

Figures

ID	EASTING	NORTHING	ELEVATION (m)
BH01	318810.447	6249155.333	35.044
BH02	318850.101	6249151.434	36.888
BH03	318831.823	6249121.275	35.337
BH04	318800.684	6249100.983	33.796
BH05	318844.81	6249098.611	35.879
BH06	318825.199	6249071.074	34.533
BH07	318796.413	6249054.505	33.556
BH08	318840.222	6249041.818	34.257
LDBH01	318874.416	6249158.963	38.247
LDBH02	318871.974	6249114.244	37.538
LDBH03	318859.272	6249059.053	35.663
LDBH04	318831.026	6249028.347	33.224
LDBH05	318807.793	6249033.34	33.629
LDBH06	318877.275	6248960.112	35.417

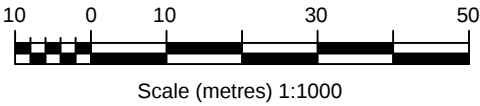


AERIAL IMAGE SOURCE: GOOGLE EARTH PRO 7.1.2
AERIAL IMAGE ©: 2015 AEROMETREX

revision	no.	description	drawn	approved	date
	A	ORIGINAL ISSUE	DK	RT	31/03/16

LEGEND

- BOREHOLE LOCATION
- LARGE DIAMETER BOREHOLE LOCATION
- SITE BOUNDARY
- INFERRED POSITION OF CONCRETE LINED DRAIN
- APPROXIMATE LOCATION OF FPCC BUILDING FOOTPRINT

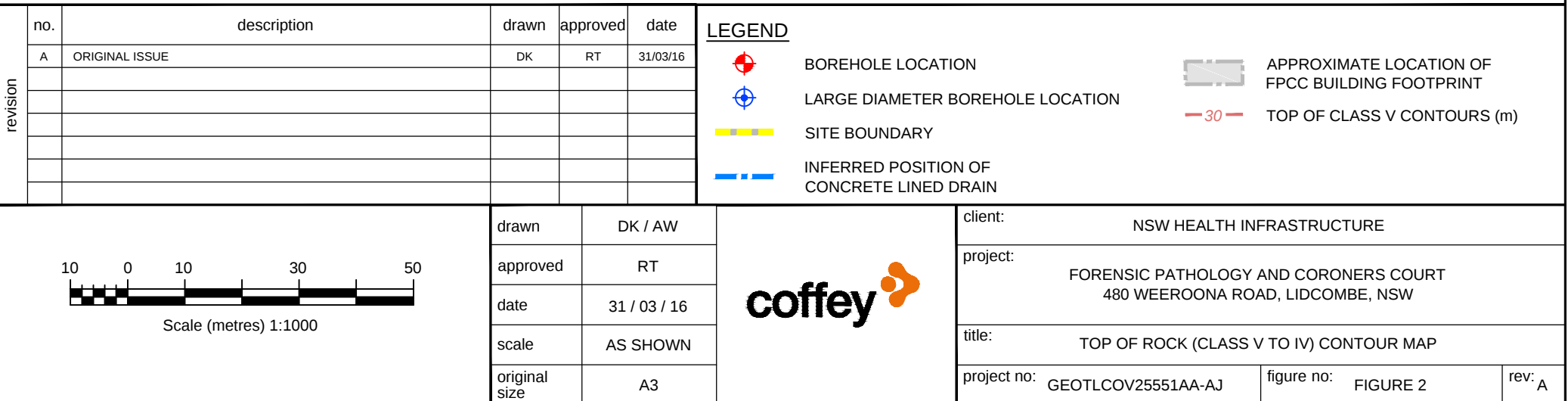


drawn	DK / AW
approved	RT
date	31 / 03 / 16
scale	AS SHOWN
original size	A3



client:	NSW HEALTH INFRASTRUCTURE		
project:	FORENSIC PATHOLOGY AND CORONERS COURT 480 WEEROONA ROAD, LIDCOMBE, NSW		
title:	BOREHOLE LOCATION PLAN		
project no:	GEOTLCOV25551AA-AJ	figure no:	FIGURE 1
		rev:	A

1. THE CONTOUR LINES HAVE BEEN GENERATED BY INTERPOLATION OF ELEVATIONS BETWEEN KNOWN BOREHOLE LOCATIONS. ROCK WEATHERING AND STRENGTH CONDITIONS BETWEEN BOREHOLE LOCATIONS MAY VARY.



NOTE:

1. THE CONTOUR LINES HAVE BEEN GENERATED BY INTERPOLATION OF ELEVATIONS BETWEEN KNOWN BOREHOLE LOCATIONS. ROCK WEATHERING AND STRENGTH CONDITIONS BETWEEN BOREHOLE LOCATIONS MAY VARY.



AERIAL IMAGE SOURCE: GOOGLE EARTH PRO 7.1.2
AERIAL IMAGE ©: 2015 AEROMETREX

revision	no.	description	drawn	approved	date	LEGEND				
	A	ORIGINAL ISSUE	DK	RT	31/03/16		BOREHOLE LOCATION		APPROXIMATE LOCATION OF FPCC BUILDING FOOTPRINT	
							LARGE DIAMETER BOREHOLE LOCATION		TOP OF CLASS III CONTOURS (m)	
							SITE BOUNDARY			
							INFERRED POSITION OF CONCRETE LINED DRAIN			
 Scale (metres) 1:1000			drawn	DK / AW			client: NSW HEALTH INFRASTRUCTURE			
			approved	RT			project: FORENSIC PATHOLOGY AND CORONERS COURT 480 WEEROONA ROAD, LIDCOMBE, NSW			
			date	31 / 03 / 16						
			scale	AS SHOWN			title: TOP OF CLASS III CONTOUR MAP			
			original size	A3			project no: GEOTLCOV25551AA-AJ		figure no: FIGURE 3	

Appendix A – Engineering borehole logs

Soil Description Explanation Sheet (1 of 2)

DEFINITION:

In engineering terms soil includes every type of uncemented or partially cemented inorganic or organic material found in the ground. In practice, if the material can be remoulded or disintegrated by hand in its field condition or in water it is described as a soil. Other materials are described using rock description terms.

CLASSIFICATION SYMBOL & SOIL NAME

Soils are described in accordance with the Unified Soil Classification (UCS) as shown in the table on Sheet 2.

PARTICLE SIZE DESCRIPTIVE TERMS

NAME	SUBDIVISION	SIZE
Boulders		>200 mm
Cobbles		63 mm to 200 mm
Gravel	coarse	20 mm to 63 mm
	medium	6 mm to 20 mm
	fine	2.36 mm to 6 mm
Sand	coarse	600 μ m to 2.36 mm
	medium	200 μ m to 600 μ m
	fine	75 μ m to 200 μ m

MOISTURE CONDITION

Dry Looks and feels dry. Cohesive and cemented soils are hard, friable or powdery. Uncemented granular soils run freely through hands.

Moist Soil feels cool and darkened in colour. Cohesive soils can be moulded. Granular soils tend to cohere.

Wet As for moist but with free water forming on hands when handled.

CONSISTENCY OF COHESIVE SOILS

TERM	UNDRAINED STRENGTH s_u (kPa)	FIELD GUIDE
Very Soft	<12	A finger can be pushed well into the soil with little effort.
Soft	12 - 25	A finger can be pushed into the soil to about 25mm depth.
Firm	25 - 50	The soil can be indented about 5mm with the thumb, but not penetrated.
Stiff	50 - 100	The surface of the soil can be indented with the thumb, but not penetrated.
Very Stiff	100 - 200	The surface of the soil can be marked, but not indented with thumb pressure.
Hard	>200	The surface of the soil can be marked only with the thumbnail.
Friable	–	Crumbles or powders when scraped by thumbnail.

DENSITY OF GRANULAR SOILS

TERM	DENSITY INDEX (%)
Very loose	Less than 15
Loose	15 - 35
Medium Dense	35 - 65
Dense	65 - 85
Very Dense	Greater than 85

MINOR COMPONENTS

TERM	ASSESSMENT GUIDE	PROPORTION OF MINOR COMPONENT IN:
Trace of	Presence just detectable by feel or eye, but soil properties little or no different to general properties of primary component.	Coarse grained soils: <5% Fine grained soils: <15%
With some	Presence easily detected by feel or eye, soil properties little different to general properties of primary component.	Coarse grained soils: 5 - 12% Fine grained soils: 15 - 30%

SOIL STRUCTURE

ZONING	CEMENTING
Layers Continuous across exposure or sample.	Weakly cemented Easily broken up by hand in air or water.
Lenses Discontinuous layers of lenticular shape.	Moderately cemented Effort is required to break up the soil by hand in air or water.
Pockets Irregular inclusions of different material.	

GEOLOGICAL ORIGIN

WEATHERED IN PLACE SOILS

Extremely weathered material Structure and fabric of parent rock visible.

Residual soil Structure and fabric of parent rock not visible.

TRANSPORTED SOILS

Aeolian soil Deposited by wind.

Alluvial soil Deposited by streams and rivers.

Colluvial soil Deposited on slopes (transported downslope by gravity).

Fill Man made deposit. Fill may be significantly more variable between tested locations than naturally occurring soils.

Lacustrine soil Deposited by lakes.

Marine soil Deposited in ocean basins, bays, beaches and estuaries.

