic log core loss	substance description rock type: grain characteristics colour, structure, minor components	weathering	Est. Strength (EL VL L M H VH EH)	point load test Is(50) MPa	RQD %	defect spacing mm (30 100 300 1000 3000)	defect description type, inclination planarity, roughness, coating, thickness unless otherwise noted defects follow general description below
NMLC			-46			SANDSTONE: medium to coarse grained, banded light grey & light brown, distinct cross bedding, 0-20deg, occasional pebbles to 5mm.	SW		D 0.54 A 0.79			UNIT 6 JT 45deg PL SO 3mm clay infill with some of adjacent rock broken. 60mm EW SW
			-47	25		Borehole CP8 Terminated at 24.65m 26m of 50mm diameter P.V.C installed in BHCP8 with 2m of nylon line & float attached to top.						
			-48	26								
			-49	27								
			-50	28								
			-51	29								
			-52	30								
			-53	31								
				32								

General Defect Description:

METHOD		WATER		POINT LOAD TEST		WEATHERING		STRENGTH		DEFECTS	
DT	diatube		water level	D -diametral	I -irregular	FR	-fresh	EL	-extremely low	JT	-joint
AS	auger screwing		water inflow	A -axial		SW	-slightly	VL	-very low	PT	-parting
AD	auger drilling	0	none observed	GRAPHIC LOG/CORE LOSS		MW	-moderately	L	-low	SM	-seam
RR	roller/tricone	*	not measured		core recovered (hatching indicates material)	HW	-highly	M	-medium	PL	-planar
NMLC	core drilling		Drilling Water			EW	-extremely	H	-high	CV	-curved
NQ, HQ, PQ	core drilling		partial loss		no core recovered			VH	-very high	IR	-irregular
	casing used		complete loss					EH	-extremely high	RO	-rough
	barrel withdrawn									SO	-smooth
										SL	-slickensided

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP9
sheet 1 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	31.8.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	1.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239580N 0333906E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -21.25 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		D	-22	1		CH	SILTY CLAY: high plasticity, dark grey-black, some fine sand (SLURRY)	>Wp	VS	×	UNIT 1B
		C		11 ,16 ,23 N= 39	-23	2		SM	SILTY SAND: fine to medium grained, dark grey, some clay.	W	VD		UNIT 2 SPT at 1.00m - trace recovery only.
DB		C		9 ,24 ,36 N*= 60	-24	3		SP	SAND: fine to medium grained, grey, some silt.				
		M		9 ,11 ,20 N*= 31	-25	4		CH	CLAY: dark grey-black, some silt and occasional 200mm thick bands of peaty clay.	>Wp	H	×	UNIT 3B
					-26	5							
					-27	6							Possible sand lense 0.2m thick at 6.0m.
					-28	7				<Wp			
				U70	-29	8						×	

COFBORE VERSION 83.1 syd 5/ 2/99 17 :15 :10

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. AD/T

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP9
sheet 2 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	31.8.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	1.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239580N 0333906E	checked by:	
drill model and mounting:	EOSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -21.25 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification SYMBOL	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa	structure and additional observations
DB	1 2 3 4				-30	9		CH	CLAY: dark grey-black, some silt and occasional 200mm thick bands of peaty clay.	<Wp	H		UNIT 3B
				U70	-31	10							
					-32	11		CL	SANDY CLAY: low plasticity, light grey-green, some shells and shell fragments, sand is fine grained.	>Wp	H		UNIT 4A
				U70	-33	12		CH	CLAY: high plasticity, mottled light grey & light brown.	<Wp			
				U70	-34	13		SP	SAND: medium to coarse grained, mottled light grey, & light brown, cemented.	M	VD		UNIT 5
					-35	14			Continued as cored borehole from 13.50 m				
					-36	15							
					-37	16							

B3.1 COREBORE VERSION syd 5/ 2/99 17 :15 :15

METHOD
AS auger screwing*
AD auger drilling*
AR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4 little resistance ranging to very slow progress

WATER
✱ not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

T87-230

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - cored borehole

borehole no: CP9
sheet 3 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	31.8.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	1.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239580N 0333906E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -21.25 m
barrel type and length:	NMLC - 3m fluid: MUD	bearing:	datum: ISLW

drilling information					rock substance				rock mass defects		
method	case-lift	water	R.L.	depth metres	graphic log core loss	substance description: rock type: grain characteristics colour, structure, minor components	weathering	Est. Strength (EL VL L M H VH EH)	point load test Is(50) MPa	RQD %	defect spacing mm (30 100 300 1000 3000)	defect description: type, inclination planarity, roughness, coating, thickness unless otherwise noted defects follow general description below
			-30	9								
			-31	10								
			-32	11								
			-33	12								
			-34	13		Continued from non-core borehole						
NMLC			-35	14		SANDSTONE: medium to coarse grained, light grey, some grey banding, distinct cross bedding @ 0-25deg.	SW		D A 0.18 0.32 D A 0.34 0.33	85		UNIT 6 Broken EW SM 30mm thick PT JT 45deg IR RO EW infills 5mm EW SM 5mm EW SM 50mm EW SM 30mm broken SM
			-36	15		Borehole CP9 Terminated at 14.85m 10m of 50mm PVC installed in BHCP9 on completion. 1.5m nylon line and float tied to top.						
			-37	16								

General Defect Description:

COFCORE VERSION C2.1
5/ 2/99 14 :40 :42 syd
ACN 003 692 019

METHOD		WATER		POINT LOAD TEST		WEATHERING		STRENGTH		DEFECTS	
DT	diatube	▽	water level	D -diametral	I -irregular	FR	-fresh	EL	-extremely low	JT	-joint
AS	auger screwing	▽	water inflow	A -axial		SW	-slightly	VL	-very low	PT	-parting
AD	auger drilling	O	none observed	GRAPHIC LOG/CORE LOSS		MW	-moderately	L	-low	SM	-seam
RR	roller/tricone	X	not measured		core recovered (hatching indicates material)	HW	-highly	M	-medium	PL	-planar
NMLC	core drilling		Drilling Water			EW	-extremely	H	-high	CV	-curved
NQ, HQ, PQ	core drilling	◁	partial loss		no core recovered			VH	-very high	IR	-irregular
	casing used	◁	complete loss					EH	-extremely high	RO	-rough
	barrel withdrawn									SO	-smooth
										SL	-slickensided

TB7-229

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP10
sheet 1 of 5

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	2.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	3.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239429N 0333945E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -15.95 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		D	-16			CH	SILTY CLAY: high plasticity, dark grey-black, some fine sand.	>Wp	VS	×	UNIT 1B
		C		20 ,20 ,23 N*= 43	-17	1		SM	SILTY SAND: fine to medium grained, dark grey, some clay.	W	VD		UNIT 2
		C			-18	2					D		
		C		8 ,10 ,15 N= 25	-19	3							
		C		11 ,10 ,6 N*= 16	-20	4		SC	CLAYEY SAND: fine to medium grained, dark grey, some silt and a trace of woody peat fragments.	W	MD		UNIT 3C
					-21	5		CH	CLAY: high plasticity, dark grey-black, some 50mm bands and 20mm lenses of silty fine to medium grained sand.	>Wp	VSt		UNIT 3B
DB		M		8 ,10 ,12 N*= 22	-22	6						×	
					-23	7		PT	PEAT: black, woody texture.	W	H		UNIT 3A
				U70									U70 at 7.25m refused at 7.40m.
						8		CH	CLAY: high plasticity, light grey, some light brown mottling, trace of fine sand, some organic clay horizons.	<Wp	H		UNIT 3B

COFBORE VERSION B3.1 syd 5/2/99 17:6.34

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured D none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

T87-230

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP10
sheet 2 of 5

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	2.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	3.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239429N 0333945E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -15.95 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa	structure and additional observations
DB	1 2 3 4			U70	-24			CH	CLAY: high plasticity, light grey, some light brown mottling, trace of fine sand, some organic clay horizons.	<Wp	H	100 200 300 400	UNIT 3B Possible sand lense 0.2m thick at 8.2m.
					-25	9				>Wp			
				U70	-26	10							
				U70	-27	11		CH	CLAY: high plasticity, dark grey-black.				
				U70	-28	12							
					-29	13							
					-30	14		CI	SANDY CLAY: low to medium plasticity, grey, sand is fine to medium grained, probably cemented.	>Wp	H		UNIT 4A U70 at 13.75 - refusal at 13.9 no recovery & tube damaged.
								CI	SANDY CLAY: low to medium plasticity, light grey-green, sand is fine grained.				
				U70	-31	15							
						16		CH	CLAY: high plasticity, grey-green, blocky texture with fissuring.				

COFFBORE VERSION B3.1 syd 5/2/99 17:6:39

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
Y V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance
ranging to
very slow progress

WATER
* not measured N none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP10
sheet 3 of 5

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	2.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	3.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239429N 0333945E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -15.95 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB					-32			CH	CLAY: high plasticity, grey-green, blocky texture with fissuring.	>Wp	H		
					-33	17							
					-34	18							
					-35	19							
					-36	20							
					-37	21							Possible sand horizon 1m thick at 21.1m. U70 at 21.45m - no recovery.
					-38	22							
					-39	23		SC	CLAYEY SAND: medium to coarse grained, mottled light grey & light brown, cemented.	W	VD		UNIT 5
						24			Continued as cored borehole from 23.50 m				

COREBORE VERSION B3.1 syd 5/2/99 17:6:43

METHOD
- AS auger screwing*
- AD auger drilling*
- RR roller/tricone
- W washbore
- CT cable tool
- HA hand auger
- DT diatube
- *bit shown by suffix
- B blank bit
- V V bit
- T TC bit
- e.g. ADT

SUPPORT
- Nil no support
- M mud
- C casing

PENETRATION
1 2 3 4 — little resistance ranging to very slow progress

WATER
- * not measured
- 0 none observed
- water level
- water outflow
- water inflow

SAMPLES, TESTS, ETC
- U undisturbed sample (mm)
- D disturbed sample
- Bs bulk sample
- E environmental sample
- N standard penetration test:
- N* SPT + sample recovered
- Nc SPT with solid cone
- VS vane shear
- PM pressuremeter
- DP dynamic penetrometer
- WS water sample
- PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

CONSISTENCY/DENSITY INDEX
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

Coffey Geosciences Pty. Ltd.
ACN 056 335 516

engineering log - cored borehole

COFFEY

borehole no: CP10
sheet 4 of 5

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	2.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	3.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239429N 0333945E	checked by:	

drill model and mounting: EOSON 3000 - BARGE — slope: -90 DEG — R.L.Surface: -15.95 m
barrel type and length: NMLC - 3.0m — fluid: MUD — bearing: — datum: ISLW

drilling information					rock substance				rock mass defects		
method	case-lift	water	R.L.	depth metres	graphic log / core loss	substance description: rock type: grain characteristics, colour, structure, minor components	weathering	Est. Strength (EL VL L M H VH EH)	point load test Is(50) MPa	ADD %	defect spacing mm (30 100 300 1000 3000)	defect description: type, inclination planarity, roughness, coating, thickness; unless otherwise noted defects follow general description below
			-32									
			-33	17								
			-34	18								
			-35	19								
			-36	20								
			-37	21								
			-38	22								
			-39	23		Continued from non-core borehole						
NMLC				24		SANDSTONE: medium to coarse grained, light grey, some dark grey banding, distinct cross bedding at 0-25deg.	SW		D A 0.49 0.52			UNIT 6 23.5-26.15m bedding partings

