

Engineering Log - Cored Borehole

client: ***Lend Lease Development Pty Ltd***

principal:

project: **SICEEP - International Convention Centre (ICC) Hotel**

location: ***Darling Harbour, Sydney***

Borehole ID. **BH205**

sheet: 2 of 4

project no. **GEOTLCOV24303AH**

date started: **16 May 2013**

date completed: **16 May 2013**

logged by: **CL**

checked by: **DS**

position: E: 333,392.80; N: 6,250,492.80 (Datum Not Specified) surface elevation : 2.90m (Datum Not Specified) angle from horizontal: 90°

drill model: DP520

mounting: Track

hole diameter : 300 mm

drilling information				material substance				rock mass defects							
method & support	water	depth (m)	graphic log	material description ROCK TYPE: grain characteristics, colour, structure, minor components	weathering & alteration	estimated strength & ls50 X = axial; O = diametral	samples, field tests & ls(50) (MPa) a = axial; d = diametral	core run & RQD	defect spacing (mm)				additional observations and defect descriptions (type, inclination, planarity, roughness, coating, thickness, other)		
									30	100	300	1000	3000	particular	general
		-2													
		-1													
		0		start coring at 2.90m											
		-0.3		SANDSTONE: fine to medium grained, orange brown mottled, pale grey, distinctly cross bedded 0-10°	MW		a=0.81 d=0.74						SM, 10 mm PT, 0°, PL, RO, CO		
		-0.7	X	NO CORE: 0.25 m									PT, 0°, PL, RO, CO PT, 0°, PL, RO, CN nota defect		
		-1.3		SANDSTONE: fine to medium grained, orange brown-brown mottled pale grey, distinctly cross bedded 0-10°	MW		a=0.93 d=0.94						PT, 0°, PL, RO, CO		
		-2.3					a=1.62 d=1.57	97%					PT, 0°, PL, RO, CN		
		-3.3					a=1.77 d=2.00						50 mm, Highly fractured zone		
		-4.3		6.02m to 6.32m: pale grey mottled pale red, orange brown and red brown			a=1.44 d=1.22	98%					PT, 0°, PL, RO, CN SM, 30 mm PT, 0°, PL, RO, CN		
		-4.7		INTERLAMINATED SHALE (75%) & SANDSTONE (25%): medium grained, shale is grey to dark grey, sandstone is fine grained, disturbed laminations	FR										
		-5.3		SANDSTONE: fine grained, grey, with dark grey laminae, distinctly cross bedded at 0-5°			a=1.56 d=0.14	95%					PT, 0°, PL, RO, CN SM, 10 mm		
		-5.7											JT, 15°, PL, RO, CO		
		-6.3											JT, 50°, PL, RO, CN		
		-6.7											JT, 15°, PL, RO, CN		
method & support		water		graphic log / core recovery			weathering & alteration*		defect type		planarity				
DT	diatube	10/10/12, water level on date shown	25UL	core recovered (graphic symbols indicate material)	no core recovered	core run & RQD	RS	residual soil	PT	parting	PL	planar			
AS	auger screwing	water inflow					XV	extremely weathered	JT	joint	CU	curved			
AD	auger drilling	complete drilling fluid loss					HW	highly weathered	SZ	shear zone	UN	undulating			
RR	roller/tricone	partial drilling fluid loss	DW	distinctly weathered	SS	shear surface	CS	crushed seam	ST	stepped	IR	irregular			
CB	claw or blade bit		MW	moderately weathered	SM	seam	SW	slightly weathered							
W	washbore		FR	fresh	DB	drilling break	FR	fresh							
NMLC	NMLC core (51.9 mm)							*W replaced with A for alteration							
NQ	wireline core (47.6mm)							strength							
HQ	wireline core (63.5mm)							VL	very low	SL	slickensided	CN	clean		
PQ	wireline core (85.0mm)							L	low	POL	polished	SN	stain		
SPT	standard penetration test							M	medium	SO	smooth	VN	veneer		
								H	high	RO	rough	CO	coating		
								VH	very high	VR	very rough				
								EH	extremely high						

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location: **Darling Harbour, Sydney**

Borehole ID: **BH205**

sheet: 3 of 4

project no: **GEOTLCOV24303AH**

date started: **16 May 2013**

date completed: **16 May 2013**

logged by: **CL**

checked by: **DS**

position: E: 333,392.80; N: 6,250,492.80 (Datum Not Specified) surface elevation : 2.90m (Datum Not Specified) angle from horizontal: 90°

drill model: DP520

mounting: Track

hole diameter : 300 mm

drilling information				material substance		rock mass defects							
method & support	water	RL (m)	depth (m)	graphic log	material description ROCK TYPE: grain characteristics, colour, structure, minor components	weathering & alteration	estimated strength & Is(50) X = axial; O = diametral a = axial; d = diametral	samples, field tests & Is(50) (MPa)	core run & RQD	defect spacing (mm)	additional observations and defect descriptions (type, inclination, planarity, roughness, coating, thickness, other)		
											particular	general	
NMLC					SANDSTONE: continued	FR		a=0.34 d=0.47					
					NO CORE: 0.06 m				95%		Highly fractured zone PT, 0°, PL, RO, CN		
			-6	9.0	SANDSTONE: fine to medium grained, pale grey, with dark grey laminae, distinctly bedded at 0-5°						PT, 0°, PL, RO, CN		
			-7	10.0	SANDSTONE: fine to medium grained, pale grey, massive, with carbonaceous flecks			a=1.41 d=1.66		100%			
			-8	11.0				a=1.70 d=1.92		100%			
			-9	12.0				a=2.09 d=1.80		100%			
			-10	13.0				a=2.04 d=1.90					
			-11	14.0	13.90m to 14.01m: with some dark grey carbonaceous laminae at 0°			a=1.13 d=0.86		98%	SM		
			-12	15.0	SANDSTONE: medium grained, pale grey, with dark grey laminae, distinctly cross bedded at 0-20°, some shale clasts			a=1.29 d=1.07			JT, 5°, PL, RO, CO		
			-13					a=1.23 d=1.34		100%	JT, 10°, PL, RO JT, 10°, PL, RO, CO		
method & support				water		graphic log / core recovery		weathering & alteration*		defect type		planarity	
DT diatube AS auger screwing AD auger drilling RR roller/tricone CB claw or blade bit W washbore NMLC NMLC core (51.9 mm) NQ wireline core (47.6mm) HQ wireline core (63.5mm) PQ wireline core (85.0mm) SPT standard penetration test				10/10/12, water level on date shown water inflow complete drilling fluid loss partial drilling fluid loss 25uL water pressure test result (lugeons) for depth interval shown		core recovered (graphic symbols indicate material) no core recovered core run & RQD barrel withdrawn RQD = Rock Quality Designation (%)		RS residual soil XW extremely weathered HW highly weathered DW distinctly weathered MW moderately weathered SW slightly weathered FR fresh *W replaced with A for alteration strength VL very low L low M medium H high VH very high EH extremely high		PT parting JT joint SZ shear zone SS shear surface CS crushed seam SM seam DB drilling break roughness SL slickensided POL polished SO smooth RO rough VR very rough		PL planar CU curved UN undulating ST stepped IR Irregular coating CN clean SN stain VN veneer CO coating	

Engineering Log - Cored Borehole

client: ***Lend Lease Development Pty Ltd***

principal:

project: **SICEEP - International Convention Centre (ICC) Hotel**

location: ***Darling Harbour, Sydney***

Borehole ID. **BH205**

sheet: 4 of 4

project no. **GEOTLCOV24303AH**

date started: **16 May 2013**

date completed: **16 May 2013**

logged by: **CL**

checked by: **DS**

position: E: 333,392.80; N: 6,250,492.80 (Datum Not Specified) surface elevation : 2.90m (Datum Not Specified) angle from horizontal: 90°

drill model: DP520

mounting: Track

hole diameter : 300 mm

drilling information				material substance				rock mass defects				
method & support	water	RL (m)	depth (m)	graphic log	material description ROCK TYPE: grain characteristics, colour, structure, minor components	weathering & alteration	estimated strength & ls(50) X = axial; O = diametral a = axial; d = diametral	samples, field tests & ls(50) (MPa)	core run & RQD	defect spacing (mm)	additional observations and defect descriptions (type, inclination, planarity, roughness, coating, thickness, other)	
											particular	general
		-14	17.0		SANDSTONE: medium grained, pale grey, with dark grey laminae, distinctly cross bedded at 0-20°, some shale clasts (continued)	FR	</					



PointID : BH205 Depth Range: 2.90 - 7.00 m

drawn	
approved	
date	07/06/2013
scale	N.T.S.
original size	A4

 SPECIALISTS MANAGING THE EARTH		client:	Lend Lease Development Pty Ltd
		project:	SICEEP - International Convention Centre (ICC) Hotel Darling Harbour, Sydney
		title:	CORE PHOTOGRAPH BH205
project no:	GEOTLCOV24303AH	fig no:	FIGURE 15
		rev:	



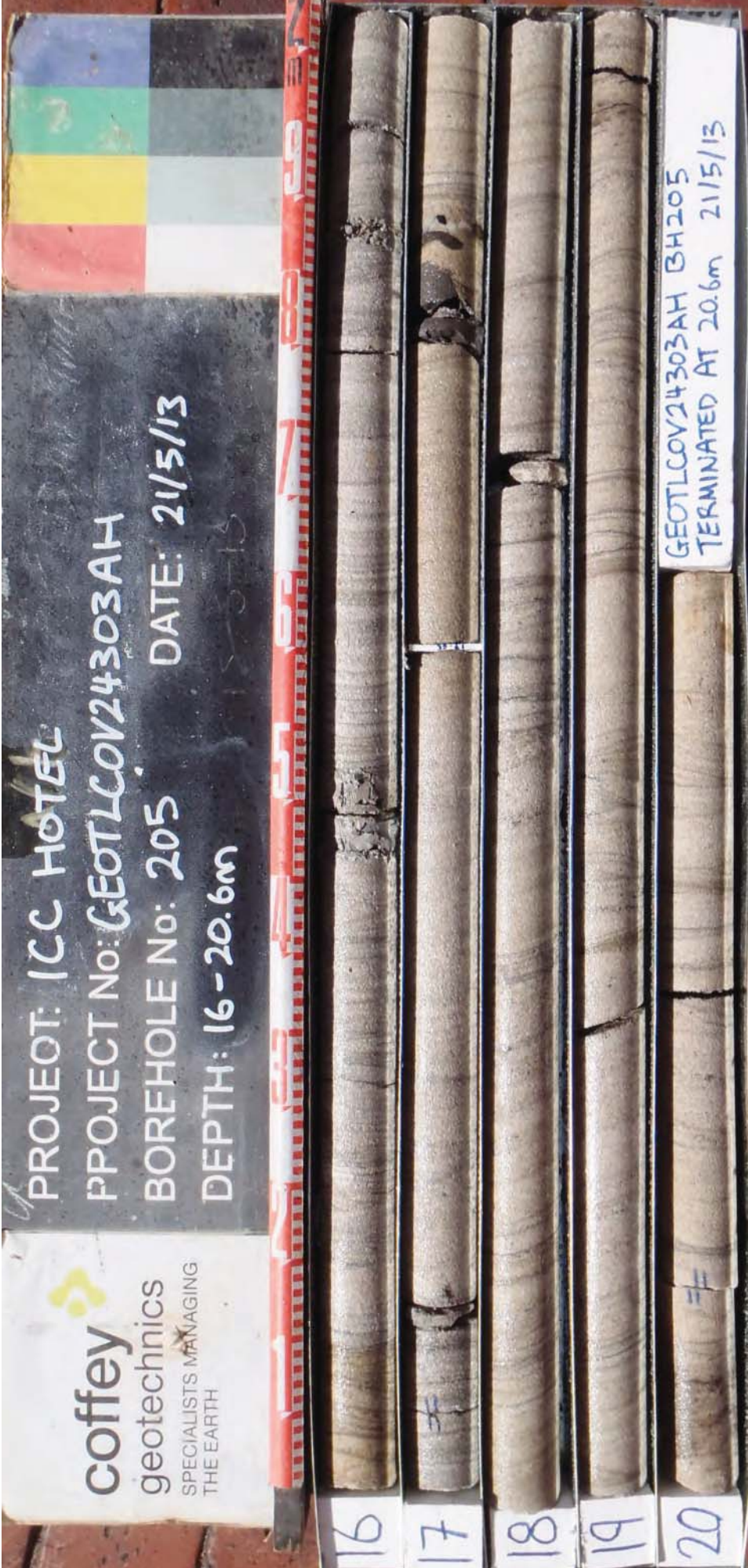
PointID : BH205 Depth Range: 7.00 - 12.00 m

drawn		 SPECIALISTS MANAGING THE EARTH	client: Lend Lease Development Pty Ltd	
approved			project: SICEEP - International Convention Centre (ICC) Hotel Darling Harbour, Sydney	
date	07/06/2013		title: CORE PHOTOGRAPH BH205	
scale	N.T.S.		project no: GEOTLCOV24303AH	fig no: FIGURE 16
original size	A4		rev:	