Soil Description Explanation Sheet (2 of 2)

SOIL CLASSIFICATION INCLUDING IDENTIFICATION AND DESCRIPTION

FIELD IDENTIFICATION PROCEDURES (Excluding particles larger than 60 mm and basing fractions on estimated mass)					USC	PRIMARY NAME		
COARSE GRAINED SOILS More than 50% of materials less than 63 mm is larger than 0.075 mm	(A 0.075 mm particle is about the smallest particle visible to the naked eye)	GRAVELS More than half of coarse fraction is larger than 2.36 mm	CLEAN GRAVELS (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate particle sizes.		GW	GRAVEL	
				Predominantly one size or a range of sizes with more intermediate sizes missing.		GP	GRAVEL	
			GRAVELS WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML below)		GM	SILTY GRAVEL	
				Plastic fines (for identification procedures see CL below)		GC	CLAYEY GRAVEL	
		SANDS More than half of coarse fraction is smaller than 2.36 mm	CLEAN SANDS (Little or no fines)	Wide range in grain sizes and substantial amounts of all intermediate sizes		SW	SAND	
				Predominantly one size or a range of sizes with some intermediate sizes missing.		SP	SAND	
			SANDS WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML below).		SM	SILTY SAND	
				Plastic fines (for identification procedures see CL below).		SC	CLAYEY SAND	
	FINE GRAINED SOILS More than 50% of material less than 63 mm is smaller than 0.075 mm	(A 0.075 mm particle is about the smallest particle visible to the naked eye)	IDENTIFICATION PROCEDURES ON FRACTIONS <0.2 mm.					
			SILTS & CLAYS Liquid limit less than 50	DRY STRENGTH	DILATANCY	TOUGHNESS		
				None to Low	Quick to slow	None	ML	SILT
				Medium to High	None	Medium	CL	CLAY
Low to medium				Slow to very slow	Low	OL	ORGANIC SILT	
SILTS & CLAYS Liquid limit greater than 50				Low to medium	Slow to very slow	Low to medium	MH	SILT
				High	None	High	CH	CLAY
Medium to High			None	Low to medium	OH	ORGANIC CLAY		
HIGHLY ORGANIC SOILS	Readily identified by colour, odour, spongy feel and frequently by fibrous texture.				Pt	PEAT		
• Low plasticity – Liquid Limit w_L less than 35%. • Medium plasticity – w_L between 35% and 50%. • High plasticity – w_L greater than 50%.								

• Low plasticity – Liquid Limit w_L less than 35%. • Medium plasticity – w_L between 35% and 50%. • High plasticity – w_L greater than 50%.

COMMON DEFECTS IN SOIL

TERM	DEFINITION	DIAGRAM	TERM	DEFINITION	DIAGRAM
PARTING	A surface or crack across which the soil has little or no tensile strength. Parallel or sub parallel to layering (eg bedding). May be open or closed.		SOFTENED ZONE	A zone in clayey soil, usually adjacent to a defect in which the soil has a higher moisture content than elsewhere.	
JOINT	A surface or crack across which the soil has little or no tensile strength but which is not parallel or sub parallel to layering. May be open or closed. The term 'fissure' may be used for irregular joints <0.2 m in length.		TUBE	Tubular cavity. May occur singly or as one of a large number of separate or inter-connected tubes. Walls often coated with clay or strengthened by denser packing of grains. May contain organic matter	
SHEARED ZONE	Zone in clayey soil with roughly parallel near planar, curved or undulating boundaries containing closely spaced, smooth or slickensided, curved intersecting joints which divide the mass into lenticular or wedge shaped blocks.		TUBE CAST	Roughly cylindrical elongated body of soil different from the soil mass in which it occurs. In some cases the soil which makes up the tube cast is cemented.	
SHEARED SURFACE	A near planar curved or undulating, smooth, polished or slickensided surface in clayey soil. The polished or slickensided surface indicates that movement (in many cases very little) has occurred along the defect.		INFILLED SEAM	Sheet or wall like body of soil substance or mass with roughly planar to irregular near parallel boundaries which cuts through a soil mass. Formed by infilling of open joints.	

Rock Description Explanation Sheet (1 of 2)

The descriptive terms used by Coffey are given below. They are broadly consistent with Australian Standard AS1726-1993.

DEFINITIONS: Rock substance, defect and mass are defined as follows:

Rock Substance In engineering terms rock substance is any naturally occurring aggregate of minerals and organic material which cannot be disintegrated or remoulded by hand in air or water. Other material is described using soil descriptive terms. Effectively homogenous material, may be isotropic or anisotropic.

Defect Discontinuity or break in the continuity of a substance or substances.

Mass Any body of material which is not effectively homogeneous. It can consist of two or more substances without defects, or one or more substances with one or more defects.

SUBSTANCE DESCRIPTIVE TERMS:

ROCK NAME Simple rock names are used rather than precise geological classification.

PARTICLE SIZE Grain size terms for sandstone are:
Coarse grained Mainly 0.6mm to 2mm
Medium grained Mainly 0.2mm to 0.6mm
Fine grained Mainly 0.06mm (just visible) to 0.2mm

FABRIC Terms for layering of penetrative fabric (eg. bedding, cleavage etc.) are:

Massive No layering or penetrative fabric.

Indistinct Layering or fabric just visible. Little effect on properties.

Distinct Layering or fabric is easily visible. Rock breaks more easily parallel to layering of fabric.

CLASSIFICATION OF WEATHERING PRODUCTS

Term	Abbreviation	Definition	Term	Abbreviation	Point Load Index, $I_{s(50)}$ (MPa)	Field Guide
Residual Soil	RS	Soil derived from the weathering of rock; the mass structure and substance fabric are no longer evident; there is a large change in volume but the soil has not been significantly transported.	Very Low	VL	Less than 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with a knife; pieces up to 30mm thick can be broken by finger pressure.
Extremely Weathered Material	XW	Material is weathered to such an extent that it has soil properties, ie, it either disintegrates or can be remoulded in water. Original rock fabric still visible.	Low	L	0.1 to 0.3	Easily scored with a knife; indentations 1mm to 3mm show with firm bows of a pick point; has a dull sound under hammer. Pieces of core 150mm long by 50mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Highly Weathered Rock	HW	Rock strength is changed by weathering. The whole of the rock substance is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Some minerals are decomposed to clay minerals. Porosity may be increased by leaching or may be decreased due to the deposition of minerals in pores.	Medium	M	0.3 to 1.0	Readily scored with a knife; a piece of core 150mm long by 50mm diameter can be broken by hand with difficulty.
Moderately Weathered Rock	MW	The whole of the rock substance is discoloured, usually by iron staining or bleaching, to the extent that the colour of the fresh rock is no longer recognisable.	High	H	1 to 3	A piece of core 150mm long by 50mm can not be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Slightly Weathered Rock	SW	Rock substance affected by weathering to the extent that partial staining or partial discolouration of the rock substance (usually by limonite) has taken place. The colour and texture of the fresh rock is recognisable; strength properties are essentially those of the fresh rock substance.	Very High	VH	3 to 10	Hand specimen breaks after more than one blow of a pick; rock rings under hammer.
Fresh Rock	FR	Rock substance unaffected by weathering.	Extremely High	EH	More than 10	Specimen requires many blows with geological pick to break; rock rings under hammer.

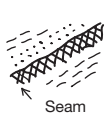
Notes on Weathering:

- AS1726 suggests the term "Distinctly Weathered" (DW) to cover the range of substance weathering conditions between XW and SW. For projects where it is not practical to delineate between HW and MW or it is judged that there is no advantage in making such a distinction. DW may be used with the definition given in AS1726.
- Where physical and chemical changes were caused by hot gasses and liquids associated with igneous rocks, the term "altered" may be substituted for "weathering" to give the abbreviations XA, HA, MA, SA and DA.

Notes on Rock Substance Strength:

- In anisotropic rocks the field guide to strength applies to the strength perpendicular to the anisotropy. High strength anisotropic rocks may break readily parallel to the planar anisotropy.
- The term "extremely low" is not used as a rock substance strength term. While the term is used in AS1726-1993, the field guide therein makes it clear that materials in that strength range are soils in engineering terms.
- The unconfined compressive strength for isotropic rocks (and anisotropic rocks which fall across the planar anisotropy) is typically 10 to 25 times the point load index $I_{s(50)}$. The ratio may vary for different rock types. Lower strength rocks often have lower ratios than higher strength rocks.

Rock Description Explanation Sheet (2 of 2)

COMMON DEFECTS IN ROCK MASSES		Diagram	Map Symbol	Graphic Log (Note 1)	DEFECT SHAPE	TERMS
Term	Definition				Planar	The defect does not vary in orientation
Parting	A surface or crack across which the rock has little or no tensile strength. Parallel or sub parallel to layering (eg bedding) or a planar anisotropy in the rock substance (eg, cleavage). May be open or closed.		20 Bedding 20 Cleavage		Curved	The defect has a gradual change in orientation
Joint	A surface or crack across which the rock has little or no tensile strength, but which is not parallel or sub parallel to layering or planar anisotropy in the rock substance. May be open or closed.		60		Undulating	The defect has a wavy surface
Sheared Zone (Note 3)	Zone of rock substance with roughly parallel near planar, curved or undulating boundaries cut by closely spaced joints, sheared surfaces or other defects. Some of the defects are usually curved and intersect to divide the mass into lenticular or wedge shaped blocks.		35		Stepped	The defect has one or more well defined steps
Sheared Surface (Note 3)	A near planar, curved or undulating surface which is usually smooth, polished or slickensided.		40		Irregular	The defect has many sharp changes of orientation
Crushed Seam (Note 3)	Seam with roughly parallel almost planar boundaries, composed of disoriented, usually angular fragments of the host rock substance which may be more weathered than the host rock. The seam has soil properties.		50		ROUGHNESS TERMS	
Infilled Seam	Seam of soil substance usually with distinct roughly parallel boundaries formed by the migration of soil into an open cavity or joint, infilled seams less than 1mm thick may be described as veneer or coating on joint surface.		65		Slickensided	Grooved or striated surface, usually polished
Extremely Weathered Seam	Seam of soil substance, often with gradational boundaries. Formad by weathering of the rock substance in place.		32		Polished	Shiny smooth surface
					Smooth	Smooth to touch. Few or no surface irregularities
					Rough	Many small surface irregularities (amplitude generally less than 1mm). Feels like fine to coarse sand paper.
					Very Rough	Many large surface irregularities (amplitude generally more than 1mm). Feels like, or coarser than very coarse sand paper.
					COATING TERMS	
					Clean	No visible coating
					Stained	No visible coating but surfaces are discoloured
					Veneer	A visible coating of soil or mineral, too thin to measure; may be patchy
					Coating	A visible coating up to 1mm thick. Thicker soil material is usually described using appropriate defect terms (eg, infilled seam). Thicker rock strength material is usually described as a vein.
					BLOCK SHAPE TERMS	
					Blocky	Approximately equidimensional
					Tabular	Thickness much less than length or width
					Columnar	Height much greater than cross section

Notes on Defects:

1. Usually borehole logs show the true dip of defects and face sketches and sections the apparent dip.
2. Partings and joints are not usually shown on the graphic log unless considered significant.
3. Sheared zones, sheared surfaces and crushed seams are faults in geological terms.