General Defect Description:
23.5-26.15m Bedding Partings

METHOD
DT diatube
AS auger screwing
AD auger drilling
AR roller/tricone
NMLC core drilling
NQ, HQ, PQ core drilling
casing used
barrel withdrawn

WATER
water level
water inflow
0 none observed
* not measured
Drilling Water
partial loss
complete loss

POINT LOAD TEST
D -diametral I -irregular
A -axial

GRAPHIC LOG/CORE LOSS
core recovered (hatching indicates material)
no core recovered

WEATHERING
FR -fresh
SW -slightly
MW -moderately
HW -highly
EW -extremely

STRENGTH
EL -extremely low
VL -very low
L -low
M -medium
H -high
VH -very high
EH -extremely high

DEFECTS
JT -joint
PT -parting
SM -seam
PL -planar
CV -curved
IR -irregular
RO -rough
SO -smooth
SL -slickensided

COFCORE VERSION C4. 8/ 2/99 14:48:21 syd

Coffey Geosciences Pty. Ltd.
ACN 056 335 516

engineering log - cored borehole

borehole no: CP10
sheet 5 of 5

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	2.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	3.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239429N 0333945E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 OEG	R.L.Surface: -15.95 m
barrel type and length:	NMLC - 3.0m fluid: MUD	bearing:	datum: ISLW

drilling information					rock substance						rock mass defects	
method	case-lift	water	R.L.	depth metres	graphic log / core loss	substance description: rock type: grain characteristics, colour, structure, minor components	weathering	Est. Strength (EL VL L M H VH EH)	point load test Is(50) MPa	RQD %	defect spacing mm (30 100 300 1000 3000)	defect description: type, inclination planarity, roughness, coating, thickness; unless otherwise noted defects follow general description below
NMLC			-40			SANDSTONE: medium to coarse grained, light grey, some dark grey banding, distinct cross bedding at 0-25deg.	SW		D 0.89 A 1.06	85		UNIT 6
			-41	25								
						SANDSTONE: medium to coarse grained, banded light brown & light grey, becoming banded light red-brown & light grey.	MW					JT 90deg IR RO infilled trace EW
												8mm EW SM
												25.70-25.78m EW SM
			-42	26					D 0.66 A 0.56			10mm EW SM
												JT 45deg IR RO infilled 30mm EW
						Borehole CP10 Terminated at 26.15m						
						27m of 50mm PVC placed in BHCP10 with 2m fishing line & float on top.						
			-43	27								
			-44	28								
			-45	29								
			-46	30								
			-47	31								
				32								

General Defect Description:
23.5-26.15m Bedding Partings

METHOD		WATER		POINT LOAD TEST		WEATHERING		STRENGTH		DEFECTS	
DT	diatube		water level	D -diametral	I -irregular	FR	-fresh	EL	-extremely low	JT	-joint
AS	auger screwing		water inflow	A -axial		SW	-slightly	VL	-very low	PT	-parting
AD	auger drilling	D	none observed	GRAPHIC LOG/CORE LOSS		MW	-moderately	L	-low	SM	-seam
RR	roller/tricone	*	not measured		core recovered (hatching indicates material)	HW	-highly	M	-medium	PL	-planar
NMLC	core drilling		Drilling Water			EW	-extremely	H	-high	CV	-curved
NQ, HQ, PQ	core drilling		partial loss					VH	-very high	IR	-irregular
	casing used		complete loss		no core recovered			EH	-extremely high	RO	-rough
	barrel withdrawn									SO	-smooth
										SL	-slickensided

Coffey Geosciences Pty. Ltd.
ACN 056 335 516

engineering log - borehole

borehole no: CP11
sheet 1 of 8

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239463N 0334060E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -11.4 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		D	-12	1		CH	SANDY CLAY: medium to high plasticity, mottled dark grey & brown, some silt sand is fine grained (SLURRY)	>Wl	VS	×	UNIT 1B
		C		12, 22, 30 Nx= 52	-13	2		SP	SAND: fine to medium grained, mottled gret & light brown, some silt and a trace of shell fragment.	W	VD		UNIT 2
		C		15, 27, - Nx> 50	-14	3		SP	SAND: fine grained, becoming fine to medium grained, light brown.				
		C		18, 36, - Nx> 70	-15	4							
		C		21, 28, - Nx=A	-16	5							
		C		29, , Nx> 50	-17	6							
					-18	7							
					-19	8							

COFBORE VERSION B4. syd 8/2/99 14:49:44

METHOD
AS auger screwing*
AD auger drilling*
AR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Geosciences Pty. Ltd.
ACN 056 335 516

engineering log - borehole

borehole no: CP11
sheet 2 of 8

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239463N 0334060E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -11.4 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
					-20	9		SP	SAND: fine grained, becoming fine to medium grained, light brown	W	VD		UNIT 2
		C		15, 36, N*> 70	-21	10		SP	SAND: fine to medium grained, light grey-brown, trace of shell fragments, becoming with traces of peat.	W	VD		UNIT 3C
		C		19, 42, N*> 80	-22	11							
		C		47, , N*> 90	-23	12		SP	SAND: fine to medium grained, grey, some silt and a trace of cemented nodules to 10mm size.				
DB		M		6, 8, 10 N*= 18	-24	13							
					-25	14		CH	CLAY: high plasticity, dark grey, some silt and a trace of peat fragments becoming with some 100mm bands of peaty sand.	>Wp	VSt	×	UNIT 3B
					-26	15							
				U70	-27	16							

COFBORE VERSION B4. 8/2/99 14:49 syd

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4 — little resistance ranging to very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Geosciences Pty. Ltd.
ACN 056 335 516

engineering log - borehole

COFFEY

borehole no: CP11
sheet 3 of 8

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239463N 0334060E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -11.4 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
					-28	17		CH	CLAY: high plasticity, dark grey, some silt and a trace of peat fragments becoming with some 100mm bands of peaty sand.	>Wp	VSt		UNIT 3B
					-29	18		CH	CLAY: high plasticity, light grey, mottled dark grey & black, some 200mm bands of woody peat and clayey peat.	<Wp	H		Possible sand or peat horizon 0.8m thick at 17.8m.
				U70	-30	19							
					-31	20		CH	CLAY: high plasticity, dark grey, blocky texture with some fissuring and 200mm bands of woody peat.				Possible sand or peat lense 0.3m thick at 19.9m.
NMLC				D	-32	21							21.1-22.6 NMLC coring.
					-33	22							
DB					-34	23		CL	SANDY CLAY: low to medium plasticity, light grey, becoming light grey-green, sand is fine grained, trace to some shell fragments, some silt.	>Wp	VSt		UNIT 4A
				U70	-35	24							

B4. VERSION COREBORE 14.50 : 1 syd 8/ 2/99

METHOD
AS auger screwing*
AD auger drilling*
AR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
1 little resistance
2 ranging to
3 very slow progress
4

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Geosciences Pty. Ltd.
ACN 056 335 516

engineering log - borehole

borehole no: CP11
sheet 4 of 8

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239463N 0334060E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -11.4 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB				U70	-36	25		CL	SANDY CLAY: low to medium plasticity, light grey, becoming light grey-green, sand is fine grained, trace to some shell fragments, some silt.		VSt	×	UNIT 4A
					-37	26					H		
					-38	27						×	
					-39	28							
					-40	29							
				U70	-41	30						×	
					-42	31							
					-43	32							

B4. COFBORE . VERSION syd 8/ 2/99 14 :50 :5

METHOD
- AS auger screwing*
- AD auger drilling*
- RR roller/tricone
- W washbore
- CT cable tool
- HA hand auger
- DT diatube
- *bit shown by suffix
- B blank bit
- V V bit
- T TC bit
- e.g. ADT

SUPPORT
- Nil no support
- M mud
- C casing

PENETRATION 1 2 3 4
- little resistance
- ranging to
- very slow progress

WATER
- * not measured
- O none observed
- water level
- water outflow
- water inflow

SAMPLES, TESTS, ETC
- U undisturbed sample (mm)
- D disturbed sample
- Bs bulk sample
- E environmental sample
- N standard penetration test:
- N* SPT + sample recovered
- Nc SPT with solid cone
- VS vane shear
- PM pressuremeter
- DP dynamic penetrometer
- WS water sample
- PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

CONSISTENCY/DENSITY INDEX
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

Coffey Geosciences Pty. Ltd.
ACN 056 335 516

engineering log - borehole

borehole no: CP11
sheet 5 of 8

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239463N 0334060E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -11.4 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L. / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
NMLC				U70	-44 / 33		CL	SANDY CLAY: low to medium plasticity, light grey, becoming light grey-green, sand is fine grained, trace to some shell fragments, some silt.	>Wp	H		UNIT 4A
					-45							
					34		CH	CLAY: high plasticity, grey, fissured with a blocky texture, some sandy clay, minor silty sand, sand and organic clay.	<Wp			
					-46							Possible sand horizon 0.8m thick at 34.6m.
					35							
					-47							
					36							
					-48							
				D	37							
					-49							
					38							
					-50							
					39							
					-51							39.4-41.4m NMLC coring.
					40							

B4. VERSION COREBORE syd 14:50:16 8/2/99

METHOD
- AS auger screwing*
- AD auger drilling*
- RR roller/tricone
- W washbore
- CT cable tool
- HA hand auger
- DT diatube
- *bit shown by suffix
- B blank bit
- V V bit
- T TC bit
- e.g. ADT

SUPPORT
- Nil no support
- M mud
- C casing

PENETRATION 1 2 3 4 — little resistance ranging to very slow progress

WATER
- * not measured
- 0 none observed
- water level
- water outflow
- water inflow

SAMPLES, TESTS, ETC
- U undisturbed sample (mm)
- D disturbed sample
- Bs bulk sample
- E environmental sample
- N standard penetration test:
- Nx SPT + sample recovered
- Nc SPT with solid cone
- VS vane shear
- PM pressuremeter
- DP dynamic penetrometer
- WS water sample
- PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

CONSISTENCY/DENSITY INDEX
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

Coffey Geosciences Pty. Ltd.
ACN 056 335 516

engineering log - borehole

borehole no: CP11
sheet 6 of 8

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239463N 0334060E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -11.4 m
hole diameter:	100mm .	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L. / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB				D	-52 / 41		CH	SANDY CLAY: medium to high plasticity, mottled & banded grey, light grey & light brown, sand is fine to medium grained.	>Wp	H		UNIT 4A
DB				U70	-53 / 42		CH	CLAY: high plasticity, mottled grey & brown.	>Wp			
					-54 / 43							
					-55 / 44							
					-56 / 45							
					-57 / 46							
					-58 / 47							
					-59 / 48							

COFBORE VERSION B4. syd 8/2/99 14:50:21

TB7-230

METHOD
- AS auger screwing*
- AD auger drilling*
- RR roller/tricone
- W washbore
- CT cable tool
- HA hand auger
- DT diatube
- *bit shown by suffix
- B blank bit
- V V bit
- T TC bit
- e.g. ADT

SUPPORT
- Nil no support
- M mud
- C casing

PENETRATION
1 2 3 4 — little resistance ranging to very slow progress

WATER
- * not measured
- D none observed
- water level
- water outflow
- water inflow

SAMPLES, TESTS, ETC
- U undisturbed sample (mm)
- B disturbed sample
- Bs bulk sample
- E environmental sample
- N standard penetration test:
- N* SPT + sample recovered
- Nc SPT with solid cone
- VS vane shear
- PM pressuremeter
- DP dynamic penetrometer
- WS water sample
- PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

