

client: ***Lend Lease Building Pty Ltd***

principal:

project: **USYD Health Precinct**

location: ***Blackburn Building, University of Sydney - Camperdown Campus***

Borehole ID. **BH4**

sheet: 1 of 3

project no. **GEOTLCOV25283AF**

date started: **15 Nov 2016**

date completed: **15 Nov 2016**

logged by: **SM**

checked by: **DS**

position: E: 332,153.15; N: 6,248,625.70 (MGA94 Zone 56) surface elevation: 21.70 m (AHD)

angle from horizontal: 90°

drill model: Hydropower Scout. Truck mounted

drilling fluid:

hole diameter : 100 mm

drilling information					material substance							
method & support	1 penetration	2 water	3 samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	hand penetrometer (kPa) 100 200 300 400	structure and additional observations
AD HA	1 2 3		E	21	1.0		CL-CI	ASPHALT: 50mm.	D	VL		ROAD SURFACE
								FILL: Gravelly SAND: fine to coarse grained, grey-pale grey, gravel is sub-rounded to sub-angular, trace low to medium plasticity clay.			PID = 8.8ppm	
AD/T			E	20	2.0		CI-CH	FILL: Sandy CLAY: low to medium plasticity, grey-brown, sand is fine to coarse grained.	<Wp	VSt		FILL PID = ??ppm
								CLAY: low to medium plasticity, grey with red-brown mottling, with ironstone gravel.			RESIDUAL SOIL PID = 20.5ppm	
AD/T			SPT 3, 7, 11 N*=18	19	3.0		CI-CH	1.5 m: becoming red mottled grey	>Wp	VSt / H		
								2.1 m: becoming grey, mottled red				
AD/T			SPT 7, 9, 12 N*=21	18	4.0		CI-CH	2.8 m: becoming medium to high plasticity	>Wp	VSt / H		
								CLAY: medium to high plasticity, grey, pale grey.				
AD/T			SPT 10, 12, 30/70mm N*=R	17	5.0			SHALE: grey-dark grey, extremely weathered, with clay lenses, very low strength.				WEATHERED BEDROCK
AD/T				16	6.0			Borehole BH4 continued as cored hole				
AD/T				15	7.0							
AD/T				14								

method

AD auger drilling*

AS auger screwing*

HA hand auger

W washbore

HA hand auger

support

M mud

C casing

penetration

1

2

3

no resistance ranging to refusal

water

10-Oct-12 water level on date shown

water inflow

water outflow

samples & field tests

B bulk disturbed sample

D disturbed sample

E environmental sample

SS split spoon sample

U## undisturbed sample ##mm diameter

HP hand penetrometer (kPa)

N standard penetration test (SPT)

N* SPT - sample recovered

Nc SPT with solid cone

VS vane shear; peak/remoulded (kPa)

R refusal

HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture

D dry

M moist

W wet

Wp plastic limit

WL liquid limit

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

Engineering Log - Cored Borehole

client: **Lend Lease Building Pty Ltd**

principal:

project: **USYD Health Precinct**

location: **Blackburn Building, University of Sydney - Camperdown Campus**

Borehole ID. **BH4**

sheet: 2 of 3

project no. **GEOTLCOV25283AF**

date started: **15 Nov 2016**

date completed: **15 Nov 2016**

logged by: **SM**

checked by: **DS**

position: E: 332,153.15; N: 6,248,625.70 (MGA94 Zone 56) surface elevation: 21.70 m (AHD)

angle from horizontal: 90°

drill model: Hydropower Scout, Truck mounted

drilling fluid:

hole diameter : 100 mm

vane id.:

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)				
							VL	L	M	H			VH	EH	30	100	300	1000	3000	particular	general
			21																		
			20																		
			19																		
			18																		
			17																		
			16																		
			6.0		started coring at 6.00m																
			15		SHALE: grey-dark grey, distinctly laminated at 0°-10°.	SW															
			14			FR															
method & support				water				graphic log / core recovery				weathering & alteration*				defect type				planarity	
AS auger screwing AD auger drilling CB claw or blade bit W washbore NMLCNMLC core (51.9 mm) NQ wireline core (47.6mm) HQ wireline core (63.5mm) PQ wireline core (85.0mm) SPT standard penetration test HA hand auger				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 CO contact CS crushed seam SM seam				PL planar CU curved UN undulating ST stepped IR Irregular	
				25uL								strength				roughness				coating	
												VL very low L low M medium H high VH very high EH extremely high				SL slickensided POL polished SO smooth RO rough VR very rough				CN clean SN stain VN veneer CO coating	

method & support
AS auger screwing
AD auger drilling
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
HA hand auger

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
CO contact
CS crushed seam
SM seam
planarity
PL planar
CU curved
UN undulating
ST stepped
IR irregular
roughness
SL slickensided
POL polished
SO smooth
RO rough
VR very rough
coating
CN clean
SN stain
VN veneer
CO coating

Engineering Log - Cored Borehole

client: ***Lend Lease Building Pty Ltd***

principal:

project: **USYD Health Precinct**

location: **Blackburn Building, University of Sydney - Camperdown Campus**

Borehole ID. **BH4**

sheet: 3 of 3

project no. **GEOTLCOV25283AF**

date started: **15 Nov 2016**

date completed: **15 Nov 2016**

logged by: **SM**

checked by: **DS**

position: E: 332,153.15; N: 6,248,625.70 (MGA94 Zone 56) surface elevation: 21.70 m (AHD)