Engineering Log - Borehole

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

Borehole ID. **BH01**

sheet: 1 of 3

project no. **GEOTLCOV25551AA**

date started: **02 Mar 2016**

date completed: **02 Mar 2016**

logged by: **TO**

checked by: **MG**

position: E: 318810; N: 6249155 (Datum Not Specified) surface elevation: 35.04 m (AHD)

angle from horizontal: 90°

drill model: GEO205, Track mounted

hole diameter : 96 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	hand penetrometer (kPa)	structure and additional observations	
AD/T CASING	1	2	3			35				FILL: Sandy CLAY: low plasticity, brown to dark brown, sand is fine to medium grained, trace of silt and rootlets.				FILL PID(0.2m-0.5m)=2.8ppm	
										FILL: Gravelly CLAY: high plasticity, brown and red-brown, gravel is fine to coarse grained, sub-angular to angular.				PID(0.5m-0.6m)=2.7ppm	
						34	1.0			0.3 m: clay becoming medium-high plasticity, gravel becoming fine to medium grained				PID(1.0m-1.2m)=4.4ppm	
					SPT 5, 6, 11 N*=17				CH	Silty CLAY: high plasticity, pale grey mottled red-brown and yellow-brown.	<Wp	VSt / H		RESIDUAL SOIL	
						33	2.0								
					SPT 34, 32/80mm HB N*=R					SHALE: pale grey to grey, extremely weathered, estimated very low strength.				WEATHERED BEDROCK	
						32	3.0								
						31	4.0			Borehole BH01 continued as cored hole					
						30	5.0								
						29	6.0								
						28	7.0								
method AD auger drilling* AS auger screwing* HA hand auger W washbore * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit						support M mud 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 - Cored Borehole

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

Borehole ID. **BH01**

sheet: 2 of 3

project no. **GEOTLCOV25551AA**

date started: **02 Mar 2016**

date completed: **02 Mar 2016**

logged by: **TO**

checked by: **MG**

position: E: 318810; N: 6249155 (Datum Not Specified) surface elevation: 35.04 m (AHD)

angle from horizontal: 90°

drill model: GEO205. Track mounted

drilling fluid:

hole diameter : 96 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) a = axial; d = diametral	core run & RQD	defect spacing (mm) 30 100 300 1000 3000	additional observations and defect descriptions (type, inclination, planarity, roughness, coating, thickness, other)	
		-35									particular	general
		-34	1.0									
		-33	2.0									
		-32	3.0									
		-31	4.0		start coring at 3.80m							
		-30	5.0		SHALE: dark grey, red-brown, yellow-brown and pale grey, massive.	MW		a=0.24 d=0.04	93%		PT, 0 - 5°, UN, RO, Fe SN PT, 0 - 5°, UN, RO, Fe SN	
		-29	6.0		SHALE: dark grey to black, massive.	SW		a=0.08 a=0.20 d=0.36	100%		JT, 75 - 80°, PL, RO, CN CS, 25°, IR, RO, Fe SN, 45 mm	
		-28	7.0			HW		a=0.45 d=0.09	97%		JT, 60°, CU, RO, Fe SN JT, 85°, CU, RO, CN	
						FR		a=0.51 d=0.24	86%		PT, 0°, PL, RO, CN PT, 20°, CU, RO, Fe SN JT, 45°, PL, Fe SN, healed CS, 0°, PL, RO, 10 mm	
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				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 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 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		

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

Piezometer Installation Log

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

Hole ID. **BH01**

sheet: 1 of 1

project no. **GEOTLCOV25551AA**

date started: **02 Mar 2016**

date completed: **02 Mar 2016**

logged by: **TO**

checked by: **MG**

position: E: 318810; N: 6249155 (Datum Not Specified) surface elevation: 35.04 m (AHD)

angle from horizontal: 90°

equipment type: GEO205, Track mounted

hole diameter : 96 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.:	
ADIT CASING NMLC		34 32 30 28 26 24	1 2 3 4 5 6 7 8 9 10 11		FILL: Sandy CLAY FILL: Gravelly CLAY	BH01	Concrete
					Silty CLAY		Cuttings
					SHALE		Bentonite
		24	11		Borehole BH01 terminated at 10.35 m Target depth		

method & support		graphic log / core recovery		ID	type	stick up & RL	tip depth & RL	install. date	water level
see engineering log for details				BH01	standpipe	0.69 m 34.35 m AHD	10.10 m 24.94 m AHD		
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		 core recovered (graphic symbols indicate material)  no core recovered							

CDF_0_9_04BB\GLB_GrctM_COF PHOTO CORE PHOTO 1 PER PAGE GEOTLCOV25551AA GEOTINVEST.GPJ <-DrawingFiles> 30/03/2016 09:33



PointID : BH01 Depth Range: 3.80 - 8.00 m

drawn	TO		client:	NSW Health Infrastructure		
approved	MG		project:	Forensic Pathology & Coroners Court 480 Weeroona Road, Lidcombe		
date	30/03/2016		title:	CORE PHOTOGRAPH BH01		
scale	N.T.S.		project no:	GEOTLCOV25551AA	fig no:	FIGURE 1
original size	A4				rev:	

CDF_0_9_04BB.GLB_GrctM_COF PHOTO CORE PHOTO 1 PER PAGE GEOTLCOV25551AA GEOTINVEST.GPJ <DrawingFiles> 30/03/2016 09:33



PointID : BH01 Depth Range: 8.00 - 10.35 m

drawn	TO		client:	NSW Health Infrastructure		
approved	MG		project:	Forensic Pathology & Coroners Court 480 Weeroona Road, Lidcombe		
date	30/03/2016		title:	CORE PHOTOGRAPH BH01		
scale	N.T.S.		project no:	GEOTLCOV25551AA	fig no:	FIGURE 2
original size	A4				rev:	

Engineering Log - Borehole

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

Borehole ID. **BH02**

sheet: 1 of 3

project no. **GEOTLCOV25551AA**

date started: **07 Mar 2016**

date completed: **07 Mar 2016**

logged by: **PH**

checked by: **MG**

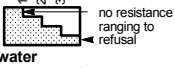
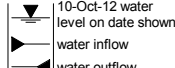
position: E: 318850; N: 6249151 (Datum Not Specified) surface elevation: 36.89 m (AHD)

angle from horizontal: 90°

drill model: GEO205, Track mounted

casing diameter: 96 mm

drilling information				material substance				
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description
1 2 3								
AD/T		Not Observed	SPT 15, 22, 34 N*=56	-36	1.0		CH	TOPSOIL: Silty CLAY: low plasticity, brown, with some rootlets. Silty CLAY: high plasticity, pale grey mottled red-brown.
			SPT 29, 42, 20 HB N*=R	-34	3.0			SHALE: pale grey and dark grey, highly to moderately weathered, estimated low strength..
			SPT 18	-33	4.0			
			40/140mm HB N*=R	-32	5.0			Borehole BH02 continued as cored hole
				-31	6.0			
				-30	7.0			
				-29				

method	support	samples & field tests	classification symbol & soil description	consistency / relative density
AD auger drilling* AS auger screwing* HA hand auger W washbore	M mud C casing penetration  water 	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	moisture D dry M moist W wet Wp plastic limit WI liquid limit	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 - Cored Borehole

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

Borehole ID. **BH02**

sheet: 2 of 3

project no. **GEOTLCOV25551AA**

date started: **07 Mar 2016**

date completed: **07 Mar 2016**

logged by: **PH**

checked by: **MG**

position: E: 318850; N: 6249151 (Datum Not Specified) surface elevation: 36.89 m (AHD)

angle from horizontal: 90°

drill model: GEO205, Track mounted

drilling fluid:

casing diameter : 96 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)				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	particular
		-36	1.0												
		-35	2.0												
		-34	3.0												
		-33	4.0												
					start coring at 4.20m										
		-32	5.0		SHALE: pale grey and dark grey, indistinctly to distinctly laminated at 0-5° with some iron staining.	MW				a=0.43 d=0.39	70%			SM, 0 - 5°, IR, Clay filled, 30 mm XW Zone, 40 mm JT, 80° - 90°, IR, RO, CN SM, 0 - 5°, IR, Clay filled, 20 mm JT, 20°, IR, RO, CN SM, 0 - 5°, IR, Clay filled, 2 mm PT, 0 - 5°, PL - IR, RO, CN	
		-31	6.0		SHALE: dark grey, indistinctly to distinctly laminated at 0-5°.	HW - MW MW - SW HW - MW SW - FR				a=0.80 d=0.48	85%			SM, 0 - 5°, IR, Clay filled, 40 mm SM, 0 - 5°, IR, Clay filled, 20 mm SM, 0 - 5°, IR, Clay filled, 10 mm SM, 0 - 5°, IR, Clay filled, 40 mm JT, 10°, ST, RO, Fe SN	
		-30	7.0							a=0.86 d=0.93				PT, 0 - 10°, UN, RO, CN SM, 0 - 5°, IR, Clay filled, 20 mm	
		-29				MW SW - FR				a=0.71 d=0.17	73%			PT, 0 - 10°, PL - IR, RO, Fe SN PT, 0 - 10°, PL - IR, RO, Fe SN	
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) PQ 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 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 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

Borehole ID.	BH02
sheet:	3 of 3
project no.	GEOTLCOV25551AA
date started:	07 Mar 2016
date completed:	07 Mar 2016
logged by:	PH
checked by:	MG

client: **NSW Health Infrastructure**
principal:
project: **Forensic Pathology & Coroners Court**
location: **480 Weeroona Road, Lidcombe**

position: E: 318850; N: 6249151 (Datum Not Specified)	surface elevation: 36.89 m (AHD)
drill model: GEO205, Track mounted	drilling fluid:

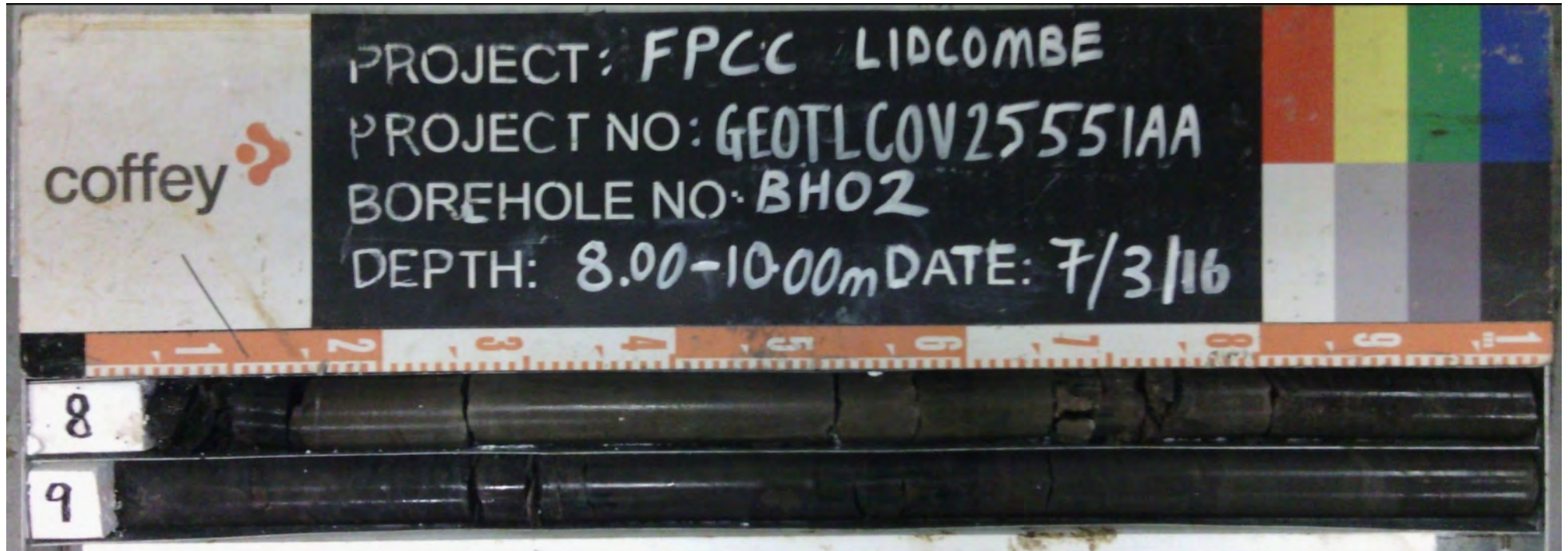
angle from horizontal: 90°
casing diameter : 96 mm

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) a = axial; d = diametral	core run & RQD	defect spacing (mm)	additional observations and defect descriptions (type, inclination, planarity, roughness, coating, thickness, other)	
											particular	general
NMLC Not Observed		-28	9.0		SHALE: dark grey, indistinctly to distinctly laminated at 0-5°. (continued)	SW - FR	</					



PointID : BH02 Depth Range: 4.20 - 8.00 m

drawn	TO		client:	NSW Health Infrastructure		
approved	MG		project:	Forensic Pathology & Coroners Court 480 Weeroona Road, Lidcombe		
date	30/03/2016		title:	CORE PHOTOGRAPH BH02		
scale	N.T.S.		project no:	GEOTLCOV25551AA	fig no:	FIGURE 1
original size	A4				rev:	



PointID : BH02 Depth Range: 8.00 - 10.00 m

drawn	TO		client:	NSW Health Infrastructure		
approved	MG		project:	Forensic Pathology & Coroners Court 480 Weeroona Road, Lidcombe		
date	30/03/2016		title:	CORE PHOTOGRAPH BH02		
scale	N.T.S.		project no:	GEOTLCOV25551AA	fig no:	FIGURE 2
original size	A4				rev:	

Engineering Log - Borehole

Borehole ID.	BH03
sheet:	1 of 2
project no.	GEOTLCOV25551AA
date started:	04 Mar 2016
date completed:	04 Mar 2016
logged by:	PH
checked by:	MG

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

position: E: 318832; N: 6249121 (Datum Not Specified) surface elevation: 35.34 m (AHD)

angle from horizontal: 90°

drill model: GEO205, Track mounted

hole diameter : 96 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	hand penetrometer (kPa)	structure and additional observations
		1	2							SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components			100 200 300 400	
AD/T CASING				Not Observed					CH	TOPSOIL: Silty CLAY : low plasticity, brown, with some rootlets. Silty CLAY : high plasticity, pale grey mottled orange-brown.	<Wp	St / VSt		TOPSOIL RESIDUAL SOIL
					SPT 4, 6, 9 N*=15		1.0							
							2.0			2.1 m: becoming pale brown				
					SPT 40/130mm HB N*=R		3.0			SHALE: pale grey and pale brown, extremely to highly weathered, estimated very low to low strength. Borehole BH03 continued as cored hole				WEATHERED BEDROCK
							3.0							
							3.2							
							4.0							
							3.1							
							5.0							
							3.0							
							6.0							
							2.9							
							7.0							
							2.8							

method

AD auger drilling*
AS auger screwing*
HA hand auger
WA washbore

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

support

M mud N nil
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: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

Borehole ID. **BH03**

sheet: 2 of 2

project no. **GEOTLCOV25551AA**

date started: **04 Mar 2016**

date completed: **04 Mar 2016**

logged by: **PH**

checked by: **MG**

position: E: 318832; N: 6249121 (Datum Not Specified) surface elevation: 35.34 m (AHD)

angle from horizontal: 90°

drill model: GEO205. Track mounted

drilling fluid:

hole diameter : 96 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
		-35										
		-34	1.0									
		-33	2.0									
		-32	3.0		start coring at 2.70m SHALE: grey and dark grey, orange-brown staining, distinctly laminated at 0-5°.	SW	X	a=0.41 d=0.22	92%		SM, 0 - 5°, IR, Clay filled PT, 0 - 5°, PL - IR, RO, VN	
		-31	4.0			MW		a=0.33			SM, 0 - 5°, IR, Clay filled SM, 0 - 5°, IR, Clay filled XW Zone	
		-30	5.0		SHALE: dark grey, distinctly laminated at 0-5°.	SW - FR	X	a=0.56 d=0.36	92%		JT, 40 - 80°, IR, Clay CO SM, 0 - 5°, IR, Clay filled	
		-29	6.0		6.4 to 6.45 m: subrounded pebbles		X	a=0.53 d=0.29	90%		JT, 20 - 30°, IR, RO, CN SM, 0 - 5°, IR, Clay filled, 4 mm SM, 0 - 5°, IR, Silt filled	
		-28	7.0		Borehole BH03 terminated at 7.00 m Target depth				93%			
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				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 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		



PointID : BH03 Depth Range: 2.70 - 7.00 m

drawn	TO		client:	NSW Health Infrastructure		
approved	MG		project:	Forensic Pathology & Coroners Court 480 Weeroona Road, Lidcombe		
date	30/03/2016		title:	CORE PHOTOGRAPH BH03		
scale	N.T.S.		project no:	GEOTLCOV25551AA	fig no:	FIGURE 1
original size	A4				rev:	

Engineering Log - Borehole

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

Borehole ID: **BH04**

sheet: 1 of 2

project no: **GEOTLCOV25551AA**

date started: **01 Mar 2016**

date completed: **01 Mar 2016**

logged by: **TO**

checked by: **MG**

position: E: 318801; N: 6249101 (Datum Not Specified) surface elevation: 33.80 m (AHD)

angle from horizontal: 90°

drill model: GEO205, Track mounted

hole diameter : 96 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	hand penetrometer (kPa)	structure and additional observations
								SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components				
AD/T CASING Not Observed	1		E					FILL: Gravelly CLAY : low plasticity, brown, gravel is fine to medium grained and sub-angular.			100	FILL
	2		E								200	
	3		E	-33	1.0	CH	CLAY: high plasticity, pale grey mottled red-brown and yellow-brown, with some fine-medium size ironstone gravel.	<Wp	VSt / H	300	RESIDUAL SOIL	
		SPT 6, 8, 12 N*=20			>>X							
			-32	2.0	>>X							
			SPT 8, 14, 18 HB N*=32	-31	3.0		SHALE: pale grey, brown and grey, extremely weathered, estimated very low to low strength.				WEATHERED BEDROCK	
			SPT 30, 40, 16 a=40, b=8 N*=R	-30	4.0							
				-29	5.0			Borehole BH04 continued as cored hole				
				-28	6.0							
				-27	7.0							
				-26								

method AD auger drilling* AS auger screwing* HA hand auger W washbore * bit shown by suffix e.g. B blank bit T TC bit V V bit	support M mud 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 - Cored Borehole

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

Borehole ID. **BH04**

sheet: 2 of 2

project no. **GEOTLCOV25551AA**

date started: **01 Mar 2016**

date completed: **01 Mar 2016**

logged by: **TO**

checked by: **MG**

position: E: 318801; N: 6249101 (Datum Not Specified) surface elevation: 33.80 m (AHD)