PointID : BH205 Depth Range: 12.00 - 16.00 m

drawn		 SPECIALISTS MANAGING THE EARTH	client: Lend Lease Development Pty Ltd	
approved			project: SICEEP - International Convention Centre (ICC) Hotel Darling Harbour, Sydney	
date	07/06/2013		title: CORE PHOTOGRAPH BH205	
scale	N.T.S.		project no: GEOTLCOV24303AH	
original size	A4		fig no: FIGURE 17	rev:



PointID : BH205 Depth Range: 16.00 - 20.60 m

drawn		 coffey geotechnics SPECIALISTS MANAGING THE EARTH	client: Lend Lease Development Pty Ltd	
approved			project: SICEEP - International Convention Centre (ICC) Hotel Darling Harbour, Sydney	
date	07/06/2013		title: CORE PHOTOGRAPH BH205	
scale	N.T.S.		project no: GEOTLCOV24303AH	fig no: FIGURE 18
original size	A4		rev:	

Engineering Log - Borehole

client: **Lend Lease Development Pty Ltd**

principal:

project: **SICEEP - International Convention Centre (ICC) Hotel**

location: **Darling Harbour, Sydney**

Borehole ID. **BH206**

sheet: 1 of 4

project no. **GEOTLCOV24303AH**

date started: **27 May 2013**

date completed: **27 May 2013**

logged by: **CL**

checked by: **DS**

position: E: 333,376.20; N: 6,250,483.20 (Datum Not Specified) surface elevation: 2.70m (Datum Not Specified) angle from horizontal: 90°

drill model: DP520

mounting: Track

Casing Diameter: HQ

drilling information				material substance						
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density
AD/T HQ Casing	1		E					ASPHALT: 0.08m.	D	
	2		E					FILL: Gravelly SAND: fine to coarse, dark grey, fine to medium igneous gravel.		
	3		E					from 0.8m - becoming dark grey mottled orange brown		
			SPT 6, 10, 13 N*=23		1.0		SM	Silty SAND: fine to medium, mottled orange brown, brown, pale grey and pink, with a trace of fine grained sandstone gravel.	D	
					2.0			SANDSTONE: fine to medium grained, orange brown mottled grey and pink, highly weathered, estimated low strength		
					3.0			Borehole BH206 continued as cored hole		
					4.0					
					5.0					
					6.0					
					7.0					
					8.0					
					9.0					
					10.0					
					11.0					
					12.0					
					13.0					
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					96.0					
					97.0					
					98.0					
					99.0					
					100.0					

method AD auger drilling* AS auger screwing* RR roller/tricone W washbore CT cable tool HA hand auger DT diatube B blank bit V V bit T TC bit * bit shown by suffix e.g. AD/T	support M mud C casing N nil penetration  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests U## undisturbed sample ##mm diameter D disturbed sample B bulk disturbed sample E environmental sample HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shearpeak/remoulded (uncorrected kPa) R refusal	classification symbol & 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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client: ***Lend Lease Development Pty Ltd***
principal:
project: ***SICEEP - International Convention Centre (ICC) Hotel***
location: ***Darling Harbour, Sydney***

Borehole ID.	BH206
sheet:	2 of 4
project no.	<u>GEOTLCOV24303AH</u>
date started:	27 May 2013
date completed:	27 May 2013
logged by:	CL
checked by:	DS

position: E: 333,376.20; N: 6,250,483.20 (Datum Not Specified) surface elevation : 2.70m (Datum Not Specified) angle from horizontal: 90°
drill model: DP520 mounting: Track casing Diameter : HQ

drilling information				material substance				rock mass defects			
method & support	water	RL (m)	depth (m)	graphic log	material description ROCK TYPE: grain characteristics, colour, structure, minor components	weathering & alteration	estimated strength & Is(50) X = axial; O = diametral a = axial; d = diametral	samples, field tests & Is(50) (MPa) a = axial; d = diametral	core run & RQD	defect spacing (mm)	additional observations and defect descriptions (type, inclination, planarity, roughness, coating, thickness, other)
		-2	1.0								
		-1	2.0								
					start coring at 2.30m						
		-0	3.0		SANDSTONE: medium to coarse grained, yellow brown mottled brown with dark grey laminae, iron stained, distinctly cross bedded at 0-5° 2.65m - 3.4m: coarse grained	MW		a=0.68 d=0.47	96%		SM, Clayey sand, 10 mm PT, 0°, PL, RO, CN PT, 0°, PL, RO, CN
		-1	4.0					a=1.74 d=1.15 a=1.27 d=1.68			JT, 10°, PL, RO, CN PT, 0°, PL, RO, Fe SN JT, 10°, PL, RO, CN PT, 0°, PL, RO, CN
		-2	5.0		5.1m - becoming mottled yellow brown and pale grey with dark grey laminae			a=0.77 d=0.23	97%		PT, 0°, PL, RO, Fe SN PT, 0°, PL, RO, CN
		-3	6.0								JT, 20°, PL, RO, CN
		-4	7.0		SANDSTONE: medium to coarse grained, pale grey with dark grey shale lenticules SHALE: dark grey with a trace of fine grained pale grey sandstone laminae SANDSTONE: fine to medium grained, pale grey with some dark grey laminae, distinctly cross bedded at 0-10°	XW FR		a=0.50 d=2.06 a=0.06 d=0.06	92%		PT, 0°, PL, RO, CN PT, 0°, PL, RO, CN Highly fractured zone, 40mm XW SM, 20mm

method & support

DT diatube
AS auger screwing
AD auger drilling
RR roller/tricone
CB claw or blade bit
W washbore
NMLC NMLC core (51.9 mm)
NQ wireline core (47.6mm)
HQ wireline core (63.5mm)
PQ wireline core (85.0mm)
SPT standard penetration test

water

10/10/12, water level on date shown
water inflow
complete drilling fluid loss
partial drilling fluid loss

water pressure test result (lugeons) for depth interval shown

graphic log / core recovery

core recovered (graphic symbols indicate material)

no core recovered

core run & RQD

barrel withdrawn

RQD = Rock Quality Designation (%)

weathering & alteration*

RS residual soil
XW extremely weathered
HW highly weathered
DW distinctly weathered
MW moderately weathered
SW slightly weathered
FR fresh
*W replaced with A for alteration

strength

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

defect type

PT parting
JT joint
SZ shear zone
SS shear surface
CS crushed seam
SM seam
DB drilling break

roughness

SL slickensided
POL polished
SO smooth
RO rough
VR very rough

planarity

PL planar
CU curved
UN undulating
ST stepped
IR irregular

coating

CN clean
SN stain
VN veneer
CO coating

Engineering Log - Cored Borehole

client: **Lend Lease Development Pty Ltd**

principal:

project: **SICEEP - International Convention Centre (ICC) Hotel**

location: **Darling Harbour, Sydney**

Borehole ID: **BH206**

sheet: 3 of 4

project no: **GEOTLCOV24303AH**

date started: **27 May 2013**

date completed: **27 May 2013**

logged by: **CL**

checked by: **DS**

position: E: 333,376.20; N: 6,250,483.20 (Datum Not Specified) surface elevation : 2.70m (Datum Not Specified) angle from horizontal: 90°

drill model: DP520

mounting: Track

Casing Diameter : HQ

drilling information				material substance			rock mass defects						
method & support	water	RL (m)	depth (m)	graphic log	material description ROCK TYPE: grain characteristics, colour, structure, minor components	weathering & alteration	estimated strength & Is50 X = axial; O = diametral a = axial; d = diametral	samples, field tests & Is(50) (MPa)	core run & RQD	defect spacing (mm)	additional observations and defect descriptions (type, inclination, planarity, roughness, coating, thickness, other)		
											particular	general	
					SANDSTONE: fine to medium grained, pale grey with some dark grey laminae, distinctly cross bedded at 0-10° (continued)	FR		a=1.38 d=0.82	92%		PT, 0°, PL, RO, CN		
		-6	9.0		SANDSTONE: fine to medium grained, pale grey with dark grey carbonaceous flecks, massive						XW SM, 10mm		
					11m - 11.45m: indistinctly cross bedded at 20°			a=1.56 d=1.22	100%		PT, 0°, PL, RO, CN		
		-7	10.0					a=1.56 d=1.93 a=2.12 d=2.05				PT, 0°, PL, RO, CN JT, 15°, PL, RO, CN	
		-8	11.0					d=1.65	100%				
		-9	12.0					a=1.57 d=2.10				PT, 0°, PL, RO, CN	
		-10	13.0		SANDSTONE: fine to medium grained, pale grey with grey laminae, distinctly cross bedded at 0-5° 13.55m: shale band 60mm 13.65m: shale clast 20mm			a=1.36 d=1.32	100%				
		-11	14.0					a=1.81 d=1.57					
		-12	15.0										
		-13			from 15.8 to 15.88m - shale clast inclusion				60% 90%		SM, Clay, 20 mm		
method & support				water		graphic log / core recovery		weathering & alteration*		defect type		planarity	
DT diatube AS auger screwing AD auger drilling RR roller/tricone CB claw or blade bit W washbore NMLC NMLC core (51.9 mm) NQ wireline core (47.6mm) HQ wireline core (63.5mm) PQ wireline core (85.0mm) SPT standard penetration test				10/10/12, water level on date shown water inflow complete drilling fluid loss partial drilling fluid loss 25uL water pressure test result (lugeons) for depth interval shown		core recovered (graphic symbols indicate material) no core recovered core run & RQD barrel withdrawn RQD = Rock Quality Designation (%)		RS residual soil XW extremely weathered HW highly weathered DW distinctly weathered MW moderately weathered SW slightly weathered FR fresh *W replaced with A for alteration strength VL very low L low M medium H high VH very high EH extremely high		PT parting JT joint SZ shear zone SS shear surface CS crushed seam SM seam DB drilling break roughness SL slickensided POL polished SO smooth RO rough VR very rough		PL planar CU curved UN undulating ST stepped IR irregular coating CN clean SN stain VN veneer CO coating	

Borehole ID.	BH206
sheet:	4 of 4
project no.	GEOTLCOV24303AH
date started:	27 May 2013
date completed:	27 May 2013
logged by:	CL
checked by:	DS

principal:

date started: **27 May 2013**

date completed: **27 May 2013**

logged by: **CL**

location: ***Darling Harbour, Sydney***

checked by: **DS**

position: E: 333,376.20; N: 6,250,483.20 (Datum Not Specified)

surface elevation : 2.70m (Datum Not Specified)