CONSISTENCY/DENSITY INDEX
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

Coffey Geosciences Pty. Ltd.
ACN 056 335 516

engineering log - borehole

borehole no: CP11
sheet 7 of 8

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239463N 0334060E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -11.4 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB				U70	-60	49		CH	CLAY: high plasticity, mottled grey & brown.	>Wp	H		UNIT 4A
					-61	50							
					-62	51							
					-63	52							
					-64	53		SC	CLAYEY SAND: medium to coarse grained, mottled light grey & light brown, trace of angular gravel, cemented.	M	VD		UNIT 5
					-65	54			Continued as cored borehole from 53.25m				
					-66	55							
					-67	56							

METHOD
AS auger screwing*
AD auger drilling*
AR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

COFBORE VERSION 84. 8/2/99 14:50:25 syd

Coffey Geosciences Pty. Ltd.
ACN 056 335 516

engineering log - cored borehole

borehole no: CP11
sheet 8 of 8

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239463N 0334060E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: ~90 OEG	R.L.Surface: -11.40 m
barrel type and length:	NMLC - 3.0m fluid: MUD	bearing:	datum: ISLW

drilling information					rock substance					rock mass defects		
method	case-litt	water	R.L.	depth metres	graphic log / core loss	substance description: rock type: grain characteristics colour, structure, minor components	weathering	Est. Strength (EL VL L M H VH EH)	point load test Is(50) MPa	RQD %	defect spacing mm (30 100 300 1000 3000)	defect description: type, inclination planarity, roughness, coating, thickness; unless otherwise noted defects follow general description below
			-60	49								
			-61	50								
			-62	51								
			-63	52								
			-64	53		Continued from non-core borehole						
NMLC			-65	54		NO CORE: 0.3m						
						SANDSTONE: medium to coarse grained, banded & mottled light brown & light grey, 0-20deg cross bedding.	MW		D 0.14 A 0.17	30		UNIT 6 PT with 1mm clay infill JT 30deg PL RO with 1mm clay veneer
							EW		D 0.38 A 0.26			JT 60deg PL RO clean 54.25-54.63m EW SM
			-66				MW					30mm EW SM
			-67	55		Borehole CP11 Terminated at 54.75m On Completion of CP11 57m of 50mm dia. PVC placed in borehole with 2m nylon line (and float) on top.						
				56								

General Defect Description:

METHOD		WATER		POINT LOAD TEST		WEATHERING		STRENGTH		DEFECTS	
DT	diatube		water level	D -diametral	I -irregular	FR	-fresh	EL	-extremely low	JT	-joint
AS	auger screwing		water inflow	A -axial		SW	-slightly	VL	-very low	PT	-parting
AD	auger drilling	0	none observed	GRAPHIC LOG/CORE LOSS		MW	-moderately	L	-low	SM	-seam
RR	roller/tricone	*	not measured		core recovered (hatching indicates material)	HW	-highly	M	-medium	PL	-planar
NMLC	core drilling		Drilling Water partial loss			EW	-extremely	H	-high	CV	-curved
NQ, HQ, PQ	core drilling		complete loss		no core recovered			VH	-very high	IR	-irregular
	casing used							EH	-extremely high	RO	-rough
	barrel withdrawn									SO	-smooth
										SL	-slickensided

COFCORE VERSION C4. 8/2/99 14:49:10 syd

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP12
sheet 1 of 9

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239508N 0334175E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -11.70 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		D	-12			SC	CLAYEY SAND: fine to medium grained, grey-brown, some silt (SLURRY).	W	VL		UNIT 1B
		C		9 ,14 ,14 N*= 28	-13	1		SP	SAND: fine to medium grained, light grey-brown, traces of silt & clay and shell fragments.	W	MD		UNIT 2
					-14	2							
		C		12 ,34 , N*> 60	-15	3		SP	SAND: fine to medium grained, light brown, traces of silt & shell fragments.				
					-16	4							
		C		12 ,31 , N*> 60		5							
					-17								
		C		20 ,28 , N*> 50	-18	6							
						7							
		C		13 ,38 , N> 70	-19								
						8							

COFBORE VERSION 83.1 syd 5/ 2/99 17 :20 :6

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4 little resistance ranging to very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP12
sheet 2 of 9

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239508N 0334175E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -11.70 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
N		C		17, 32, N*=R	-10	9		SP	SAND: fine to medium grained, light brown, traces of silt & shell fragments.	W	MD		UNIT 2
		C		17, 46, N*> 90	-11	10							
		C		20, 33, N*=R	-12	11							
		C		41, , N> 80	-13	12		SM	SILTY SAND: fine to medium grained, dark brown, some peaty sand.	W	VD		UNIT 3C
		C		46, , N*> 90	-14	13		SP	SAND: fine to medium grained, brown, becoming light-brown, some silt and trace of peat.				
					-15	14							
					-16	15							

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4 little resistance ranging to very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP12
sheet 3 of 9

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239508N 0334175E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	A.L.Surface: -11.70 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
					-28	17		SP	SAND: fine to medium grained, brown, becoming light-brown, some silt and trace of peat.	W	VD		UNIT 3C
DB		C	W	27,26 N*=R	-29	18							
					-30			SP	SAND: fine to medium grained, light grey.				
					-31	19							
				D	-32	20							U70 at 20.55m - disturbed sand placed in bag.
					-33	21							
					-34	22		CH	CLAY: high plasticity, mottled grey & dark grey, some bands and lenses of clayey fine to medium grained sand, some woody peat fragments.	>Wp	H		UNIT 3B
					-35	23							
						24							

COREBORE VERSION 83.1 syd 5/2/99 17:20:19

METHOD
AS auger screwing*
AD auger drilling*
AR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured D none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP12
sheet 4 of 9

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239508N 0334175E	checked by:	
drill model and mounting:	EOSDN 3000 - BARGE	slope: -90 DEG	R.L.Surface: -11.70 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics; colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
				U70	-36	25		CH	CLAY: high plasticity, mottled grey & dark grey, some bands and lenses of clayey fine to medium grained sand, some woody peat fragments.	>Wp	H	×	UNIT 3B
					-37								
						26		CL	SILTY CLAY: low plasticity, dark grey, some shell fragments and trace fine sand.	>Wp	H		UNIT 4A
				U70	-38	27							
					-39							×	
						28							
					-40								
								CH	CLAY: high plasticity, dark grey, trace of shell fragments.				
						29							
				U70	-41								
						30						×	
					-42								
						31							
					-43								
						32							

COFBORE VERSION B3.1
OB
syd 5/ 2/99 17 :20 :24

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance
ranging to
very slow progress

WATER
✗ not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

TB7-230

Coffey Partners International Pty. Ltd.
ACN 003 692 019.

engineering log - borehole

borehole no: CP12
sheet 5 of 9

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239508N 0334175E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -11.70 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
DB					-44	33		CH	CLAY: high plasticity, dark grey, trace of shell fragments.	>Wp	H		UNIT 4A
					-45	34							
					-46								
				U70	-47	35		SP	SAND: fine to medium grained, light grey, mottled grey & dark grey, traces of silt, clay and peat.	W	VD		UNIT 4B
					-48	36							
					-49	37			37.00-38.50m probable cemented zone.				
					-50	38							
					-51	39							-Possible clay or clayey sand horizon 0.5m thick at 38.5m.
						40							

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance
ranging to
very slow progress

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP12
sheet 6 of 9

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239508N 0334175E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -11.70 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L. / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
NMLC					-52 / 41		SP	SAND: fine to medium grained, light grey, mottled grey & dark grey, traces of silt, clay and peat.	W	VD		UNIT 4B
NMLC				D	-53 / 42		CH	CLAY: high plasticity, grey-green, some fine sand & shell fragments, occasional 200mm bands of clayey sand.	<Wp	H	×	UNIT 4A
					-54 / 43							
					-55 / 44							
					-56 / 45							
					-57 / 46							
					-58 / 47							
					-59 / 48							

COREBORE VERSION 83.1 syd 5/ 2/99 17 :20 32

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

TBD-230

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP12
sheet 7 of 9

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239508N 0334175E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -11.70 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
NMLC				U70	-60 / -61 / -62 / -63 / -64 / -65 / -66 / -67	49 / 50 / 51 / 52 / 53 / 54 / 55 / 56		CH	CLAY: high plasticity, grey-green, some fine sand & shell fragments, occasional 200mm bands of clayey sand.	<Wp	H		UNIT 4A U70 @ 49.25m - no recovery.
								SP-PT	SANDY PEAT: fine to medium grained, dark brown-black, some bands of woody peat.	W	VD		UNIT 4B 54.25-59.15m NMLC coring.

COFBORE VERSION 83.1 5/2/99 17:20:35 syd

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance
ranging to
very slow progress

WATER
* not measured D none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP12
sheet 8 of 9

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239508N 0334175E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -11.70 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
					-58			SP-PT	SANDY PEAT: fine to medium grained, dark brown-black, some bands of woody peat.	W	VD		UNIT 4B
								SC	CLAYEY SAND: fine grained, mottled light grey & grey, some silt.				UNIT 4B
					-69	57							
						58							
					-70								
DB					-71	59							
				50 N=8	-72	60							
						61							
					-73								
						62		SC	CLAYEY SAND: light grey.	W	VD		UNIT 5
					-74				Continued as cored borehole from 62.05m				
						63							
					-75								
						64							

B3.1 COREBORE VERSION syd 5/2/99 17:20:38

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured D none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - cored borehole

borehole no: CP12
sheet 9 of 9

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	7.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	11.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239508N 0334175E	checked by:	
drill model and mounting:	EOSON 3000 - BARGE	slope: -90 DEG	A.L.Surface: -11.70 m
barrel type and length:	NMLC 3.0m fluid: MUD	bearing:	datum: ISLW

drilling information					rock substance				rock mass defects			
method	case-lift	water	R.L.	depth metres	graphic log / core loss	substance description: rock type: grain characteristics colour, structure, minor components	weathering	Est. Strength (EL VL L M H VH EH)	point load test Is(50) MPa	RQD %	defect spacing mm (30 100 300 1000 3000)	defect description: type, inclination planarity, roughness, coating, thickness; unless otherwise noted defects follow general description below
			-68	57								
			-69	58								
			-70	59								
			-71	60								
			-72	61								
			-73	62		Continued from non-core borehole						
NMLC			-74	63		SANDSTONE: fine to medium grained, light grey, indistinct cross bedding @ 0-10deg.	FR		D 0.07 A 0.10	90		UNIT 6 PT EW SM 65mm thick PT
			-75	64		On completion ~ 66m of 50mm diameter P.V.C placed in borehole with 2m of fishing line and float on top.			D 0.17 A 0.19			High strength SM <10mm thick with PT each side 63.70-63.80m EW SM
						Borehole CP12 Terminated at 63.80m						

General Defect Description:

METHOD		WATER		POINT LOAD TEST		WEATHERING		STRENGTH		DEFECTS	
DT	diatube		water level	D -diametral	I -irregular	FR	-fresh	EL	-extremely low	JT	-joint
AS	auger screwing		water inflow	A -axial		SW	-slightly	VL	-very low	PT	-parting
AD	auger drilling	D	none observed	GRAPHIC LOG/CORE LOSS		MW	-moderately	L	-low	SM	-seam
RR	roller/tricone	X	not measured		core recovered (hatching indicates material)	HW	-highly	M	-medium	PL	-planar
NMLC	core drilling		Drilling Water			EW	-extremely	H	-high	CV	-curved
NQ, HQ, PQ	core drilling		partial loss					VH	-very high	IR	-irregular
	casing used		complete loss		no core recovered			EH	-extremely high	RO	-rough
	barrel withdrawn									SO	-smooth
										SL	-slickensided