angle from horizontal: 90°

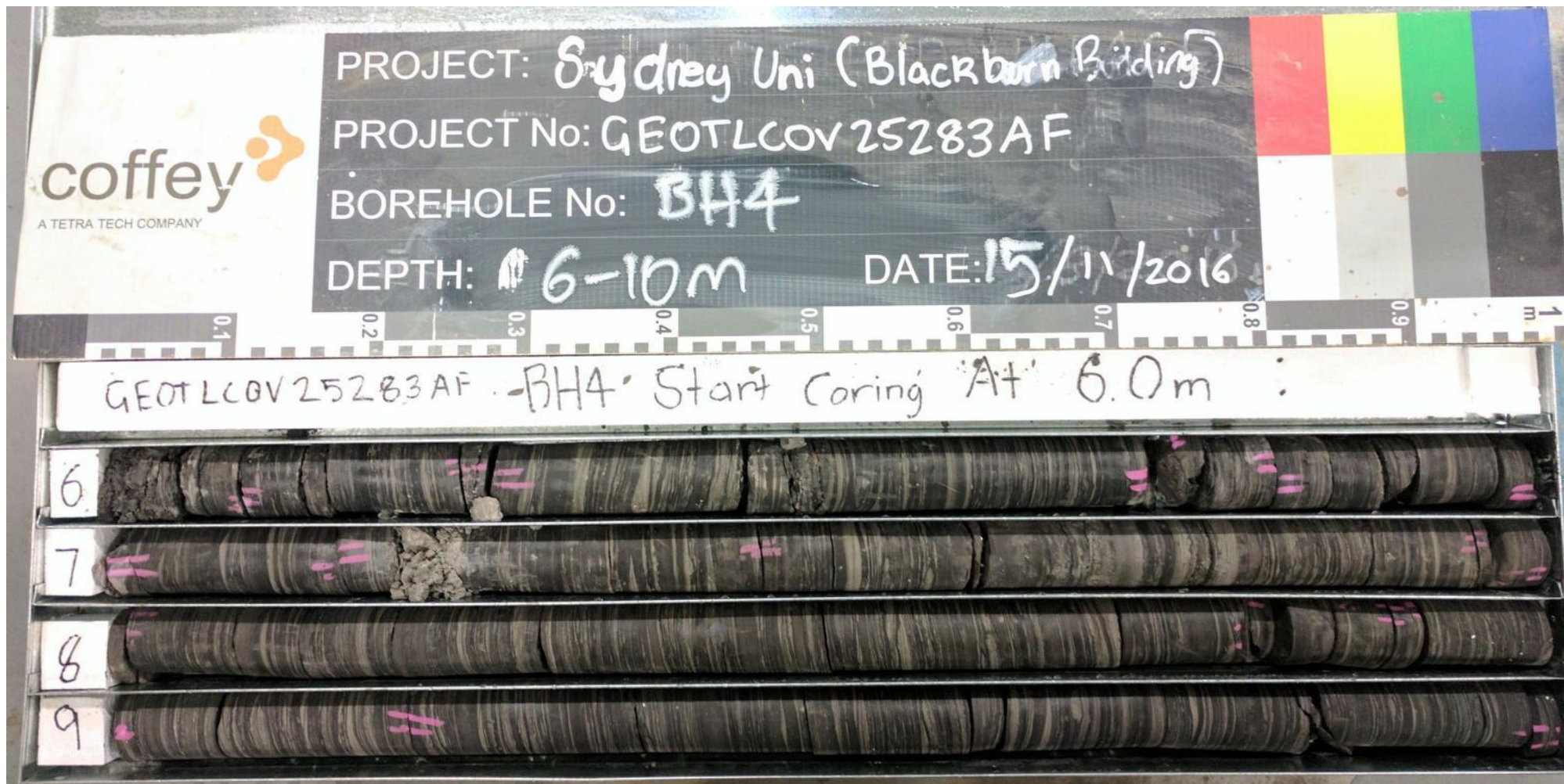
drill model: Hydropower Scout, Truck mounted

drilling fluid:

hole diameter : 100 mm

vane id.:

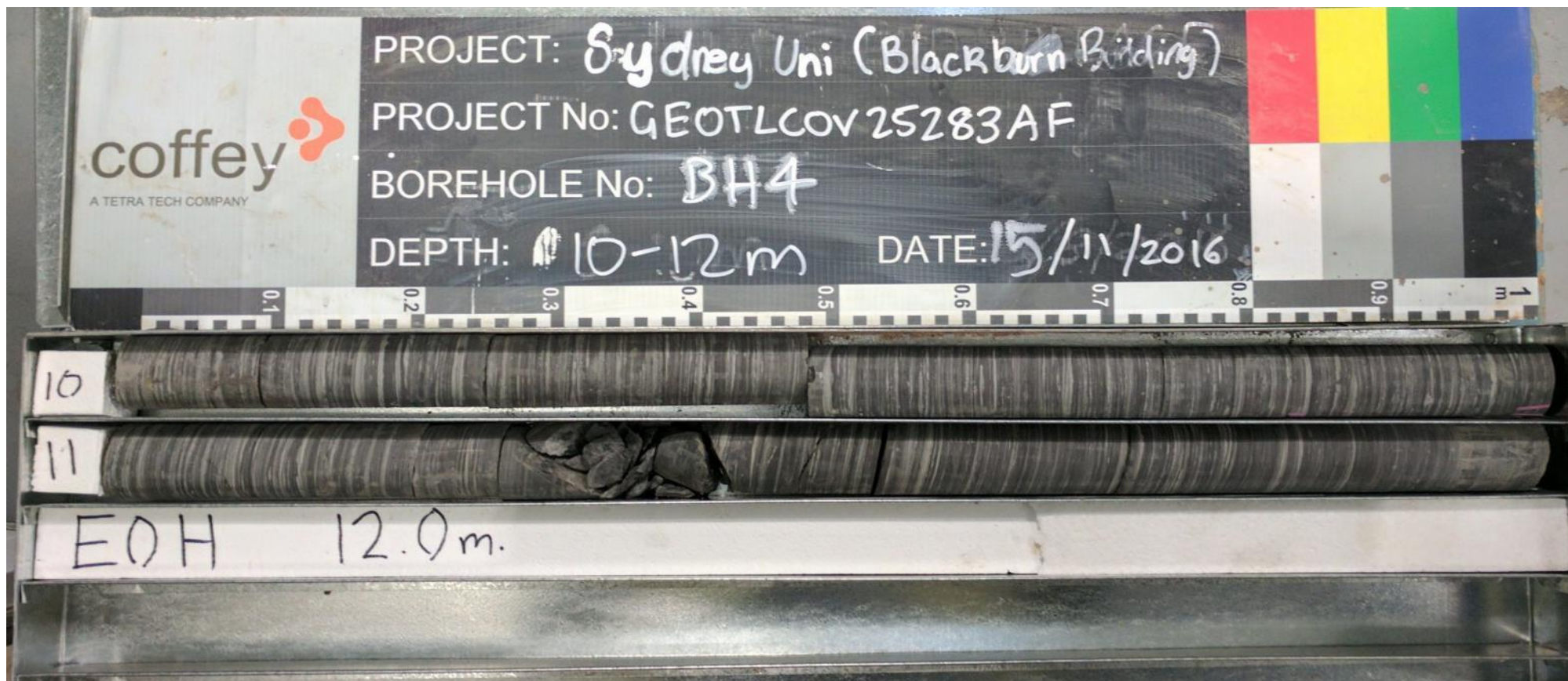
drilling information				material substance				rock mass defects													
method & support	water	RL (m)	depth (m)	graphic log	ROCK TYPE: grain characteristics, colour, structure, minor components	weathering & alteration	estimated strength & Is(50) X = axial; O = diametral a = axial; d = diametral	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			9.0		SHALE: grey-dark grey, distinctly laminated at 0°-10°. (continued)	FR		a=0.89 d=0.39	92%		JT, 65°, PL, CO - CN										
		10.0																			
		11.0																			
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			12.0		Borehole BH4 terminated at 12.00 m			a=1.56 d=1.03													
			13.0																		
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BH4 6.00 - 10.00 m

drawn	AW	 A TETRA TECH COMPANY	client:	Lend Lease Building Pty Ltd		
approved	DS		project:	USYD Health Precinct Blackburn Building, University of Sydney - Camperdown Campus		
date	8/12/2016		title:	CORE PHOTOGRAPH BH4		
scale	N.T.S.		project no:	GEOTLCOV25283AF	fig no:	FIGURE 1
original size	A4				rev:	