angle from horizontal: 90°

drill model: GEO205, Track mounted

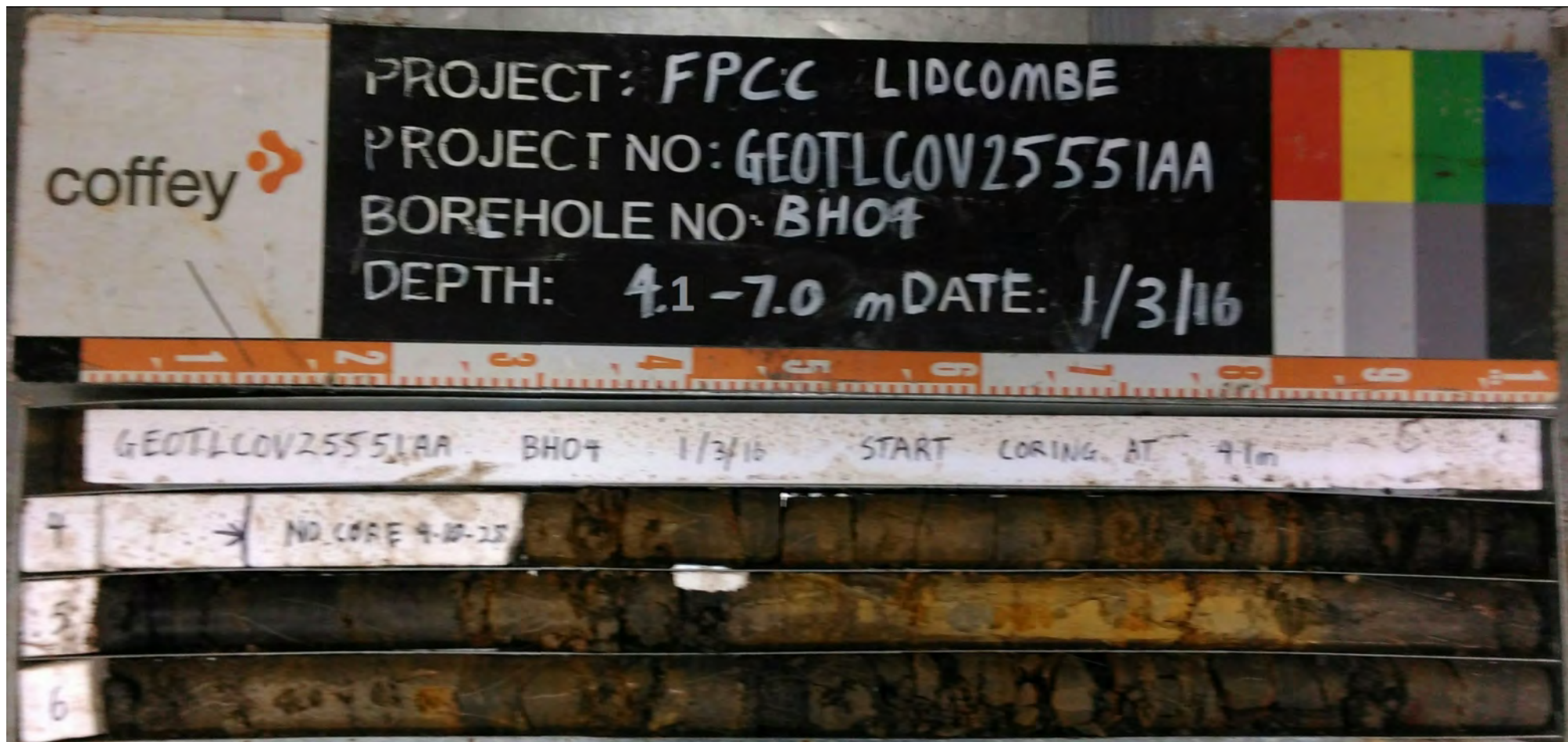
drilling fluid:

hole diameter : 96 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) a = axial d = diametral	core run & RQD	defect spacing (mm) 30 100 300 1000 3000	additional observations and defect descriptions (type, inclination, planarity, roughness, coating, thickness, other) particular general
			33								
			32								
			31								
			30								
			29		start coring at 4.23m			a=0.38 d=0.16			
			28		SHALE: grey and brown, with some fine grained sandstone laminations.	MW					
			27		SHALE: dark grey and orange brown, massive.	HW		a=0.09	82%		PT, 0°, UN, RO, Fe SN SM, 0°, PL, Silty clay filled, 140 mm JT, 55°, IR, RO, CN JT, 30°, CU, RO, CN
			26		5.425 to 5.955 m: extremely weathered zone, remoulds to silty clay	XW					PT, 0°, PL, Fe SN SM, 0°, PL, Silty clay filled, 530 mm
			25			HW			70%		SM, 0°, PL, Silty clay filled, 150 mm SM, 0°, PL, Silty clay filled, 120 mm multiple defects including joints
			24		LAMINITE: Sandstone (65%) fine grained, pale grey and Siltstone (35%), dark grey, indistinctly laminated at 0-5°.	MW		a=0.66 d=0.46			CS, 0 - 5°, IR, Silty clay filled, 50 mm
			23		Borehole BH04 terminated at 7.00 m Target depth	SW					
			22								
			21								
			20								
			19								
			18								
			17								
			16								
			15								
			14								
			13								
			12								
			11								
			10								
			9								
			8								
			7								
			6								
			5								
			4								
			3								
			2								
			1								
			0								

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	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
---	---	--	--	---	--

CDF_0_9_04BB.GLB GrcTbL COF PHOTO CORE PHOTO 1 PER PAGE GEOTLCOV25551AA GEOTINVEST.GPJ <DrawingFiles> 30/03/2016 09:35



PointID : BH04 Depth Range: 4.10 - 7.00 m

drawn	TO		client:	NSW Health Infrastructure		
approved	MG		project:	Forensic Pathology & Coroners Court 480 Weeroona Road, Lidcombe		
date	30/03/2016		title:	CORE PHOTOGRAPH BH04		
scale	N.T.S.		project no:	GEOTLCOV25551AA	fig no:	FIGURE 1
original size	A4				rev:	

Engineering Log - Borehole

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

Borehole ID. **BH05**

sheet: 1 of 2

project no. **GEOTLCOV25551AA**

date started: **07 Mar 2016**

date completed: **07 Mar 2016**

logged by: **PH**

checked by: **MG**

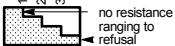
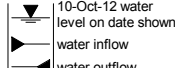
position: E: 318845; N: 6249099 (Datum Not Specified) surface elevation: 35.88 m (AHD)

angle from horizontal: 90°

drill model: GEO205, Track mounted

hole diameter : 96 mm

drilling information				material substance				
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description
1 2 3	1 2 3							
AD/T	CASING	Not Observed	D: 0.5 SPT 8, 7, 8 N*=15	-35	1.0		CH	TOPSOIL: Silty CLAY: low plasticity, brown, with some rootlets. Silty CLAY: high plasticity, pale grey mottled orange-brown.
				-34	2.0			
			SPT 25, 48/145mm HB N*=R	-33	3.0			SHALE: pale grey, extremely weathered, estimated very low strength. Distinctly laminated at 0-5° with trace of fine-medium gravel size ironstone.
				-32	4.0			Borehole BH05 continued as cored hole
				-31	5.0			
				-30	6.0			
				-29	7.0			
				-28				

method	support	samples & field tests	classification symbol & soil description	consistency / relative density
AD auger drilling* AS auger screwing* HA hand auger W washbore	M mud C casing penetration  water 	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	based on Unified Classification System moisture D dry M moist W wet Wp plastic limit WI liquid limit	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 - Cored Borehole

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

Borehole ID. **BH05**

sheet: 2 of 2

project no. **GEOTLCOV25551AA**

date started: **07 Mar 2016**

date completed: **07 Mar 2016**

logged by: **PH**

checked by: **MG**

position: E: 318845; N: 6249099 (Datum Not Specified) surface elevation: 35.88 m (AHD)

angle from horizontal: 90°

drill model: GEO205, Track mounted

drilling fluid:

hole diameter : 96 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)
		-35	1.0								
		-34	2.0								
		-33	3.0		start coring at 3.10m						
		-32	4.0		SHALE: pale grey and dark grey, distinctly laminated at 0-5°.	XW - HW SW XW - HW MW - SW HW SW			95%		SM, 0 - 5°, IR, Clay filled, 30 mm
		-31	5.0		4.13 to 4.2 m: ironstone lense				98%		PT, 0 - 5°, IR, RO, Fe CO SM, 0 - 5°, IR, Clay filled, 90 mm
		-30	6.0		SHALE: dark grey, distinctly laminated at 0-5°.	XW HW - MW MW SW - FR					PT, 0 - 5°, PL, RO, Clay CO PT, 0 - 5°, IR, RO, Fe SN
		-29	7.0		Borehole BH05 terminated at 7.00 m Target depth						
		-28									

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	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
---	---	--	--	---	--

CDF_0_9_04BB.GLB GrcTbL COF PHOTO CORE PHOTO 1 PER PAGE GEOTLCOV25551AA GEOTINVEST.GPJ <-DrawingFiles> 30/03/2016 09:35



PointID : BH05 Depth Range: 3.10 - 7.00 m

drawn	TO		client:	NSW Health Infrastructure		
approved	MG		project:	Forensic Pathology & Coroners Court 480 Weeroona Road, Lidcombe		
date	30/03/2016		title:	CORE PHOTOGRAPH BH05		
scale	N.T.S.		project no:	GEOTLCOV25551AA	fig no:	FIGURE 1
original size	A4				rev:	

Engineering Log - Borehole

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

Borehole ID. **BH06**

sheet: 1 of 2

project no. **GEOTLCOV25551AA**

date started: **02 Mar 2016**

date completed: **02 Mar 2016**

logged by: **TO**

checked by: **MG**

position: E: 318825; N: 6249071 (Datum Not Specified) surface elevation: 34.53 m (AHD)

angle from horizontal: 90°

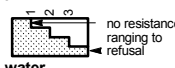
drill model: GEO205, Track mounted

hole diameter : 96 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	hand penetrometer (kPa)	structure and additional observations
AD/T CASING	1 2 3	Not Observed	SPT 3, 5, 6 N*=11	D	-34	1.0	CH			FILL: SAND: fine to medium grained, yellow brown and brown, with some rootlets. FILL: Gravelly Sandy CLAY: medium to high plasticity, brown, sand is fine to medium grained, gravel is fine to coarse, sun-angular to anular.	D / M			FILL
SPT 8, 32/mm HB N*=R	-33	2.0			Silty CLAY: high plasticity, pale grey mottled red-brown and yellow-brown.	<Wp	St / VSt		RESIDUAL SOIL					
SPT 24, 30/80mm HB N*=R	-32	3.0			SHALE: yellow-brown and pale grey, extremely weathered, estimated very low strength. 2.7 m: becoming grey, highly weathered, estimated very low to low strength				WEATHERED BEDROCK					
SPT 24, 30/80mm HB N*=R	-31	4.0			Borehole BH06 continued as cored hole									
SPT 24, 30/80mm HB N*=R	-30	5.0												
SPT 24, 30/80mm HB N*=R	-29	6.0												
SPT 24, 30/80mm HB N*=R	-28	7.0												
SPT 24, 30/80mm HB N*=R	-27													

method		support		samples & field tests		classification symbol & soil description		consistency / relative density	
AD	auger drilling*	M	mud	B	bulk disturbed sample	based on Unified Classification System		VS	very soft
AS	auger screwing*	C	casing	D	disturbed sample	moisture D dry M moist W wet Wp plastic limit WI liquid limit	S	soft	
HA	hand auger			E	environmental sample		F	firm	
WA	washbore			SS	split spoon sample		St	stiff	
				U##	undisturbed sample ##mm diameter		VSt	very stiff	
				HP	hand penetrometer (kPa)		H	hard	
				N	standard penetration test (SPT)		Fb	friable	
				N*	SPT - sample recovered		VL	very loose	
				Nc	SPT with solid cone		L	loose	
				VS	vane shear; peak/remoulded (kPa)		MD	medium dense	
				R	refusal		D	dense	
				HB	hammer bouncing		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	
--	--	--	--

method AD auger drilling* AS auger screwing* HA hand auger W washbore * bit shown by suffix e.g. B blank bit T TC bit V V bit	support M mud 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 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
---	--	--	--	--

