

drawn	BC			Wanda One S	Sydney Pt	ty Ltd					
approved	MG	coffey ?	project:	Sydney O							
date	4/09/2015	· · · · · · · · · · · · · · · · · · ·	title:	Sydney C							
scale	N.T.S.		CORE PHOTOGRAPH BH03								
original size	A4		project no:	GEOTLCOV24001AF	fig no:	FIGURE 2	rev:				



BH03

GEOTLCOV24001AF

fig no:

FIGURE 3

rev:

project no:

scale

original size

N.T.S.

A4







<u>d</u>

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TC bit

V bit

Borehole ID. **BH04** sheet: 1 of 4 **Engineering Log - Borehole** GEOTLCOV24001AF project no. Wanda One Sydney Pty Ltd client: 24 Aug 2015 date started: 25 Aug 2015 principal: date completed: Sydney One Project BY project: logged by: Goldfield House Basement MG location. checked by: position: E: 334315; N: 6251717 (WGS84 Zone 56) surface elevation: -4.57 m (AHD) angle from horizontal: 90° drill model: XC Rig, Track mounted casing diameter : HW drilling information material substance consistency / relative density material description hand structure and classificatior penetratio samples & g penetro meter method & support additional obse vations Ē moisture condition graphic lo SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components field tests symbol Ē depth (water (kPa) ᆋ 100 200 300 casing -CONCRETE: 0.2 m. CONCRETE Observable AD/TY DT GRAVEL: medium to coarse grained, sub-angular to DRAINAGE LAYER 1 ₹ -5 angular, dark grey. | | | |ğ ||||Borehole BH04 continued as cored hole | | | ||||||||||1.0 |||||||||| | | |||||-6 |||||||||||||||2.0 -7 1 | | | | | |||||||||||||||||||3.0 |||||||||||||||||||||-8 |||| | | |4.0 | | | |||||-9 GEOTLCOV24001AF |||||||||||||||||||||| | | |5.0 |||||||||||||||||||||||-10 NON CORED |||| | | |111 60 **BOREHOLE:** ||||||||-11 ||||||SQF ||||| | | |||||| | | | |g | | | |04BB.GLB 7.0 |||||||||||||1111 -12 ||||||111 1111 |||||classification symbol & auger drilling* samples & field tests consistency / relative density meth AD support soil description N nil mud Μ bulk disturbed sample В VS very soft auger screwing* based on Unified AS C casing disturbed sample environmental sample D S F soft ΗА hand auger Classification System E firm penetration W washbore split spoon sample undisturbed sample ##mm diamete St VSt SS stiff DT HE NDD diatube hand excavation non destructive drilling no resistance ranging to refusal moisture D dry M mois W wet U## very stiff hand penetrometer (kPa) standard penetration test (SPT) H Fb HP hard moist wet friable Ν wate SPT - sample recovered SPT with solid cone bit shown by suffix 10-Oct-12 water N* VL very loose Wp plastic limit WI liquid limit ▼ e.g. B Nc L MD loose AD/T level on date shown blank bit VS vane shear; peak/remouded (kPa) medium dense water inflow D

R

HB

water outflow

refusal

hammer bouncing

dense

very dense

VD



			_	J								Boreho	le ID.	BH04	
E	5	Nin	~~	rin	alaa Caraa	Dorok						sheet:		2 of 4	
_	Ц				g Log - Corec	Dotei	IOI	;				project	no.	GEOTLCOV2400	01AI
clie	nt:	V	Vanc	la Or	ne Sydney Pty Ltd							date st	arted:	24 Aug 2015	
prin	ncipa	al:										date co	mpleted:	25 Aug 2015	
proj	ject:	S	Sydn	ey O	ne Project							logged	by:	BY	
loca	atior	n: G	Goldi	field l	House Basement							checke	d by:	MG	
posi	ition:	E: 334	4315; N	: 62517	17 (WGS84 Zone 56) surfa	ce elevation: -4.57	m (AHD)			angle	e from horiz	zontal: 90°		
drill	mod	el: XC F	Rig, Tr	ack mou	unted drillir	ıg fluid:					-	g diametei			
dril	ling	inform	ation		erial substance material description	1	ø	estima	ated	samples,	rock	mass defe defect		ditional observations and	
a b d		Ê	Ē	ic log	ROCK TYPE: grain charac colour, structure, minor cor	terisics,	weathering alteration	streng & Iss	50	field tests & Is(50)	un Q	spacing (mm)	(type, inclina	defect descriptions ation, planarity, roughness, co	oating,
method support	water	RL (m)	depth (m)	graphic I		F	weath altera	X=axi O=diam ⊐ ≅ ∟ ≍	etral	(MPa) a = axial; d = diametral	core run & RQD	30 100 1000 300	particular	thickness, other)	eneral
		5	-	-	start coring at 0.56m				İİ						-
			-	· · · · ·	SANDSTONE: medium grained, pa massive.	ale grey,	FR			a=1.23 d=1.29					-
		-	1.0								100%		— JT, 30°, F	PL, RO, Fe SN	_
			-												
		6	-							a: 1.00					-
			-						Í.	a=1.03 d=1.28			−− PT, 5°, C	U, RO, CN	
		-	2.0 —								100%				_
		7	-												-
			-							a=1.14 d=0.93					-
		-	- 3.0 —							u=0.95					-
					3.14 m: Siltstone clast (20mm)									PL, 10 mm	-
		8	-					 ×¢			99%				-
	0		-							a=0.60 d=1.02					-
	Observable	-	4.0-	· · · · ·	SANDSTONE: medium grained, pa	ale arev	_							PL, 30 mm	_
NMLC	Not Obs		-		indistinctly bedded at 5° to 10°.										-
	z	9	-												-
			-	· · · · ·				× ø		a=0.31 d=0.92	100%				-
			5.0-		SANDSTONE: medium grained, pa dark grey laminations, distinctly bee				İ	u=0.92					-
		10	-	· · · · ·						0-1.47					
			-	· · · · ·				•		a=1.47 d=1.00					
i		-	6.0	· · · · · · · · · · · · · · · · · · ·											
			-	· · · · ·				*		a=0.64	100%		PT, 0°, U	N, RO, X CO	-
5		11	-	· · · · ·						d=0.80	100%		PT, 0°, U	N, RO, X CO	-
			-						Ì						-
			7.0-												
		12	-										DT 00 ···		-
			-							a=0.66 d=0.64	100%		P1, 0°, U	N, RO, X CO	-
		-	-							une the state	0 -1/		d-f		
me AS AD	3	& supp auger s auger d	crewing	9	water	graphic log / com		ry		XW extrem	ual soil nely we	athered	defect type PT partin JT joint	g PL planar CU curved	
CB W	3	claw or washbo	blade b re		level on date shown	(graphic syn	covered nbols indicate	material)		DW distin	/ weathe ctly weather rately w			zone UN undulating surface ST stepped ed seam IR Irregular	g
NM NG HG	כ נ	wireline	core (4	l.9 mm) 47.6mm 53.5mm	complete drilling fluid loss	no core	recovere	ed		SW slight FR fresh	ly weath	ered	SM seam DB drilling	÷	
PC	ג די	wireline standar	core (8 d penet	35.0mm		core run & RQD		_		*W replaced wi strength VL very lo		ciauon	roughness SL slick	ensided CN clean	
DT HE	-		cavatio		water pressure test result (lugeons) for depth		vithdrawr uality De		n (%)	L low M mediur H high	m		POL polis SO smo RO roug	oth VN veneer	
ND														rough	



														BH04	
	-						Dowah		_			sheet:		3 of 4	
	=ľ	าั	jin	ee	rin	g Log - Corec	a Borer	1016	9			project r	10.	GEOTLCOV2	4001AF
с	lien	ıt:	V	Vano	la On	e Sydney Pty Ltd						date sta	rted:	24 Aug 2015	
р	rinc	cipal	l:									date cor	npleted:	25 Aug 2015	
р	roje	ect:	S	vdn	ev Oi	ne Project						logged b	ov:	BY	
	-	tion		-	-	, House Basement						checked	•	MG	
_							ce elevation: -4.57	m (AHD))		angle	e from horizo	,		
1 ·					ack mou	· · · · ·	ng fluid:	,	, ,		· ·	ng diameter			
4	Irilli	ng i	nform	ation	mate	rial substance	_	ళ	estimate	d samples,	rock	defect		ditional observations and	
8	Ŧ			Ê	c log	material descriptio ROCK TYPE: grain charac	terisics,	ering 8 on	strength & Is50		5	spacing (mm)		defect descriptions ation, planarity, roughnes	
nethoo	support	water	RL (m)	depth (m)	graphic log	colour, structure, minor cor	nponents	weathering a	X=axial; O=diametra J⊇⊻⊥∑		core run & RQD	30 300 3000 3000	particular	thickness, other)	general
	00	>				SANDSTONE: medium grained, pa		FR				0-0-0	particular		gonoral
			13	-	· · · · ·	dark grey laminations, distinctly be (continued)	dded at 5° to 10° .				100%				_
				-	 					a=1.59 d=1.49	-				-
			F	- 9.0 —	· · · · ·										_
				-	· · · · ·	SANDSTONE: fine to medium grai indistinctly cross bedded at 10° to 2									-
			14	-	· · · · · · · · · ·					a=1.10	100%				-
				-	· · · · ·					d=1.10					_
			F	10.0 —	· · · · ·										-
			15	-											1
			15	-	 					a=1.36 d=1.08					-
			Ļ	-	· · · · ·	SANDSTONE: medium grained, pa		-			100%	╏╎╎╎┎╹	PT, 0°, U	IN, RO, X CO	-
4:34				11.0	· · · · · · · · · ·	massive to indistinctly bedded at 0 ^d carbonaceous flecks and lamination									-
2015 14			16	-	· · · · ·										-
01/20		Not Observable		-					ox	a=1.24 d=0.75			— SM 0° F	PL, Sandy clay, 50 mm	1
gh lle>>	NMLC	ot Obs	-	12.0 —	· · · · ·									L, Carlay olay, co min	_
Drawin		z		-	· · · · ·					a=1.16	94%		— PT, 10°, I	PL, RO, CN	-
GPJ ≮			17	-	· · · · ·					d=1.33					-
-101AF			Ļ	-				SW							-
COV24				13.0		BRECCIA: dark grey siltstone clas medium to coarse grained sandsto massive.		500							-
GEOIL			18	-									— PT, 10°,	PL, RO, CN	-
JKED				-						a=0.52					-
HOLE: CC			-	14.0 —						d=0.46	91%		SM, 5°, C	CU, Sandy clay, 40 mm PL, Sandy clay, 15 mm	-
BOREH			10	-	: <u>-: : </u>	SANDSTONE: fine to medium grai indistinctly bedded at 5° to 10°.	ned, pale grey,	FR					∽ SM, 0°, F	² L, Sandy clay, 15 mm	1
н 1 2 2 2 2			19	-	· · · · ·	indistinctly bedded at 5 to 10.				a=1.14					-
E Log			-	- 15.0 —	· · · · ·					d=0.84					-
J4BB.GLB				- 15.0	· · · · ·								PT, 10°, I	PL, RO, Fe SN	-
0-6-0-			20	-	 						100%				-
5				-	· · · · ·					a=1.15 d=1.45					-
$\left \right $	 meti	hod 4	- S supr	ort		water	graphic log / cor	e recove	lii 🛛	weatherin	g & alter	ation*	defect type	planarity	
	AS auger screwing AD auger drilling ▼ 10/10/12, water											eathered ered	PT partin JT joint SZ shear	CU curve	d
	W washbore water inflow (graphic symbols indicate material) DW distinctly w MW moderatel											athered veathered	SS shear CS crush	r surface ST stepp led seam IR Irregi	bed
	NQ HQ	W W	/ireline /ireline	core (4 core (6	7.6mm 3.5mm	complete drilling fluid loss	core run & RQD		eu	SW sligh FR fresl *W replaced strength	h			g break	
	PQ SPT	s	/ireline tandar est iatube	core (8 d penet	ration	—		vithdraw	n	VL very I L low	ow		SL slick POL polis	ensided CN clear shed SN stain	
	DT HE NDE	h	and ex	cavatio	n drilling	water pressure test result (lugeons) for depth interval shown	I I RQD = Rock QI	uality De	signation (M medi %) H high VH very h			SO smo RO roug	oth VN vene	
			5.7 000							EH extrem		ı	vit very	loagn	