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BH4 10.00 - 12.00 m

drawn	AW		client:	Lend Lease Building Pty Ltd		
approved	DS		project:	USYD Health Precinct Blackburn Building, University of Sydney - Camperdown Campus		
date	8/12/2016		title:	CORE PHOTOGRAPH BH4		
scale	N.T.S.		project no:	GEOTLCOV25283AF	fig no:	FIGURE 2
original size	A4				rev:	

Piezometer Installation Log

client: **Lend Lease Building Pty Ltd**

principal:

project: **USYD Health Precinct**

location: **Blackburn Building, University of Sydney - Camperdown Campus**

Hole ID. **BH4**

sheet: 1 of 1

project no. **GEOTLCOV25283AF**

date started: **15 Nov 2016**

date completed: **15 Nov 2016**

logged by: **SM**

checked by: **DS**

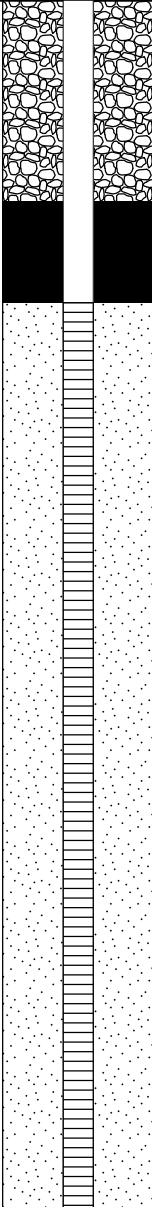
position: E: 332,153.15; N: 6,248,625.70 (MGA94 Zone 56) surface elevation: 21.70 m (AHD)

angle from horizontal: 90°

equipment type: Hydropower Scout, Truck mounted

drilling fluid:

hole diameter: 100 mm

drilling information			material substance	piezometer construction details		
method & support	water	RL (m)	depth (m)	graphic log	material name	bore construction license: drilling company: driller: driller's permit no.:
HA ADT NMILC			1		ROAD SURFACE	BH4 
			2		FILL	
			3		RESIDUAL SOIL	
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Engineering Log - Borehole

client: **Lend Lease Building Pty Ltd**

principal:

project: **USYD Health Precinct**

location: **Blackburn Building, University of Sydney - Camperdown Campus**

Borehole ID. **BH5**

sheet: 1 of 3

project no. **GEOTLCOV25283AF**

date started: **22 Nov 2016**

date completed: **22 Nov 2016**

logged by: **SM**

checked by: **DS**

position: E: 332,144.72; N: 6,248,664.74 (MGA94 Zone 56) surface elevation: 21.90 m (AHD)

angle from horizontal: 90°

drill model: Hydropower Scout, Truck mounted

drilling fluid:

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 SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	hand penetrometer (kPa)	structure and additional observations
AD AS HA W HA AD/T HA <												

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System	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
penetration 	water 	moisture D dry M moist W wet Wp plastic limit WI liquid limit		

* bit shown by suffix
e.g.
AD/T
B blank bit
T TC bit
V V bit

Engineering Log - Cored Borehole

client: ***Lend Lease Building Pty Ltd***

principal:

project: **USYD Health Precinct**

location: **Blackburn Building, University of Sydney - Camperdown Campus**

Borehole ID. **BH5**

sheet: 2 of 3

project no. **GEOTLCOV25283AF**

date started: **22 Nov 2016**

date completed: **22 Nov 2016**

logged by: **SM**

checked by: **DS**

position: E: 332,144.72; N: 6,248,664.74 (MGA94 Zone 56) surface elevation: 21.90 m (AHD)

angle from horizontal: 90°

drill model: Hydropower Scout, Truck mounted

drilling fluid:

hole diameter : 100 mm

vane id.:

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) a = axial; d = diametral	core run & RQD	defect spacing (mm)				additional observations and defect descriptions (type, inclination, planarity, roughness, coating, thickness, other)	
							VL	L	M	H	FH			30	100	300	1000	3000	particular
		-21	1.0																
		-20	2.0																
		-19	3.0																
		-18	4.0																
		-17	5.0																
		-16	6.0		started coring at 6.10m														
		-15	7.0		SHALE: grey and red-brown, distinctly laminated at 0°-10°.	HW / MW													
		-14			7.35 m: becoming grey-pale grey	SW													
method & support				water		graphic log / core recovery				weathering & alteration*				defect type		planarity			
AS auger screwing				10/10/12, water		core recovered				RS residual soil				PT parting		PL planar			
AD auger drilling				level on date shown		(graphic symbols indicate material)				XW extremely weathered				SZ shear zone		CU curved			
CB claw or blade bit				water inflow		no core recovered				HW highly weathered				SS shear surface		UN undulating			
W washbore				complete drilling fluid loss						DW distinctly weathered				CO contact		ST stepped			
NMLCNMLC core (51.9 mm)				partial drilling fluid loss						MW moderately weathered				CS crushed seam		IR Irregular			
NQ wireline core (47.6mm)										SW slightly weathered				SM seam					
HQ wireline core (63.5mm)										FR fresh									
PQ wireline core (85.0mm)										*W replaced with A for alteration									
SPT standard penetration test										strength									
HA hand auger										VL very low									
				25uL water pressure test result (lugeons) for depth interval shown		barrel withdrawn				L low				roughness		coating			
						RQD = Rock Quality Designation (%)				M medium				SL slickensided		CN clean			
										H high				POL polished		SN stain			
										FH very high				SO smooth		VN veneer			
										extremely high				RO rough		CO coating			
														VR very rough					

Engineering Log - Cored Borehole

client: ***Lend Lease Building Pty Ltd***

principal:

project: **USYD Health Precinct**

location: **Blackburn Building, University of Sydney - Camperdown Campus**

Borehole ID. **BH5**

sheet: 3 of 3

project no. **GEOTLCOV25283AF**

date started: **22 Nov 2016**

date completed: **22 Nov 2016**

logged by: **SM**

checked by: **DS**

position: E: 332,144.72; N: 6,248,664.74 (MGA94 Zone 56) surface elevation: 21.90 m (AHD)

angle from horizontal: 90°

drill model: Hydropower Scout, Truck mounted

drilling fluid:

hole diameter : 100 mm

vane id.:

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)	
							VL L M H VH FH			30 100 300 1000 3000	particular	general
		-13	9.0		SHALE: grey and red-brown, distinctly laminated at 0°-10°. (continued)	SW	X	a=0.76 d=0.39				
		-12	10.0				O	a=1.18 d=0.77				
					Borehole BH5 terminated at 10.40 m		X	a=1.24 d=0.94				
		-11	11.0									
		-10	12.0									
		-9	13.0									
		-8	14.0									
		-7	15.0									
		-6										

method & support

AS auger screwing
AD auger drilling
CB claw or blade bit
W washbore
NMLCNMLC core (51.9 mm)
NQ wireline core (47.6mm)
HQ wireline core (63.5mm)
PQ wireline core (85.0mm)
SPT standard penetration test
HA hand auger

water

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

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
FH extremely high

defect type

PT parting
JT joint
SZ shear zone
SS shear surface
CO contact
CS crushed seam
SM seam

roughness

SL slickensided
POL polished
SO smooth
RO rough
VR very rough

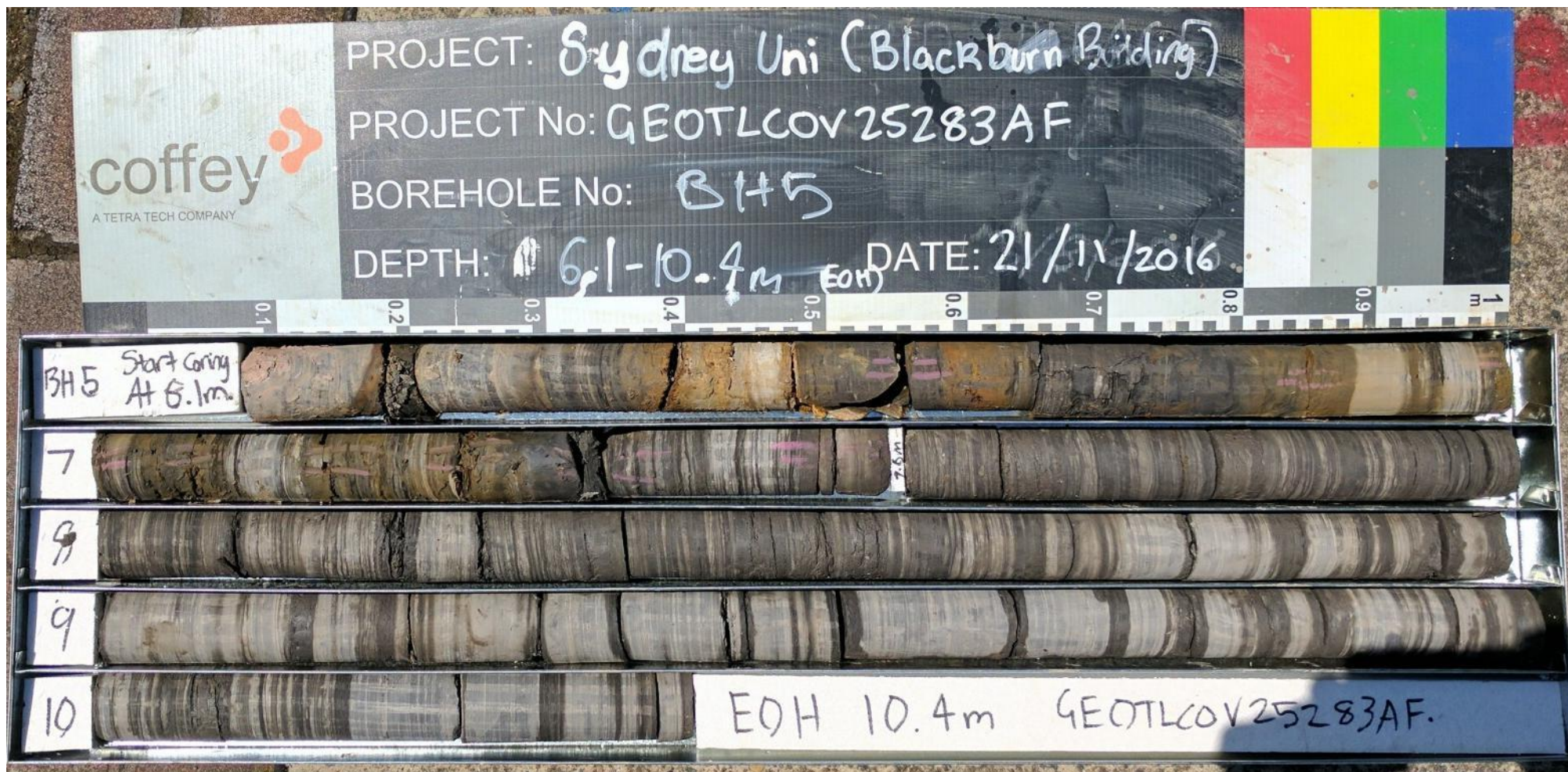
planarity

PL planar
CU curved
UN undulating
ST stepped
IR Irregular

coating

CN clean
SN stain
VN veneer
CO coating

Defects are: PT, 0 - 10°, PL, SO, CN, unless otherwise described



BH5 6.10 - 10.40 m

drawn	AW	 A TETRA TECH COMPANY	client:	Lend Lease Building Pty Ltd		
approved	DS		project:	USYD Health Precinct Blackburn Building, University of Sydney - Camperdown Campus		
date	8/12/2016		title:	CORE PHOTOGRAPH BH5		
scale	N.T.S.		project no:	GEOTLCOV25283AF	fig no:	FIGURE 1
original size	A4		rev:			

Engineering Log - Borehole

client: **Lend Lease Building Pty Ltd**

principal:

project: **USYD Health Precinct**

location: **Blackburn Building, University of Sydney - Camperdown Campus**

Borehole ID. **BH6**

sheet: 1 of 3

project no. **GEOTLCOV25283AF**

date started: **14 Nov 2016**

date completed: **14 Nov 2016**

logged by: **SM**

checked by: **DS**

position: E: 332,138.86; N: 6,248,690.09 (MGA94 Zone 56) surface elevation: 21.90 m (AHD)