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP13
sheet 1 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	28.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	28.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240590N 0333879E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -6.05 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C			-7	1		OH	SILTY CLAY: high plasticity, black, some fine sand and root fibres.	>Wp	VS		UNIT 1D
		C		0 ,1 ,1 N*= 2	-8	2					S	X	
					-9	3		SM	SILTY SAND: fine to medium grained, mottled brown & grey, trace to some clay.	W	L		UNIT 2
		C		0 ,2 ,3 N*= 5	-10	4							
					-11	5							
		C		0 ,1 ,3 N*= 4	-12	6		SP	SAND: fine to medium grained, light brown & brown, traces of silt and shell fragments.		VD		
		C		13 ,19 ,41 N*= 60	-13	7							
					-14	8							

COFBORE VERSION B3.1
5/ 2/99 10 :58 :10 syd

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
1 little resistance
4 ranging to very slow progress

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP13
sheet 2 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	28.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	28.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240590N 0333879E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -6.05 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W*		C		43, N*= 80	-15	9		SP	SAND: fine to medium grained, light brown & brown, traces of silt and shell fragments.	W	VD		
		C		44, N*> 80	-16	10		SP	SAND: fine to medium grained, light brown, trace to some silt.				
		C		20, 35, N*> 70	-17	11							
		C		37, N*=R	-18	12		SP	SAND: fine to medium grained, light grey-brown.				
		C		41, N*> 80	-19	13							
		C		37, N*=R	-20	14							
					-21	15							
					-22	16							

COFBORE VERSION 83.1 syd 5/2/99 10:58:14

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4 little resistance ranging to very slow progress

WATER
* not measured D none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP13
sheet 3 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	28.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	28.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240590N 0333879E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -6.05 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification SYMBOL	material: soil type: plasticity or particle characteristics colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		27 , , N*> 50	-23	17		SP	SAND: fine to medium grained, light grey-brown.	W	VD		
		C		8 , 33 , N*> 60	-24	18		SP-PT	SANDY PEAT: PEATY SAND: fine to medium grained, mottled brown & dark grey, some silt.	W	VD		UNIT 3C
		C		22 , 38 , N*> 70	-25	19		SP	SAND: fine to medium grained, light grey.				
		M		11 , 13 , 19 N*= 32	-26	20		CH	CLAY: high plasticity, dark grey, some 50mm bands of peat, black.	>Wp	St	X	UNIT 3B
					-27	21							
					-28	22			Borehole CP13 Terminated at 21.60 m				
					-29	23							
					-30	24							

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing
PENETRATION 1 2 3 4 — little resistance ranging to very slow progress
WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

COFFORE VERSION 83.1 syd 5/ 2/99 10 :58 :20

TB7-230

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP14
sheet 1 of 4

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	28.8.98
principal:	SYDNEY PORT CORPORATION	hole completed:	29.8.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240248N 0333991E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -2.95 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C			-3			SM	SILTY SAND: fine to medium grained, dark brown, becoming with some shell fragments and some silt.	W	MD		UNIT 2
				5 ,6 ,7 N*= 13	-4	1							
		C			-5	2							
					-6	3							
		C		7 ,14 ,16 N*= 30				SM	SILTY SAND: fine to medium grained, dark brown, becoming with some shell fragments and some silt.		D		
					-7	4							
		C		10 ,14 ,17 N*= 31	-8	5							
					-9	6		SP	SAND: fine to medium grained, light brown, some peat and shell fragments.		VD		
		C		19 ,26 , N*> 50									
					-10	7							
						8		SP	SAND: fine to medium grained, light grey-brown, some silt.				

B3.1 VERSION COREBORE syd 11 : 1 :12 5/ 2/99

METHOD C
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4 little resistance ranging to very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP14
sheet 2 of 4

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	28.8.98
principal:	SYDNEY PORT CORPORATION	hole completed:	29.8.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240248N 0333991E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -2.95 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W				14, 24, 24 N*= 48	-11			SP	SAND: fine to medium grained, light grey-brown, some silt.	W	VD		UNIT 2
		C		28, , N*> 50	-12	9							
					-13	10		SP	SAND: fine to medium grained, light brown, trace of silt.				
		C		19, 24, 30 N*= 54	-14	11							
					-15	12							
		C		26, , N*> 50	-16	13							
		C		27, , N*> 50	-17	14							
					-18	15							
		C		37, , N*=R		16							

COFBORE VERSION B3.1 syd 11 : 1 :18 5/ 2/99

METHOD
- AS auger screwing*
- AD auger drilling*
- RR roller/tricone
- W washbore
- CT cable tool
- HA hand auger
- DT diatube
- *bit shown by suffix
- B blank bit
- V V bit
- T TC bit
- e.g. ADT

SUPPORT
- Nil no support
- M mud
- C casing

PENETRATION 1 2 3 4
- little resistance
- ranging to
- very slow progress

WATER
- * not measured
- 0 none observed
- water level
- water outflow
- water inflow

SAMPLES, TESTS, ETC
- U undisturbed sample (mm)
- D disturbed sample
- Bs bulk sample
- E environmental sample
- N standard penetration test:
- N* SPT + sample recovered
- Nc SPT with solid cone
- VS vane shear
- PM pressuremeter
- DP dynamic penetrometer
- WS water sample
- PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

CONSISTENCY/DENSITY INDEX
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP14
sheet 3 of 4

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	28.8.98
principal:	SYDNEY PORT CORPORATION	hole completed:	29.8.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240248N 0333991E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -2.95 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics; colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		32, N*> 60	-19 / -20	17		SP	SAND: fine to medium grained, light brown, trace of silt.	W	VD		UNIT 2
		C		38, N*> 70	-21 / -22	18 / 19							
		C		38, N*> 70	-23 / -24 / -25	20 / 21 / 22							
					-26	23 / 24							

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4 little resistance ranging to very slow progress

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

B3.1 COFBORE VERSION syd 5/ 2/99 11 : 1 24

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP14
sheet 4 of 4

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	28.8.98
principal:	SYDNEY PORT CORPORATION	hole completed:	29.8.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240248N 0333991E	checked by:	
drill model and mounting:	EOSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -2.95 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa	structure and additional observations
N	1 2 3 4	C		42 , , N*> 80	-27			SP	SAND: fine to medium grained, light brown, trace of silt.	W	VD	100 200 300 400	UNIT 2
					-28	25							
					-29	26		CH	CLAY: high plasticity, banded grey & dark grey, some peat.	>Wp	VSt		UNIT 3B
		M		9 , 12 , 16 N*= 28	-30	27							
					-31	28			Borehole CP14 Terminated at 27.55 m				
					-32	29							
					-33	30							
					-34	31							
						32							

B3.1 COFBORE VERSION syd 11 : 1.30 5/ 2/99

METHOD
AS auger screwing*
AO auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing
PENETRATION 1 2 3 4 little resistance ranging to very slow progress
WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP15
sheet 1 of 4

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240063N 0334049E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -3.30 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C						SP	SAND: fine to medium grained, light brown, some shell fragments and trace silt.	W	L		UNIT 1C
		C		0 ,2 ,3 N*= 5	-4	1							
					-5			SP-PT	SANDY PEAT: PEATY SAND: fine to medium grained, brown & black, peat is friable, some silt.	W	VD		UNIT 2
		C		8 ,15 ,22 N*= 37	-6	2							
						3		SP	SAND: fine to medium grained, light brown, traces of silt and shell fragments.				
		C		19 ,28 , N*> 50	-7								
					-8	4		SP-PT	SANDY PEAT: PEATY SAND: fine to medium grained, mottled brown & black, peat is friable, some silt and shell fragments.				
		C		8 ,16 ,16 N*= 32		5							
					-9								
						6		SP	SAND: fine to medium grained, light brown, becoming with traces of shell fragments.				
		C		10 ,32 , N*> 60	-10								
						7							
					-11								
						8							

COFBORE VERSION B3.1 syd 5/ 2/99 11 : 6 57

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP15
sheet 2 of 4

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240063N 0334049E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -3.30 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		33, , N*> 60	-12	9		SP	SAND: fine to medium grained, light brown, becoming with traces of shell fragments.	W	VD		UNIT 2
		C		28, , N*> 50	-13	10							
		C		32, , N*> 60	-14	11							
		C		38, , N*> 70	-15	12							
		C		29, , N*> 50	-16	13		SP	SAND: fine to medium grained, light brown.				
		C		32, , N*> 60	-17	14							
					-18	15							
					-19	16							

COFBORE VERSION 83.1 5/ 2/99 11 : 7 :3 syd

METHOD
AS auger screwing*
AD auger drilling*
AR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance
ranging to
very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP15
sheet 3 of 4

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240063N 0334049E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -3.30 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W					-20	17		SP	SAND: fine to medium grained, light brown.	W	VD		UNIT 2
		C		28, N*> 50	-21	18							
					-22	19							
					-23	20		SP	SAND: fine to medium grained, light grey.				
		C		42, N*> 80	-24	21							
					-25	22							
					-26	23							
					-27	24		CH	SANDY CLAY: medium to high plasticity, mottled grey & dark grey, sand is fine to medium grained.	>Wp	St		UNIT 3B

COFBORE VERSION 83.1 5/ 2/99 11 : 7 :10 syd

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance
ranging to
very slow progress

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP15
sheet 4 of 4

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240063N 0334049E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -3.30 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		M		9 ,15 ,18 Nx= 33	-28			CH	SANDY CLAY: medium to high plasticity, mottled grey & dark grey, sand is fine to medium grained.	>Wp	St	×	UNIT 3B
						25			Borehole CP15 Terminated at 24.75 m				
					-29	26							
					-30	27							
					-31	28							
					-32	29							
					-33	30							
					-34	31							
					-35	32							

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing
PENETRATION 1 2 3 4 little resistance, ranging to very slow progress
WATER
* not measured D none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system
MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

B3.1 COFBORE VERSION syd 5/ 2/99 11 : 7 :16

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP16
sheet 1 of 5

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239898N 0334094E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -0.20 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L. / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		2 ,1 ,0 N*< 1	0		SM	SILTY SAND: fine to medium grained, mottled light brown & grey, becoming grey, some clay and shell fragments.	W	VL		UNIT 1A
		C		1 ,0 ,0 N*< 1	2							
		C		0 ,1 ,0 N*< 1	4							
		C		5 ,5 ,5 N*= 10	5		SM	SILTY SAND: fine to medium grained, grey-brown.	W	MD		UNIT 2
		C		10 ,17 ,17 N*= 34	6		SM	SILTY SAND: fine to medium grained, dark brown.		D		
					7		SP	SAND: fine to medium grained, light brown, trace silt.				
					8							

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP16
sheet 2 of 5

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239898N 0334094E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L. Surface: -0.20 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L. depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics; colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		12, 17, 22 N*= 39	-9 9		SP	SAND: fine to medium grained, light brown, trace silt.	W	VD		UNIT 2
		C		22, 32, N*> 60	-10 10							
		C		27, , N*> 50	-11 11							
		C		32, , N*> 60	-12 12							
		C		38, , N*> 70	-13 13							
		C		34, , N*> 60	-14 14							
					-15 15							
					-16 16							

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing
PENETRATION 1 2 3 4 little resistance ranging to very slow progress
WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

COFBORE VERSION B3.1 5/ 2/99 11 :10 :34 syd

TB7-230

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP16
sheet 3 of 5

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239898N 0334094E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -0.20 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		22,34, Nx=R	-17 -18 -19 -20 -21 -22 -23 -24	17 18 19 20 21 22 23 24		SP	SAND: fine to medium grained, light brown, trace silt.	W	VD		UNIT 2
		C		11,42, Nx> 80									