				-							Borehole sheet:	e ID.	BH04 4 of 4	
E	ng	gin	ee	rın	g Log - Core	d Borer	IOI	;			project r	10.	GEOTLCOV24	001AF
clie	nt:	l	Vanc	la Or	e Sydney Pty Ltd						date sta	rted:	24 Aug 2015	
prin	icipa	1:									date cor	npleted:	25 Aug 2015	
proj	ject:	S	Sydn	ey O	ne Project						logged b	by:	BY	
loca	ation	: (Goldi	ield l	House Basement						checked	l by:	MG	
posi	tion:	E: 33	4315; N	: 62517	17 (WGS84 Zone 56) surfa	ace elevation: -4.57	m (AHD)		angle	e from horizo	ontal: 90°		
drill	mode	el: XC	Rig, Tr	ack mou	inted drilli	ng fluid:				casin	g diameter :	HW		
dril	ling i	nform	ation	mate	rial substance material descriptio	N	જ	estimated	samples,	rock	mass defect	1	dditional observations and	
method & support	water	RL (m)	depth (m)	graphic log	ROCK TYPE: grain chara colour, structure, minor co	cterisics,	weathering a	strength & Is50 ×=axial; O=diametral	field tests & Is(50) (MPa) a = axial; d = diametral	core run & RQD	spacing (mm)		defect descriptions nation, planarity, roughness, thickness, other)	, coating, general
	>				SANDSTONE: fine to medium gra		FR				0 - 0 - 0	paraoaiai		gonora
	ble	21	- - - - - - - - - -		massive, trace carbonaceous fleck (continued)	s and laminations.			a=1.61 d=0.71	100%				-
	Not Observable			· · · · · ·					a=1.27 d=1.41					-
NMLC	Not OI	23	18.0		SANDSTONE: fine to medium gra distinctly bedded at 5° to 10°.	ined, pale grey,			a=1.47 d=1.66	99%				-
to:		_	- 19.0 —				-		a=1.00					-
		24	- - - - 		LAMINITE (60% SILTSTONE, 40 siltstone is dark grey, sandstone is grey, distinctly laminated at 0° to 1 SANDSTONE: fine to medium gra massive to indistinctly bedded at 0 carbonaceous flecks and laminatic	fine grained, pale 0°. ined, pale grey, °, trace	-		d=1.06	100%				-
		25	-	-	Borehole BH04 terminated at 20.00 Target depth	/			d=1.78					-
		_	- 21.0 — -	-										-
		26	-	-										-
		27	22.0	-										-
			- - 23.0	-										- -
		28	-											-
, ,			-											-
AS AD CB W NM NC HC SP	AD auger drilling CB claw or blade bit W washbore VMLC NMLC core (51.9 mm) VQ wireline core (47.6mm HQ wireline core (63.5mm PQ wireline core (63.5mm PC wireline core (85.0mm PT standard penetration							material) ed		ual soil mely we v weathe ctly weath erately w ly weath ith A for alt	athered ered ithered eathered eered	SS shea CS crush SM seam DB drillin roughnes SL slich	ng PL planar CU curved ar zone UN undulat ir surface ST steppec hed seam IR Irregula n ng break	ting d
DT HE ND	E h		cavatio	n e drilling	water pressure test result (lugeons) for depth interval shown	RQD = Rock Q			M mediu H high VH very hi EH extrem	gh	1	SO smo RO roug	ooth VN veneer	



drawn	BC		Client: Wanda One Sydney Pty Ltd									
approved	MG	coffey?	project:	Sydney O								
date	4/09/2015		title:									
scale	N.T.S.		CORE PHOTOGRAPH BH04									
original size	A4		project no:	GEOTLCOV24001AF	fig no:	FIGURE 1	rev:					



drawn		BC		client: Wanda One Sydney Pty Ltd									
approve	ed	MG	coffey 🌮	project:	Sydney O								
date		4/09/2015	concy	title:									
scale		N.T.S.		CORE PHOTOGRAPH BH04									
original	size	A4		project no:	FIGURE 2	rev:							



original size	A4		project no:	GEOTLCOV24001AF	fig no:	FIGURE 3	rev:			
scale	N.T.S.		CORE PHOTOGRAPH BH04							
date	4/09/2015	ooney	title:							
approved	MG	coffey ?	project:	Sydney C						
drawn	BC		client:	Wanda One S	Sydney P	ty Ltd				



drawn	BC		client:	Wanda One	Sydney P	ty Ltd				
approved	MG	coffey?	project:	Sydney C						
date	4/09/2015		Sydney CBD, NSW							
scale	N.T.S.		CORE PHOTOGRAPH BH04							
original size	A4		project no:	GEOTLCOV24001AF	fig no:	FIGURE 4	rev:			



		U								Boreh	nole	ID	BH05
	_	_		_						sheet			1 of 4
Eng	gin	eeri	ng	j L	_0] -	Bo	rehole		projec		,	GEOTLCOV24001AI
client:		/anda	_							date s			17 Aug 2015
principa				-,		,,				date of			
		ydney	On		roior	` +							BY
project:		-			-					logge	-		
location		oldfiel					ent			check		-	MG
-		267; N: 62 ig, Track			iS84 Zo	one 56)		surface elevation: -4.57 m (AHD)	-	e from ho Ig diamet			90°
drilling		-		.00		mate	rial sub	stance		galario			
~	ation	sample	es &		(бо	ation	material description		sy / insity		and ietro-	structure and additional observations
method & support	² penetration	field te		RL (m)	depth (m)	graphic log	classification symbol	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	(k	eter Pa)	
 1 DANKS 				_	-			CONCRETE : (0.165 m).		-	T	T	CONCRETE
AD/T DT	Not Observable			-5			GP	FILL: GRAVEL: coarse grained, sub-angular to angular, dark grey.	D				DRAINAGE LAYER
취				Ĵ	-			Borehole BH05 continued as cored hole					
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AS au HA ha W wa DT dia HE ha NDD no	AD auger drilling* AS auger screwing* HA hand auger W washbore DT diatube HE hand excavation NDD non destructive drilling			pene	mud casing etration		I	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 penetroint test (SPT) N* SPT - sample recovered	based Classific moisture D dry M moist W wet	lescriptio I on Unification System	n ed		consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose
e.g. AD B bla T TC	D/T ank bit D bit bit	by suffix			leve	er inflow er outflov	shown	Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	Wp plastic Wl liquid l	limit imit			L loose MD medium dense D dense VD very dense