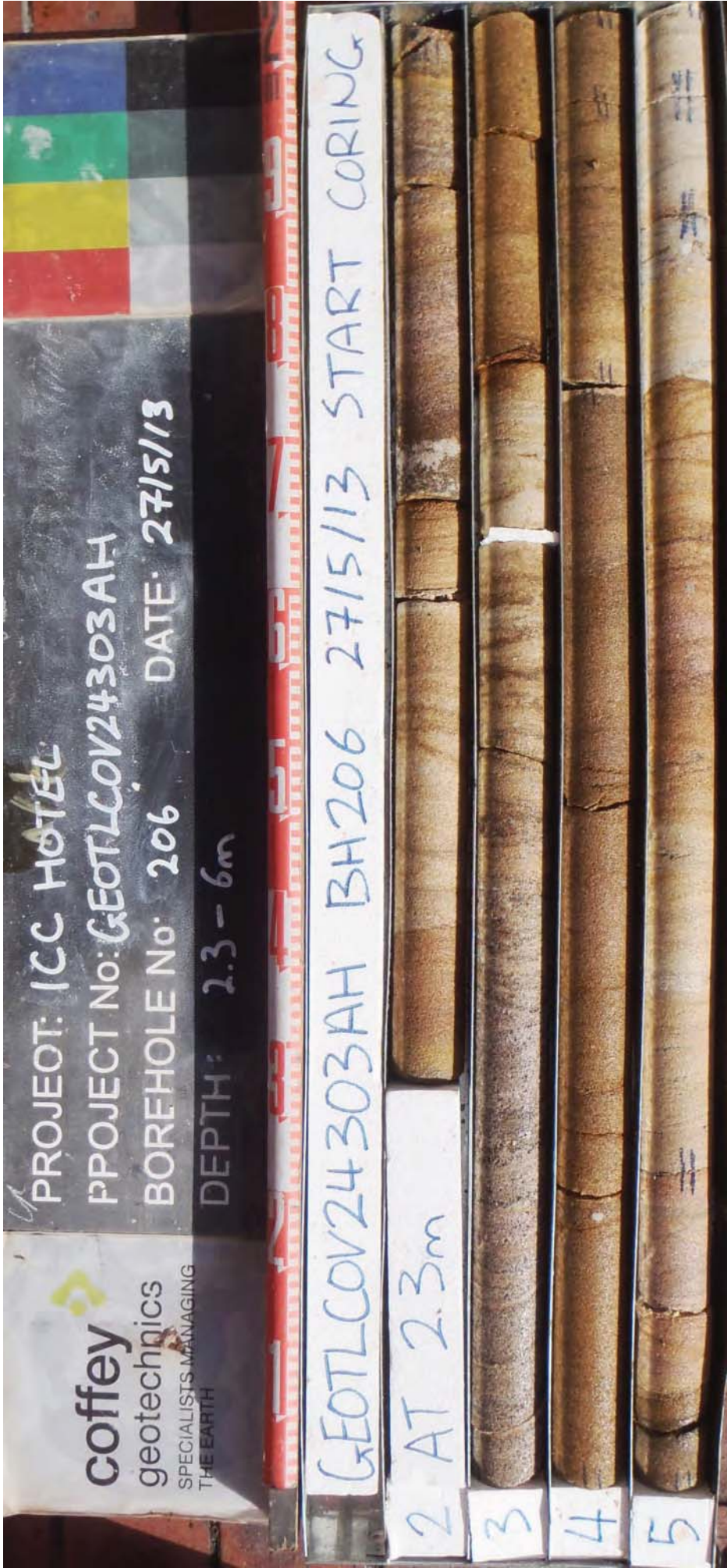
angle from horizontal: 90°

drill model: DP520

mounting: Track

Casing Diameter : HQ

drilling information				material substance				rock mass defects			
method & support	water	RL (m)	depth (m)	graphic log	material description ROCK TYPE: grain characteristics, colour, structure, minor components	weathering & alteration	estimated strength & Is50 X = axial; O = diametral a = axial; d = diametral	samples, field tests & Is(50) (MPa) a = axial; d = diametral	core run & RQD	defect spacing (mm)	additional observations and defect descriptions (type, inclination, planarity, roughness, coating, thickness, other)
NMLC		-14	17.0		SANDSTONE: fine to medium grained, pale grey with grey laminae, distinctly cross bedded at 0-5° (continued)	FR	</				



PointID : BH206 Depth Range: 2.30 - 6.00 m

drawn	
approved	
date	07/06/2013
scale	N.T.S.
original size	A4

coffey
geotechnics
SPECIALISTS MANAGING
THE EARTH

client:	Lend Lease Development Pty Ltd		
project:	SICEEP - International Convention Centre (ICC) Hotel Darling Harbour, Sydney		
title:	CORE PHOTOGRAPH BH206		
project no:	GEOTLCOV24303AH	fig no:	FIGURE 19
		rev:	



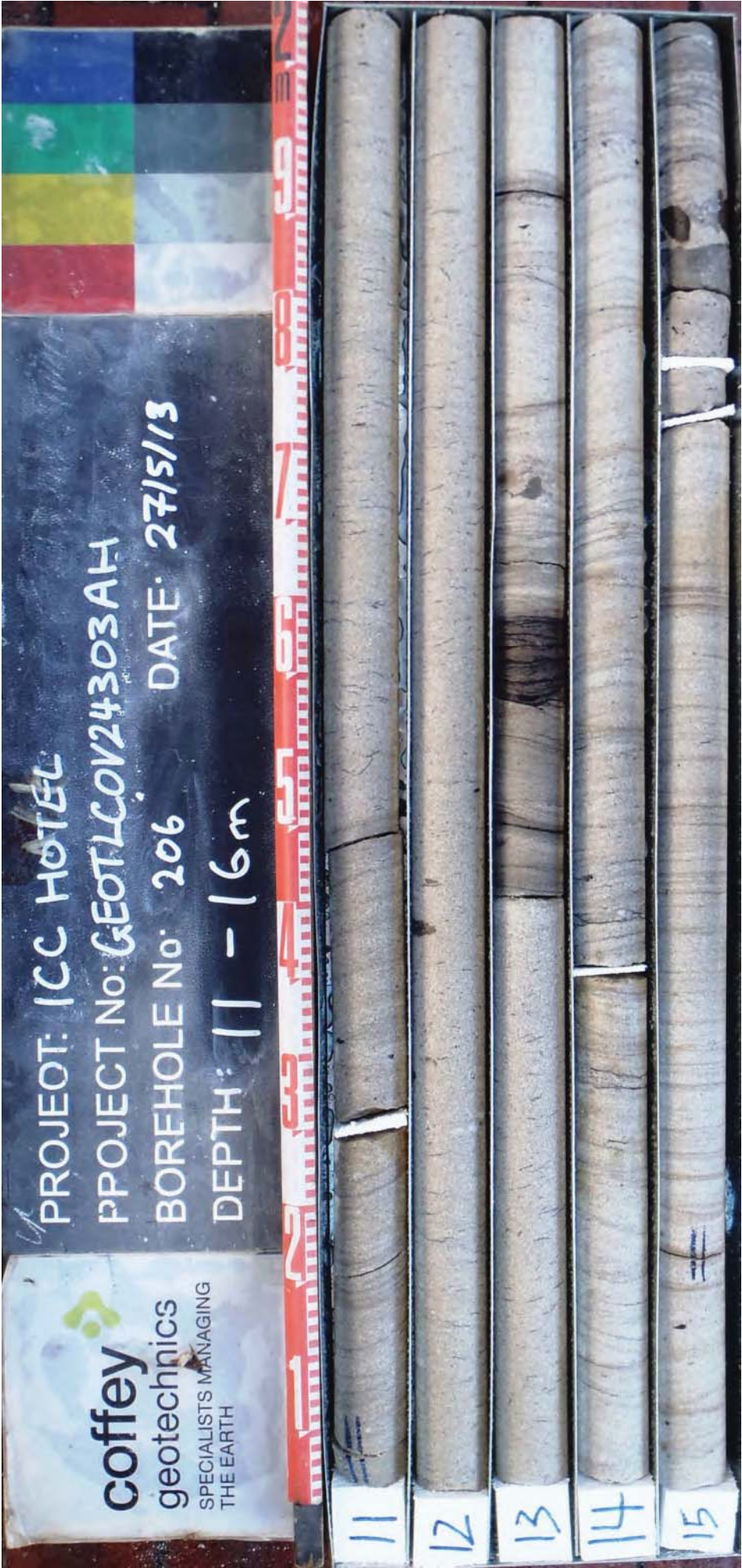
PointID : BH206 Depth Range: 6.00 - 11.00 m

drawn	
approved	
date	07/06/2013
scale	N.T.S.
original size	A4



coffey
geotechnics
SPECIALISTS MANAGING
THE EARTH

client:	Lend Lease Development Pty Ltd		
project:	SICEEP - International Convention Centre (ICC) Hotel Darling Harbour, Sydney		
title:	CORE PHOTOGRAPH BH206		
project no:	GEOTLCOV24303AH	fig no:	FIGURE 20
			rev:



PointID : BH206 Depth Range: 11.00 - 16.00 m

drawn		 SPECIALISTS MANAGING THE EARTH client: Lend Lease Development Pty Ltd project: SICEEP - International Convention Centre (ICC) Hotel Darling Harbour, Sydney title: CORE PHOTOGRAPH BH206 project no: GEOTLCOV24303AH fig no: FIGURE 21 rev:
approved		
date	07/06/2013	
scale	N.T.S.	
original size	A4	



PointID : BH206 Depth Range: 16.00 - 20.40 m

drawn	
approved	
date	07/06/2013
scale	N.T.S.
original size	A4

coffey
geotechnics
SPECIALISTS MANAGING
THE EARTH

client:	Lend Lease Development Pty Ltd		
project:	SICEEP - International Convention Centre (ICC) Hotel Darling Harbour, Sydney		
title:	CORE PHOTOGRAPH BH206		
project no:	GEOTLCOV24303AH	fig no:	FIGURE 22
			rev:

Engineering Log - Borehole

client: **Lend Lease Development Pty Ltd**

principal:

project: **SICEEP - International Convention Centre (ICC) Hotel**

location: **Darling Harbour, Sydney**

Borehole ID. **BH207**

sheet: 1 of 4

project no. **GEOTLCOV24303AH**

date started: **14 May 2013**

date completed: **15 May 2013**

logged by: **JW**

checked by: **DS**

position: E: 333,380.80; N: 6,250,502.90 (Datum Not Specified) surface elevation : 2.80m (Datum Not Specified) angle from horizontal: 90°

drill model: DP520

mounting: Track

Casing Diameter : HQ

drilling information				material substance						
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density
	1 2 3							SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components		hand penetrometer (kPa) 100 200 300 400
ADV	HQCasing		E				SC	BRICK PAVER: 0.1m.	M	MD / D
			E					FILL: SAND: fine to medium, brown and orange brown, becoming dark brown		
			E					FILL: SAND: fine to medium, mottled grey, pale grey and brown, with a trace of clay and fine gravel.		
			E					FILL: SAND: fine to medium, pale orange and brown.		
			SPT 6, 14, 33/120mm N*=R		1			with a trace of shell		
					2			Clayey SAND: medium to coarse, mottled grey, brown, dark red purple.		
								SANDSTONE: medium to coarse grained, grey with carbonaceous laminae, highly weathered, low strength		
				0	3.0			Borehole BH207 continued as cored hole		
				-1	4.0					
				-2	5.0					
				-3	6.0					
				-4	7.0					
				-5						

method AD auger drilling* AS auger screwing* RR roller/tricone W washbore CT cable tool HA hand auger DT diatube B blank bit V V bit T TC bit * bit shown by suffix e.g. AD/T	support M mud C casing N nil	penetration 10-Oct-12 water level on date shown water inflow water outflow	samples & field tests U## undisturbed sample ##mm diameter D disturbed sample B bulk disturbed sample E environmental sample HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shearpeak/remoulded (uncorrected kPa) R refusal	classification symbol & 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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Engineering Log - Cored Borehole

client: ***Lend Lease Development Pty Ltd***

principal:

project: **SICEEP - International Convention Centre (ICC) Hotel**

location: ***Darling Harbour, Sydney***

Borehole ID. **BH207**

sheet: 2 of 4

project no. **GEOTLCOV24303AH**

date started: **14 May 2013**

date completed: **15 May 2013**

logged by: **JW**

checked by: **DS**

position: E: 333,380.80; N: 6,250,502.90 (Datum Not Specified) surface elevation : 2.80m (Datum Not Specified) angle from horizontal: 90°

drill model: DP520

mounting: Track

Casing Diameter : HQ

[illegible]