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	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 25uL	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 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
---	---	--	--	---	--



PointID : BH06 Depth Range: 4.30 - 7.00 m

drawn	TO		client:	NSW Health Infrastructure		
approved	MG		project:	Forensic Pathology & Coroners Court 480 Weeroona Road, Lidcombe		
date	30/03/2016		title:	CORE PHOTOGRAPH BH06		
scale	N.T.S.		project no:	GEOTLCOV25551AA	fig no:	FIGURE 1
original size	A4				rev:	

Engineering Log - Borehole

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

Borehole ID. **BH07**

sheet: 1 of 3

project no. **GEOTLCOV25551AA**

date started: **04 Mar 2016**

date completed: **04 Mar 2016**

logged by: **PH**

checked by: **MG**

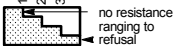
position: E: 318796; N: 6249055 (Datum Not Specified) surface elevation: 33.56 m (AHD)

angle from horizontal: 90°

drill model: GEO205, Track mounted

hole diameter : 96 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
ADT CASING	1	Not Observed					CH	TOPSOIL: Silty CLAY: low plasticity, pale brown, trace of medium size angular gravel and rootlets.	<Wp	VSt / H	100	TOPSOIL
	2				200			RESIDUAL SOIL				
	3				300							
					400							
			SPT 10, 18, 23 N*=41	-33	1.0							
				-32	2.0							
			SPT 14, 16, 20 N*=36	-31	3.0			3 m: becoming with trace of fine to medium gravel size ironstone			>>X	SPT could not be retrieved
				-30	4.0							
			SPT 8, 9, 11 N*=20	-29	5.0			4.2 m: becoming grey			X	
				-28	6.0						X	
				-27	7.0			SHALE: grey and dark grey, extremely to highly weathered, estimated very low to low strength.				WEATHERED BEDROCK
				-26				Borehole BH07 continued as cored hole				

method AD auger drilling* AS auger screwing* HA hand auger W washbore	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 water 10-Oct-12 water level on date shown water inflow water outflow		moisture D dry M moist W wet Wp plastic limit WL liquid limit	

Engineering Log - Cored Borehole

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

Borehole ID. **BH07**

sheet: 2 of 3

project no. **GEOTLCOV25551AA**

date started: **04 Mar 2016**

date completed: **04 Mar 2016**

logged by: **PH**

checked by: **MG**

position: E: 318796; N: 6249055 (Datum Not Specified) surface elevation: 33.56 m (AHD)

angle from horizontal: 90°

drill model: GEO205, Track mounted

drilling fluid:

hole diameter : 96 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)					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			FH	30	100	300	1000	3000	particular	general
			-33																		
			-32																		
			-31																		
			-30																		
			-29																		
			-28																		
			-27																		
			-26																		
			-25																		
			-24																		
NMLC	Not Observed	-27		start coring at 6.50m	HW - MW - SW						35%				SM, 0 - 5°, IR, Clay filled, 2 mm SM, 0 - 5°, IR, Clay filled, 15 mm	Defects are: PT, 0 - 5°, IR, RO, CN, unless otherwise described					
		-26		LAMINITE: sandstone (60%) fine grained, pale grey and Siltstone (40%) dark grey. Distinctly laminated at 0-5°.	SW FR					100%			PT, 0 - 5°, PL, RO, Clay CO SM, 0 - 5°, IR, Clay filled, 10 mm								
method & support				water				graphic log / core recovery				weathering & alteration*				defect type				planarity	
AS auger screwing AD auger drilling CB claw or blade bit washbore W 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 FH 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				CN clean PL planar CU curved UN undulating ST stepped IR Irregular coating CN clean SN stain VN veneer CO coating	

Engineering Log - Cored Borehole

Borehole ID.	BH07
sheet:	3 of 3
project no.	GEOTLCOV25551AA
date started:	04 Mar 2016
date completed:	04 Mar 2016
logged by:	PH
checked by:	MG

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

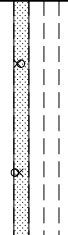
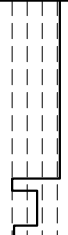
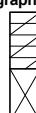
angle from horizontal: 90°

position: E: 318796; N: 6249055 (Datum Not Specified) surface elevation: 33.56 m (AHD)

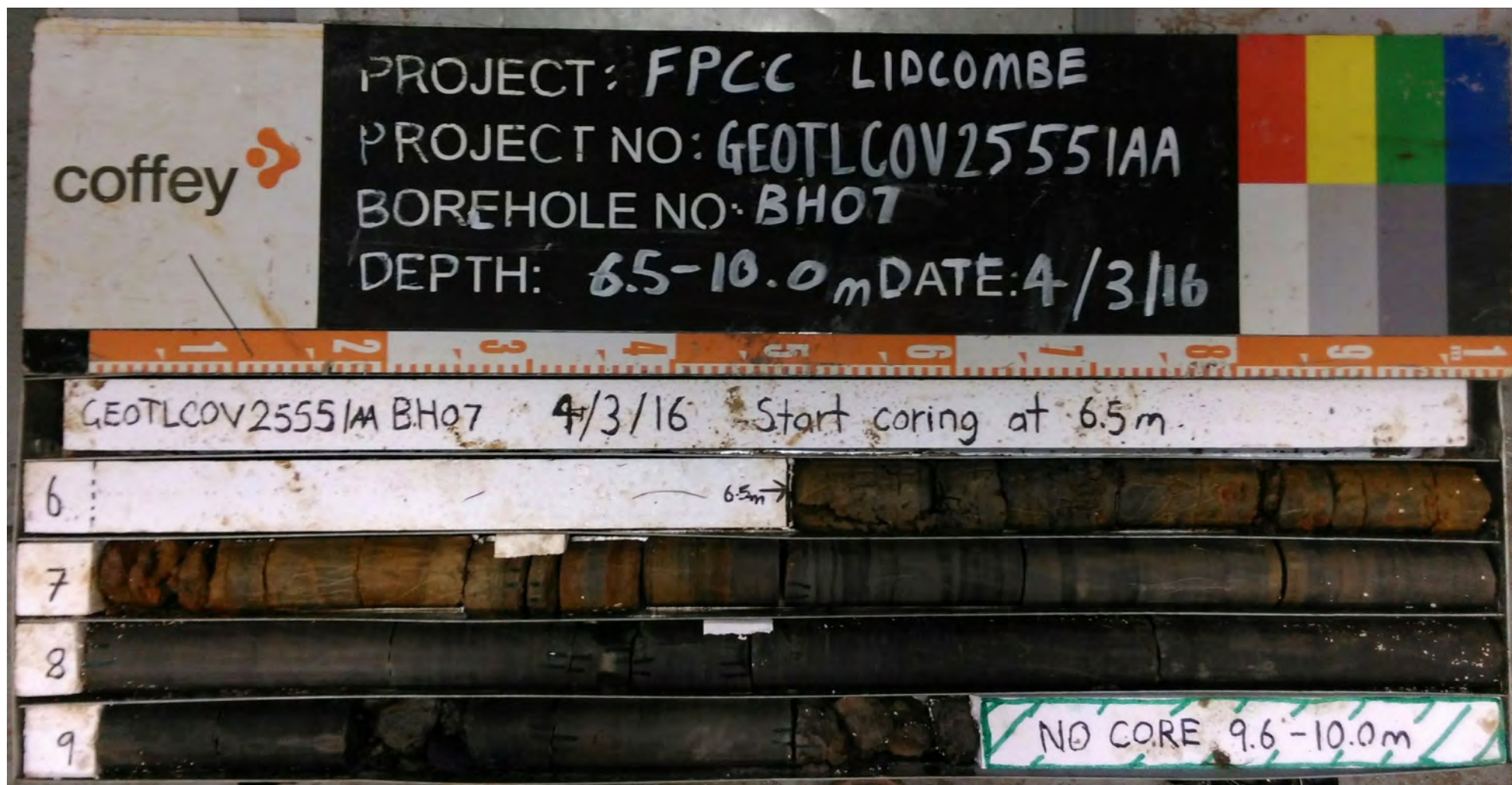
hole diameter : 96 mm

drill model: GEO205. Track mounted

drilling fluid:

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	
method & support AS AD CB W NMLC NQ HQ PQ SPT	water 100% loss	RL (m) 25 24	depth (m) 9.0 10.0	graphic log  	SHALE: dark grey, indistinctly laminated at 0-5°.	FR		a=0.40 d=0.52 a=0.46 d=0.33	100% 67%		multiple partings multiple defects		
					Borehole BH07 terminated at 10.00 m Target depth								
method & support AS AD CB W NMLC NQ HQ PQ SPT	water 10/10/12, water level on date shown water inflow complete drilling fluid loss partial drilling fluid loss	RL (m) 23 11.0 22 12.0 21 13.0 20 14.0 19 15.0 18	depth (m) 23 11.0 22 12.0 21 13.0 20 14.0 19 15.0 18	graphic log 									
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				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 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			

CDF_0_9_04BB.GLB_Grctb COF PHOTO CORE PHOTO 1 PER PAGE GEOTLCOV25551AA GEOTINVEST.GPJ <-DrawingFiles> 30/03/2016 09:36



PointID : BH07 Depth Range: 6.50 - 10.00 m

drawn	TO		client:	NSW Health Infrastructure		
approved	MG		project:	Forensic Pathology & Coroners Court 480 Weeroona Road, Lidcombe		
date	30/03/2016		title:	CORE PHOTOGRAPH BH07		
scale	N.T.S.		project no:	GEOTLCOV25551AA	fig no:	FIGURE 1
original size	A4				rev:	

Engineering Log - Borehole

Borehole ID.	BH08
sheet:	1 of 3
project no.	GEOTLCOV25551AA
date started:	01 Mar 2016
date completed:	01 Mar 2016
logged by:	TO
checked by:	MG