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E	2	Nin	~~~	rin	alaa Cara	Doroh					sheet:		2 of 4	
	ПĆ				g Log - Coreo	a porei	IOIE	;			project r	10.	GEOTL	COV24001AF
clie	nt:	V	Vanc	la Or	ne Sydney Pty Ltd						date sta	rted:	17 Aug	2015
prin	icipa	al:									date cor	npleted:	18 Aug	2015
proj	ject:	S	Sydn	ey O	ne Project						logged b	by:	BY	
loca	atior	n: C	Goldf	field l	House Basement						checked	l by:	MG	
posi	tion:	E: 334	1267; N	: 62517:	30 (WGS84 Zone 56) surfa	ace elevation: -4.57	m (AHD)		angle	e from horizo	ontal: 90°		
drill	mod	el: XC I	Rig, Tra	ack mou	unted drilli	ng fluid:				casir	ng diameter	HW		
dril	ling	inform	ation	mate	rial substance material descriptio	n	ళ	estimated	samples,	rock	mass defe defect		Iditional obser	vations and
od &		Ê	(E	graphic log	ROCK TYPE: grain charac colour, structure, minor co	cterisics,	weathering alteration	strength & Is50 ×= axial;	field tests & Is(50)	ΞQ	spacing (mm)		defect desc ation, planarity	riptions , roughness, coating,
method & support	water	RL (m)	depth (m)	graph			weath altera	X=axiai; O=diametral ⊰ _ ≅ ± 못 급	(MPa) a = axial; d = diametral	core run & RQD	30 100 3000 3000	particular	thickness,	general
			-											_
		-5	-		start coring at 0.43m SANDSTONE: fine to medium gra	ined, pale grev.	SW	 @×	a=1.26					_
			-	· · · · ·	massive to indistinctly bedded at 0 carbonaceous flecks and lamination	°, trace	FR		d=0.65			_		-
		-	1.0	· · · · · · · · · ·										_
			-	· · · · ·				 	a=1.34 d=1.74					=
		6	-	· · · · · · · · · ·					u					-
			-							100%				-
			2.0-							10070		_		
		7	-	· · · · ·										-
			-	· · · · ·					a=1.59 d=1.61					-
		-	3.0-						u 1.01					
14:34			-	· · · · · · · · · ·										-
0/2015		8	-	· · · · ·					- 4 5 4	100%				Ċ
> 02/1	ble		-						a=1.54 d=1.49					L, RO scribec
ngFile>	Not Observable	-	4.0-	· · · · · · · · · ·					-1.01					10°, P se des
< <drawingfile>> 02/10/2015 14:34 </drawingfile>	Not O	9	-	· · · · ·					a=1.31 d=1.37					PT, 0 - 10°, PL, RO, CN, otherwise described
_		9	-	· · · · ·										are:P
001AF.			-	· · · · ·						100%				Defects are: unless
COV24			5.0 -	· · · · ·	SANDSTONE: medium grained, p dark grey laminations, distinctly be							JT, 40 - 4	15°, PL, RO, C	N <u>õ</u> –
SEOTL		10	-	· · · · ·					a=0.98		lii Lii	_		-
RED			-	· · · · · · · · · ·					d=1.82					
CO LEI		+	6.0	· · · · ·										-
CDF_0_9_04BB.GLB Log COF BOREHOLE: CORED GEOTLCOV24001AF.GP.			-							100%				-
COF B		11	-					%	a=1.38 d=1.08					
g Log			-											
BB.GLE			7.0-											
0.40		12	-									— JT, 70°, F	PL, RO, CN	-
CDF			-						a=1.19	100%				
		_	-	· · · · · · · · · ·					d=1.24	, P oltor		defect type		nlonority
Me AS AD	; ;	& supp auger s auger d	crewing	9	water	graphic log / com		У	XW extrem	ual soil mely we	athered	PT partin JT joint	g	planarity PL planar CU curved
CB W	3	claw or washbo	blade b re		level on date shown water inflow	(graphic syn	nbols indicate	material)	HW highly DW distin	y weathe ictly wea	ered		zone surface ed seam	UN undulating ST stepped IR Irregular
NM NG HC	2	wireline	e core (4	.9 mm) 17.6mm 33.5mm	complete drilling fluid loss	no core	recovere	ed	SW slight	ly weath	nered	SM seam DB drilling		
PG) РТ	wireline standar	e core (8 d penet	35.0mm		core run & RQD	والمراجع والمراجع		*W replaced w strength VL very lo	ini A for alt	เลเลของ		ensided	coating CN clean
DT HE		test diatube hand e>	cavatio	'n	water pressure test result (lugeons) for depth interval shown	RQD = Rock Q	vithdrawr		L low M mediu H high	m		POL polis SO smo RO roug	oth	SN stain VN veneer CO coating
ND	D	non des	structive	e drilling	interval shown				VH very hi EH extrem		1 <u> </u>	VR very	rough	- s county



				9						Borehol	e ID.	BH05			
	n	nin		rin	alog Coroc	Borok		•			sheet:		3 of 4		
	ΠĆ				g Log - Corec	Dotei		9			project r	10.	GEOTI	LCOV24	001AF
clier	nt:	ŀ	Vanc	la Or	ne Sydney Pty Ltd						date sta	rted:	17 Aug	y 2015	
prin	cipa	al:									date cor	npleted:	18 Aug	2015	
proj	ect:	S	Sydn	ey O	ne Project						logged b	by:	BY		
loca	ition	: (Goldf	ïeld l	House Basement						checked	l by:	MG		
posit	ion:	E: 334	4267; N	: 62517:	30 (WGS84 Zone 56) surfa	ce elevation: -4.57	m (AHE))		angle	from horizo	ontal: 90°			
			-	ack mou		g fluid:				-	g diameter				
drill	ing i	inform	ation	mate	rial substance material description	1	ళ	estimated	samples,	rock	mass defe defect		ditional obse	rvations and	
method & support	water	RL (m)	depth (m)	graphic log	ROCK TYPE: grain charact colour, structure, minor con		weathering alteration	strength & Is50 X=axial; O=diametral ਤ _ ≥ ∓ 5 ⊞	field tests & Is(50) (MPa) a = axial; d = diametral	core run & RQD	spacing (mm)	(type, inclina particular	defect deso ation, planarit thickness	y, roughness,	coating, general
- NMLC -	Not Observable	13 14 15 16 17 18 19	9.0		 SANDSTONE: medium grained, pa dark grey laminations, distinctly bec (continued) SANDSTONE: fine to medium grain indistinctly cross bedded at 10° to 1 BRECCIA: dark grey siltstone clast medium to coarse grained sandstor massive. SANDSTONE: medium grained, pa massive to indistinctly bedded at 0° carbonaceous flecks and lamination SANDSTONE: fine to medium grain distinctly bedded at 5° to 10°. SANDSTONE: fine to medium grain distinctly bedded at 10°. 	Ideā at 5° to 10°. ned, pale grey, 5°. s within a ne matrix, lie grey, trace is.	FR		a=1.29 d=1.40 a=1.26 d=1.03 a=0.24 d=0.71 d=1.96 d=1.67 a=1.34 d=1.56 a=0.68 d=1.37 a=1.26 d=1.40	100% 100% 100% 100%			0°, PL, RO, 0		Defects are:PT, 0 - 10°, PL, RO, CN,
		20	15.0 — - - -						a=1.39 d=1.56	100%		-			-
AS AD CB W NQ HQ PQ SP DT HE	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 (85.0mm) SPT standard penetration test DT diatube HE hand excavation NDD				water 10/10/12, water level on date shown water inflow complete drilling fluid loss partial drilling fluid loss partial drilling fluid loss partial drilling fluid loss	(graphic syn no core core run & RQD	covered mbols indicate e recover	e material) red	XW extreme HW highly DW distin MW mode	ual soil mely we y weathe ictly weathe erately w thy weath ith A for alt w m	athered red thered eathered ered eration	CS crushe SM seam DB drilling roughness SL slick POL polis SO smoo RO rough	g zone surface ed seam g break ensided hed oth	Planarity PL planar CU curved UN undula ST steppe IR irregula Coating CN clean SN stain VN veneer CO coating	d ar



14.04

-				J							Borehole	e ID.	BH05	
		-1-	~~	i		Darah		-			sheet:		4 of 4	
	nõ	JIN	ee	rin	g Log - Coreo	a Boren		9			project r	10.	GEOTLCO	V24001AF
clier	nt:	V	Vano	la Or	ne Sydney Pty Ltd						date sta	rted:	17 Aug 20	15
prin	cipal	l:									date cor	npleted:	18 Aug 20	15
proj	ect:	S	ydn	ey O	ne Project						logged b	y:	BY	
loca	tion	G	Goldf	ïeld l	House Basement						checked	l by:	MG	
posit	ion:	E: 334	267; N	: 62517	30 (WGS84 Zone 56) surfa	ace elevation: -4.57 ı	m (AHD))		angle	e from horizo	ontal: 90°		
			-	ack mou	unted drilli rial substance	ng fluid:					g diameter : mass defeo			
um	ling i	nform			material description	n	å	estimated	samples,	TUCK	defect		Iditional observation	
method & support	ter	RL (m)	depth (m)	graphic log	ROCK TYPE: grain charac colour, structure, minor co		weathering { alteration	strength & Is50 ×= axial; O= diametral	field tests & Is(50) (MPa)	core run & RQD	spacing (mm)	(type, inclina	defect descriptior ation, planarity, roug thickness, other	hness, coating,
sup	water	교	deb	. gra	CANDOTONE: fine to medium and	ined note every	alte BH	루그호프루프	a = axial; d = diametral		300 300 300 300 300 300 300 300 300 300	particular		general
			-	· · · · · · · · · ·	SANDSTONE: fine to medium gra indistinctly bedded at 10°. (continu		FK			100%				-
	Observable	21	-	· · · · · · · · · ·										-
NMLC -	Not Obse		-	· · · · · · · · · ·						100%				-
	10% N		17.0	· · · · ·										-
		22	-	· · · · ·										-
v	Y		-	· · · · ·	Borehole BH05 terminated at 17.70) m								¥
		-	18.0 —		Target depth									_
			-											-
		23	-											-
		L	-											-
			19.0 —											-
		24	-											-
			-											-
		-	20.0 —											_
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		25	-											-
		L	-											-
			21.0											-
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			-											-
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			23.0 —											-
		28	-											-
			-											-
mo	hod	- & supp	ort		water	graphic log / core	racova	liiii	weathering	& altera		defect type		
AS AD	a a	uger s uger d	crewing rilling		🖝 10/10/12, water	core rec		ıy	RS residu XW extrer	ual soil	athered	PT partin JT joint SZ shear	CU	planar curved undulating
CB W	w	/ashbo	blade b re ore (51	it .9 mm)	water inflow	(graphic sym	bols indicate		DW distin MW mode	ctly wea erately w	athered reathered	SS shear CS crush	surface ST ed seam IR	stepped Irregular
NQ HQ	N N	/ireline /ireline	core (4 core (6	7.6mm 3.5mm	partial drilling fluid loss	no core	recover	ed	SW slight FR fresh *W replaced wi strength	ly weath ith A for alt		SM seam DB drilling	g break	
PQ SP	T s	tandar	core (8 d penet	5.0mm ration	-	core run & RQD	ithdrawi	n	strength VL very lo L low	w		Foughness SL slick POL polis		i ng clean stain
DT HE	h	est iatube and ex	cavatio	n drillina	u water pressure test result G (lugeons) for depth	RQD = Rock Qu			M mediu H high			SO smo	oth VN	veneer coating
ND	n ש	UT des	auctive	drilling	™ interval shown				VH very hi EH extrem		1	VR very	rougn	



original size	A4		project no:	GEOTLCOV24001AF	fig no:	FIGURE 1	rev:
scale	N.T.S.		title:	CORE PHO	DTOGRA	PH	
date	4/09/2015	concy		Sydney C	BD, NSV	V	
approved	MG	coffey ?	project:	Sydney O			
drawn	BC		client:	Wanda One S	Sydney Pt	y Ltd	



original size	A4		project no:	GEOTLCOV24001AF	fig no:	FIGURE 2	rev:
scale	N.T.S.		uue.	CORE PHO BH	DTOGRA 105	νРН	
date	4/09/2015	ooncy	title:	Sydney C	BD, NSV	V	
approved	MG	coffey ?	project:	Sydney O			
drawn	BC		client:	Wanda One S	Sydney Pl	y Ltd	





scale

original size

N.T.S.