Engineering Log - Cored Borehole

client: **Lend Lease Development Pty Ltd**

principal:

project: **SICEEP - International Convention Centre (ICC) Hotel**

location: **Darling Harbour, Sydney**

Borehole ID: **BH207**

sheet: 3 of 4

project no: **GEOTLCOV24303AH**

date started: **14 May 2013**

date completed: **15 May 2013**

logged by: **JW**

checked by: **DS**

position: E: 333,380.80; N: 6,250,502.90 (Datum Not Specified) surface elevation : 2.80m (Datum Not Specified) angle from horizontal: 90°

drill model: DP520

mounting: Track

Casing Diameter : HQ

drilling information				material substance		rock mass defects									
method & support	water	RL (m)	depth (m)	graphic log	material description ROCK TYPE: grain characteristics, colour, structure, minor components	weathering & alteration	estimated strength & Is(50)				samples, field tests & Is(50) (MPa)	core run & RQD	defect spacing (mm)	additional observations and defect descriptions (type, inclination, planarity, roughness, coating, thickness, other)	
							VL	L	M	H				VH	EH
NMLC					SANDSTONE: medium to coarse grained, carbonaceous laminae, rooted	HW					a=0.77 d=1.20	45%		SM, Clay, 100 mm	
			-6		8.35m - 9.45m: sandstone is medium to coarse grained, pale grey, with carbonaceous laminae, indistinctly bedded at 0-15°	FR								SM, Clay, 60 mm	
			-7		SANDSTONE: fine to medium grained, pale grey, with carbonaceous flecks, massive						a=1.50 d=1.80	100%		PT, 0°, PL, RO, CN	
			-8											PT, 0°, PL, RO, CN	
			-9											PT, 0°, IR, RO, CN	
			-10								a=1.37 d=1.93	100%		PT, 0°, PL, RO, CN	
			-11								a=1.92 d=1.95				
			-12								a=1.86 d=1.92	100%		PT, 0°, PL, RO, CN	
			-13								a=1.59 d=2.06				
						with shale clasts					a=1.34 d=1.57	100%		PT, 0 - 5°, PL - CU, RO, CN	
					SANDSTONE: medium to coarse grained, pale grey, with dark grey laminae, indistinctly cross bedded at 0-10°					a=1.76			PT, 5°, PL, RO, CN		
method & support				water		graphic log / core recovery			weathering & alteration*			defect type		planarity	
DT diatube AS auger screwing AD auger drilling RR roller/tricone CB claw or blade bit W washbore NMLC NMLC core (51.9 mm) NQ wireline core (47.6mm) HQ wireline core (63.5mm) PQ wireline core (85.0mm) SPT standard penetration test				10/10/12, water level on date shown water inflow complete drilling fluid loss partial drilling fluid loss 25uL water pressure test result (lugeons) for depth interval shown		core recovered (graphic symbols indicate material) no core recovered core run & RQD barrel withdrawn RQD = Rock Quality Designation (%)			RS residual soil XW extremely weathered HW highly weathered DW distinctly weathered MW moderately weathered SW slightly weathered FR fresh *W replaced with A for alteration strength VL very low L low M medium H high VH very high EH extremely high			PT parting JT joint SZ shear zone SS shear surface CS crushed seam SM seam DB drilling break roughness SL slickensided POL polished SO smooth RO rough VR very rough		PL planar CU curved UN undulating ST stepped IR Irregular coating CN clean SN stain VN veneer CO coating	

Borehole ID.	BH207
sheet:	4 of 4
project no.	GEOTLCOV24303AH
date started:	14 May 2013
date completed:	15 May 2013
logged by:	JW
checked by:	DS

[illegible]



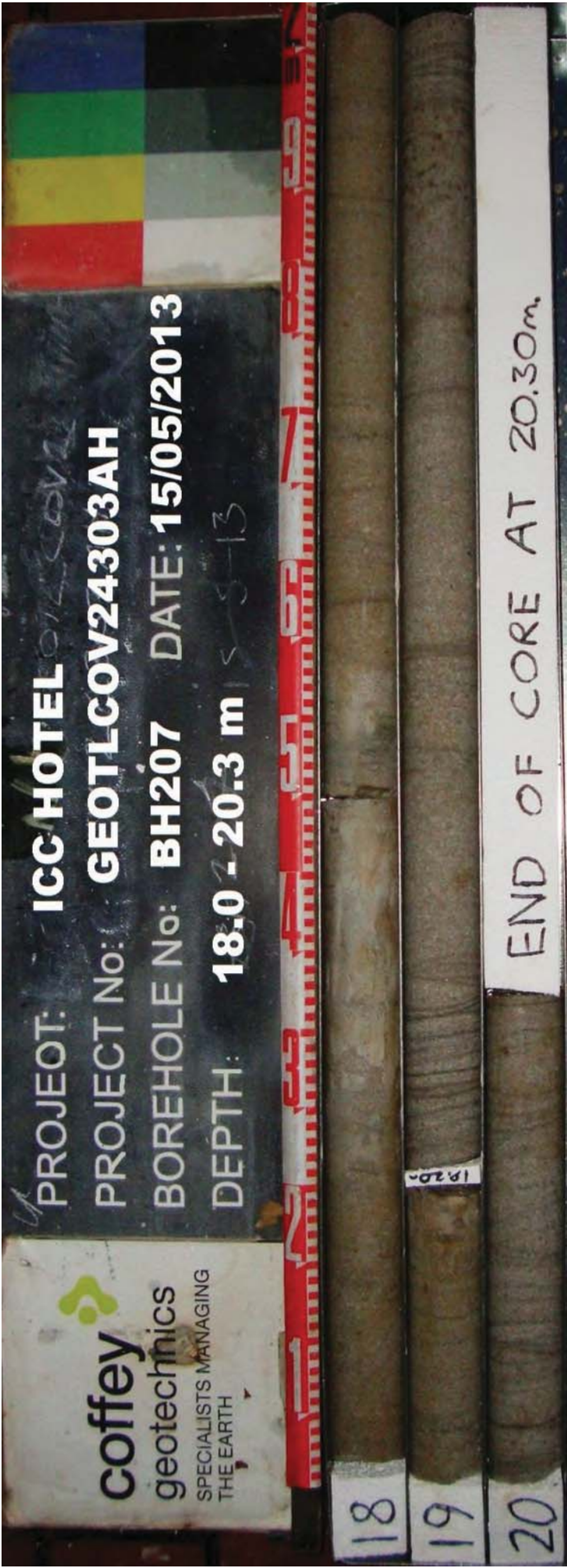
PointID : BH207 Depth Range: 2.70 - 7.00 m

drawn		client: Lend Lease Development Pty Ltd	
approved		project: SICEEP - International Convention Centre (ICC) Hotel Darling Harbour, Sydney	
date	07/06/2013	title: CORE PHOTOGRAPH BH207	
scale	N.T.S.	project no: GEOTLCOV24303AH	fig no: FIGURE 23
original size	A4	rev:	



PointID : BH207 Depth Range: 12.00 - 18.00 m

drawn		 coffey geotechnics SPECIALISTS MANAGING THE EARTH	client: Lend Lease Development Pty Ltd	
approved			project: SICEEP - International Convention Centre (ICC) Hotel Darling Harbour, Sydney	
date	07/06/2013		title: CORE PHOTOGRAPH BH207	
scale	N.T.S.		project no: GEOTLCOV24303AH	fig no: FIGURE 25
original size	A4		rev:	



PointID : BH207 Depth Range: 18.00 - 20.30 m

drawn		 coffey geotechnics SPECIALISTS MANAGING THE EARTH		client:	Lend Lease Development Pty Ltd
approved				project:	SICEEP - International Convention Centre (ICC) Hotel Darling Harbour, Sydney
date	07/06/2013			title:	CORE PHOTOGRAPH BH207
scale	N.T.S.			project no:	GEOTLCOV24303AH
original size	A4			fig no:	FIGURE 26
				rev:	

Engineering Log - Borehole

client: **Lend Lease Development Pty Ltd**

principal:

project: **SICEEP - International Convention Centre (ICC) Hotel**

location: **Darling Harbour, Sydney**

Borehole ID: **BH208**

sheet: 1 of 4

project no: **GEOTLCOV24303AH**

date started: **21 May 2013**

date completed: **22 May 2013**

logged by: **CL**

checked by: **DS**

position: E: 333,366.90; N: 6,250,510.70 (Datum Not Specified) surface elevation : 2.80m (Datum Not Specified) angle from horizontal: 90°

drill model: DP520

mounting: Track

Casing Diameter : HQ

drilling information					material substance							
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	hand penetrometer (kPa)	structure and additional observations
 DT ADT HQ Casing	 1 2 3	 water	 E E E E E SPT 30 N*=R	-2 -1 0 -1 -2 -3 -4 -5	1.0 2.0 3.0 4.0 5.0 6.0 7.0	 SP		BRICK PAVER: 0.1m. CONCRETE: 0.1m. ASPHALT: 0.3m.	D	L / MD	100 200 300 400	PAVEMENT PID = 0 ppm at 0.2m, no staining or odour
								FILL: Gravelly SAND: fine to coarse, brown, fine to coarse sandstone and igneous rock gravel. from 0.8m - becoming orange brown FILL: SAND: fine, yellow brown.				ROADBASE PID = 0 ppm at 0.5m, no staining or odour
												FILL PID = 0 ppm at 1m, no staining or odour
												PID = 0 ppm at 2m, no staining or odour
												ALLUVIUM PID = 0 ppm at 3m, no staining or odour
	SANDSTONE: fine to medium grained, orange brown mottled grey and brown, extremely to highly weathered, low strength Borehole BH208 continued as cored hole			BEDROCK								

method	support	samples & field tests	classification symbol & soil description	consistency / relative density
AD auger drilling* AS auger screwing* RR roller/tricone W washbore CT cable tool HA hand auger DT diatube B blank bit V V bit T TC bit * bit shown by suffix e.g. AD/T	M mud C casing N nil penetration water 10-Oct-12 water level on date shown water inflow water outflow	U## undisturbed sample ##mm diameter D disturbed sample B bulk disturbed sample E environmental sample HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shearpeak/remoulded (uncorrected kPa) R refusal	based on Unified Classification System moisture D dry M moist W wet	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 - Cored Borehole

client: **Lend Lease Development Pty Ltd**

principal:

project: **SICEEP - International Convention Centre (ICC) Hotel**

location: **Darling Harbour, Sydney**

Borehole ID: **BH208**

sheet: 2 of 4

project no: **GEOTLCOV24303AH**

date started: **21 May 2013**

date completed: **22 May 2013**

logged by: **CL**

checked by: **DS**

position: E: 333,366.90; N: 6,250,510.70 (Datum Not Specified) surface elevation : 2.80m (Datum Not Specified) angle from horizontal: 90°