COFBORE VERSION 83.1 syd 5/ 2/99 11 :10 :40

METHOD
- AS auger screwing*
- AD auger drilling*
- RR roller/tricone
- W washbore
- CT cable tool
- HA hand auger
- DT diatube
- *bit shown by suffix
- B blank bit
- V V bit
- T TC bit
- e.g. ADT

SUPPORT
- Nil no support
- M mud
- C casing

PENETRATION
1 2 3 4 little resistance ranging to very slow progress

WATER
- * not measured
- O none observed
- water level
- water outflow
- water inflow

SAMPLES, TESTS, ETC
- U undisturbed sample (mm)
- D disturbed sample
- Bs bulk sample
- E environmental sample
- N standard penetration test:
- Nx SPT + sample recovered
- Nc SPT with solid cone
- VS vane shear
- PM pressuremeter
- DP dynamic penetrometer
- WS water sample
- PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
- O dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

CONSISTENCY/DENSITY INDEX
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP16
sheet 4 of 5

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239898N 0334094E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -0.20 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L. / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		31, , N*> 60	-25 / 25		SP	SAND: fine to medium grained, light grey, some 50mm bands of clayey peat.	W	VD		UNIT 3C
		C		33, , N*> 60	-26 / 26							
		C		36, , N*> 70	-27 / 27							
					-28 / 28							
					-29 / 29							
					-30 / 30							
					-31 / 31							
					-32 / 32							

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP16
sheet 5 of 5

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	4.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	7.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239898N 0334094E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -0.20 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration (1 2 3 4)	support	water	samples, tests, etc	R.L. / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa (100 200 300 400)	structure and additional observations
N		M		8 .10 .14 N*= 24	-33 / 33		SP	SAND: fine to medium grained, light grey, some 50mm bands of clayey peat.	W	VD		UNIT 3C
							CH	CLAY: high plasticity, dark grey.	>Wp	VSt	×	UNIT 3B
					-34 / 34			Borehole CP16 Terminated at 33.60 m				
					-35 / 35							
					-36 / 36							
					-37 / 37							
					-38 / 38							
					-39 / 39							
					-40 / 40							

COFBORE VERSION B3.1
5/ 2/99 11 :10 52 syd

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance
ranging to
very slow progress

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP17
sheet 1 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	21.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	21.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240676N 0333702E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -1.55 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L. / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		D	-2		SP	SAND: fine to medium grained, light brown, some live sea grass.	W	L		UNIT 1C
		C		D	-3		SN	SILTY SAND: fine to medium grained, mottled light brown, dark brown & grey, some shells.	W	MD		UNIT 2
		C		5 ,6 ,8 N*= 14	-4							
		C		28 , , N*> 50	-5		SP	SAND: fine to medium grained, brown, some silt.		VD		
		C		10 ,15 ,20 N*= 35	-7							
		C		31 , , N*> 60	-8		SP	SAND: fine to medium grained, light brown, trace to some silt.				
					-9							

METHOD	C
AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
*bit shown by suffix	
B	blank bit
V	V bit
T	TC bit
e.g.	ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured D none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC	
U	undisturbed sample (mm)
D	disturbed sample
Bs	bulk sample
E	environmental sample
N	standard penetration test:
N*	SPT + sample recovered
Nc	SPT with solid cone
VS	vane shear
PM	pressuremeter
DP	dynamic penetrometer
WS	water sample
PZ	piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE

D	dry
M	moist
W	wet
Wp	plastic limit
Wl	liquid limit

CONSISTENCY/DENSITY INDEX

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

COFBORE VERSION 83.1 syd 5/ 2/99 11 :11 29

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP17
sheet 2 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	21.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	21.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240676N 0333702E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -1.55 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L. / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W				19, 32, N*>60	-10 / 9		SP	SAND: fine to medium grained, light brown, trace to some silt.	W	VD		UNIT 2
		C		31, , N*>60	-11 / 10							
		C		28, , N*>50	-12 / 11							
		C		34, , N*>60	-13 / 12							
		C		41, , N*=R	-14 / 13		SP	SAND: fine to medium grained, light brown, banded dark brown, with some 100mm layers of sandy peat.				
		C		52, , N*>100	-15 / 14							
					-16 / 15		SP	SAND: fine to medium grained, light brown, trace of silt.				
					-17 / 16							

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4 little resistance ranging to very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

COFBORE VERSION B3.1 syd 5/ 2/99 11 :11 :35

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP17
sheet 3 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	21.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	21.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240676N 0333702E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: ~1.55 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
N		C		34 , , N*> 60	-18 / -19	17 / 18		SP	SAND: fine to medium grained, light brown, trace of silt.	M	VD		UNIT 2
		C		32 , , N*> 60	-20 / -21	19 / 20							
		M		8 , 7 , 10 N*= 17	-22	21		CH	CLAY: high plasticity, dark grey, trace of peat fragments.	>Wp	VSt	X	UNIT 3B
					-23 / -24 / -25	22 / 23 / 24			Borehole CP17 Terminated at 22.30 m				

COFBORE VERSION 83.1 syd 5/ 2/99 11 :11 :42

T87-230

METHOD
- AS auger screwing*
- AD auger drilling*
- RR roller/tricone
- W washbore
- CT cable tool
- HA hand auger
- DT diatube
- *bit shown by suffix
- B blank bit
- V V bit
- T TC bit
- e.g. ADT

SUPPORT
- Nil no support
- W mud
- C casing

PENETRATION 1 2 3 4 — little resistance ranging to very slow progress

WATER
- * not measured
- D none observed
- water level
- water outflow
- water inflow

SAMPLES, TESTS, ETC
- U undisturbed sample (mm)
- D disturbed sample
- Bs bulk sample
- E environmental sample
- N standard penetration test:
- N* SPT + sample recovered
- Nc SPT with solid cone
- VS vane shear
- PM pressuremeter
- DP dynamic penetrometer
- WS water sample
- PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

CONSISTENCY/DENSITY INDEX
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

COFFEY

borehole no: CP18

sheet 1 of 2

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	21.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	22.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240492N 0333757E	checked by:	

drill model and mounting: EDSON 3000 - BARGE; slope: -90 DEG; R.L.Surface: -15.00 m

hole diameter: 100mm; bearing: ; datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		D	-15			CH	SILTY CLAY: high plasticity, mottled grey & dark grey, some fine sand and a trace of live sea grass (SLURRY).	>Wl	VS	X	UNIT 1B
								SP	SAND: fine to medium grained, light grey-brown, some silt.	W	MD		UNIT 2
		C		3 ,4 ,5 N*= 9	-16	1							
					-17	2							
		C		13 ,24 ,29 N*= 53	-18	3					VD		
					-19	4							
		C		22 ,24 ,27 N*= 51	-20	5							
								SP	SAND: fine to medium grained, light grey, trace of silt.				
		C		37 , , N*> 70	-21	6							
					-22	7							
		C		31 , , N*=R	-23	8							

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support; M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured; O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

TB7-230

COFBORE VERSION B3.1 syd 5/ 2/99 11 :12 :47

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP18
sheet 2 of 2

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	21.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	22.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240492N 0333757E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -15.00 m
hole diameter:	100mm	bearing:	datum: ISLN

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L. / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W					-23							
							SP	SAND: fine to medium grained, light grey, trace of silt.	W	VO		UNIT 2
					-24 / 9		CH	CLAY: high plasticity, dark grey-black, with some bands of peat and sand.	>Wp	VSt	×	UNIT 3B
		M		10,28, N*>50								
					-25 / 10			Borehole CP18 Terminated at 9.45 m				
					-26 / 11							
					-27 / 12							
					-28 / 13							
					-29 / 14							
					-30 / 15							
					-31 / 16							

METHOD
- AS auger screwing*
- AD auger drilling*
- RR roller/tricone
- W washbore
- CT cable tool
- HA hand auger
- DT diatube
- *bit shown by suffix
- B blank bit
- V V bit
- T TC bit
- e.g. ADT

SUPPORT
- Nil no support
- M mud
- C casing

PENETRATION 1 2 3 4
- little resistance
- ranging to
- very slow progress

WATER
- * not measured
- O none observed
- water level
- water outflow
- water inflow

SAMPLES, TESTS, ETC
- U undisturbed sample (mm)
- D disturbed sample
- Bs bulk sample
- E environmental sample
- N standard penetration test:
- Nx SPT + sample recovered
- Nc SPT with solid cone
- VS vane shear
- PM pressuremeter
- DP dynamic penetrometer
- WS water sample
- PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

CONSISTENCY/DENSITY INDEX
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

COFBORE VERSION 03.1 5/ 2/99 11:12:52 syd

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP19/19A
sheet 1 of 2

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	26.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	26.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240305N 0333817E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -14.75 m
hole diameter:	100mm	bearing:	datum: JSLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification SYMBOL	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		D	-15			CH	SANDY CLAY: high plasticity, dark grey-black, some silt, sand is fine (SLURRY).	>Wl	VS		UNIT 1B
								SP	SAND: fine to medium grained, grey-brown, some silt.	W	VD		UNIT 2
		C		15,17,15 N*=32	-16	1							
					-17	2							
					-18	3							
				14,32, N*>60	-19	4							Borehole CP19A continued from borehole CP19 at 3.85m.
				30,25, N*>50	-20	5		SP	SAND: fine to medium grained, light grey-brown.				SPT test: 70mm for last 25 blows.
					-21	6							
				35,25, N*>50	-22	7							SPT test: 50mm for last 25 blows.
				50,-,- N*>50		8							SPT test: 140mm for 50 blows.

COFBORE VERSION B3.1 syd 5/ 2/99 11 :14 :14

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4 little resistance ranging to very slow progress

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP19/19A
sheet 2 of 2

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	26.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	26.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240305N 0333817E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -14.75 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W					-23	9		SP	SAND: fine to medium grained, light grey-brown.	W	VD		UNIT 2
				6 ,7 ,12 N*= 19	-24			SP	SAND: fine to medium grained, grey, trace shell fragments, trace silt.		MD		
						10		CH	CLAY: high plasticity, dark grey.	>Wp	St		UNIT 3B
				6 ,9 ,11 N*= 20	-25							X	
					-26	11			Borehole CP19/19A Terminated at 11.20 m				
					-27	12							
					-28	13							
					-29	14							
					-30	15							
						16							

COFBORE VERSION 03.1
5/ 2/99 11 :14 :21 syd

METHOD
AS auger screwing*
AD auger drilling*
AR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. AD/T

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance
ranging to
very slow progress

WATER
* not measured D none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
O dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

787-230

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP20
sheet 1 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	18.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	18.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240465N 0333448E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -2.80 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		D	-3			SP	SAND: fine to medium grained, light brown, trace of silt.	W	MD		UNIT 1C
								SP	SAND: fine to medium grained, brown, some silt.				
		C		D	-4	1							Disturbed sample at 1.00m from U63.
						2		SP	SAND: fine to medium grained, light brown, becoming mottled dark brown & brown, traces of silt and shell fragments, becoming with some silt & shell fragments.	W	VD		UNIT 2
		C		9 ,12 ,17 Nx= 29	-5								
					-6	3							
		C		5 ,11 ,22 Nx= 33	-7	4							
					-8	5		SM	SILTY SAND: fine to medium grained, brown & dark brown, some 50mm bands of clayey peat.				
		C		15 ,24 ,24 Nx= 48	-9	6							
						7		SP	SAND: fine to medium grained, light brown, some silt, becoming with traces of silt & shell fragments.				
		C		14 ,23 , Nx=R	-10	8							

METHOD
AS auger screwing*
AD auger drilling*
AR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4 little resistance ranging to very slow progress