A4

CORE PHOTOGRAPH

BH05

GEOTLCOV24001AF

fig no:

FIGURE 4

rev:

project no:



	ngi	ne	ering	_				rehole		sheet projec date s		BH06 ^{1 of 4} GEOTLCOV24001A 26 Aug 2015 27 Aug 1975
proje	ct:	Sv	dney Or	ne P	rojeo	ct				logge	d by:	BY
locati		-	ldfield F		-		ent				ked by:	MG
	-		7; N: 625171					surface elevation: -4.57 m (AHD)	angle		rizontal: 90°	
			, Track mou	•		,		× ,	-	g diamet		
drilli	ng info	ormati	on	1		mate	erial sub	stance				
method & support	¹ 2 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 penetro- meter (kPa) © 8 8 8 9	structure and additional observations
					_			CONCRETE: 0.15 m.	W	-	$ \sim$	ONCRETE
HE WU		Observable		5	-			FILL: GRAVEL: coarse grained, sub-angular to angular, dark grey.	vv			RAINAGE LAYER
<u> </u>		Z		6	- 1.0 - - 2.0			Borehole BH06 continued as cored hole				
				7	- - - 3.0-							
				8	-							
				9	4.0							
				10	5.0							
				11	- 6.0 — - -							
				12	- 7.0 - - -							
metho AD AS HA W DT HE NDD * e.g. B T V	auger auger hand a washt diatub hand o non do	screw auger bore excava estruct bwn by bit	ing*	pen wate	■ 10-1 leve		ater shown	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/remouded (kPa) R refusal HB hammer bouncing		lescriptio on Unificiation System	n ed	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



-			_	J								Borehol	e ID.	BH06
	\mathbf{n}	nin	~~	rin	alog Coro	1 Barak		•				sheet:		2 of 4
	Π				g Log - Coreo		IOIE	;				project r	10.	GEOTLCOV24001A
clie	nt:	V	Vano	la Or	ne Sydney Pty Ltd							date sta	rted:	26 Aug 2015
prin	cipa	al:										date cor	mpleted:	27 Aug 1975
proj	ect:	S	Sydn	ey O	ne Project							logged b	by:	BY
loca	atior	n: G	Goldf	ïeld l	House Basement							checked	l by:	MG
posit	tion:	E: 334	277; N	: 62517	18 (WGS84 Zone 56) surfa	ace elevation: -4.57	m (AHD)			angle	e from horizo	ontal: 90°	
				ack mou		ng fluid:						ng diameter		
drill	ling	inform	ation		erial substance material description	n	બ્ર	estin	nated	samples,	rock	mass defe defect	1	ditional observations and
s po a bo		Ē	Ē	graphic log	ROCK TYPE: grain charac colour, structure, minor co		nering ttion	stre & l: ×=:	s50	field tests & Is(50) (MPa)	ыg	spacing (mm)	(type, inclina	defect descriptions ation, planarity, roughness, coating
method & support	water	RL (m)	depth (m)	graph			weathering	O=dia ⊇ ⊑	metral	a = axial;	core run & RQD	30 100 3000 3000	particular	thickness, other) genera
			-											
		5	-		start coring at 0.52m									
			-	· · · · · · · · · ·	SANDSTONE: medium grained, p massive.	ale grey,	FR		 	a=1.43 d=1.52			— JT, 20°, F	PL, RO, SN, Fe
		+	1.0	· · · · ·						4 1.02	95%			-
			-	· · · · ·										
		6	-											
			-	· · · · ·					1	a=1.54 d=1.57				
			2.0	· · · · · · · · · ·				Li i			100%			-
		7	-	· · · · ·	SANDSTONE: medium grained, p indistinctly cross bedded at 10° to	ale grey, 15°.								
			-	· · · · · · · · · ·					8 8	a=1.62 d=1.61				
		-	- 3.0	· · · · ·					8 	u=1.01				_
5				· · · · ·										
		8	-	· · · · · · · · · ·							93%			
	e		-					11	Ø 	a=1.23 d=1.39		╎╅┼┼┦	► PT, 10°, F	PL, Clay, 10 mm PL, RO, CN
5	Not Observable	-	4.0-	· · · · ·	SANDSTONE: fine to medium gra	ned nale arev	-						SM, 0 - 5	°, PL, Clay, 20 mm -
NMLC	Vot Obs		-	· · · · ·	distinctly bedded at 0° to 10°.	rica, paio groy,								
	2	9	-						8 8					
			-	· · · · ·					- 1	a=1.36 d=1.55	100%			
			5.0	· · · · ·										-
		10	-	· · · · ·				11		a=1.12 d=1.09				
			-											
3		+	6.0											-
			-											
5		11	-	· · · · ·	SANDSTONE: medium grained, p massive to indistinctly bedded at 0		-		o t 	a=1.90 d=1.64	100%		PT, 0°, U	N, RO, CN
			-	· · · · ·	carbonaceous flecks and laminatio									
		F	7.0 —					11						- ²L, Sandy clay, 3 mm
		12	-	· · · · ·					ox 	a=1.69 d=1.36			, • , 1	
טרוביים אופניארבי במן כטר בטתבווטבב: כטרבבו פבטרבטטעצאט ואריסר			-	· · · · ·							99%			
		-	-											
AS		& supp auger s	crewing	1	water	graphic log / cor	e recover	ry			ual soil	ation*	defect type PT parting JT joint	
AD CB W		auger d claw or washbo	blade b re		■ 10/10/12, water level on date shown water inflow		covered mbols indicate	material)		HW highly DW distin	y weather	ered athered	SZ shear SS shear	zone UN undulating surface ST stepped
NM NG	ILC	NMLC of wireline	ore (51 core (4	7.6mm	complete drilling fluid loss	no core	e recovere	ed		SW slight	ly weath		CS crushe SM seam DB drilling	
HQ PQ SP		wireline wireline standar	core (8	5.0mm	│	core run & RQD				*W replaced wi strength VL very lo	ith A for all	eration	roughness	
DT HE		test diatube hand ex			water pressure test result (lugeons) for depth interval shown		vithdrawr		on /0/	L low M mediu			POL polis SO smoo	hed SN stain oth VN veneer
ND	D	non des	tructive	drilling	interval shown	RQD = Rock Q	uanty De	aignati	UII (70	H high VH very hi EH extrem		1	RO roug VR very	h CO coating rough



												Boreh	ole ID.	BH06
E	n	nir	00	rin		1 Borok	nola	`				sheet:		3 of 4
	<u> </u>	_			g Log - Coreo	Dolei		7				projec	no.	GEOTLCOV24001A
clie	nt:	ŀ	Vanc	la Or	ne Sydney Pty Ltd							date s	arted:	26 Aug 2015
prin	icipa	al:									date completed:			27 Aug 1975
proj	ect:	S	Sydn	ey O	ne Project						logged by:			BY
loca	atior	n: C	Goldi	ield l	House Basement							check	ed by:	MG
posit	tion:	E: 334	1277; N	: 62517	18 (WGS84 Zone 56) surfa	ace elevation: -4.57	m (AHD)			angle	e from hor	zontal: 90°	
								g diamete						
dril	ling	inform	ation	mate	erial substance material description	n	۰ð	estimate	ed	samples,	rock	mass def defect		ditional observations and
method & support	water	RL (m)	depth (m)	graphic log	ROCK TYPE : grain charac colour, structure, minor co	cterisics,	weathering alteration	strengti & Is50 X= axial; O= diametr) ; ral	field tests & Is(50) (MPa) a = axial; d = diametral	core run & RQD	spacing (mm)	(type, inclina	defect descriptions ation, planarity, roughness, coating, thickness, other) general
c o	5	<u> </u>	σ	5			≤ no FR	M H M L K	> □	u – ulametrai	<u>ں</u> ~			general
		13	-				_			- 1.01	99%		SM, 0°, F	- PL, Sandy clay, 3 mm
			-	· · · · ·	SANDSTONE: fine to medium grai distinctly cross bedded at 15° to 20					a=1.81 d=1.46				
		-	9.0									Ľ	: I	'L, RO, CN
			9.0-						il.					L, NO, ON
		14	-						il.		99%			
			-		SANDSTONE: fine to medium grai	ned pale grev	-	28		a=1.40 d=1.19			PT, 0°, P	L, RO, CN
		F	10.0 —		indistinctly bedded at 0° to 10°.	nica, paio groj,								-
			-	· · · · ·						a=1.48 d=1.20			1	
		15	-						i					-
			-						il.		99%			
5			11.0 —	· · · · ·						a=1.28 d=1.12	0070			-
		16	.	· · · · ·						u=1.12			SM, 0°, F	PL, Sandy clay, 10 mm
	vable		-	· · · · ·										
NMLC	Not Observable	-	- 12.0 —						i l					-
N N	Not								il.					
		17	-	· · · · ·							100%			
			-	· · · · ·						a=0.90				
		F	13.0 —							d=1.49				-
			-					Øš		a=1.82 d=1.53				
		18	-	· · · · ·					il.			1111		
			-								100%			-
			14.0											-
		19	-											L, RO, CN
מט "ר"", אפריטינג גיא פטו בטוריו טריי פטויבר פרי גיעו א אין א			-							a=1.25 d=1.49			I,J,F 	
		+	- 15.0 —		CANDOTON		_		i					-
			-		SANDSTONE: medium grained, p massive to indistinctly bedded at 0 carbonaceous flecks and laminatio	°, trace					100%			
		20	-			113.		0		a=2.28 d=1.88	100 70			-
			-											-
me AS AD	; ;	& supp auger s auger d	crewing)	water	graphic log / com		ry			ial soil nely we	athered	defect type PT partin JT joint	g PL planar CU curved
CB W		claw or washbo	blade b re		level on date shown water inflow	(graphic syn	covered nbols indicate	material)	1	HW highly DW distine	weathe	ered		r zone UN undulating r surface ST stepped led seam IR Irregular
NM NG HQ	2	wireline	core (4	.9 mm) 17.6mm 33.5mm	complete drilling fluid loss	no core	recovere	ed		SW slightl FR fresh	y weath	nered	SM seam DB drillin	-
PQ) T	wireline standar	core (8 core (8 d penel	35.0mm		core run & RQD				W replaced with strength VL very low	m A for alt N	eration	roughness SL slick	coating censided CN clean
DT HE		test diatube hand ex	cavatio	'n	water pressure test result		vithdrawr uality De				n		POL polis SO smo RO roug	oth VN veneer
ND		diatube water pressure test result M medium hand excavation (lugeons) for depth RQD = Rock Quality Designation (%) H high						1		rough				