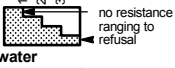
angle from horizontal: 90°

drill model: Commacchio 205, Track mounted

drilling fluid:

hole diameter : 100 mm

drilling information					material substance									
method & support	1 penetration	2 penetration	3 penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	hand penetrometer (kPa) 100 200 300 400	structure and additional observations
HA					E					ASPHALT: 50mm.	D			ROAD SURFACE
					E					FILL: Gravelly SAND: fine to coarse grained, brown-dark brown, gravel is sub-rounded to sub-angular, with coarse to medium clay.				FILL PID = 11.2ppm PID = 10.8ppm
					E	-21	1.0			FILL: Sandy CLAY: medium plasticity, brown-dark brown, sand is fine to coarse, with some gravel sub-rounded to sub-angular.	<Wp			PID = 13.1ppm
					SPT 4, 6, 8 N*=14	-20	2.0			FILL: CLAY: medium plasticity, brown with red mottling, with trace of sand fine to medium.				PID = 8.1ppm
								CI-CH	CLAY: medium to high plasticity, brown-red, with some ironstone gravel.	<Wp	St		RESIDUAL SOIL PID = 9.8ppm	
ADIT					SPT 9, 12, 16 N*=28	-19	3.0				>Wp	VSt		
					SPT 9, 17, 23 N*=40	-18	4.0			SHALE: high plasticity, red-brown, extremely weathered, with clay lenses, very low strength.				
						-17	5.0			4.9 m: becoming grey-pale grey, very low to low strength, highly to moderately weathered				
						-16	6.0							
						-15	7.0							
						-14								

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear, peak/remoulded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System	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
* bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	penetration  no resistance ranging to refusal 10-Oct-12 water level on date shown water inflow water outflow		moisture D dry M moist W wet Wp plastic limit WI liquid limit	

Engineering Log - Borehole

Borehole ID. **BH6**
sheet: 2 of 3
project no. **GEOTLCOV25283AF**
date started: **14 Nov 2016**
date completed: **14 Nov 2016**
logged by: **SM**
checked by: **DS**

client: **Lend Lease Building Pty Ltd**

principal:

project: **USYD Health Precinct**

location: **Blackburn Building, University of Sydney - Camperdown Campus**

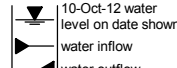
position: E: 332,138.86; N: 6,248,690.09 (MGA94 Zone 56) surface elevation: 21.90 m (AHD)

angle from horizontal: 90°

drill model: Commacchio 205, Track mounted

drilling fluid:

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 SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	hand penetrometer (kPa)				structure and additional observations			
	1	2										3	100	200	300		400		
				SPT 20/90mm HB N*=R					Borehole BH6 continued as cored hole										
					-13	9.0													
					-12	10.0													
					-11	11.0													
					-10	12.0													
					-9	13.0													
					-8	14.0													
					-7	15.0													
					-6														
method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V hit				support M mud N nil C casing penetration  water 				samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing				classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit WI liquid limit				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			

Engineering Log - Cored Borehole

client: ***Lend Lease Building Pty Ltd***

principal:

project: **USYD Health Precinct**

location: **Blackburn Building, University of Sydney - Camperdown Campus**

Borehole ID. **BH6**

sheet: 3 of 3

project no. **GEOTLCOV25283AF**

date started: **14 Nov 2016**

date completed: **14 Nov 2016**

logged by: **SM**

checked by: **DS**

position: E: 332,138.86; N: 6,248,690.09 (MGA94 Zone 56) surface elevation: 21.90 m (AHD)

angle from horizontal: 90°

drill model: Commacchio 205, Track mounted

drilling fluid:

hole diameter : 100 mm

vane id.:

drilling information				material substance		rock mass defects						
method & support	water	RL (m)	depth (m)	graphic log	material description	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)	
					ROCK TYPE: grain characteristics, colour, structure, minor components						particular	general
↑ NMLC ↓		-13	9.0		SHALE: dark grey, pale grey, distinctly laminated at 0°-10°.	FR		a=0.40 d=0.10	28%		CS, PL, SO, CN	Defects are: PT, 0 - 10°, PL, SO, CN, unless otherwise described
	-12	10.0	a=0.71 d=0.24	SM, PL, Shale, 20 mm								
	-11	11.0	a=1.27 d=0.39	JT, 60°, CU, SO, CN SM, Shale, 10 mm Multiple drill breaking								
	-10	12.0	a=1.69 d=0.76	PT, CU, SO, CN JT, 70 - 90°, PL, SO, CN								
					Borehole BH6 terminated at 12.30 m			a=1.47 d=0.83				
		-9	13.0									
		-8	14.0									
		-7	15.0									
		-6										
method & support AS auger screwing AD auger drilling CB claw or blade bit W washbore NMLCNMLC core (51.9 mm) NQ wireline core (47.6mm) HQ wireline core (63.5mm) PQ wireline core (85.0mm) SPT standard penetration test HA hand auger		water 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		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 FH extremely high		defect type PT parting JT joint SZ shear zone SS shear surface CO contact CS crushed seam SM seam 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		



BH6 8.06 - 12.30 m

drawn	AW		client: Lend Lease Building Pty Ltd		
approved	DS		project: USYD Health Precinct Blackburn Building, University of Sydney - Camperdown Campus		
date	8/12/2016		title: CORE PHOTOGRAPH BH6		
scale	N.T.S.		project no: GEOTLCOV25283AF	fig no: FIGURE 1	rev:
original size	A4				

Piezometer Installation Log

client: ***Lend Lease Building Pty Ltd***

principal:

project: **USYD Health Precinct**

location: ***Blackburn Building, University of Sydney - Camperdown Campus***

Hole ID. **BH6**

sheet: 1 of 1

project no. **GEOTLCOV25283AF**

date started: **14 Nov 2016**

date completed: **14 Nov 2016**

logged by: **SM**

checked by: **DS**

position: E: 332,138.86; N: 6,248,690.09 (MGA94 Zone 56) surface elevation: 21.90 m (AHD)

angle from horizontal: 90°

equipment type: Commacchio 205, Track mounted

drilling fluid:

hole diameter : 100 mm

drilling information				material substance		piezometer construction details								
method & support	water	RL (m)	depth (m)	graphic log	material name	bore construction license: drilling company: driller: driller's permit no.:								
HA ADIT NMLC			1		ROAD SURFACE FILL	 BH6	Cuttings Bentonite Sand							
		-20	2		RESIDUAL SOIL									
			3										3.00 m	
		-18	4										4.00 m	
			5											
		-16	6											
			7											
		-14	8											
			9											
		-12	10											
			11											
		-10	12										12.00 m	
		13												
	-8	14												
		15												
	-6													
method & support see engineering log for details				graphic log / core recovery		ID	type	installation date	stickup (m)	tip depth (m)	water level (m)	Relative Levels (AHD)		
water				 core recovered (graphic symbols indicate material) no core recovered								stickup	tip	water level
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						BH6	standpipe piezo.			12.00 m		9.90		