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

position: E: 318840; N: 6249042 (Datum Not Specified) surface elevation: 34.26 m (AHD)

angle from horizontal: 90°

drill model: GEO205, Track mounted

hole diameter : 96 mm

drilling information					material substance							
method & support	1 penetration	2 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
ADT CASING			E	34				FILL: CLAY: low plasticity, brown, with some fine to medium sub-angular gravel.	D			FILL
			E				CH	Silty CLAY: high plasticity, pale grey mottled red-brown and yellow-brown, with some fine to medium gravel size ironstone fragments.	<Wp	VSt / H		RESIDUAL SOIL
			SPT 7, 12, 14 N*=26	33	1.0			1.1 m: some tree rootlets			>>X >>X	
					2.0			SHALE: pale grey and brown, extremely weathered, estimated very low strength.				WEATHERED BEDROCK
			SPT 8, 10, 18 N*=28	32	3.0			2.5 m: becoming pale grey, red-brown with depth				
				31	3.5 m: becoming pale grey-grey							
			SPT 30 HB N*=R	30	4.0			Borehole BH08 continued as cored hole				
					5.0							
					6.0							
					7.0							
					27							

method

AD
AS
HA
WA

auger drilling*
auger screwing*
hand auger
washbore

support

M
C

mud
casing

penetration

no resistance ranging to refusal

water

10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests

B
D
E
SS
U##
HP
N
N*
Nc
VS
R
HB

bulk disturbed sample
disturbed sample
environmental sample
split spoon sample
undisturbed sample ##mm diameter
hand penetrometer (kPa)
standard penetration test (SPT)
SPT - sample recovered
SPT with solid cone
vane shear; peak/remoulded (kPa)
refusal
hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture

D
M
W
Wp
Wl

dry
moist
wet
plastic limit
liquid limit

consistency / relative density

VS
S
F
St
VSt
H
Fb
VL
L
MD
D
VD

very soft
soft
firm
stiff
very stiff
hard
friable
very loose
loose
medium dense
dense
very dense

Engineering Log - Cored Borehole

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

Borehole ID. **BH08**

sheet: 2 of 3

project no. **GEOTLCOV25551AA**

date started: **01 Mar 2016**

date completed: **01 Mar 2016**

logged by: **TO**

checked by: **MG**

position: E: 318840; N: 6249042 (Datum Not Specified) surface elevation: 34.26 m (AHD)

angle from horizontal: 90°

drill model: GEO205, Track mounted

drilling fluid:

hole diameter : 96 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) a = axial; d = diametral	core run & RQD	defect spacing (mm) 30 100 300 1000 3000	additional observations and defect descriptions (type, inclination, planarity, roughness, coating, thickness, other)
											particular
		-34									
			1.0								
		-33									
			2.0								
		-32									
			3.0								
		-31									
			4.0		start coring at 4.08m						
		-30			SHALE: dark grey, brown, orange brown, massive.	HW		a=0.30 d=0.17			PT, 5°, CU, RO, Fe SN JT, 85°, CU, healed
			5.0			MW			99%		SM, 0°, PL, Silty clay filled, 20 mm SM, 5°, IR, Clay filled, 35 mm JT, 80°, IR, RO, Fe SN
		-29									
			6.0								
		-28			SHALE: dark grey to black, massive.	SW		a=0.34 d=0.33	84%		JT, 85 - 90°, PL, RO, Fe SN PT, 20°, IR, RO, Clay CO PT, 10°, CU, RO, CN SM, 0°, PL, Clay filled Fe SN
			7.0			FR					
		-27						a=0.40 d=0.35	96%		JT, 55°, IR, RO, CN JT, 55°, IR, RO, CN PT, 0 - 5°, UN, RO, CN SM, 0 - 5°, PL, Clay filled, 70 mm JT, 60 - 85°, IR, RO, CN

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

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
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

Defects are: PT, 0 - 10°, PL, RO, Fe SN, unless otherwise described

Engineering Log - Cored Borehole

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

Borehole ID. **BH08**

sheet: 3 of 3

project no. **GEOTLCOV25551AA**

date started: **01 Mar 2016**

date completed: **01 Mar 2016**

logged by: **TO**

checked by: **MG**

position: E: 318840; N: 6249042 (Datum Not Specified) surface elevation: 34.26 m (AHD)

angle from horizontal: 90°

drill model: GEO205, Track mounted

drilling fluid:

hole diameter : 96 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 & 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	a = axial; d = diametral		90 100 200 500 1000 3000	particular	general
NMLC		-26			SHALE: dark grey to black, massive. (continued)	FR			96%		JT, 70 - 85°, IR, RO, CN JT, 50 - 85°, CU, RO, CN	
		-25	9.0		LAMINITE: Sandstone (60%) fine grained and pale grey, Siltstone(40%), dark grey and distinctly laminated at 0-5°.				a=0.49 d=0.37		100%	
					9.4 m: becoming 90% Siltstone and 10% Sandstone		OK	a=1.08 d=0.57				
		10.0			Borehole BH08 terminated at 9.98 m Target depth							
		-24										
			11.0									
		-23										
			12.0									
		-22										
			13.0									
		-21										
			14.0									
		-20										
			15.0									
		-19										
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				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 25UL		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		

Piezometer Installation Log

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

Hole ID. **BH08**

sheet: 1 of 1

project no. **GEOTLCOV25551AA**

date started: **01 Mar 2016**

date completed: **01 Mar 2016**

logged by: **TO**

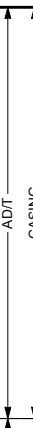
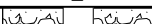
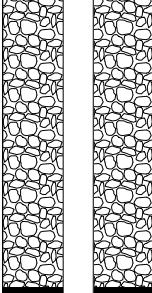
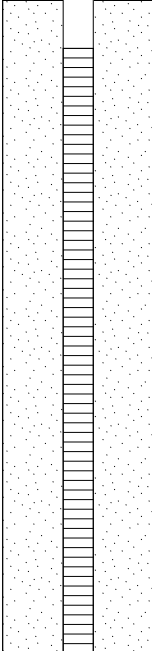
checked by: **MG**

position: E: 318840; N: 6249042 (Datum Not Specified) surface elevation: 34.26 m (AHD)

angle from horizontal: 90°

equipment type: GEO205, Track mounted

hole diameter: 96 mm

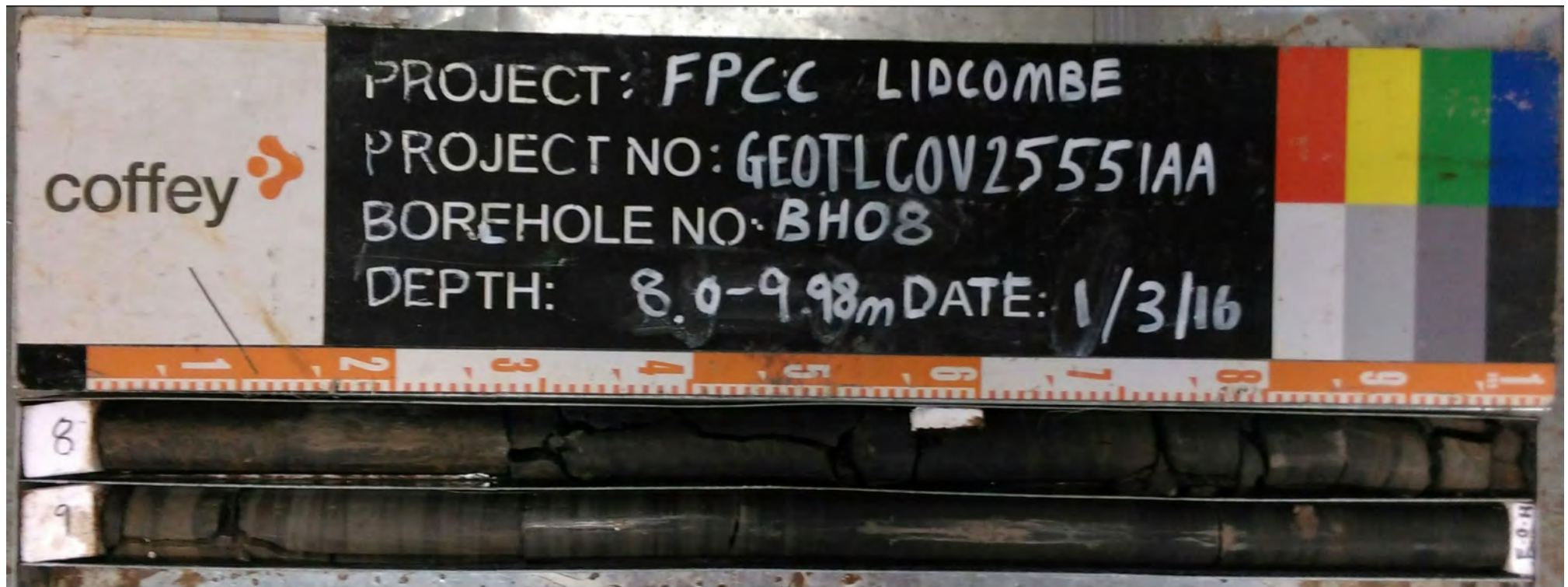
drilling information			material substance		piezometer construction details		
method & support	water	RL (m)	depth (m)	graphic log	material name		
 ADIT  CASING  NWL C		-34			FILL: CLAY	 Concrete  Cuttings  Bentonite  Sand	bore construction license: drilling company: driller: driller's permit no.:
			1		Silty CLAY		
			2		SHALE		
			3				
			4				
			5				
			6				
			7				
			8				
			9		LAMINITE		
			10		Borehole BH08 terminated at 9.98 m Target depth		
		-24	11				

method & support	graphic log / core recovery	ID	type	stick up & RL	tip depth & RL	install. date	water level
see engineering log for details 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	 core recovered (graphic symbols indicate material)  no core recovered	BH08	standpipe	0.73 m 33.53 m AHD	9.98 m 24.28 m AHD		



PointID : BH08 Depth Range: 4.08 - 8.00 m

drawn	TO		client:	NSW Health Infrastructure		
approved	MG		project:	Forensic Pathology & Coroners Court 480 Weeroona Road, Lidcombe		
date	30/03/2016		title:	CORE PHOTOGRAPH BH08		
scale	N.T.S.		project no:	GEOTLCOV25551AA	fig no:	FIGURE 1
original size	A4				rev:	



PointID : BH08 Depth Range: 8.00 - 9.98 m

drawn	TO		client:	NSW Health Infrastructure		
approved	MG		project:	Forensic Pathology & Coroners Court 480 Weeroona Road, Lidcombe		
date	30/03/2016		title:	CORE PHOTOGRAPH BH08		
scale	N.T.S.		project no:	GEOTLCOV25551AA	fig no:	FIGURE 2
original size	A4				rev:	