	-	-			J								Boreho	le ID.	BH06	
client: Wanda One Sydnay Pty Ltd principal: client: Sydnay One Project cucator: Golffield House Basement cucator: Golffield House Basement cucator: Golffield House Basement cucator: Golffield House Basement cucator: Golffield House Basement cutator: Golffield House cutator: Golffield House cutator: Golffield House cutator: Golffield House cutator: Golf				~~~		alaa Cara	d Darak		_				sheet:		4 of 4	
primpel:		ΠĆ					a porei	1016	•				project	no.	GEOTLCOV	24001AF
proprie Spanne Propried proprie propried	clie	nt:	V	Vano	la Or	ne Sydney Pty Ltd							date sta	arted:	26 Aug 2015	
Income OddRed House Besenett Decknow Mdd product E. SM27, N. ESTF1 (WC384, Zor SH) and elevalut42 (fir (AL)) are granted to the standard of the	prin	cipa	1:									date completed:			27 Aug 1975	
position: E. 394277. Nr. 0851716 (WCSH Zore 56) surface downlos: 4-57 m (440) angle from horizonal: 00' diffinition: diffinit: diffinition: diffinition: diffinition: diffinit: diff	proj	ect:	S	Sydn	ey O	ne Project							logged	BY		
millionality Ling material substance materia	loca	tion	: C	Goldf	ïeld I	House Basement							checke	d by:	MG	
detIlling information material abstance material abstance material abstance material abstance 9 30 <th>posit</th> <th>tion:</th> <th>E: 334</th> <th>4277; N</th> <th>: 62517</th> <th>18 (WGS84 Zone 56) surfa</th> <th>ace elevation: -4.57</th> <th>m (AHD</th> <th>)</th> <th></th> <th></th> <th>angle</th> <th>from horiz</th> <th>ontal: 90°</th> <th></th> <th></th>	posit	tion:	E: 334	4277; N	: 62517	18 (WGS84 Zone 56) surfa	ace elevation: -4.57	m (AHD)			angle	from horiz	ontal: 90°		
Note: Note: <th< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th>ng fluid:</th><th></th><th></th><th></th><th></th><th></th><th>-</th><th></th><th></th><th></th></th<>							ng fluid:						-			
Image: second	dril	ingi	nform	ation			n	ళ				rock	defect			nd
Image: second	method & support	water	RL (m)	depth (m)	graphic log			weathering	& Is50 X=axial; O=diamet) ; tral	& Is(50) (MPa) a = axial;	core run & RQD	(mm)		ation, planarity, roughne	-
Image: section of the section of th		_	-			SANDSTONE: medium grained, p	ale grey,					-				
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NQ wireline core (63.5mm) partial drilling fluid loss Image: Core run & RQD FR fresh fresh Toughness coating PQ wireline core (63.5mm) Image: Core run & RQD VL very low Strength VL very low SL slickensided CN clean DT diatube Image: Core run & RQD VL very low SL slickensided SN stain DT diatube Image: Core run & RQD	W NM	ILC N	vashbo MLC (ore core (51	.9 mm)	water inflow					MW mode	rately w	eathered	CS crush	ed seam IR Irreg	
SPT standard penetration test	NQ HQ	i v v	vireline vireline	e core (4 e core (6	7.6mm 3.5mm	partial drilling fluid loss					ED frech			DB drillin	g break	
HE hand excavation \vec{k} (lugeons) for depth NDD non destructive drilling interval shown RQD = Rock Quality Designation (%) H high VR very high CO coating VR very rough	SP	T s	standar	d penet					n		VL very lov L low	w		SL slick POL polis	ensided CN clea shed SN stai	n
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original size	A4		project no:	GEOTLCOV24001AF	fig no:	FIGURE 4	rev:
scale	N.T.S.			CORE PHO Bł	DTOGRA	N PH	
date	4/09/2015	concy	title:	Sydney C			
approved	MG	coffey?	project:	Sydney O			
drawn	BC		client:	Wanda One S	Sydney Pt	y Ltd	



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 μm to 2.36 mm
	medium	200 μm to 600 μm
	fine	75 μm to 200 μm

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	CE	MENTING
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 Structure and fabric of parent rock visible. weathered material									
Residual soil	Structure and fabric of parent rock not visible.								
TRANSPORTE									
Aeolian soil	Deposited by wind.								
/ collar soli	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.								

coffey **>**

Soil Description Explanation Sheet (2 of 2)

(Exclu	Iding				ON PROCEDURE and basing fractions		USC	PRIMARY NAME		
(0		arse 36 mm	CLEAN GRAVELS (Little or no fines)		range in grain size a ints of all intermediat		GW	GRAVEL		
3 mm is		/ELS If of co than 2.	CLE GRAN (Lit or fine		ominantly one size or more intermediate siz		GP	GRAVEL		
SUILS than 6 m	eye)	GRAVELS More than half of coarse ction is larger than 2.36 m	/ELS FINES ciable unt nes)		plastic fines (for iden edures see ML below		GM	SILTY GRAVEL		
A COARSE GRAIINED SOILS More than 50% of materials less than 63 mm is larger than 0.075 mm about the smallest particle visible to the naked evel	e naked	GRAVELS More than half of coarse fraction is larger than 2.36 mm	GRAVELS WITH FINES (Appreciable amount of fines)		ic fines (for identificat CL below)	tion procedures	GC	CLAYEY GRAVEL		
	ble to th		AN IDS or s)		range in grain sizes a ints of all intermediat		SW	SAND		
	icle visi	DS f of coa than 2.(CLEAN SANDS (Little or no fines)		ominantly one size or some intermediate siz		SP	SAND		
	lest part	SANDS More than half of coarse fraction is smaller than 2.36 mm	SANDS WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML below).			SM	SILTY SAND		
	the sma	More fraction i	SAI WITH (Appre amo	Plastic fines (for identification procedures see CL below).			SC	CLAYEY SAND		
	out		IDENTIFICAT	TION PROCEDURES ON FRACTIONS <0.2 mm						
nan	s ab		DRY STREN	GTH	DILATANCY	TOUGHNESS				
ובאו less th 75 mr	particle is	CLAYS limit an 50	None to Low	,	Quick to slow	None	ML	SILT		
ED SC aterial an 0.0	nm pa	SILTS & CLAY: Liquid limit less than 50	TS & _iquid ess the	TS & -iquid ess the	Medium to H	ligh None		Medium	CL	CLAY
aRAIN of ma aller th	0.075 mm	SIL	Low to medi	um	Slow to very slow	Low	OL	ORGANIC SILT		
FINE GRAINED SOILS More than 50% of material less than 63 mm is smaller than 0.075 mm	(A 0	CLAYS I limit than 50	Low to medium		Slow to very slow	Low to medium	МН	SILT		
ore tha 3 mm		~ O T	High	None		High	СН	CLAY		
Mc 6		SILTS Liqui greater	Medium to H	ligh	None	Low to medium	ОН	ORGANIC CLAY		
HIGHL' SOILS	Y OF	RGANIC	Readily ident frequently by		y colour, odour, spon Is texture.	gy feel and	Pt	PEAT		

SOIL CLASSIFICATION INCLUDING IDENTIFICATION AND DESCRIPTION

• Low plasticity – Liquid Limit $w_{\rm L}$ less than 35%. • Medium plasticity – $w_{\rm L}$ between 35% and 50%. • High plasticity – $w_{\rm L}$ 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.	ALL DE LE DE
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)