WATER
* not measured D none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP20
sheet 2 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	18.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	18.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240465N 0333448E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -2.80 m
hole diameter:	100mm	bearing: .	datum: ISLN

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		28 , , N*> 50	-11 / -12	9		SP	SAND: fine to medium grained, light brown, some silt, becoming with traces of silt & shell fragments.	W	VD		UNIT 2
		C		41 , , N*> 80	-13 / -14	10 / 11							
		C		3 , 11 , 23 N*= 34	-15 / -16	12 / 13					D		
		C		14 , 24 , N*=R	-17	14					VD		
		C		15 , 45 , N*> 90	-18	15 / 16							

METHOD

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
*bit shown by suffix	
B	blank bit
V	V bit
T	TC bit
e.g.	ADT

SUPPORT

Nil no support M mud
C casing

PENETRATION

1 2 3 4 — little resistance ranging to very slow progress

WATER

* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC

U	undisturbed sample (mm)
D	disturbed sample
Bs	bulk sample
E	environmental sample
N	standard penetration test:
N*	SPT + sample recovered
Nc	SPT with solid cone
VS	vane shear
PM	pressuremeter
DP	dynamic penetrometer
WS	water sample
PZ	piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION

based on unified classification system

MOISTURE

D	dry
M	moist
W	wet
Wp	plastic limit
Wl	liquid limit

CONSISTENCY/DENSITY INDEX

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP20
sheet 3 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	18.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	18.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240465N 0333448E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -2.80 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration	support	water	samples, tests, etc	R.L. / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa	structure and additional observations
W	1 2 3 4	C		20, 37, N*=R	-19 / 17		SP	SAND: fine to medium grained, light grey, traces of silt & shell fragments.	W	VD		UNIT 2
					-20		CH	CLAY: high plasticity, dark grey, trace to some peat fragments.	>Wp	VSt		UNIT 3B
		M		3, 5, 7 N*= 12	-21 / 18							
					-22 / 19			Borehole CP20 Terminated at 18.70 m				
					-23 / 20							
					-24 / 21							
					-25 / 22							
					-26 / 23							
					24							

syd 5/2/99 17:9 57 COFBORE VERSION B3.1

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance
ranging to
very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

787-230

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP21
sheet 1 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	17.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	17.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240191N 0333534E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: ~4.35 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		D				SP	SAND: fine to medium grained, brown, some shell fragments and trace silt.	W	L		UNIT 1C
		C		D	-5	1		SP	SAND: fine to medium grained, brown, some shell fragments and trace of silt.	W	MD		UNIT 2 Disturbed sample at 1.00m from U63.
		C		7 ,11 ,17 N*= 28	-6	2		SW	SILTY SAND: fine to medium grained, brown & dark brown, some 50mm bands of sandy peat.		VD		
		C		9 ,15 ,20 N*= 35	-7	3		SP	SAND: fine to medium grained, light brown, some silt & shell fragments.				
		C		21 ,35 , N*> 70	-8	4							
		C		28 , N*> 50	-9	5							
					-10	6							
					-11	7							
					-12	8							

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance
ranging to
very slow progress

WATER
* not measured D none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP21
sheet 2 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	17.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	17.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240191N 0333534E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -4.35 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa	structure and additional observations
W	1 2 3 4	C		18, 43, N*> 80	-13	9		SP	SAND: fine to medium grained, light brown, some silt & shell fragments.	W	VD	100 200 300 400	UNIT 2
		C		31, , N*> 60	-15	11							
		C		35, , N*> 70	-16	12							
		C		36, , N*> 70	-18	14							
		C		28, , N*> 50	-19	15							
					-20	16							

COFBORE VERSION 83.1 5/2/99 11:39:45 syd

METHOD
AS auger screwing*
AD auger drilling*
AR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test;
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

COFFEY

borehole no: CP21

sheet 3 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	17.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	17.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240191N 0333534E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -4.35 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		28 , , N*> 50	-21	17		SP	SAND: fine to medium grained, light brown, some silt & shell fragments.	W	VD		UNIT 2
					-22	18		CH	CLAY: high plasticity, dark grey, some 50mm bands of peat.	>Wp	VSt		UNIT 3B
		M		8 ,8 ,8 N*= 16								x	
					-23	19			Borehole CP21 Terminated at 18.50 m				
					-24	20							
					-25	21							
					-26	22							
					-27	23							
					-28	24							

B3.1 COFDORE VERSION syd 5/ 2/99 11 :39 :51

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP22
sheet 1 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	16.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	16.9.98
project:	ADDITIONAL PORT FACILTIES, PORT BOTANY	logged by:	JAF
borehole location:	6239893N 0333635E	checked by:	
drill model and mounting:	EDSDN 3000 - BARGE	slope: -90 DEG	R.L.Surface: -6.45 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type:plasticity or particle characteristics colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		D	-7	1		SC	CLAYEY SAND: fine to medium grained, dark grey, some silt and trace wood fragments (SLURRY).	W	VL		UNIT 1C
								SM	SILTY SAND: fine to medium grained, mottled grey & brown, some clay and shells.		L		UNIT 1A
		C		D	-8								Disturbed sample at 1.00m from U63.
						2							
					-9								
		C		0 ,3 ,3 N*= 6		3							
					-10								
								SP	SAND: fine to medium grained, light brown, becoming light grey-brown, trace silt & shell fragments.	W	D		UNIT 2
		C		7 ,14 ,14 N*= 28	-11	4							
						5					VD		
		C		8 ,20 ,25 N*= 45	-12								
						6							
					-13			SM	SILTY SAND: fine to medium grained, dark grey, trace clay and shell fragments.				
		C		20 ,27 , N*> 50		7							
					-14								
						8							

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing
PENETRATION 1 2 3 4 — little resistance ranging to very slow progress
WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

COFBORE VERSION B3.1 syd 5/ 2/99 11 :51 :38

TB7-230

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP22
sheet 2 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	16.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	16.9.98
project:	ADDITIONAL PORT FACILTIES, PORT BOTANY	logged by:	JAF
borehole location:	6239893N 0333635E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -6.45 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		20, 33, N*> 60	-15	9		SM	SILTY SAND: fine to medium grained, dark grey, trace clay and shell fragments.	M	VD		UNIT 2
		C		23, 32, N*> 60	-16	10		SP	SAND: fine to medium grained, brown, becoming light brown, some silt.				
		C		37, , N*=R	-17	11							
		C		22, 38, N*> 70	-18	12							
		C		36, , N*> 70	-19	13							
		C		13, 31, N*> 60	-20	14							
					-21	15		PT	SANDY PEAT: dark grey-black, woody texture, sand is fine to medium grained.	M	VD		UNIT 3A
					-22	16							

METHOD
AS auger screwing*
AD auger drilling*
AR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4 little resistance ranging to very slow progress

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

COFBORE VERSION 83.1 syd 5/ 2/99 11 :51 :44

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP22
sheet 3 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	16.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	16.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239893N 0333635E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -6.45 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L. / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency / density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		M		6 ,7 ,10 N*= 17	-23 / 17		PT	SANDY PEAT: dark grey-black, woody texture, sand is fine to medium grained	W	VD		UNIT 3A
							CH	CLAY: high plasticity, dark grey-black, trace fine sand.	>Wp	VSt	X	UNIT 3B
					-24 / 18			Borehole CP22 Terminated at 17.15 m				
					-25 / 19							
					-26 / 20							
					-27 / 21							
					-28 / 22							
					-29 / 23							
					-30 / 24							

COFBORE VERSION 83.1
5/ 2/99 11:51 syd

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION 1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

COFFEY

Borehole no: CP23
sheet 1 of 2

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	11.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	12.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF/LRP
borehole location:	6239587N 0333730E	checked by:	
drill model and mounting:	EOSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -10.27 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		Nil		D	-11	1		SM	SILTY SAND: fine to medium grained, mottled grey & brown, some clay (SLURRY).	W	VL		UNIT 1C
				5 ,6 ,8 N= 14	-12	2		SP	SAND: fine to medium grained, grey-brown, trace coarse grains, trace silt, trace to some shells.	W	MD		UNIT 2
				8 ,30 ,25 N*> 55	-13	3					VD		SPT test: 50mm for last 25 blows.
				2 ,5 ,18 N*= 23	-14	4					D		
				11 ,29 ,25 N*> 54	-15	5			becoming grey-brown and light brown.		VD		SPT test: 70mm for last 25 blows.
				50 , , N*=R	-16	6		SP	SAND: fine to medium grained, light grey, trace silt.				
					-17	7							
					-18	8							

COFBORE VERSION 03.1 syd 5/ 2/99 11:56 26

T67-230

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance
ranging to
very slow progress

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP23
sheet 2 of 2

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	11.9.1998
principal:	SYDNEY PORTS CORPORATION	hole completed:	12.9.1998
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF/LAP
borehole location:	6239587N 0333730E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -10.27 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W				33 , , N*> 50	-19	9		SP	SAND: fine to medium grained, light grey, trace silt, some 40mm lenses of black peaty sand.	W	VD		UNIT 3C SPT test: 70mm for last 25 blows.
				15 , 18 , 16 N*= 34	-20	10		SP	SAND: fine to medium grained, dark grey, trace silt, trace shell fragments.		D		
					-21	11		CH	CLAY: high plasticity, dark grey,	>Wp	St		UNIT 3B Driller noted an increase in pressure from approximately 10
				22 , 50 , N*=R				PT	PEAT: black.	W	St	X	UNIT 3A
					-22	12			Borehole CP23 Terminated at 11.42 m				SPT test : 120mm for last 50 blows.
					-23	13							
					-24	14							
					-25	15							
					-26	16							

COFBORE VERSION 83.1 syd 11:56:32 5/2/99

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance
ranging to
very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

COFFEY

borehole no: CP24
sheet 1 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	19.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	19.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240595N 0333265E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -2.30 m
hole diameter:	100mm	bearing:	datum: ISML

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics; colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		D		1		SP	SAND: fine to medium grained, light brown, some live sea-grass becoming with some shells & shell fragments.	W	L		UNIT 1C
		C		D		2		SP	SAND: fine to medium grained, light brown.	W	MD		UNIT 2
		C		8 ,8 ,6 N*= 14		3							
		C		8 ,12 ,13 N*= 25		4		SM	SILTY SAND: fine to medium grained, dark brown, traces of peat and shell fragments.		D		
		C		10 ,13 ,16 N*= 29		5		SP	SAND: fine to medium grained, brown, some silt & traces of shell fragments.				
		C		12 ,20 ,30 N*= 50		6					VD		
						7							
						8							

METHOD
AS auger screwing*
AD auger drilling*
AR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4 little resistance ranging to very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

COFBORE VERSION 03.1 syd 5/ 2/99 11 :57 :16

T87-230

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP24
sheet 3 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	19.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	19.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240595N 0333265E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -2.30 m
hole diameter:	100mm	bearing:	datum: ISWL

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		M		8 ,10 , 11 N*= 21	-19 / 17			PT	SANDY PEAT: dark grey-brown-black, sand is fine to medium grained, peat is woody.	W	VD		UNIT 3A
					-20 / 18			CH	CLAY: high plasticity, dark grey.	>Wp	VSt		UNIT 3B
					-21 / 19				Borehole CP24 Terminated at 17.40 m				
					-22 / 20								
					-23 / 21								
					-24 / 22								
					-25 / 23								
					-26 / 24								

COFBORE VERSION B3.1
5/ 2/99 11:57:29 syd

METHOD
AS auger screwing*
AD auger drilling*
AR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured D none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