drill model: DP520

mounting: Track

Casing Diameter : HQ

drilling information				material substance				rock mass defects			
method & support	water	RL (m)	depth (m)	graphic log	ROCK TYPE: grain characteristics, colour, structure, minor components	weathering & alteration	estimated strength & Is50 X = axial O = diametral a = axial d = diametral	samples, field tests & Is(50) (MPa)	core run & RQD	defect spacing (mm)	additional observations and defect descriptions (type, inclination, planarity, roughness, coating, thickness, other)
			0								
			1.0								
			2.0								
			3.0								
			3.25		start coring at 3.25m						
			4.0		SANDSTONE: medium to coarse grained, pale grey with dark grey laminae, distinctly cross bedded at 0-15°, iron stained at surface	SW FR		a=2.59 d=1.20 a=1.83 d=1.78	97%		PT, 0°, PL, RO, Fe SN PT, 5°, PL, RO, Fe SN PT, 10°, PL, RO, CN PT, 10°, PL, RO, CN
			5.0		SANDSTONE: fine to medium grained, pale grey with carbonaceous flecks, massive to indistinctly bedded						SM, Clay, 10 mm PT, 5°, PL, RO, CN
			6.0					a=2.56 d=1.59	87%		
			7.0		SANDSTONE: medium to coarse grained, grey with some dark grey shale lenticles, distinctly cross bedded at 0-5°			a=1.39 d=1.22 a=1.86 d=2.05	87%		PT, 5°, PL, RO, Clay CO PT, 5°, PL, RO, Clay CO PT, 0°, PL, RO, Clay CO
			7.19		NO CORE: 0.19 m	XW					XW SM, Clay, 60mm PT, 0°, PL, RO, Clay CO

method & support DT diatube AS auger screwing AD auger drilling RR roller/tricone CB claw or blade bit W washbore NMLC NMLC core (51.9 mm) NQ wireline core (47.6mm) HQ wireline core (63.5mm) PQ wireline core (85.0mm) SPT standard penetration test	water 10/10/12, water level on date shown water inflow complete drilling fluid loss partial drilling fluid loss water pressure test result (lugeons) for depth interval shown	graphic log / core recovery core recovered (graphic symbols indicate material) no core recovered core run & RQD barrel withdrawn RQD = Rock Quality Designation (%)	weathering & alteration* RS residual soil XW extremely weathered HW highly weathered DW distinctly weathered MW moderately weathered SW slightly weathered FR fresh *W replaced with A for alteration strength VL very low L low M medium H high VH very high EH extremely high	defect type PT parting JT joint SZ shear zone SS shear surface CS crushed seam SM seam DB drilling break roughness SL slickensided POL polished SO smooth RO rough VR very rough	planarity PL planar CU curved UN undulating ST stepped IR irregular coating CN clean SN stain VN veneer CO coating
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Engineering Log - Cored Borehole

client: **Lend Lease Development Pty Ltd**

principal:

project: **SICEEP - International Convention Centre (ICC) Hotel**

location: **Darling Harbour, Sydney**

Borehole ID: **BH208**

sheet: 3 of 4

project no: **GEOTLCOV24303AH**

date started: **21 May 2013**

date completed: **22 May 2013**

logged by: **CL**

checked by: **DS**

position: E: 333,366.90; N: 6,250,510.70 (Datum Not Specified) surface elevation : 2.80m (Datum Not Specified) angle from horizontal: 90°

drill model: DP520

mounting: Track

Casing Diameter : HQ

drilling information				material substance		rock mass defects												
method & support	water	RL (m)	depth (m)	graphic log	material description ROCK TYPE: grain characteristics, colour, structure, minor components	weathering & alteration	estimated strength & Is(50)				samples, field tests & Is(50) (MPa)	core run & RQD	defect spacing (mm)				additional observations and defect descriptions (type, inclination, planarity, roughness, coating, thickness, other)	
							VL	J	M	H			VH	EH	30	100	300	1000
NMLC					SANDSTONE: medium to coarse grained, grey with some dark grey shale lenticles and clasts, distinctly cross bedded at 0-5° (continued)	FR						87%				PT, 0°, PL, RO, CN		
			-6		SANDSTONE: fine grained, grey with grey laminae, distinctly cross bedded at 0-5°													
			-7															
			-8		SANDSTONE: fine to medium grained, pale grey with some carbonaceous flecks, massive												PT, 0°, PL, RO, CO, Siderite	
			-9														PT, 0°, PL, RO, Clay CO	
			-10														SM, Clay, 20 mm	
			-11														JT, 15°, PL, RO, CN	
			-12		14.2m: some shale clasts up to 50mm													
			-13		SANDSTONE: fine grained, pale grey, with grey laminae, distinctly bedded at 0-5°, with some silty sandstone beds													SM, Clay, 10 mm
method & support				water		graphic log / core recovery			weathering & alteration*			defect type			planarity			
DT diatube AS auger screwing AD auger drilling RR roller/tricone CB claw or blade bit W washbore NMLC NMLC core (51.9 mm) NQ wireline core (47.6mm) HQ wireline core (63.5mm) PQ wireline core (85.0mm) SPT standard penetration test				10/10/12, water level on date shown water inflow complete drilling fluid loss partial drilling fluid loss water pressure test result (lugeons) for depth interval shown		core recovered (graphic symbols indicate material) no core recovered core run & RQD barrel withdrawn RQD = Rock Quality Designation (%)			RS residual soil XW extremely weathered HW highly weathered DW distinctly weathered MW moderately weathered SW slightly weathered FR fresh *W replaced with A for alteration strength VL very low L low M medium H high VH very high EH extremely high			PT parting JT joint SZ shear zone SS shear surface CS crushed seam SM seam DB drilling break roughness SL slickensided POL polished SO smooth RO rough VR very rough			PL planar CU curved UN undulating ST stepped IR Irregular coating CN clean SN stain VN veneer CO coating			

checked by: **DS**[illegible]

drawn	 coffey geotechnics SPECIALISTS MANAGING THE EARTH					client:	Lend Lease Development Pty Ltd
approved						project:	SICEEP - International Convention Centre (ICC) Hotel Darling Harbour, Sydney
date	07/06/2013					title:	CORE PHOTOGRAPH BH208
scale	N.T.S.					project no:	GEOTLCOV24303AH
original size	A4					fig no:	FIGURE 27
						rev:	



PointID : BH208 Depth Range: 9.00 - 16.00 m

drawn		 SPECIALISTS MANAGING THE EARTH	client: Lend Lease Development Pty Ltd	
approved			project: SICEEP - International Convention Centre (ICC) Hotel Darling Harbour, Sydney	
date	07/06/2013		title: CORE PHOTOGRAPH BH208	
scale	N.T.S.		project no: GEOTLCOV24303AH	fig no: FIGURE 28
original size	A4		rev:	



PointID : BH208 Depth Range: 16.00 - 20.72 m

drawn		 SPECIALISTS MANAGING THE EARTH	client: Lend Lease Development Pty Ltd	
approved			project: SICEEP - International Convention Centre (ICC) Hotel Darling Harbour, Sydney	
date	07/06/2013		title: CORE PHOTOGRAPH BH208	
scale	N.T.S.		project no: GEOTLCOV24303AH	fig no: FIGURE 29
original size	A4		rev:	

Engineering Log - Borehole

client: **Lend Lease Development Pty Ltd**

principal:

project: **SICEEP - International Convention Centre (ICC) Hotel**

location: **Darling Harbour, Sydney**

Borehole ID: **BH209**

sheet: 1 of 1

project no: **GEOTLCOV24303AH**

date started: **28 May 2013**

date completed: **28 May 2013**

logged by: **DB**

checked by: **DS**

position: E: 333,376.70; N: 6,250,542.30 (Datum Not Specified) surface elevation: 3.00m (Datum Not Specified) angle from horizontal: 90°

drill model: Hand Auger

mounting:

hole diameter: 100 mm

drilling information				material substance						
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density
HA	1 2 3		E	0				BRICK PAVER: 0.08m. FILL: SAND: medium - coarse, pale brown to orange brown. FILL: BITUMEN FILL: Gravelly SAND: medium - coarse, dark grey, fine to medium grained subangular gravel with some lime. SANDSTONE: medium, orange brown to pale grey, moderately weathered, medium strength. Borehole BH209 terminated at 0.45 m	D M	100 200 300 400
					1.0					
					2.0					
					3.0					
					4.0					
					5.0					
					6.0					
					7.0					

method AD auger drilling* AS auger screwing* RR roller/tricone W washbore CT cable tool HA hand auger DT diatube B blank bit V V bit T TC bit * bit shown by suffix e.g. AD/T	support M mud C casing N nil penetration  no resistance ranging to refusal 10-Oct-12 water level on date shown water inflow water outflow	samples & field tests U## undisturbed sample ##mm diameter D disturbed sample B bulk disturbed sample E environmental sample HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shearpeak/remoulded (uncorrected kPa) R refusal	classification symbol & 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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Appendix B

Laboratory Testing Results

Uniaxial Compressive Strength with Deformation Parameters using Strain Gauges

Client:	LEND LEASE DEVELOPMENT LTD	Job no:	SIC187
Principal:	COFFEY GEOTECHNICS	Laboratory:	Abbotsford
Project:	SICEEP - INTERNATIONAL CONVENTION CENTER (ICC) HOTEL :	Report date:	27 Jun 2013
Location:	DARLING HARBOUR, SYDNEY	Report No:	
Test procedure: AS 4133 4.2.1 - 2007, 4.3.1 - 2009, 1.1.1 - 2007		Test date: 19 Jun 2013	
Test apparatus: Avery with 200 kN CAS load cell S/N 080LSOO602001 calibrated Feb 2012			

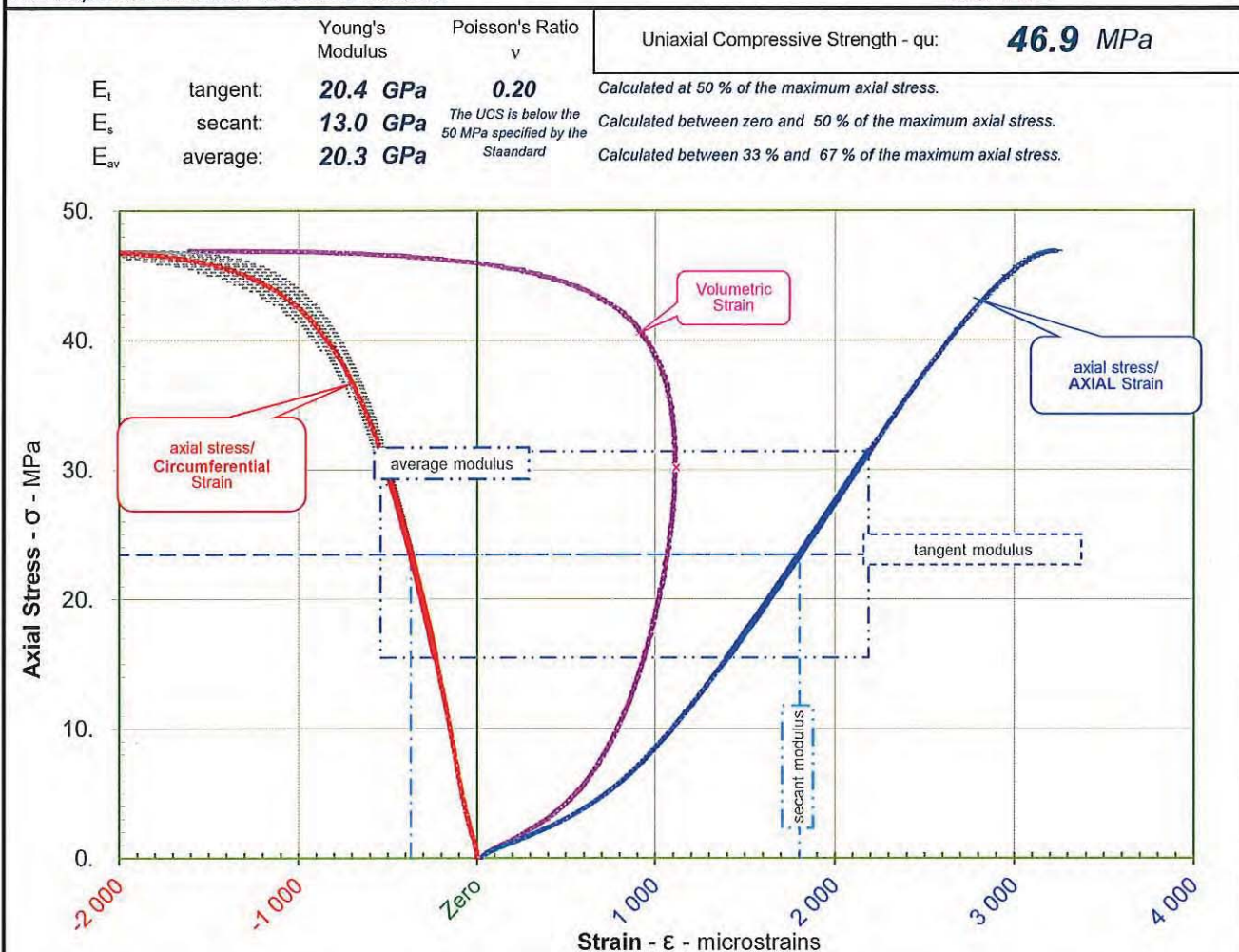
Site ID: **BH202**

Depth: from 17.24 to 17.52 m.