DEFINITIONS	: Roo	ck substance, defect and mass are defined as follo	ows:				
	ce In e disi	ngineering terms rock substance is any naturally or ntegrated or remoulded by hand in air or water. Ot nogenous material, may be isotropic or anisotropic	ccurring aggregate her material is des				
Defect Mass	Dis Any	continuity or break in the continuity of a substance / body of material which is not effectively homogenec re substances with one or more defects.	e or substances.	two or m	ore substances	without defects, or one or	
SUBSTANCE		CRIPTIVE TERMS:	ROCK	SUBST	ANCE STRE	NGTH TERMS	
ROCK NAME	Cin	and rock names are used rother than provise	Term	Abbrou	Point Load	Field Guide	
		nple rock names are used rather than precise ological classification.	iem	iation	Index, I _{s(50)} (MPa)		
PARTICLE SIZE		in size terms for sandstone are:					
Coarse grained		inly 0.6mm to 2mm	Very Lov	v VI	Less than 0.1	Material crumbles under firm	
0		inly 0.2mm to 0.6mm	Very Lov	V VL	Less indit 0.1	blows with sharp end of pic	
Fine grained		inly 0.06mm (just visible) to 0.2mm				can be peeled with a knife; pieces up to 30mm thick ca	
ABRIC		ms for layering of penetrative fabric (eg. bedding, avage etc.) are:				be broken by finger pressure	
Massive	No	layering or penetrative fabric.			041.00		
Indistinct	Lay	ering or fabric just visible. Little effect on properties.	Low	L	0.1 to 0.3	Easily scored with a knife; indentations 1mm to 3mm show with firm bows of a	
Distinct		rering or fabric is easily visible. Rock breaks more sily parallel to layering of fabric.				pick point; has a dull sound under hammer. Pieces of core 150mm long by 50mm	
Term Abb	reviat					diameter may be broken by hand. Sharp edges of core may be friable and break	
Residual Soil	RS	Soil derived from the weathering of rock; the mass structure and substance fabric are no				during handling.	
		longer evident; there is a large change in volume but the soil has not been significantly transported.	Medium	М	0.3 to 1.0	Readily scored with a knife; piece of core 150mm long b	
Extremely Weathered	xw	Material is weathered to such an extent that it has soil properties, ie, it either disintegrates or				50mm diameter can be broken by hand with difficult	
Material		can be remoulded in water. Original rock fabric still visible.	High	н	1 to 3	A piece of core 150mm lon by 50mm can not be broke	
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				by hand but can be broken by a pick with a single firm blow; rock rings under hammer.	
		leaching or may be decreased due to the deposition of minerals in pores.	Very Hig	h VH	3 to 10	Hand specimen breaks aft more than one blow of a pick; rock rings under hammer.	
Moderately Weathered	MW	The whole of the rock substance is discoloured, usually by iron staining or bleaching , to the					
Rock		extent that the colour of the fresh rock is no longer recognisable.	Extreme High	ly EH	More than 10	Specimen requires many blows with geological pick	
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	Notes on	Bock Si	ubstance Stre	break; rock rings under hammer.	
		fresh rock substance.				o strength applies to the strengt	
Fresh Rock	FR	Rock substance unaffected by weathering.	perpend break rea	cular to the	e anisotropy. High el to the planar ar	n strength anisotropic rocks ma hisotropy.	
	ts the te	erm "Distinctly Weathered" (DW) to cover the range of conditions between XW and SW. For projects where it i	term. Wr makes it	ile the terr	n is used in AS17	d as a rock substance strength 26-1993, the field guide thereir strength range are soils in	
advantage in ma given in AS1726	aking su i.	te between HW and MW or it is judged that there is no ich a distinction. DW may be used with the definition emical changes were caused by hot gasses and liquic	anisotrop 10 to 25	bic rocks w times the p	hich fall across the point load index l	th for isotropic rocks (and ne planar anisotropy) is typically s(50). The ratio may vary for rocks often have lower ratios	



Rock Description Explanation Sheet (2 of 2)

ROCK MA		Diagram		aphic Log Note 1)	DEFECT SHAPE Planar	TERMS The defect does not vary i orientation
Term	Definition				a 1	
Parting	A surface or crack across which the rock has little or no tensile strength. Parallel or sub parallel to layering		20 Bedding		Curved	The defect has a gradual change in orientation
	(eg bedding) or a planar anisotropy in the rock substance (eg, cleavage).		20 Cleavage	(Note 2)	Undulating	The defect has a wavy surface
	May be open or closed.			(NOLE 2)	Stepped	The defect has one or mo well defined steps
Joint	A surface or crack across which the rock has little or no tensile strength.				Irregular	The defect has many shar changes of orientation
	but which is not parallel or sub parallel to layering or planar anisotropy in the rock substance.		60	(Note 2)		ment of defect shape is partly by the scale of the observation
	May be open or closed.			(1010 2)	ROUGHNESS Slickensided	FERMS Grooved or striated surfac usually polished
Sheared Zone	Zone of rock substance with roughly parallel near planar, curved or				Polished	Shiny smooth surface
(Note 3)	undulating boundaries cut by closely spaced joints, sheared surfaces or other defects. Some of		35		Smooth	Smooth to touch. Few or r surface irregularities
	the defects are usually curved and intersect to divide the mass into lenticular or wedge shaped blocks.	·/· · · ·		~	Rough	Many small surface irregulariti (amplitude generally less tha 1mm). Feels like fine to coars sand paper.
Sheared Surface (Note 3)	A near planar, curved or undulating surface which is usually smooth, polished or slickensided.		40	いいがの	Very Rough	Many large surface irregularities (amplitude generally more than 1mm Feels like, or coarser than ve coarse sand paper.
Crushed Seam	Seam with roughly parallel almost planar boundaries, composed of				COATING TER	MS No visible coating
(Note 3)	disoriented, usually angular fragments of the host rock substance which may be more		50	جم م م 1/2/	Stained	No visible coating but surfaces are discoloured
	weathered than the host rock. The seam has soil properties.			17 1	Veneer	A visible coating of soil or mineral, too thin to measur may be patchy
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 ••••••••••••••••••••••••••••••••••••		Coating	A visible coating up to 1m thick. Thicker soil material usually described using appropriate defect terms (e infilled seam). Thicker roc strength material is usuall described as a vein.
					BLOCK SHAPE Blocky	Approximately
Extremely Weathered Seam	Seam of soil substance, often with gradational boundaries. Formad by weathering of the rock substance in		32	5114	Tabular	equidimensional Thickness much less than length or width
	place.	Seam	-	N.C.	Columnar	Height much greate than cross section

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.

Appendix B – Laboratory Test Certificates



mgt

Certificate of Analysis

NATA Accredited Accreditation Number 1261 Site Number 1254

Accredited for compliance with ISO/IEC 17025. The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Coffey Geotechnics Pty Ltd Chatswood Level 18, Tower B, Citadel Tower 799 Pacific Highway Chatswood NSW 2067



Attention:

Bernice Cahill

Report Project name Project ID Received Date 470640-S SYDNEY ONE GEOTLCOV24CC1AF Sep 01, 2015

Client Sample ID			BH03_(0.5-0.6)	BH03 (1 0-1 1)	BH03_(2.0-2.1)	BH03 (3.4-3.5)
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S15-Se00378	S15-Se00379	S15-Se00380	S15-Se00382
Date Sampled			Aug 24, 2015	Aug 24, 2015	Aug 24, 2015	Aug 24, 2015
•	LOR	1.1	Aug 24, 2013	Aug 24, 2013	Aug 24, 2013	Aug 24, 2010
Test/Reference Total Recoverable Hydrocarbons - 1999 NEPM Fra		Unit				
TRH C6-C9	20	ma/ka	< 20	_	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	-	< 20	< 20
TRH C15-C28	50	mg/kg mg/kg	210	-	< 50	< 50
TRH C29-C36	50		790	-	< 50	< 50
	50	mg/kg	1000	-	< 50	< 50
TRH C10-36 (Total) BTEX	50	mg/kg	1000	-	< 50	< 50
	0.1	mallea	.01		:01	.01
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	-	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	60	-	84	71
Total Recoverable Hydrocarbons - 2013 NEPM Fra						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	-	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	-	< 20	< 20
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	-	< 50	< 50
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	1.6	-	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	1.9	-	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	2.1	-	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	1.3	-	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	1.2	-	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	1.2	-	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	0.8	-	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	0.9	-	< 0.5	< 0.5
Chrysene	0.5	mg/kg	0.9	-	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	2.3	-	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	0.6	-	< 0.5	< 0.5



mgt

Client Sample ID				BH02 (4 0 4 4)	BH02 (2024)	BU02 (2 4 2 5)
Sample Matrix			BH03_(0.5-0.6) Soil	BH03_(1.0-1.1) Soil	BH03_(2.0-2.1) Soil	BH03_(3.4-3.5) Soil
Eurofins mgt Sample No.			S15-Se00378	S15-Se00379	S15-Se00380	S15-Se00382
Date Sampled			Aug 24, 2015	Aug 24, 2015	Aug 24, 2015	Aug 24, 2015
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons	1					
Naphthalene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	1.2	-	< 0.5	< 0.5
Pyrene	0.5	mg/kg	2.5	-	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	13	-	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	91	-	114	112
p-Terphenyl-d14 (surr.)	1	%	84	-	109	104
Total Recoverable Hydrocarbons - 2013 NEPM Frac						
TRH >C10-C16	50	mg/kg	< 50	-	< 50	< 50
TRH >C16-C34	100	mg/kg	670	-	< 100	< 100
TRH >C34-C40	100	mg/kg	850	-	< 100	< 100
Chloride	10	mg/kg	-	71	45	56
pH (1:5 Aqueous extract)	0.1	pH Units	-	6.8	7.4	7.3
Sulphate (as SO4)	10	mg/kg	-	600	140	300
% Moisture	0.1	%	13	11	11	18
Heavy Metals						
Arsenic	2	mg/kg	14	-	4.4	< 2
Cadmium	0.4	mg/kg	< 0.4	-	< 0.4	< 0.4
Chromium	5	mg/kg	21	-	6.3	< 5
Copper	5	mg/kg	30	-	220	11
Lead	5	mg/kg	43	-	150	15
Mercury	0.05	mg/kg	0.24	-	0.25	0.11
Nickel	5	mg/kg	5.9	-	< 5	< 5
Zinc	5	mg/kg	43	-	66	5.6
Chromium Suite	-					
pH-KCL	0.1	pH Units	-	7.5	-	6.7
Acid trail - Titratable Actual Acidity	2	mol H+/t	-	< 2	-	< 2
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	-	< 0.02	-	< 0.02
Chromium Reducible Sulfur ^{S04}	0.005	% S	-	0.090	-	0.22
Chromium Reducible Sulfur -acidity units	3	mol H+/t	-	56	-	130
Sulfur - KCI Extractable	0.02	% S	-	n/a	-	n/a
HCI Extractable Sulfur	0.02	% S	-	n/a	-	n/a
Net Acid soluble sulfur	0.02	% S	-	n/a	-	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t		n/a	-	n/a
Net Acid soluble sulfur - equivalent S% pyrite ^{S02}	0.02	% S	-	n/a	-	n/a
Acid Neutralising Capacity (ANCbt) Acid Neutralising Capacity - acidity (ANCbt)	0.01	%CaCO3 mol H+/t		0.76	-	1.5
	2	mol H+/t	-	150	-	300
Acid Neutralising Capacity - equivalent S% pyrite (s- ANCbt) ^{S03}	0.02	% S	-	0.24		0.49
ANC Fineness Factor		factor	-	1.5	-	1.5
Net Acidity (Sulfur Units)	0.02	% S	-	< 0.02	-	< 0.02
Net Acidity (Acidity Units)	10	mol H+/t	-	< 10	-	< 10
Liming Rate ^{S01}	1	kg CaCO3/t	-	< 1	-	< 1
Extraneous Material	-					
<2mm Fraction	0.005	g	-	n/a	-	n/a
>2mm Fraction	0.005	g	-	n/a	-	n/a
Analysed Material	0.1	%	-	100	-	100
Extraneous Material	0.1	%	-	< 0.1	-	< 0.1