Engineering Log - Borehole

Borehole ID. **HA01**
sheet: 1 of 1
project no. **GEOTLCOV25283AF**
date started: **24 Nov 2016**
date completed: **24 Nov 2016**
logged by: **SB**
checked by: **DS**

client: **Lend Lease Building Pty Ltd**
principal:
project: **USYD Health Precinct**
location: **Near Oval 1 - University of Sydney - Camperdown Campus**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: drilling fluid: hole diameter :

drilling information					material substance							
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	hand penetrometer (kPa)	structure and additional observations
↑ HA ↓ ↑ N ↓	1							CONCRETE: 130mm.			100	ROAD SURFACE
	2							FILL: Gravelly SAND: medium to coarse grained, dark brown, gravel is sub-angular.			200	FILL No odour or ACM observed PID = 3.2ppm (DUP01)
	3		E				CL	CLAY: low plasticity, dark brown to dark red, orange.	<Wp	St	300	RESIDUAL SOIL No odour or ACM observed PID = 2.1ppm
				E		0.5					400	
					1.0			Borehole HA01 terminated at 0.7 m Target depth Natural material encountered				
					1.5							
method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V hit			support M mud N nil C casing penetration no resistance ranging to refusal water 10-Oct-12 water level on date shown water inflow water outflow			samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing			classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit WI liquid limit		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	

Engineering Log - Borehole

client: **Lend Lease Building Pty Ltd**

principal:

project: **USYD Health Precinct**

location: **Near Oval 1 - University of Sydney - Camperdown Campus**

Borehole ID. **HA02**

sheet: 1 of 1

project no. **GEOTLCOV25283AF**

date started: **24 Nov 2016**

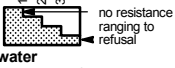
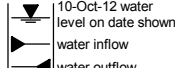
date completed: **24 Nov 2016**

logged by: **SB**

checked by: **DS**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: drilling fluid: hole diameter :

drilling information					material substance				
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	structure and additional observations
HA	1		E					ASPHALT: 25mm. FILL: Gravelly SAND: medium to coarse grained, dark brown/grey, medium grained sub-angular gravel, clay traces, crushed concrete fines, sub-angular sandstone pieces.	ROAD SURFACE FILL No odour or ACM observed PID = 2.0ppm
	2				0.5		CL	CLAY: dark brown/orange/red, grading to pale brown colour.	RESIDUAL SOIL No odour or ACM observed PID = 3.3ppm
	3							Borehole HA02 terminated at 0.7 m Target depth Natural material encountered at 0.3m	

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil	penetration 	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System	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
* bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	water 			moisture D dry M moist W wet Wp plastic limit WI liquid limit	

Engineering Log - Borehole

client: **Lend Lease Building Pty Ltd**

principal:

project: **USYD Health Precinct**

location: **Near Oval 1 - University of Sydney - Camperdown Campus**

Borehole ID. **HA03**

sheet: 1 of 1

project no. **GEOTLCOV25283AF**

date started: **22 Nov 2016**

date completed: **22 Nov 2016**

logged by: **SB**

checked by: **DS**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: drilling fluid: hole diameter :

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
	1	2	3											
HA N				E						PAVER: 30mm. FILL: Silty CLAY: brown, black, red.	M			ROAD SURFACE
								CH	Silty CLAY: orange/pale brown.	<Wp	St		RESIDUAL SOIL	
				E		0.5		CH	Silty CLAY: pale brown, ash layer observed.				Ash layer, no odour or ACM observed PID = 2.0ppm	
							1.0			Borehole HA03 terminated at 0.7 m Natural material				
							1.5							

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil	penetration 	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System	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
* bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	water 10-Oct-12 water level on date shown water inflow water outflow			moisture D dry M moist W wet Wp plastic limit WI liquid limit	

Engineering Log - Borehole

client: **Lend Lease Building Pty Ltd**

principal:

project: **USYD Health Precinct**

location: **Near Oval 1 - University of Sydney - Camperdown Campus**

Borehole ID. **HA04**

sheet: 1 of 1

project no. **GEOTLCOV25283AF**

date started: **22 Nov 2016**

date completed: **22 Nov 2016**

logged by: **SB**

checked by: **DS**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: drilling fluid: hole diameter :

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
HA N	1	2	3							PAVER: 40mm.				ROAD SURFACE
				E						FILL: Gravelly SAND: medium to coarse grained, grey/pale brown, sub-angular gravels.	D			FILL No odour or ACM observed PID = 1.5ppm
						0.5				FILL: Silty CLAY: dark brown to pale brown, medium to coarse grained. 0.3 m: with some paving sand	<Wp			No odour or ACM observed PID = 1.2ppm
				E						Silty CLAY: low plasticity, black, orange.		St		RESIDUAL SOIL No odour or ACM observed PID = 0.6ppm
							1.0			Borehole HA04 terminated at 1.0 m Target depth Natural material				
							1.5							

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil	penetration no resistance ranging to refusal water 10-Oct-12 water level on date shown water inflow water outflow	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit WI liquid limit	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
---	--	--	--	--	--

* bit shown by suffix
e.g.
AD/T
B blank bit
T TC bit
V V bit

Engineering Log - Borehole

client: **Lend Lease Building Pty Ltd**

principal:

project: **USYD Health Precinct**

location: **Near Oval 1 - University of Sydney - Camperdown Campus**

Borehole ID. **HA05**

sheet: 1 of 1

project no. **GEOTLCOV25283AF**

date started: **22 Nov 2016**

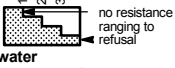
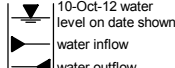
date completed: **22 Nov 2016**

logged by: **SB**

checked by: **DS**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: drilling fluid: hole diameter :

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
HA N	1	2	3		E					TOPSOIL: with grass roots.	D		100 200 300 400	TOPSOIL No odour or ACM observed PID = 1.6ppm
										FILL: Silty CLAY: low plasticity, pale to dark brown, with medium grained sub-angular gravel.				FILL
					E	0.5				FILL: Silty CLAY: low plasticity, red brown, with organics and rootlets, grading to black.	D - M			No odour or ACM observed PID = 0.5ppm
							1.0			Borehole HA05 terminated at 0.6 m Refusal on tree root				
							1.5							

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil	penetration  water 	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System	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
* bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit				moisture D dry M moist W wet Wp plastic limit WI liquid limit	

Engineering Log - Borehole

client: ***Lend Lease Building Pty Ltd***

principal:

project: **USYD Health Precinct**

location: **Near Oval 1 - University of Sydney - Camperdown Campus**Borehole ID. **HA06**

sheet: 1 of 1

project no. **GEOTLCOV25283AF**

date started: **22 Nov 2016**

date completed: **22 Nov 2016**

logged by: **SB**

checked by: **DS**

position: Not Specified

surface elevation: Not Specified

angle from horizontal: 90°

drill model:

drilling fluid:

hole diameter :