COFFEY

borehole no: CP25
sheet 1 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	17.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	17.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240257N 0333370E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -4.75 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L. / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		D	-5		SM	SILTY SAND: fine to medium grained, brown, trace to some shell fragments.	W	L		UNIT 1C
		C		D	-6		SM	SILTY SAND: fine to medium grained, dark grey, mottled grey & brown, some shells.	W	MD		UNIT 2 Disturbed sample at 1.00m from UB3.
		C		4,7,8 N*= 15	-7		SP-PT	SANDY PEAT: PEATY SAND : fine to medium grained, mottled dark grey, grey & brown, some shells.				
		C		13,17,14 N*= 31	-8		SM	SILTY SAND: fine to medium grained, dark grey, mottled light brown, some peat and shell fragments.		VD		
		C		7,8,13 N*= 21	-9		SP	SAND: fine to medium grained, light brown, some silt and trace shell fragments.		D		
		C		18,20,20 N*= 40	-10					VD		
		C			-11							
					-12							

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support W mud
C casing

PENETRATION
1 2 3 4
little resistance
ranging to
very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

B3.1 VERSION COFBORE syd 11:58:0 5/2/99

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP25
sheet 2 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	17.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	17.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240257N 0333370E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -4.75 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L. / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		15,20,25 N*= 45	-13 / 9		SP	SAND: fine to medium grained, light brown, some silt and trace shell fragments.	M	VD		UNIT 2
		C		15,18,24 N*= 42	-14 / 10							
		C		36, , N*> 70	-15 / 11							
		C		28, , N*> 50	-16 / 12							
		C		41, , N*> 80	-17 / 13							
		C		13,28, , N*> 50	-18 / 14							
					-19 / 15		PT	SANDY PEAT: dark brown & black, sand is fine to medium grained.	M	M		UNIT 3A
					-20 / 16							

COFBORE VERSION B3.1
5/ 2/99 11:58 :6 syd

TB7-230

METHOD
AS auger screwing*
AD auger drilling*
AR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance
ranging to
very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

COFFEY

borehole no: CP25
sheet 3 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	17.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	17.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6240257N 0333370E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -4.75 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L. / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics; colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		M		13,20,20 N*= 40	-21 / 17		CH	CLAY: high plasticity, dark grey-black, some 50mm bands of woody peat.	>Wp	St	X	UNIT 3B
					-22 / 18			Borehole CP25 Terminated at 17.05 m				
					-23 / 19							
					-24 / 20							
					-25 / 21							
					-26 / 22							
					-27 / 23							
					-28 / 24							

METHOD
AS auger screwing*
AD auger drilling*
AR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4 little resistance ranging to very slow progress

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP26
sheet 1 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	14.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	15.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239755N 0333535E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -6.70 m
hole diameter:	100mm	bearing:	datum: ISWL

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		D	-7			SM	SILTY SAND: fine to medium grained, brown, becoming dark brown, some clay and trace shell fragments.	W	L		UNIT 1C
		C		D	-8	1		SM	SILTY SAND: fine to medium grained, brown, becoming dark brown, some clay and trace shell fragments.	W	MD		UNIT 2 Disturbed sample at 1.00m from U63.
		C		9 , 9 , 14 N*= 23	-10	2		SP	SAND: fine to medium grained, light brown, trace silt & shell fragments.		D		
		C		14 , 15 , 18 N*= 33	-11	3							
		C		45 , , N*> 90	-12	4					VD		
		C		22 , 36 , N*> 70	-13	5							
					-14	6							
						7							
						8							

B3.1 COFBORE VERSION syd 12 : 0 38 5/ 2/99

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP26
sheet 2 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	14.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	15.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239755N 0333535E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -6.70 m
hole diameter:	100mm	bearing:	datum: ISWL

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification SYMBOL	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W					-15	9		SP	SAND: fine to medium grained, light brown, trace silt & shell fragments.	W	VD		UNIT 2
		C		21 ,37 , Nk> 70	-16	10							
		C		32 , , Nk=R	-17	11							
		C		29 , , Nk> 50	-18	12							
		C		28 , , Nk=R	-19	13							
		C		7 ,8 ,27 Nk= 35	-20	14		SP	SAND: fine to medium grained, mottled light grey & light brown, trace shell fragments.				
					-21	15		SP	SAND: fine to medium grained, light grey, with some 50mm bands of clayey peat.	W	D		UNIT 3C
					-22	16							

B3.1 COFBORE VERSION syd 5/ 2/99 12 : 0 :44

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4 little resistance ranging to very slow progress

WATER
* not measured D none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
Nx SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

T87-230

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP26
sheet 3 of 3

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	14.9.98
principal:	SYDNEY PORTS CORPORATION	hole completed:	15.9.98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF
borehole location:	6239755N 0333535E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope: -90 DEG	R.L.Surface: -6.70 m
hole diameter:	100mm	bearing:	datum: ISHL

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L. / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W					-23		SP	SAND: fine to medium grained, light grey, with some 50mm bands of clayey peat.	W	D		UNIT 3C
							CH	CLAY: high plasticity, black.	>Wp	VSt		UNIT 3B
		M		5 ,9 ,12 N*= 21	-24						×	
					17			Borehole CP26 Terminated at 17.65 m				
					18 -25							
					19 -26							
					20 -27							
					21 -28							
					22 -29							
					23 -30							
					24							

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4 little resistance ranging to very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
O dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

COREBORE VERSION B3.1 5/2/99 12:0.50 syd

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP27
sheet 1 of 2

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	14/9/98
principal:	SYDNEY PORTS CORPORATION	hole completed:	14/9/98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF/KST
borehole location:	6239446N 0333635E	checked by:	
drill model and mounting:	EDSON 3000 - BARGE	slope:	-90 DEG
hole diameter:	100mm	bearing:	
R.L.Surface:	-7.05 m		
datum:	ISLW		

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W		C		0				SM	SILTY SAND: fine to medium grained, grey-brown, trace to some clay.	W	VL		UNIT 1C
		C		2 ,3 ,4 N*= 7	-8	1		SM	SILTY SAND: fine to medium grained, dark brown, some shells & clay.	W	MD		UNIT 2
					-9	2							
								SP	SAND: fine to medium grained, light brown.		VD		
		C		13 ,23 ,24 N*= 47	-10	3							
					-11	4		SP	SAND: fine to medium grained, brown, some silt & shells.				
		C		7 ,17 ,15 N*= 32	-12	5							
					-13	6							
		C		8 ,30 , N*> 60									
					-14	7		SP	SAND: fine to medium grained, brown and light grey, trace silt & shell fragments.				
		C		24 ,30 , N*> 60	-15	8							

COFSBORE VERSION B3.1
5/ 2/99 12 : 5 :49 syd

METHOD

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
*bit shown by suffix	
B	blank bit
V	V bit
T	TC bit
e.g.	ADT

SUPPORT
Nil no support M mud
C casing

PENETRATION
1 2 3 4 little resistance ranging to very slow progress

WATER
* not measured 0 none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC

U	undisturbed sample (mm)
D	disturbed sample
Bs	bulk sample
E	environmental sample
N	standard penetration test:
N*	SPT + sample recovered
Nc	SPT with solid cone
VS	vane shear
PM	pressuremeter
DP	dynamic penetrometer
WS	water sample
PZ	piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE

D	dry
M	moist
W	wet
Wp	plastic limit
Wl	liquid limit

CONSISTENCY/DENSITY INDEX

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey Partners International Pty. Ltd.
ACN 003 692 019

engineering log - borehole

borehole no: CP27
sheet 2 of 2

office job no: S10526/2

client:	CONNELL WAGNER PTY LTD	hole commenced:	14/9/98
principal:	SYDNEY PORTS CORPORATION	hole completed:	14/9/98
project:	ADDITIONAL PORT FACILITIES, PORT BOTANY	logged by:	JAF/KST
borehole location:	6239446N 0333636E	checked by:	
drill model and mounting:	EDSDN 3000 - BARGE	slope: -90 DEG	R.L.Surface: -7.05 m
hole diameter:	100mm	bearing:	datum: ISLW

method	penetration 1 2 3 4	support	water	samples, tests, etc	R.L.	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	hand penetrometer kPa 100 200 300 400	structure and additional observations
W								SP	SAND: fine to medium grained, brown and light grey, trace silt & shell fragments.	W	VD		UNIT 2
					-16	9		PT	SANDY PEAT: dark grey-black, sand is fine to medium grained.				UNIT 3A
		C		8 ,31 , Nx> 60	-17	10							
		C		9 ,6 ,11 Nx= 17	-18	11		SC	CLAYEY SAND: fine to medium grained, dark grey and dark brown.		MD		UNIT 3C
		C		13 ,13 ,12 Nx= 25	-19	12							
		N		6 ,6 ,23 Nx= 29	-20	13		CH	CLAY: high plasticity, grey, some fine sand, some 100-200mm bands of clayey sand.	>Wp	VSt	X	UNIT 3B
					-21	14			Borehole CP27 Terminated at 13.75 m				
					-22	15							
					-23	16							

83.1 VERSION COFBORE 5/2/99 12:56 syd

METHOD
AS auger screwing*
AD auger drilling*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
*bit shown by suffix
B blank bit
V V bit
T TC bit
e.g. ADT

SUPPORT
Nil no support W mud
C casing

PENETRATION
1 2 3 4
little resistance ranging to very slow progress

WATER
* not measured O none observed
water level
water outflow
water inflow

SAMPLES, TESTS, ETC
U undisturbed sample (mm)
D disturbed sample
Bs bulk sample
E environmental sample
N standard penetration test:
N* SPT + sample recovered
Nc SPT with solid cone
VS vane shear
PM pressuremeter
DP dynamic penetrometer
WS water sample
PZ piezometer

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
based on unified classification system

MOISTURE
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

CONSISTENCY/DENSITY INDEX
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Engineering Log – Borehole

Borehole No: BH 07

Sheet 1 of 7

Client	Sydney Ports Corporation	Borehole Location	see Figure 2
Project	Patrick Terminal, Sydney	Logged By	DS
Project No.	5832.02.CP	Checked By	SY
Started Drilling	29.05.00	Slope 90	Drill Rig
Completed Drilling	1.06.00	Bearing	Ground Level

DRILLING				SOIL CHARACTERISTICS						
Method	Water Table	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity, colour, other components)	Moisture Cond'n	Consistency	Samples and tests	Additional Comments
A			0.2		SP	Pavement Materials				Hydraulic Fill
			1			SAND: brown, fine to medium grained, trace shells	M			
			2					MD	SPT 3,4,6 N=10	
W	▽		3			trace of organics			SPT 4,6,10 N=16	
			4							
			5							
			6			becoming grey, with shell fragments	W		SPT 2,2,1 N=3	
			7					L/VL	Dilatometer Testing	
			8			contains a 0.05m layer of black sandy clay, very soft, medium plasticity, with trace organics			SPT 3,2,3 N=5	
			9						Dilatometer Testing	
			10			with fine shell fragments			SPT 3,3,6 N=9	

Remarks:
wash boring below 3m
permeability test at 4.55m & 5.55m

Engineering Log – Borehole

Borehole No: BH 07

Sheet 2 of 7

Client	Sydney Ports Corporation	Borehole Location	see Figure 2
Project	Patrick Terminal, Sydney	Logged By	DS
Project No.	5832.02.CP	Checked By	SY
Started Drilling	29.05.00 N	Slope 90	Drill Rig
Completed Drilling	1.06.00 E	Bearing	Ground Level