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Client Sample ID			BH03_(3.5-3.9)	BH03_(4.5- 4.52)	BH02_(2.1-2.3)	BH02_(3.3-3.5)
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S15-Se00383	S15-Se00384	S15-Se00385	S15-Se00386
Date Sampled			Aug 24, 2015	Aug 24, 2015	Aug 27, 2015	Aug 27, 2015
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fra	-	0				
TRH C6-C9	20	mg/kg	_	_	< 20	_
TRH C10-C14	20	mg/kg		-	< 20	-
TRH C15-C28	50	mg/kg		-	< 50	-
TRH C29-C36	50	mg/kg		-	< 50	-
TRH C10-36 (Total)	50	mg/kg	-	-	< 50	-
BTEX						
Benzene	0.1	mg/kg	_	_	< 0.1	_
Toluene	0.1	mg/kg	-	_	< 0.1	_
Ethylbenzene	0.1	mg/kg	-	_	< 0.1	_
m&p-Xylenes	0.1	mg/kg	_	_	< 0.2	_
o-Xylene	0.2	mg/kg	-	-	< 0.2	-
Xylenes - Total	0.1	mg/kg	-	_	< 0.3	-
4-Bromofluorobenzene (surr.)	1	<u>%</u>	-	_	71	-
Total Recoverable Hydrocarbons - 2013 NEPM Fra		70				
Naphthalene ^{N02}	0.5	mg/kg	_	_	< 0.5	_
TRH C6-C10	20	mg/kg			< 20	-
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	_		< 20	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50		_		< 50	-
Polycyclic Aromatic Hydrocarbons	50	mg/kg	-	-	< 50	-
Benzo(a)pyrene TEQ (lower bound) *	0.5	malka	_		< 0.5	_
Benzo(a)pyrene TEQ (nedium bound) *	0.5	mg/kg mg/kg	-	-	0.6	-
Benzo(a)pyrene TEQ (integration bound) *	0.5			-	1.2	-
Acenaphthene	0.5	mg/kg			< 0.5	-
•	0.5	mg/kg		-	< 0.5	-
Acenaphthylene Anthracene	0.5	mg/kg		-	< 0.5	-
	0.5	mg/kg		-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg			< 0.5	-
Benzo(a)pyrene Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg mg/kg		-	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg		-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	_	_	< 0.5	-
Chrysene	0.5	mg/kg			< 0.5	_
Dibenz(a.h)anthracene	0.5	mg/kg		_	< 0.5	
Fluoranthene	0.5			_	< 0.5	_
Fluorene	0.5	mg/kg mg/kg		-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	-
Naphthalene	0.5	mg/kg	-		< 0.5	-
Phenanthrene	0.5	mg/kg		-	< 0.5	-
Pyrene	0.5	mg/kg	-	-	< 0.5	-
Total PAH*	0.5	mg/kg		-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	111g/kg %		-	115	-
p-Terphenyl-d14 (surr.)	1	%	-		106	-
Total Recoverable Hydrocarbons - 2013 NEPM Fra		70	-	-	100	-
•		m a //			. 50	
TRH >C10-C16	50	mg/kg	-	-	< 50	-
TRH >C16-C34	100	mg/kg	-	-	< 100	-
TRH >C34-C40	100	mg/kg	-	-	< 100	-


Client Sample ID			BH03_(3.5-3.9)	BH03_(4.5- 4.52)	BH02_(2.1-2.3)	BH02_(3.3-3.5)
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S15-Se00383	S15-Se00384	S15-Se00385	S15-Se00386
Date Sampled			Aug 24, 2015	Aug 24, 2015	Aug 27, 2015	Aug 27, 2015
Test/Reference	LOR	Unit		jj	J	,
	LOIN	Onit				
Chloride	10	mg/kg	-	-	-	1400
pH (1:5 Aqueous extract)	0.1	pH Units	-	-	-	8.2
Sulphate (as SO4)	10	mg/kg	-	-	-	330
% Moisture	0.1	%	20	12	22	28
Heavy Metals						
Arsenic	2	mg/kg	-	-	< 2	-
Cadmium	0.4	mg/kg	-	-	< 0.4	-
Chromium	5	mg/kg	-	-	< 5	-
Copper	5	mg/kg	-	-	15	-
Lead	5	mg/kg	-	-	22	-
Mercury	0.05	mg/kg	-	-	0.08	-
Nickel	5	mg/kg	-	-	< 5	-
Zinc	5	mg/kg	-	-	21	-
Chromium Suite						
pH-KCL	0.1	pH Units	8.6	9.1	8.9	8.8
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2	< 2	< 2	< 2
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	< 0.02	< 0.02	< 0.02
Chromium Reducible Sulfur ^{S04}	0.005	% S	0.28	0.17	0.021	0.23
Chromium Reducible Sulfur -acidity units	3	mol H+/t	170	100	13	140
Sulfur - KCI Extractable	0.02	% S	n/a	n/a	n/a	n/a
HCI Extractable Sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite ^{S02}	0.02	% S	n/a	n/a	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	5.7	0.51	1.2	1.0
Acid Neutralising Capacity - acidity (ANCbt)	2	mol H+/t	1100	100	230	200
Acid Neutralising Capacity - equivalent S% pyrite (s- ANCbt) ^{S03}	0.02	% S	1.8	0.16	0.37	0.32
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
Net Acidity (Sulfur Units)	0.02	% S	< 0.02	0.06	< 0.02	< 0.02
Net Acidity (Acidity Units)	10	mol H+/t		36	< 10	< 10
Liming Rate ^{S01}	1	kg CaCO3/t		3.0	< 1	1.0
Extraneous Material	·					
<2mm Fraction	0.005	g	170	150	n/a	n/a
>2mm Fraction	0.005	g	64	43	n/a	n/a
Analysed Material	0.1	%	73	78	100	100
Extraneous Material	0.1	%	27	22	< 0.1	< 0.1



Client Sample ID			BH02_(3.5- 3.95)	BH02_(4.5- 4.95)	QC1
Sample Matrix			Soil	Soil	Soil
Eurofins mgt Sample No.			S15-Se00387	S15-Se00389	S15-Se00390
Date Sampled			Aug 27, 2015	Aug 27, 2015	Aug 27, 2015
Test/Reference	LOR	Unit	jj ,	, g ,	J
Total Recoverable Hydrocarbons - 1999 NEPM	_	Offic			
TRH C6-C9	20	mg/kg	_		< 20
TRH C10-C14	20	mg/kg	_		< 20
TRH C15-C28	50	mg/kg	_	_	170
TRH C29-C36	50	mg/kg	_	_	780
TRH C10-36 (Total)	50	mg/kg	_		950
BTEX	00	iiig/itg			
Benzene	0.1	mg/kg	_		< 0.1
Toluene	0.1	mg/kg	-	-	< 0.1
Ethylbenzene	0.1	mg/kg	-		< 0.1
m&p-Xylenes	0.1	mg/kg	-	-	< 0.1
o-Xylene	0.1	mg/kg	-	-	< 0.1
Xylenes - Total	0.1	mg/kg	-	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	_	80
Total Recoverable Hydrocarbons - 2013 NEPM		70			
Naphthalene ^{N02}	0.5	mg/kg	-		< 0.5
TRH C6-C10	20	mg/kg	-	-	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	-	-	< 20
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	-	_	< 50
Polycyclic Aromatic Hydrocarbons	00	mg/ng			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	_		1.0
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	_	_	1.3
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	_	_	1.6
Acenaphthene	0.5	mg/kg	-	-	< 0.5
Acenaphthylene	0.5	mg/kg	-	_	< 0.5
Anthracene	0.5	mg/kg	-	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	-	1.1
Benzo(a)pyrene	0.5	mg/kg	-	-	0.8
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	-	-	0.6
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	0.8
Benzo(k)fluoranthene	0.5	mg/kg	-	-	0.6
Chrysene	0.5	mg/kg	-	-	0.7
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5
Fluoranthene	0.5	mg/kg	-	-	2.0
Fluorene	0.5	mg/kg	-	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5
Naphthalene	0.5	mg/kg	-	-	< 0.5
Phenanthrene	0.5	mg/kg	-	-	1.0
Pyrene	0.5	mg/kg	-	-	2.2
Total PAH*	0.5	mg/kg	-	-	9.8
2-Fluorobiphenyl (surr.)	1	%	-	-	113
p-Terphenyl-d14 (surr.)	1	%	-	-	104
Total Recoverable Hydrocarbons - 2013 NEPM	Fractions				
TRH >C10-C16	50	mg/kg	-	-	< 50
TRH >C16-C34	100	mg/kg	-		790
TRH >C34-C40	100	mg/kg	-	-	630
% Moisture	0.1	%	24	19	13