Sample dimensions: 150 mm high by 51.5 mm dia.

This sample was tested in an "as received" condition.

Test 1 of 1



Rock substance description: Yellowish grey (5Y7/2) sandstone.

Bedding: Bedding planes are at an angle of 70° to the axis of loading.

Mode of failure: Shear

Duration of test: 12.35 minutes

Rate of loading: 3.80 MPa/min

Moisture content (as tested): 6.5 %

Wet density: 2.38 t/m³

Dry density: 2.23 t/m³

Remarks:

Shear on rock substance at 21 degrees to axis of loading.

Uniaxial Compressive Strength

with Deformation Parameters using Strain Gauges

Page 2 of 3

Client:	LEND LEASE DEVELOPMENT LTD	Job no:	MTA187
Principal:	COFFEY GEOTECHNICS	Laboratory:	Abbotsford
Project:	SICEEP - INTERNATIONAL CONVENTION CENTER (ICC) HOTEL (	Report date:	27 Jun 2013
Location:	DARLING HARBOUR, SYDNEY	Report No:	
Test procedure: AS 4133 4.2.1 - 2007, 4.3.1 - 2009, 1.1.1 - 2007		Test date: 19 Jun 2013	
Test apparatus: Avery with 200 kN CAS load cell S/N 080LSOO602001 calibrated Feb 2012			



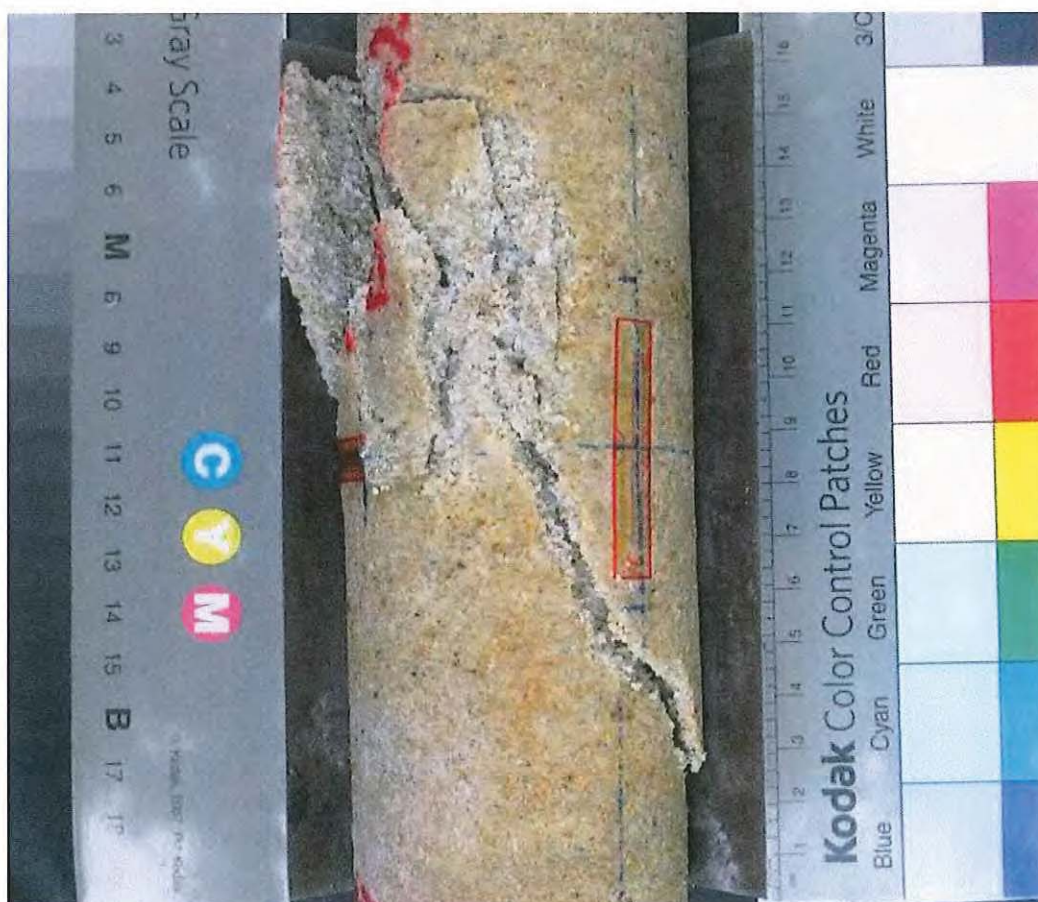
IBH202 / 17.24 - 17.52

Uniaxial Compressive Strength

with Deformation Parameters using Strain Gauges

Page 3 of 3

Client:	LEND LEASE DEVELOPMENT LTD	Job no:	MTA187
Principal:	COFFEY GEOTECHNICS	Laboratory:	Abbotsford
Project:	SICEEP - INTERNATIONAL CONVENTION CENTER (ICC) HOTEL (	Report date:	27 Jun 2013
Location:	DARLING HARBOUR, SYDNEY	Report No:	
Test procedure: AS 4133 4.2.1 - 2007, 4.3.1 - 2009, 1.1.1 - 2007		Test date: 19 Jun 2013	
Test apparatus: Avery with 200 kN CAS load cell S/N 080LSOO602001 calibrated Feb 2012			



BH202 / 17.24 - 17.52

photo after test

NHIL---modulus---RPTstrg---003---2012

Uniaxial Compressive Strength

with Deformation Parameters using Strain Gauges

Client:	LEND LEASE DEVELOPMENT LTD	Job no:	SIC187
Principal:	COFFEY GEOTECHNICS	Laboratory:	Abbotsford
Project:	SICEEP - INTERNATIONAL CONVENTION CENTER (ICC) HOTEL :	Report date:	27 Jun 2013
Location:	DARLING HARBOUR, SYDNEY	Report No:	
Test procedure: AS 4133 4.2.1 - 2007, 4.3.1 - 2009, 1.1.1 - 2007		Test date: 19 Jun 2013	
Test apparatus: Avery with 200 kN CAS load cell S/N 080LS00602001 calibrated Feb 2012			

Site ID: **BH205**

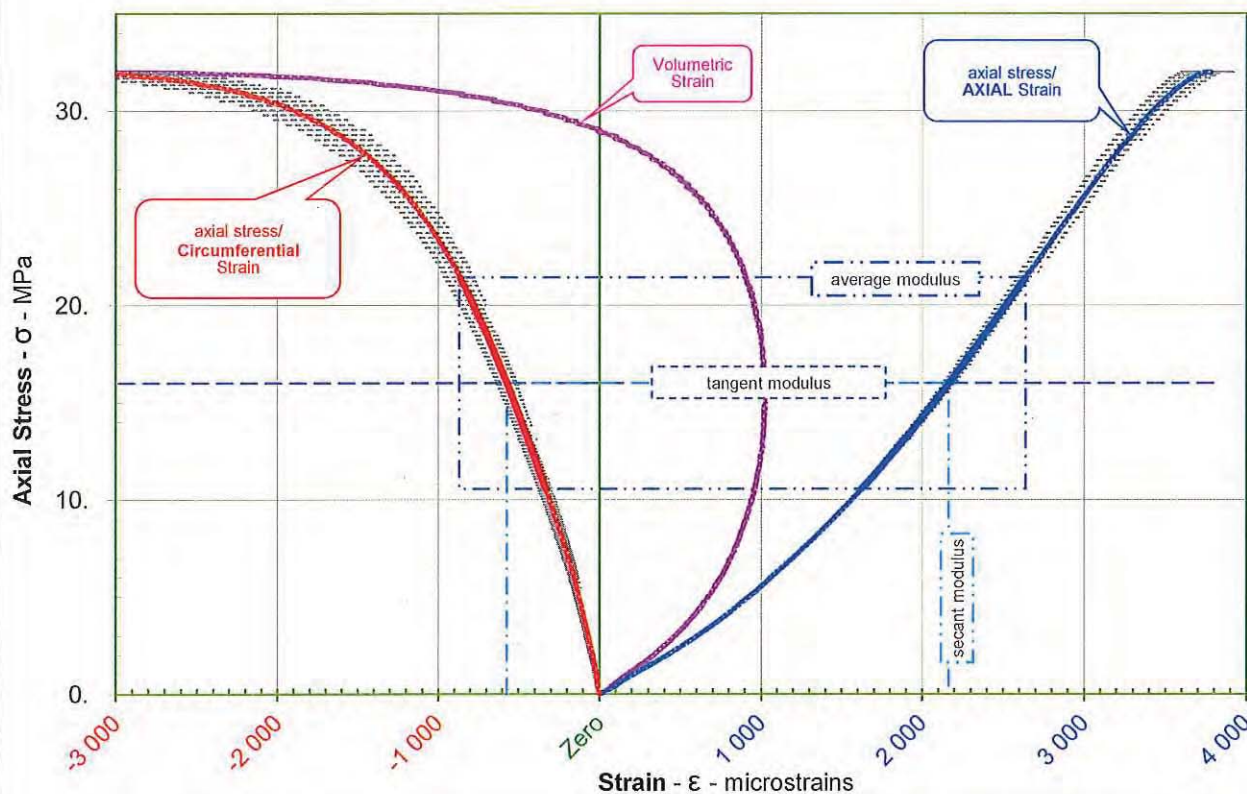
Depth: from 12.56 to 12.85 m.

Sample dimensions: 151 mm high by 51.6 mm dia.

This sample was tested in an "as received" condition.

Test 1 of 1

		Young's Modulus	Poisson's Ratio ν	Uniaxial Compressive Strength - q_u :	32.0 MPa
E_t	tangent:	10.9 GPa	0.26	Calculated at 50 % of the maximum axial stress.	
E_s	secant:	7.39 GPa	The UCS is below the 50 MPa specified by the Standard	Calculated between zero and 50 % of the maximum axial stress.	
E_{av}	average:	10.8 GPa		Calculated between 33 % and 67 % of the maximum axial stress.	



Rock substance description: Dusky yellow (5Y6/4) sandstone

Bedding: Massive.