[illegible]

Engineering Log - Borehole

client: **Lend Lease Building Pty Ltd**

principal:

project: **USYD Health Precinct**

location: **Near Oval 1 - University of Sydney - Camperdown Campus**

Borehole ID. **HA07**

sheet: 1 of 1

project no. **GEOTLCOV25283AF**

date started: **24 Nov 2016**

date completed: **24 Nov 2016**

logged by: **SB**

checked by: **DS**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: drilling fluid: hole diameter :

drilling information					material substance				
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	structure and additional observations
HA	1							TOPSOIL: with grass.	TOPSOIL
	2		E					FILL: SILTY SAND: fine grained, dark brown to black, with rootlets, organics and wood chip fragments.	FILL No odour or ACM observed PID = 4.3ppm
	3							FILL: Sandy CLAY: low plasticity, light brown, fine to medium grained sand, trace of grey/red clays, trace crushed concrete.	No odour or ACM observed PID = 1.3ppm
			E		0.5			Sandy CLAY: low plasticity, light brown.	RESIDUAL SOIL
							CL		No odour or ACM observed PID = 6.6ppm
			E		1.0			Borehole HA07 terminated at 1.0 m Target depth	
					1.5				

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System	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
* bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	penetration 		moisture D dry M moist W wet Wp plastic limit WI liquid limit	

Engineering Log - Borehole

client: **Lend Lease Building Pty Ltd**

principal:

project: **USYD Health Precinct**

location: **Near Oval 1 - University of Sydney - Camperdown Campus**

Borehole ID. **HA08**

sheet: 1 of 1

project no. **GEOTLCOV25283AF**

date started: **24 Nov 2016**

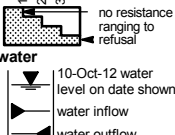
date completed: **24 Nov 2016**

logged by: **SB**

checked by: **DS**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: drilling fluid: hole diameter :

drilling information					material substance				
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	structure and additional observations
HA	1							TOPSOIL: with grass and wood chips.	TOPSOIL
	2		E					FILL: SILTY SAND: fine grained, dark brown to black, with rootlets, organics and wood traces.	FILL No odour or ACM observed PID = 4.7ppm
	3				0.5		CL	Sandy CLAY: low plasticity, pale brown, fine to medium grained sand.	RESIDUAL SOIL No odour or ACM observed PID = 5.0ppm
			E						
			E				CL	CLAY: low plasticity, white grey red.	PID = 4.2ppm
					1.0			Borehole HA08 terminated at 1.0 m Target depth	
					1.5				

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil	penetration 	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System	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
* bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit				moisture D dry M moist W wet Wp plastic limit WI liquid limit	

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Appendix C – Calibration Certificates

RENTALS

Equipment Report - MiniRAE 3000 PID

This Gas Meter has been performance checked and calibrated as follows:

Lamp	Compound	Concentration	Zero	Span	Traceability Lot #	Pass?
10'6 eV	Isobutylene	100 ppm	0 ppm	100 ppm	389261	☒

Alarm Limits

High	100 ppm
Low	50 ppm

Bump Test

Date	Target Gas	Reading	Pass?
10/11/16	100 ppm	99-9 ppm	☒

- ☒ Battery Status 100%
☒ 10 minutes test complete
☒ Spare battery status (Min 5.5 volts)
☒ Electrical Safety Tag attached (AS/NZS 3760)

- ☒ Performance check (pump, lamp, sensor)
☒ Data cleared
☒ Filters checked

Tag No: 936

Valid to: 4/2/17

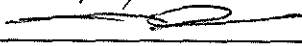
Date: 10/11/16

Signed: 

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
☒	☒	MiniRAE 2000 PID / Operational Check / Battery Status 100%
☒	☒	Lamp 10'6 eV, Compound Set to: 100 C/factor: 1.0
☒	☒	Protective yellow rubber boot
☒	☒	Inlet probe (attached to PID)
☒	☒	Spare water trap filter(s) Qty 3
☒	☒	Charger 240V to 12V1250mA
☒	☒	Cradle and Travel Charger
☒	☒	Instruction Manual behind foam on the lid of case "
☒	☒	Quick Guide Sheet behind foam on the lid of case "
☒	☒	Spare Alkaline Battery Compartment with batteries
☒	☒	Inline Moisture trap Filter Guide Laminated
☒	☒	Calibration regulator & tubing (optional)
☒	☒	Data cable and Software CD (optional)
☒	☒	Carry Case
☒	☒	Check to confirm electrical safety (tag must be valid)

Date: 10/11/16

Signed: 

TFS Reference	CS005807	Return Date: 24/11/2016
Customer Reference	32678042	Return Time:
Equipment ID	PID3000-18	Condition on return: ☒
Equipment Serial No.	592-94228	

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RENTALS

Equipment Report – Micropurge Flow Cell

This unit has been performance checked as follows:

Operations Check		
☒ Clean / decon		

Date: 21/11/2016 Checked by: MILENKO
 Signed: fu

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$20 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Received	Returned	Item
			Sample Pro Pump
☒	☐	☐	Flow Cell
☒	☐	☐	3-way valve
☒	☐	☐	Connecting tubes (3)
☒	☐	☐	Optional – cable
☐	☐	☐	
☐	☐	☐	
Processors Signature/ Initials			<u>MS</u>

Quote Reference	<u>CS005819</u>	Condition on return
Customer Ref		
Equipment ID	<u>EFC500SG</u>	
Equipment serial no.		
Return Date	<u>1 / 1</u>	
Return Time		

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RENTALS

Equipment Report – Solinst Model 122 Interface Meter

This Meter has been performance checked / calibrated* as follows:

Cleaned/Tested

 Pass? ☒ Yes

☐ No

☒ Probe

☒ Tape/Reel

9.0

☒ Performance Test & Battery Voltage Check (9.0v) 8.0v minimum

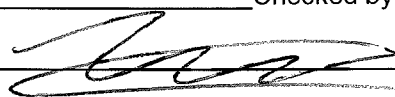
Date:

17/11/16

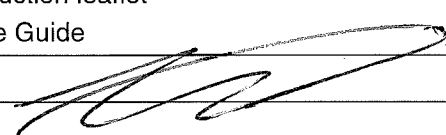
Checked by:

William Tran

Signed:



Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$20 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Received	Returned	Item
☒	☐	☐	Operations check OK
☒	☐	☐	Plastic Box / Bag
☒	☐	☐	Spare 9V Battery Qty _____
☒	☐	☐	Probe Cleaning Brush
☒	☐	☐	Decon
☒	☐	☐	Instruction leaflet
☒	☐	☐	Tape Guide
☐	☐	☐	
Processors Signature/ Initials			