Engineering Log - Borehole

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

Borehole ID. **LDBH01**

sheet: 1 of 1

project no. **GEOTLCOV25551AA**

date started: **03 Mar 2016**

date completed: **03 Mar 2016**

logged by: **PH**

checked by: **MG**

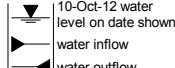
position: E: 318874; N: 6249159 (Datum Not Specified) surface elevation: 38.25 m (AHD)

angle from horizontal: 90°

drill model: GEO205, Track mounted

hole diameter : 200 mm

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
AD/T	1 2 3	Not Observed	BX2 SPT 5, 8, 5 N*=13	-38 -37	1.0 2.0		CH	FILL: ASPHALT: dark grey, 50mm. FILL: GRAVEL: fine to coarse grained, sub-angular to angular, dark grey. FILL: Gravelly SAND: fine to medium grained, gravel is fine to coarse grained, sub angular to angular, sandstone. Silty CLAY: high plasticity, pale grey mottled red brown - orange brown. becoming pale grey	PAVEMENT FILL RESIDUAL SOIL
				-36					
				-35	3.0			Borehole LDBH01 terminated at 2.5 m Target depth	
				-34	4.0				
				-33	5.0				
				-32	6.0				
				-31	7.0				

method AD auger drilling* AS auger screwing* HA hand auger W washbore	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  no resistance ranging to refusal	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		

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

Engineering Log - Borehole

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

Borehole ID. **LDBH02**

sheet: 1 of 1

project no. **GEOTLCOV25551AA**

date started: **03 Mar 2016**

date completed: **03 Mar 2016**

logged by: **PH**

checked by: **MG**

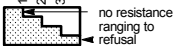
position: E: 318872; N: 6249114 (Datum Not Specified) surface elevation: 37.54 m (AHD)

angle from horizontal: 90°

drill model: GEO205, Track mounted

hole diameter : 200 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	moisture condition	consistency / relative density	hand penetrometer (kPa)	structure and additional observations					
AD/T				Not Observed	BX2	-37	1.0		CL	TOPSOIL: Silty CLAY: low plasticity, orange brown, with some rootlets.	<Wp	VSt / H		TOPSOIL					
					SPT 9, 12, 14 N*=26	-36			CH	Silty CLAY: high plasticity, pale grey mottled orange brown.				RESIDUAL SOIL					
						-36	2.0			SHALE: pale grey, extremely weathered to highly weathered, estimated very low strength.				WEATHERED BEDROCK					
						-35				Borehole LDBH02 terminated at 2.0 m Target depth									
						-34													
						-33													
						-32													
						-31													
						-30													
method AD auger drilling* AS auger screwing* HA hand auger W washbore * bit shown by suffix e.g. AD/T B blank bit T TC bit V hit					support M mud N nil C casing penetration 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	

method AD auger drilling* AS auger screwing* HA hand auger W washbore	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 water 10-Oct-12 water level on date shown water inflow water outflow		moisture D dry M moist W wet Wp plastic limit WL liquid limit	

Engineering Log - Borehole

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

Borehole ID. **LDBH03**

sheet: 1 of 1

project no. **GEOTLCOV25551AA**

date started: **03 Mar 2016**

date completed: **03 Mar 2016**

logged by: **PH**

checked by: **MG**

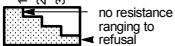
position: E: 318859; N: 6249059 (Datum Not Specified) surface elevation: 35.66 m (AHD)

angle from horizontal: 90°

drill model: GEO205, Track mounted

hole diameter : 200 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/T	1 2 3	Not Observed	E					FILL: Clayey GRAVEL: dark grey, potentially ash.	D		100 200 300 400	FILL
	BX2											
	E		-35		CH	Silty CLAY: high plasticity, orange brown.	<Wp	VSt / H		RESIDUAL SOIL		
	E		becoming pale grey									
				-34			SHALE: pale grey, extremely weathered to highly weathered, estimated very low strength.				WEATHERED BEDROCK	
				2.0			Borehole LDBH03 terminated at 2.0 m Target depth					
				-33								
					3.0							
				-32								
					4.0							
				-31								
					5.0							
				-30								
					6.0							
				-29								
					7.0							
				-28								

method AD auger drilling* AS auger screwing* HA hand auger W washbore	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 water 10-Oct-12 water level on date shown water inflow water outflow		moisture D dry M moist W wet Wp plastic limit Wl liquid limit	

Engineering Log - Borehole

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

Borehole ID. **LDBH04**

sheet: 1 of 1

project no. **GEOTLCOV25551AA**

date started: **03 Mar 2016**

date completed: **03 Mar 2016**

logged by: **TO/PH**

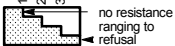
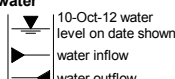
checked by: **MG**

position: E: 318831; N: 6249028 (Datum Not Specified) surface elevation: 33.22 m (AHD)

angle from horizontal: 90°

drill model: GEO205, Track mounted

hole diameter : 200 mm

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
AD/T	1 2 3	Not Observed	E BX2 E U75	-33				FILL: Silty CLAY: low plasticity, brown, with some rootlets.	FILL
					1.0		CH	FILL: Silty CLAY: low plasticity, brown, with trace gravel, fine grained. Silty CLAY: high plasticity, orange - red brown, with some ironstone gravel, fine grained, subangular.	RESIDUAL SOIL
				-32				tree root	
					2.0			becoming pale grey	
				-31				Borehole LDBH04 terminated at 2.0 m Target depth	
					3.0				
				-30					
					4.0				
				-29					
					5.0				
				-28					
					6.0				
				-27					
					7.0				
				-26					
method AD auger drilling* AS auger screwing* HA hand auger W washbore * bit shown by suffix e.g. B blank bit T TC bit V V bit					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				

Engineering Log - Borehole

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

Borehole ID. **LDBH05**

sheet: 1 of 1

project no. **GEOTLCOV25551AA**

date started: **03 Mar 2016**

date completed: **03 Mar 2016**

logged by: **TO/PH**

checked by: **MG**

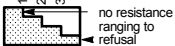
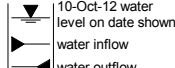
position: E: 318808; N: 6249033 (Datum Not Specified) surface elevation: 33.63 m (AHD)

angle from horizontal: 90°

drill model: GEO205, Track mounted

hole diameter : 200 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	hand penetrometer (kPa)	structure and additional observations					
	1	2	3							SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components			100 200 300 400						
AD/T				Not Observed	E					FILL: Gravelly CLAY: low plasticity, with some rootlets.	D			FILL					
					BX2 D					FILL: Gravelly CLAY: low plasticity, brown, gravel is fine to coarse grained, subangular to angular, with some brick fragments and cement cobbles.									
					E	-33	1.0												
					E					FILL: Gravelly SAND: fine to medium grained, pale grey, pale red, gravel is fine to medium grained sandstone.									
						-32	2.0			Borehole LDBH05 terminated at 2.0 m Target depth									
						-31	3.0												
						-30	4.0												
						-29	5.0												
						-28	6.0												
						-27	7.0												
						-26													
method AD auger drilling* AS auger screwing* HA hand auger W washbore * 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 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	

method AD auger drilling* AS auger screwing* HA hand auger W washbore	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  no resistance ranging to refusal	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		

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

Engineering Log - Borehole

client: **NSW Health Infrastructure**

principal:

project: **Forensic Pathology & Coroners Court**

location: **480 Weeroona Road, Lidcombe**

Borehole ID. **LDBH06**

sheet: 1 of 1

project no. **GEOTLCOV25551AA**

date started: **03 Mar 2016**

date completed: **03 Mar 2016**

logged by: **TO/PH**

checked by: **MG**

position: E: 318877; N: 6248960 (Datum Not Specified) surface elevation: 35.42 m (AHD)

angle from horizontal: 90°

drill model: GEO205, Track mounted

hole diameter : 200 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	hand penetrometer (kPa)	structure and additional observations
	1	2	3											
AD/T				Not Observed	BX2	-35	1.0		CH	FILL: Sandy Gravelly CLAY: low plasticity, brown, sand is fine grained, gravel is fine to medium grained, subangular, with trace rootlets.	D			FILL
										FILL: Gravelly CLAY: low plasticity, brown. Silty CLAY: high plasticity, pale grey mottled red brown-orange brown.	<Wp	VSt / H		RESIDUAL SOIL
							2.0			Borehole LDBH06 terminated at 2.0 m Target depth				>>X
							-33							
							-34							
							-35							
							-36							
							-37							
							-38							
							-39							
							-40							
							-41							
							-42							
							-43							
							-44							
							-45							
							-46							
							-47							
							-48							
							-49							
							-50							
							-51							
							-52							
							-53							
							-54							
							-55							
							-56							
							-57							
							-58							
							-59							
							-60							
							-61							
							-62							
							-63							
							-64							
							-65							
							-66							
							-67							
							-68							
							-69							
							-70							
							-71							
							-72							
							-73							
							-74							
							-75							
							-76							
							-77							
							-78							
							-79							
							-80							
							-81							
							-82							
							-83							
							-84							
							-85							
							-86							
							-87							
							-88							
							-89							
							-90							
							-91							
							-92							
							-93							
							-94							
							-95							
							-96							
							-97							
							-98							
							-99							
							-100							
							-101							
							-102							
							-103							
							-104							
							-105							
							-106							
							-107							
							-108							
							-109							
							-110							
							-111							
							-112							
							-113							
							-114							
							-115							
							-116							
							-117							
							-118							
							-119							
							-120							
							-121							
							-122							
							-123							
							-124							
							-125							
							-126							
							-127							
							-128							
							-129							
							-130							
							-131							
							-132							
							-133							
							-134							
							-135							
							-136							
							-137							
							-138							
							-139							
							-140							
							-141							
							-142							
							-143							
							-144							
							-145							
							-146							
							-147							
							-148							
							-149							
							-150							
							-151							
							-152							
							-153							
							-154							
							-155							
							-156							
							-157							
							-158							
							-159							
							-160							
							-161							
							-162							
							-163							
							-164							
							-165							
							-166							
							-167							
							-168							
							-169							
							-170							
							-171							
							-172							
							-173							
							-174							
							-175							
							-176							
							-177							
							-178							
							-179							
							-180							
							-181							
							-182							
							-183							
							-184							
							-185							
							-186							
					</									