Mode of failure: Shear

Duration of test: 6.60 minutes

Rate of loading: 4.85 MPa/min

Moisture content (as tested): 6.4 %

Wet density: 2.40 t/m³

Dry density: 2.25 t/m³

Remarks:

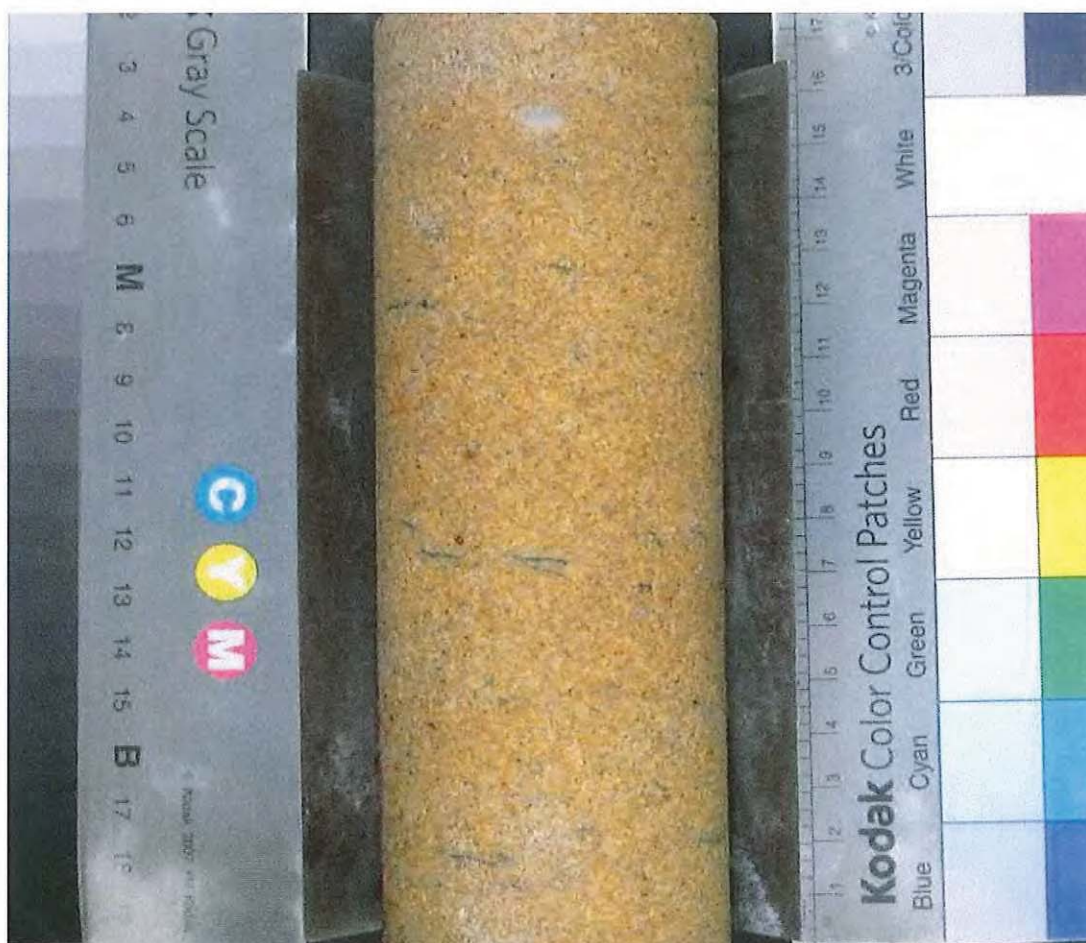
Shear through rock substance at 27 degrees from axis of loading and conjugate shear through rock substance at 27 degrees from axis.

Uniaxial Compressive Strength

with Deformation Parameters using Strain Gauges

Page 2 of 3

Client:	LEND LEASE DEVELOPMENT LTD	Job no:	MTA187
Principal:	COFFEY GEOTECHNICS	Laboratory:	Abbotsford
Project:	SICEEP - INTERNATIONAL CONVENTION CENTER (ICC) HOTEL (	Report date:	27 Jun 2013
Location:	DARLING HARBOUR, SYDNEY	Report No:	
Test procedure: AS 4133 4.2.1 - 2007, 4.3.1 - 2009, 1.1.1 - 2007		Test date: 19 Jun 2013	
Test apparatus: Avery with 200 kN CAS load cell S/N 080LSOO602001 calibrated Feb 2012			



BH205 / 12.56 - 12.85

Uniaxial Compressive Strength

with Deformation Parameters using Strain Gauges

Page 3 of 3

Client:	LEND LEASE DEVELOPMENT LTD	Job no:	MTA187
Principal:	COFFEY GEOTECHNICS	Laboratory:	Abbotsford
Project:	SICEEP - INTERNATIONAL CONVENTION CENTER (ICC) HOTEL (	Report date:	27 Jun 2013
Location:	DARLING HARBOUR, SYDNEY	Report No:	
Test procedure: AS 4133 4.2.1 - 2007, 4.3.1 - 2009, 1.1.1 - 2007		Test date: 19 Jun 2013	
Test apparatus: Avery with 200 kN CAS load cell S/N 080LSOO602001 calibrated Feb 2012			



BH205 / 12.56 - 12.85

photo after test

Uniaxial Compressive Strength

with Deformation Parameters using Strain Gauges

Client:	LEND LEASE DEVELOPMENT LTD	Job no:	SIC187
Principal:	COFFEY GEOTECHNICS	Laboratory:	Abbotsford
Project:	SICEEP - INTERNATIONAL CONVENTION CENTER (ICC) HOTEL :	Report date:	27 Jun 2013
Location:	DARLING HARBOUR, SYDNEY	Report No:	
Test procedure: AS 4133 4.2.1 - 2007, 4.3.1 - 2009, 1.1.1 - 2007		Test date: 19 Jun 2013	
Test apparatus: Avery with 200 kN CAS load cell S/N 080LSOO602001 calibrated Feb 2012			

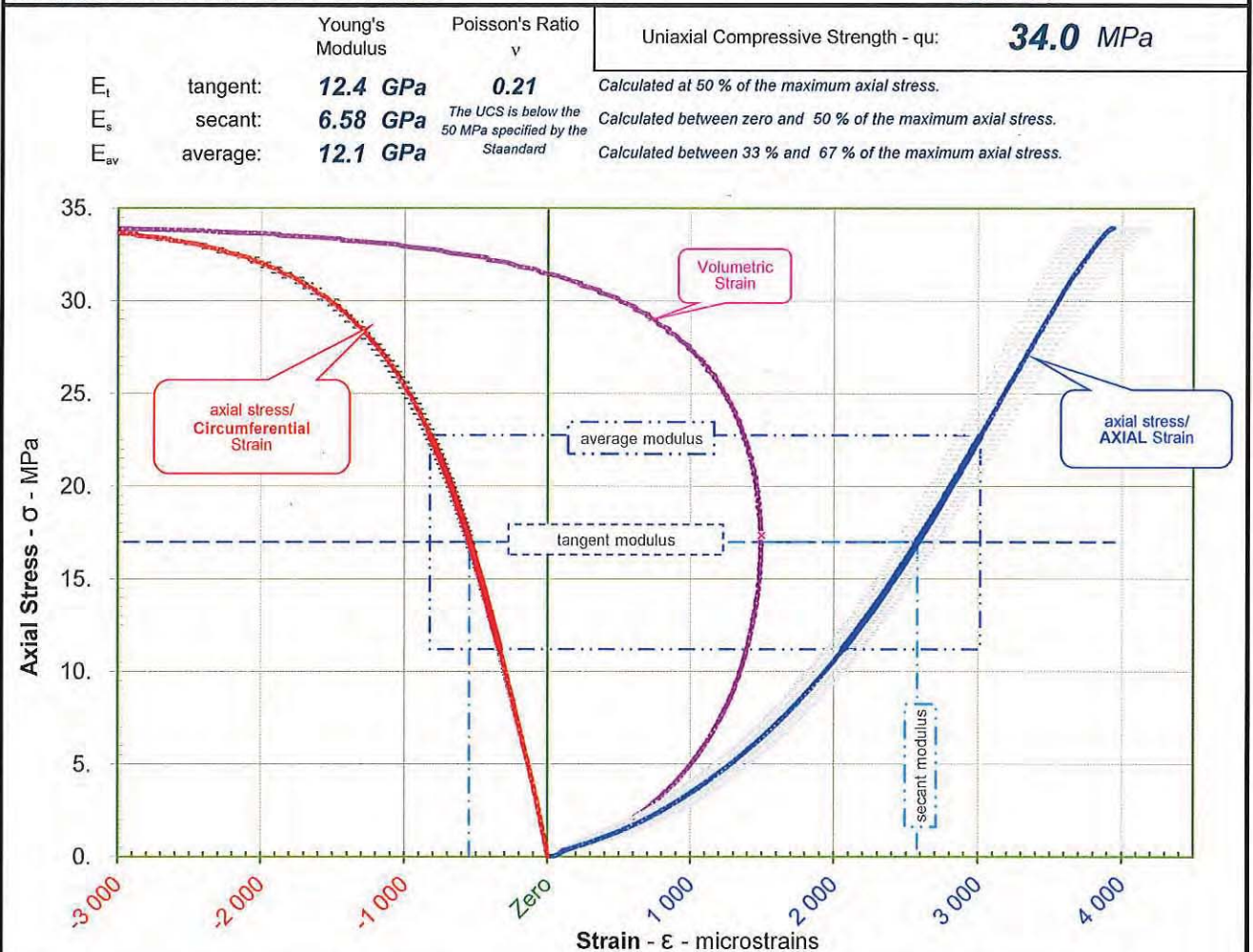
Site ID: **BH206**

Depth: from 3.49 to 3.64 m.

Sample dimensions: 124 mm high by 51.6 mm dia.

Test 1 of 1

The height of this specimen was shorter than the Standard's requirements.
This sample was tested in an "as received" condition.



Rock substance description: Yellowish grey (5Y7/2) to light olive grey (5Y5/2) sandstone

Bedding: Bedding planes are at an angle of 90° to the axis of loading.

Mode of failure: Shear

Duration of test: 6.92 minutes

Rate of loading: 4.91 MPa/min

Moisture content (as tested): 6.4 %

Wet density: 2.39 t/m³

Dry density: 2.24 t/m³

Remarks:

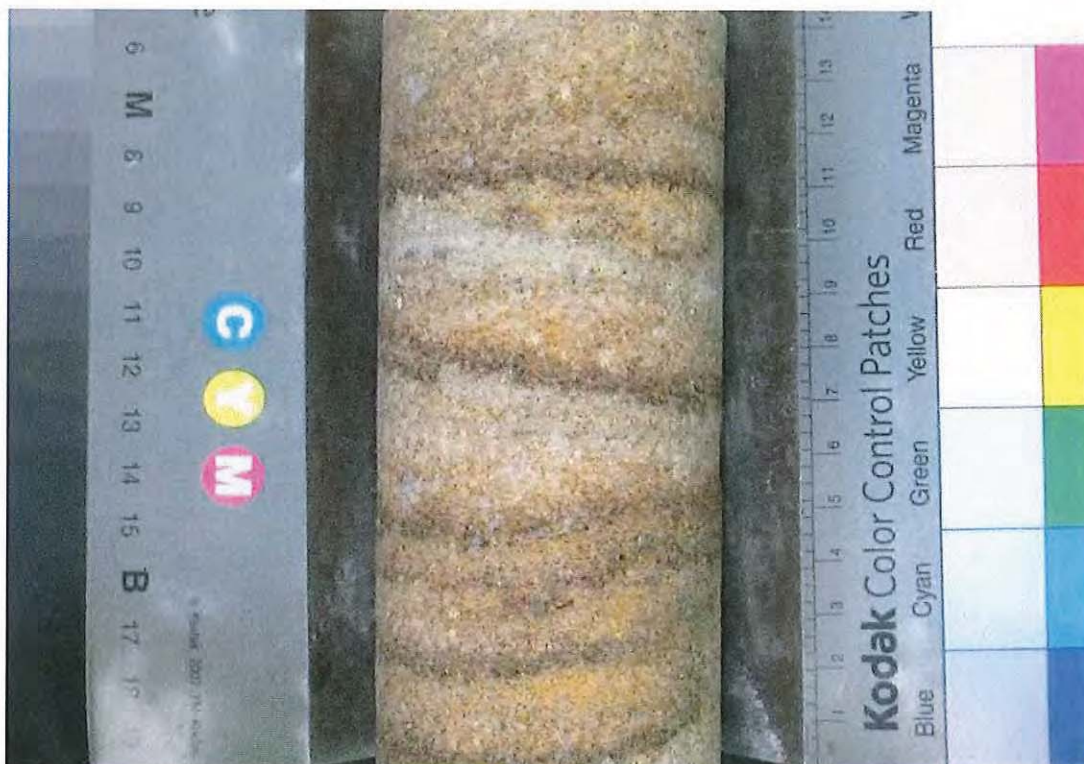
Shear on rock substance at 23 degrees from axis of loading.