DRILLING				SOIL CHARACTERISTICS						
Method	Water Table	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity, colour, other components)	Moisture Cond'n	Consistency	Samples and tests	Additional Comments
			11		SP	as above				
						trace thin fibrous material			SPT 3,2,3 N=5	
			12						Dilatometer Testing	
			13							
						becoming light grey, trace of black organics, no shells			SPT 4,3,5 N=8	
			14							
			15				W	L/VL	Dilatometer Testing	
			16			becoming light grey, trace of shell fragment			SPT 3,3,4 N=7	
						containing 30mm of dary grey silty clay, medium to high plasticity, with black organic inclusions and trace of sand				
			17						Dilatometer Testing	
			18			sand, grey, fine to medium grained, trace of shell fragments, with organic inclusion			SPT 1,2,3 N=5	
			19						SPT 1,1,1 N=2	
						containing 20mm clay, black soft, medium plasticity, with fine fibres				
						containing 20mm clay as above			SPT 1,0,0 N=0	
			20			sand, as above, trace of silt, fine fibres, clay lumps				
					SP					

Remarks:

Engineering Log – Borehole

Borehole No: BH 07

Sheet 3 of 7

Client	Sydney Ports Corporation			Borehole Location	see Figure 2
Project	Patrick Terminal, Sydney			Logged By	DS
Project No.	5832.02.CP			Checked By	SY
Started Drilling	29.05.00	N	Slope	90	Drill Rig
Completed Drilling	1.06.00	E	Bearing		Ground Level

DRILLING				SOIL CHARACTERISTICS							
Method	Water Table	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity, colour, other components)	Moisture Cond'n	Consistency	Samples and tests	Additional Comments
			21		SP					in situ
						sand,light brown, fine to medium grained			SPT 14,21,15/70mm N>50	
			22							
			23							
			24							
			25				W	VD	SPT 20,30/110mm	
			26							
			27							
						sand, light brown-grey			SPT 26,24/70mm	no sample recovery
			28							
			29							
			30							

Remarks:

Connell Wagner

Engineering Log – Borehole

Borehole No: BH 07

Client	Sydney Ports Corporation	Borehole Location	see Figure 2
Project	Patrick Terminal, Sydney	Logged By	DS
Project No.	5832.02.CP	Checked By	SY
Started Drilling	29.05.00 N	Slope 90	Drill Rig
Completed Drilling	1.06.00 E	Bearing	Ground Level

DRILLING				SOIL CHARACTERISTICS							
Method	Water Table	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity, colour, other components)	Moisture Cond'n	Consistency	Samples and tests	Additional Comments
					SP	as above				
			31						SPT 24/70mm	
			32							
			33							
			34						SPT 30/120mm	
			35				W	VD		
			36							
			37						SPT 8,30/90mm	
			38							
			39							
			40						SPT 30/140mm	

Remarks:

Engineering Log – Borehole

Borehole No: BH 07

Client	Sydney Ports Corporation	Borehole Location	see Figure 2
Project	Patrick Terminal, Sydney	Logged By	DS
Project No.	5832.02.CP	Checked By	SY
Started Drilling	29.05.00	N	Slope 90	Drill Rig
Completed Drilling	1.06.00	E	Bearing	Ground Level

DRILLING				SOIL CHARACTERISTICS						
Method	Water Table	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity, colour, other components)	Moisture Cond'n	Consistency	Samples and tests	Additional Comments
					SP					
			41		SC	Clayey SAND: fine, black, trace of brown 20mm size organic matter	W	VD		
			42							
			43						U50	
					CH	Silty CLAY: light grey to grey, high plasticity, very stiff to hard, some sand, trace of black organic matter			U50	
			44							
			45				M	H		
			46			becoming dark grey			SPT 6,11,15 N=26	
			47							
			48		SM	Silty SAND: fine, light grey, dense, interlayered with grey clay, high plasticity	W	MD/VD	SPT 31/90mm	
			49							
			50							

Remarks:

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Engineering Log – Borehole

Borehole No: BH 07

Sheet 6 of 7

Client	Sydney Ports Corporation	Borehole Location	see Figure 2
Project	Patrick Terminal, Sydney	Logged By	DS
Project No.	5832.02.CP	Checked By	SY
Started Drilling	29.05.00	N	Slope 90	Drill Rig
Completed Drilling	1.06.00	E	Bearing	Ground Level

DRILLING				SOIL CHARACTERISTICS						
Method	Water Table	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity, colour, other components)	Moisture Cond'n	Consistency	Samples and tests	Additional Comments
			51		SM					
					CH	some coarse sand				
			52			clay, dark grey, high plasticity, some shell fragments and organics			SPT 16,14,21 N=35	
			53							
					SC					
			54							
			55			clayey sand, grey, fine grained, high plasticity clay	W	MD/VD	U50	push tube refusal
			56							
			57							
			58			clayey sand, grey, fine grained, some shells			SPT 4,17/300mm N=17	
			59							
			60							

Remarks:

Engineering Log – Borehole

Client	Sydney Ports Corporation			Borehole Location	see Figure 2
Project	Patrick Terminal, Sydney			Logged By	DS
Project No.	5832.02.CP			Checked By	SY
Started Drilling	29.05.00	N	Slope	90	Drill Rig
Completed Drilling	1.06.00	E	Bearing		Ground Level

DRILLING				SOIL CHARACTERISTICS						
Method	Water Table	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity, colour, other components)	Moisture Cond'n	Consistency	Samples and tests	Additional Comments
					SC		W	MD/VD		
						Auger refusal, end of borehole (target depth)				
			61							
			62							
			63							
			64							
			65							
			66							
			67							
			68							
			69							
			70							

Remarks:
Inclinometer casing installed to 60.1

Borehole No: BH 08

Engineering Log – Borehole

Client	Sydney Ports Corporation	Borehole Location	see Figure 2
Project	Patrick Terminal, Sydney	Logged By	DS
Project No.	5832.02.CP	Checked By	SY
Started Drilling	3.06.00	N	Slope 90	Drill Rig
Completed Drilling	6.06.00	E	Bearing	Ground Level

DRILLING				SOIL CHARACTERISTICS							
Method	Water Table	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity, colour, other components)	Moisture Cond'n	Consistency	Samples and tests	Additional Comments
A			0.2		SP	Pavement Materials				Hydraulic Fill
			1			SAND: brown, fine to medium grained	M	MD		
			2						SPT 3,7,11 N=18	
W	▽		2.5							
			3			becoming light brown, with shell and shell fragments			SPT 1,3,3 N=6	
			4							
			5			trace shell fragments			SPT 1,0,1 N=1	
			6				W	L/VL	Dilatometer Testing	
			7							
			8			containing 0.15m thick clay, dark grey to black, medium plasticity, soft, with organics and fine fibre, elsewhere the sand is light brown, fine to medium grained			SPT 2,3,4 N=7	
									SPT 1,1,1 N=2	
			9						Dilatometer Testing	
			10							

Remarks:
wash boring below 2.5m
permeability test at 3.9m & 4.85m

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Engineering Log – Borehole

Borehole No: BH 08

Client	Sydney Ports Corporation	Borehole Location	see Figure 2
Project	Patrick Terminal, Sydney	Logged By	DS
Project No.	5832.02.CP	Checked By	SY
Started Drilling	3.06.00	N	Slope 90	Drill Rig
Completed Drilling	6.06.00	E	Bearing	Ground Level

DRILLING				SOIL CHARACTERISTICS						
Method	Water Table	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity, colour, other components)	Moisture Cond'n	Consistency	Samples and tests	Additional Comments
			11		SP	trace of shells			SPT 1,3,3 N=6	
									SPT 2,3,3 N=6	
			12						Dilatometer Testing	from 11.6m to 12.2m tests were parallel to wall
										from 12.4m to 13.2m tests were perpendicular to wall
			13							
									SPT 4,5,7 N=12	
			14						SPT 2,3,4 N=7	
									Dilatometer Testing	from 14.6m to 15.4m tests were parallel to wall
			15				W	L/VL		
									Dilatometer Testing	from 15.4m to 16.2m tests were perpendicular to wall
			16			becoming dark grey, with organic inclusion and fine fibre			SPT 3,3,4 N=7	
										tests were parallel to wall
			17						Dilatometer Testing	
			18							
			19			becoming clayey sand, brown grey, and dark grey, fine grained, clay is high plasticity			U75	
			20							

Remarks:

Connell Wagner

Engineering Log – Borehole

Client	Sydney Ports Corporation	Borehole Location	see Figure 2
Project	Patrick Terminal, Sydney	Logged By	DS
Project No.	5832.02.CP	Checked By	SY
Started Drilling	3.06.00	N	Slope 90	Drill Rig
Completed Drilling	6.06.00	E	Bearing	Ground Level

DRILLING				SOIL CHARACTERISTICS						
Method	Water Table	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity, colour, other components)	Moisture Cond'n	Consistency	Samples and tests	Additional Comments
			21		SP	Silty CLAY/Clayey SAND: dark grey, sand is fine to medium grained, clay is medium plasticity, with fine organic fibre	M		U75	
									U75	
			22			SAND: grey, fine grained, some medium gravel (rock fill?, may have fallen from 21.45m				
			23						SPT 20,40/150mm N>50	
			24							
			25							
			26				W	MD/VD		
						sample contains approx. 70% gravel			SPT 30/150mm	
			27							
			28							
			29							
						gravel at bottom end of sampler			SPT 30/130mm	
			30							

Remarks:

Engineering Log – Borehole

Borehole No: BH 08

Client	Sydney Ports Corporation	Borehole Location	see Figure 2
Project	Patrick Terminal, Sydney	Logged By	DS
Project No.	5832.02.CP	Checked By	SY
Started Drilling	3.06.00	N	Slope 90	Drill Rig
Completed Drilling	6.06.00	E	Bearing	Ground Level

DRILLING				SOIL CHARACTERISTICS						
Method	Water Table	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity, colour, other components)	Moisture Cond'n	Consistency	Samples and tests	Additional Comments
			31		SP	becoming light brown sand, fine grained, trace of gravel	W	MD/VD	SPT 9,8,10 N=18	
			32							
			33							
			34							
						PEAT: assessed from water return				in situ
			35		SP	SAND: grey-brown, fine grained, trace of silt				push tube refusal, no sample recovery
			36			some peat and clay interlayered with sand				
			37							
			38		CH	CLAY: dark grey, high plasticity, thinly laminated			U75	push tube refusal
			39				M	H	U75	
									U75	
			40							

Remarks:

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Engineering Log – Borehole

Borehole No: BH 08

Sheet 5 of 5

Client	Sydney Ports Corporation	Borehole Location	see Figure 2
Project	Patrick Terminal, Sydney	Logged By	DS
Project No.	5832.02.CP	Checked By	SY
Started Drilling	3.06.00	N	Slope 90	Drill Rig
Completed Drilling	6.06.00	E	Bearing	Ground Level

DRILLING				SOIL CHARACTERISTICS							
Method	Water Table	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity, colour, other components)	Moisture Cond'n	Consistency	Samples and tests	Additional Comments
			41		CH					
			42				M	H	U50	
			43			becoming sandy on water return				
			44			core loss SANDSTONE: brown and grey, medium grained, 5 to 10 degree joints extremely weathered, estimated low strength becoming light grey to white, slightly weathered to fresh, estimated high strength				Joint, 1–2mm clay, 10 degrees RQD=0%, CR=98% RQD=91%, CR=100% Joint, clean, 0 degree
			45			10 to 20mm clay at 43.68m and 43.89m End of Coring at 44.7m				
			46							
			47							
			48							
			49							
			50							

Remarks:
Commenced coring at 43.45m
CR=core recovery
Inclinometer casing installed to 44.7m