Quote Reference	C3005819	Condition on return
Customer Ref		
Equipment ID	SOL122T	
Equipment serial no.	122009035-1	
Return Date	/ /	
Return Time		

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RENTALS

Equipment Certification Report – TPS 90FLMV Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7.00 pH	4.00 pH	289006/287695	☒
Conductivity	12.88mS/cm	0.00 mS/cm	12.88 mS/cm	NL1785	☒
TDS	36 ppk	0 ppk	3.6 ppk	NG1857	☒
Dissolved Oxygen	Sodium Sulphite / Air	0.00 ppm in Sodium Sulphite	8.09 ppm Saturation in Air	1602213461 NJ1314	☒

Check only

Redox (ORP) *	Electrode operability test	240mV +/- 10%	235 mV	NL1807(A)/NL1088(B)	☒
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* This meter uses an Ag/AgCl ORP electrode. To convert readings to SHE (Standard Hydrogen Electrode), add 199mV to the mV reading.

- ☒ Battery Status 6.5 (min 7.2V)
☒ Electrical Safety Tag attached (AS/NZS 3760)

- ☒ Temperature 22.3 °C
☒ Electrodes Cleaned and checked

Tag No: 200915

Valid to: 7/10/2017

Date: 21/11/2016

Signed: [Signature]

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
☒	☐	90FLMV Unit. Ops check/Battery status: <u>8.00</u>
☒	☐	pH sensor with wetting cap, 5m
☒	☐	Conductivity/TDS/Temperature K=10 sensor, 5m
☒	☐	Dissolved oxygen YSI5739 sensor with wetting cap, 5m
☒	☐	Redox (ORP) sensor with wetting cap, 5m
☒	☐	Power supply 240V to 12V DC 200mA
☒	☐	Instruction Manual
☒	☐	Quick Guide
☒	☐	Syringe with storage solution for pH and ORP sensors
☒	☐	Carry Case
☒	☐	Check to confirm electrical safety (tag must be valid)

Date: 21/11/2016

Signed: [Signature]

TFS Reference	<u>C5005819</u>	Return Date:	<u>1 / 1</u>
Customer Reference		Return Time:	
Equipment ID	<u>90FLMV 3V</u>	Condition on return:	
Equipment Serial No.	<u>41038</u>		

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RENTALS

Equipment Certification Report – TPS 90FLMV Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7.00 pH	4.00 pH	289006/287695	☒
Conductivity	12.88mS/cm	0.00 mS/cm	12.88 mS/cm	NL1785	☒
TDS	36 ppk	0 ppk	3.6 ppk	NG1857	☒
Dissolved Oxygen	Sodium Sulphite / Air	0.00 ppm in Sodium Sulphite	8.29 ppm Saturation in Air	1602213461 NJ1314	☒

Check only

Redox (ORP) *	Electrode operability test	240mV +/- 10%	235 mV	NL1807(A)/NL1088(B)	☒
---------------	----------------------------	---------------	--------	---------------------	-------------------------------------

* This meter uses an Ag/AgCl ORP electrode. To convert readings to SHE (Standard Hydrogen Electrode), add 199mV to the mV reading.

- ☒ Battery Status 6.5 (min 7.2V)
☒ Electrical Safety Tag attached (AS/NZS 3760)

- ☒ Temperature 22.3 °C
☒ Electrodes Cleaned and checked

Tag No: 200715

Valid to: 17/11/2017

Date: 21/11/2016

Signed: [Signature]

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
☒	☐	90FLMV Unit. Ops check/Battery status: <u>8.00</u>
☒	☐	pH sensor with wetting cap, 5m
☒	☐	Conductivity/TDS/Temperature K=10 sensor, 5m
☒	☐	Dissolved oxygen YSI5739 sensor with wetting cap, 5m
☒	☐	Redox (ORP) sensor with wetting cap, 5m
☒	☐	Power supply 240V to 12V DC 200mA
☒	☐	Instruction Manual
☒	☐	Quick Guide
☒	☐	Syringe with storage solution for pH and ORP sensors
☒	☐	Carry Case
☒	☐	Check to confirm electrical safety (tag must be valid)

Date: 21/11/2016

Signed: [Signature]

TFS Reference	<u>C500587</u>	Return Date:	<u>1 / 1</u>
Customer Reference		Return Time:	
Equipment ID	<u>90FLMV SV</u>	Condition on return:	
Equipment Serial No.	<u>41038</u>		

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RENTALS

Equipment Report - MiniRAE 3000 PID

This Gas Meter has been performance checked and calibrated as follows:

Lamp	Compound	Concentration	Zero	Span	Traceability Lot #	Pass?
10.6 eV	Isobutylene	100 ppm	0.0 ppm	100 ppm	389261	☒

Alarm Limits

High	100 ppm
Low	50 ppm

Bump Test

Date	Target Gas	Reading	Pass?
21/11/2016	100 ppm	98.3 ppm	☒

- ☒ Battery Status 100%
☒ 10 minutes test complete
☒ Spare battery status (Min 5.5 volts)
☒ Electrical Safety Tag attached (AS/NZS 3760)

- ☒ Performance check (pump, lamp, sensor)
☒ Data cleared
☒ Filters checked

Tag No: 626

Valid to: 7/1/17

Date: 17/11/16

Signed: [Signature]

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
☒	☐	MiniRAE 2000 PID / Operational Check / Battery Status <u>100%</u>
☒	☐	Lamp <u>10.6</u> eV, Compound Set to: <u>150</u> C/factor: <u>1</u>
☒	☐	Protective yellow rubber boot
☒	☐	Inlet probe (attached to PID)
☒	☐	Spare water trap filter(s) Qty <u>1</u>
☒	☐	Charger 240V to 12V1250mA
☒	☐	Cradle and Travel Charger
☒	☐	Instruction Manual behind foam on the lid of case "
☒	☐	Quick Guide Sheet behind foam on the lid of case "
☒	☐	Spare Alkaline Battery Compartment with batteries
☒	☐	Inline Moisture trap Filter Guide Laminated
☒	☐	Calibration regulator & tubing (optional)
☒	☐	Data cable and Software CD (optional)
☒	☐	Carry Case
☒	☐	Check to confirm electrical safety (tag must be valid)

Date: 21/11/2016

Signed: [Signature]

TFS Reference	<u>C5005819</u>	Return Date:	<u>/ /</u>
Customer Reference		Return Time:	
Equipment ID	<u>PID3000 28</u>	Condition on return:	
Equipment Serial No.	<u>592-914-597</u>		

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Sydney Branch Level 1, 4 Talavera Road, North Ryde 2113	Perth Branch 121 Beringarra Ave Malaga WA 6090	