Uniaxial Compressive Strength

with Deformation Parameters using Strain Gauges

Page 2 of 3

Client:	LEND LEASE DEVELOPMENT LTD	Job no:	MTA187
Principal:	COFFEY GEOTECHNICS	Laboratory:	Abbotsford
Project:	SICEEP - INTERNATIONAL CONVENTION CENTER (ICC) HOTEL (	Report date:	27 Jun 2013
Location:	DARLING HARBOUR, SYDNEY	Report No:	
Test procedure: AS 4133 4.2.1 - 2007, 4.3.1 - 2009, 1.1.1 - 2007		Test date: 19 Jun 2013	
Test apparatus: Avery with 200 kN CAS load cell S/N 080LSOO602001 calibrated Feb 2012			



BH206 / 3.49 - 3.64
photo before test

Uniaxial Compressive Strength

with Deformation Parameters using Strain Gauges

Page 3 of 3

Client:	LEND LEASE DEVELOPMENT LTD	Job no:	MTA187
Principal:	COFFEY GEOTECHNICS	Laboratory:	Abbotsford
Project:	SICEEP - INTERNATIONAL CONVENTION CENTER (ICC) HOTEL (	Report date:	27 Jun 2013
Location:	DARLING HARBOUR, SYDNEY	Report No:	
Test procedure: AS 4133 4.2.1 - 2007, 4.3.1 - 2009, 1.1.1 - 2007		Test date: 19 Jun 2013	
Test apparatus: Avery with 200 kN CAS load cell S/N 080LSOO602001 calibrated Feb 2012			



BH206 / 3.49 - 3.64

photo after test

NHIL---modulus---RPTstrg---003---2012

Uniaxial Compressive Strength

with Deformation Parameters using Strain Gauges

Client:	LEND LEASE DEVELOPMENT LTD	Job no:	SIC187
Principal:	COFFEY GEOTECHNICS	Laboratory:	Abbotsford
Project:	SICEEP - INTERNATIONAL CONVENTION CENTER (ICC) HOTEL :	Report date:	27 Jun 2013
Location:	DARLING HARBOUR, SYDNEY	Report No:	
Test procedure: AS 4133 4.2.1 - 2007, 4.3.1 - 2009, 1.1.1 - 2007		Test date: 19 Jun 2013	
Test apparatus: Avery with 200 kN CAS load cell S/N 080LSOO602001 calibrated Feb 2012			

Site ID: **BH208**

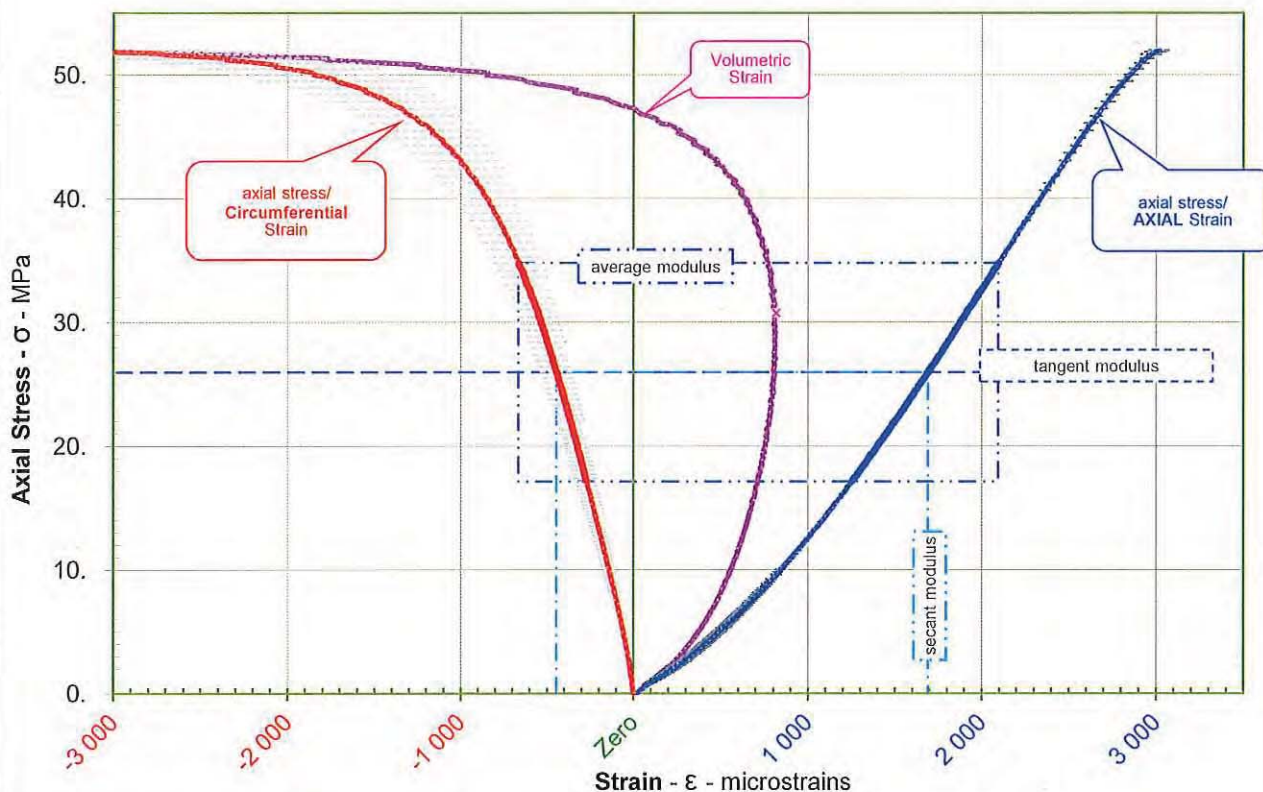
Depth: from 7.07 to 7.27 m.

Sample dimensions: 150 mm high by 51.8 mm dia.

This sample was tested in an "as received" condition.

Test 1 of 1

		Young's Modulus	Poisson's Ratio ν	Uniaxial Compressive Strength - qu:	52.0 MPa
E_t	tangent:	21.2 GPa	0.26	Calculated at 50 % of the maximum axial stress.	
E_s	secant:	15.4 GPa		Calculated between zero and 50 % of the maximum axial stress.	
E_{av}	average:	21.0 GPa		Calculated between 33 % and 67 % of the maximum axial stress.	



Rock substance description: Yellowish grey (5Y7/2) sandstone

Bedding: Massive.

Mode of failure: Shear

Duration of test: 5.30 minutes

Rate of loading: 9.80 MPa/min

Moisture content (as tested): 5.2 %

Wet density: 2.35 t/m³

Dry density: 2.24 t/m³

Remarks:

Shear on rock substance at 31 degrees from axis of loading.

Uniaxial Compressive Strength

with Deformation Parameters using Strain Gauges

Page 2 of 3

Client:	LEND LEASE DEVELOPMENT LTD	Job no:	MTA187
Principal:	COFFEY GEOTECHNICS	Laboratory:	Abbotsford
Project:	SICEEP - INTERNATIONAL CONVENTION CENTER (ICC) HOTEL (	Report date:	27 Jun 2013
Location:	DARLING HARBOUR, SYDNEY	Report No:	
Test procedure: AS 4133 4.2.1 - 2007, 4.3.1 - 2009, 1.1.1 - 2007		Test date: 19 Jun 2013	
Test apparatus: Avery with 200 kN CAS load cell S/N 080LSOO602001 calibrated Feb 2012			



BH208 / 7.07 - 7.27
 photo before test

Uniaxial Compressive Strength

with Deformation Parameters using Strain Gauges

Page 3 of 3

Client:	LEND LEASE DEVELOPMENT LTD	Job no:	MTA187
Principal:	COFFEY GEOTECHNICS	Laboratory:	Abbotsford
Project:	SICEEP - INTERNATIONAL CONVENTION CENTER (ICC) HOTEL (	Report date:	27 Jun 2013
Location:	DARLING HARBOUR, SYDNEY	Report No:	
Test procedure: AS 4133 4.2.1 - 2007, 4.3.1 - 2009, 1.1.1 - 2007		Test date: 19 Jun 2013	
Test apparatus: Avery with 200 kN CAS load cell S/N 080LSOO602001 calibrated Feb 2012			



BH208 / 7.07 - 7.27
 BH208 / 7.07 - 7.27 photo
 after test

Appendix C

Standpipe Piezometer Installation Details

Piezometer Installation Log

client: ***Lend Lease Development Pty Ltd***

principal:

project: **SICEEP - International Convention Centre (ICC) Hotel**

location: ***Darling Harbour, Sydney***

Hole ID. **BH203**

sheet: 1 of 2

project no. **GEOTLCOV24303AH**

date started: **24 May 2013**

date completed: **24 May 2013**

logged by: **CL**

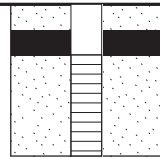
checked by: **MG**

position: E: 333,395.70; N: 6,250,513.50 (Datum Not Specified) surface elevation : 3.10m (Datum Not Specified) angle from horizontal: 90°

equipment type: DP520

mounting: Track

hole diameter : 125 mm

drilling information			material substance		piezometer construction details	
method & support	water	RL (m)	depth (m)	graphic log	material name	
					BRICK PAVERS FILL: Gravelly SAND FILL: Gravelly Clayey SAND Silty SAND SANDSTONE	0.50 m 1.00 m 3.00 m  BH203 bore construction license: drilling company: driller: NUMAC driller's permit no.:
		-0	4			Sand Bentonite Sand
		-4	8		INTERLAMINATED SHALE (80%) & SANDSTONE (20%) NO CORE SANDSTONE	
		-8	12			
		-12	16			
		-16	20			
					Borehole BH203 terminated at 20.80 m	
		-20				

method & support
see engineering log for details

water

 10-Oct-12, water level on date shown
 water inflow
 complete drilling fluid loss
 partial drilling fluid loss

25 | water pressure test result
(lugeons) for depth
interval shown

graphic log / core recovery

core recovered
(graphic symbols
indicate material)

no core recovered

ID
BH203

type
pipe piezo.

stick up & RL
0.00 m 3.10 m

tip depth & RL
3.00 m 0.10 m

installation
date

static water
level

Piezometer Installation Log

client: **Lend Lease Development Pty Ltd**

principal:

project: **SICEEP - International Convention Centre (ICC) Hotel**

location: **Darling Harbour, Sydney**

Hole ID. **BH204a**

sheet: 1 of 2

project no. **GEOTLCOV24303AH**

date started: **07 Jun 2013**

date completed: **07 Jun 2013**

logged by: **RC**

checked by: **MG**

position: E: 333,405.50; N: 6,250,490.90 (Datum Not Specified) surface elevation : 3.00m (Datum Not Specified) angle from horizontal: 90°
equipment type: DP520 mounting: Track hole diameter : 100 mm

drilling information		material substance	piezometer construction details	
method & support	water	depth (m)	material name	bore construction license: drilling company: driller: driller's permit no.:
				NUMAC
			ASPHALT	Cuttings
			FILL: Gravelly SAND	Bentonite
			FILL: SAND	
			FILL: Sandy CLAY	
			FILL: Silty SAND	
			FILL: MIXTURE OF SAND AND CLAY	
			Silty SAND	
			SANDSTONE	
			NO CORE	
			SANDSTONE	
			NO CORE	
			SANDSTONE	
			Borehole BH204a terminated at 20.40 m	

method & support	graphic log / core recovery	ID	type	stick up & RL	tip depth & RL	installation	static water
see engineering log for details		BH204a	standpipe piezo.	0.00 m 3.00 m	4.25 m -1.25 m	date	level
water							
10-Oct-12, water level on date shown							
water inflow							
complete drilling fluid loss							
partial drilling fluid loss							
water pressure test result (lugeons) for depth interval shown							