Client Sample ID			BH02_(3.5- 3.95)	BH02_(4.5- 4.95)	QC1
Sample Matrix			Soil	Soil	Soil
Eurofins mgt Sample No.			S15-Se00387	S15-Se00389	S15-Se00390
Date Sampled			Aug 27, 2015	Aug 27, 2015	Aug 27, 2015
Test/Reference	LOR	Unit			
Heavy Metals	•				
Arsenic	2	mg/kg	-	-	5.6
Cadmium	0.4	mg/kg	-	-	< 0.4
Chromium	5	mg/kg	-	-	11
Copper	5	mg/kg	-	-	10
Lead	5	mg/kg	-	-	91
Mercury	0.05	mg/kg	-	-	0.31
Nickel	5	mg/kg	-	-	6.4
Zinc	5	mg/kg	-	-	47
Chromium Suite					
pH-KCL	0.1	pH Units	8.8	9.1	-
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2	< 2	-
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	< 0.02	-
Chromium Reducible Sulfur ^{S04}	0.005	% S	0.42	0.22	-
Chromium Reducible Sulfur -acidity units	3	mol H+/t	260	140	-
Sulfur - KCI Extractable	0.02	% S	n/a	n/a	-
HCI Extractable Sulfur	0.02	% S	n/a	n/a	-
Net Acid soluble sulfur	0.02	% S	n/a	n/a	-
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	n/a	-
Net Acid soluble sulfur - equivalent S% pyrite ^{S02}	0.02	% S	n/a	n/a	-
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	3.8	5.4	-
Acid Neutralising Capacity - acidity (ANCbt)	2	mol H+/t	760	1100	-
Acid Neutralising Capacity - equivalent S% pyrite (s- ANCbt) ^{S03}	0.02	% S	1.2	1.7	-
ANC Fineness Factor		factor	1.5	1.5	-
Net Acidity (Sulfur Units)	0.02	% S	< 0.02	< 0.02	-
Net Acidity (Acidity Units)	10	mol H+/t	< 10	< 10	-
Liming Rate ^{S01}	1	kg CaCO3/t	< 1	< 1	-
Extraneous Material	-				
<2mm Fraction	0.005	g	130	32	-
>2mm Fraction	0.005	g	27	26	-
Analysed Material	0.1	%	83	55	-
Extraneous Material	0.1	%	17	45	-



Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Sep 03, 2015	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Sydney	Sep 03, 2015	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Sep 03, 2015	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Sydney	Sep 03, 2015	14 Day
- Method: E007 Polyaromatic Hydrocarbons (PAH)			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Sep 03, 2015	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Metals M8	Sydney	Sep 03, 2015	28 Day
- Method: LTM-MET-3040_R0 TOTAL AND DISSOLVED METALS AND MERCURY IN WATERS BY ICP-MS			
Eurofins mgt Suite B18			
Chloride	Sydney	Sep 04, 2015	28 Day
- Method: E033 /E045 /E047 Chloride			
pH (1:5 Aqueous extract)	Sydney	Sep 04, 2015	7 Day
- Method: LTM-GEN-7090 pH in soil by ISE			
Sulphate (as SO4)	Sydney	Sep 04, 2015	28 Day
- Method: E045 Sulphate			
% Moisture	Sydney	Sep 01, 2015	14 Day
- Method: LTM-GEN-7080 Moisture			
Chromium Suite			
Chromium Suite	Brisbane	Sep 08, 2015	6 Week
- Method: LTM-GEN-7070			
Extraneous Material	Brisbane	Sep 08, 2015	6 Week
- Method: LTM-GEN-7050/7070			



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Melbourne 3-5 Kingston Town Close Oakleigh VIC 3166 Phone : +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271 **Sydney** Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone : +61 2 9900 8400 NATA # 1261 Site # 18217 Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 20794

Company Na Address:				acific Highway		R	order lepor hone ax:	t #:			2 94	D6 1000 D6 1002	Received: Due: Priority: Contact Name:	Sep 1, 2015 10:27 AM Sep 9, 2015 6 Day Bernice Cahill
Project Name Project ID:		EY ONE LCOV24CC1AF												
													Eurofins mgt	Client Manager: Charl Du Preez
		Sample Detail	I		Asbestos Absence /Presence	HOLD	Eurofins mgt Suite B18	Chromium Suite	Moisture Set	Moisture Set	Eurofins mgt Suite B7			
Laboratory wh														
		A Site # 1254 & 1	4271						ļ'	 '				
Sydney Labora					X	X	Х		Х	Х	Х			
Brisbane Labo		Site # 20794				<u> </u>	Х	Х	Х	Х				
External Labor									'	└── ′				
Sample ID	Sample Date	e Sampling Time	Matrix	LAB ID										
BH03_(0.5-0.6)	Aug 24, 2015		Soil	S15-Se00378	Х					Х	Х			
BH03_(1.0-1.1)	Aug 24, 2015		Soil	S15-Se00379			Х	Х		Х				
BH03_(2.0-2.1)	Aug 24, 2015		Soil	S15-Se00380	Х		Х			Х	х			
BH03_(2.9-3.0)	Aug 24, 2015		Soil	S15-Se00381		Х								
BH03_(3.4-3.5)	Aug 24, 2015		Soil	S15-Se00382			Х	Х		Х	х			
BH03_(3.5-3.9)	Aug 24, 2015		Soil	S15-Se00383				Х	Х	\vdash				
BH03_(4.5- 4.52)	Aug 24, 2015		Soil	S15-Se00384				х	х					
BH02_(2.1-2.3)	Aug 27, 2015		Soil	S15-Se00385				Х		Х	Х			



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Company Name: Address: Project Name: Project ID:	Level 18 Chatswo NSW 20 SYDNE	067		cific Highway		R P	Order Repor Phone Tax:	t #:			2 94	06 1000 06 1002	Due: Prior Cont	ity: act Name:	Sep 1, 2015 10:27 AM Sep 9, 2015 6 Day Bernice Cahill t Client Manager: Charl Du Preez
	Sample Detail				Asbestos Absence /Presence	HOLD	Eurofins mgt Suite B18	Chromium Suite	Moisture Set	Moisture Set	Eurofins mgt Suite B7				
Laboratory where															
Melbourne Labora	•		271												
Sydney Laborator					X	Х	X	V	X	X	Х				
Brisbane Laborato		ite # 20794					X	Х	Х	Х					
BH02_(3.3-3.5) Au	•		Soil	S15-Se00386			X	х		х					
	g 27, 2015		Soil	S15-Se00387				x	x						
BH02_(4.5-4.7) Au	g 27, 2015		Soil	S15-Se00388		Х									
BH02_(4.5- Au 4.95)	g 27, 2015		Soil	S15-Se00389				х	х						
QC1 Au	g 27, 2015		Soil	S15-Se00390						Х	Х				



Eurofins | mgt Internal Quality Control Review and Glossary

General

- 1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- 2. All soil results are reported on a dry basis, unless otherwise stated.
- 3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 4. Results are uncorrected for matrix spikes or surrogate recoveries.
- 5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- 6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported. Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

**NOTE: pH duplicates are reported as a range NOT as RPD

UNITS

 mg/kg: milligrams per Kilogram
 mg/l: milligrams per litre

 ug/l: micrograms per litre
 ppm: Parts per million

 ppb: Parts per billion
 %: Percentage

 org/100ml: Organisms per 100 millilitres
 NTU: Nephelometric Turbidity Units

 MPN/100mL: Most Probable Number of organisms per 100 millilitres
 Here the second sec

TERMS

I ERING	
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands.
	In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

 $Surrogate \ Recoveries: Recoveries \ must \ lie \ between \ 50-150\% \ - \ Phenols \ 20-130\%.$

QC DATA GENERAL COMMENTS

- 1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. Organochlorine Pesticide analysis where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
- 4. Organochlorine Pesticide analysis where reporting Spike data, Toxophene is not added to the Spike.
- 5. Total Recoverable Hydrocarbons where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- 6. pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- 7. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- 8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
- 9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
- 10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.



Quality Control Results

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Method Blank	I	1			
Total Recoverable Hydrocarbons - 1999 NEPM F	Fractions				
TRH C6-C9	mg/kg	< 20	20	Pass	
TRH C10-C14	mg/kg	< 20	20	Pass	
TRH C15-C28	mg/kg	< 50	50	Pass	
TRH C29-C36	mg/kg	< 50	50	Pass	
Method Blank					
BTEX					
Benzene	mg/kg	< 0.1	0.1	Pass	
Toluene	mg/kg	< 0.1	0.1	Pass	
Ethylbenzene	mg/kg	< 0.1	0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2	0.2	Pass	
o-Xylene	mg/kg	< 0.1	0.1	Pass	
Xylenes - Total	mg/kg	< 0.3	0.3	Pass	
Method Blank		4 0.0	0.0	1 400	
Total Recoverable Hydrocarbons - 2013 NEPM F	Fractions				
Naphthalene	mg/kg	< 0.5	0.5	Pass	
TRH C6-C10	mg/kg	< 20	20	Pass	
Method Blank	ing/kg	< <u>20</u>	20	1 400	
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	mg/kg	< 0.5	0.5	Pass	
Acenaphthylene	mg/kg	< 0.5	0.5	Pass	
Anthracene	mg/kg	< 0.5	0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5	0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5	0.5	Pass	
Benzo(b&j)fluoranthene		< 0.5	0.5	Pass	
	mg/kg	< 0.5	0.5	Pass	
Benzo(g.h.i)perylene Benzo(k)fluoranthene	mg/kg	1			
	mg/kg	< 0.5	0.5	Pass	
Chrysene	mg/kg	< 0.5	0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5	0.5	Pass	
Fluoranthene	mg/kg	< 0.5	0.5	Pass	
Fluorene	mg/kg	< 0.5	0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5	0.5	Pass	
Naphthalene	mg/kg	< 0.5	0.5	Pass	
Phenanthrene	mg/kg	< 0.5	0.5	Pass	
Pyrene	mg/kg	< 0.5	0.5	Pass	
Method Blank				_	
Total Recoverable Hydrocarbons - 2013 NEPM F		. 50	50	Deee	
TRH >C10-C16	mg/kg	< 50	50	Pass	
TRH >C16-C34	mg/kg	< 100	100	Pass	
TRH >C34-C40	mg/kg	< 100	100	Pass	
Method Blank		10	4.0	-	
Chloride	mg/kg	< 10	10	Pass	
Sulphate (as SO4)	mg/kg	< 10	10	Pass	
Method Blank					
Heavy Metals	"	-			
Arsenic	mg/kg	< 2	2	Pass	
Cadmium	mg/kg	< 0.4	0.4	Pass	
Chromium	mg/kg	< 5	5	Pass	
Copper	mg/kg	< 5	5	Pass	
Lead	mg/kg	< 5	5	Pass	
Mercury	mg/kg	< 0.05	0.05	Pass	



	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
ickel	mg/kg	< 5	5	Pass	
inc	mg/kg	< 5	5	Pass	
CS - % Recovery					
tal Recoverable Hydrocarbons - 1999 NEPM Fractions					
RH C6-C9	%	82	70-130	Pass	
RH C10-C14	%	76	70-130	Pass	
CS - % Recovery					
EX					
enzene	%	89	70-130	Pass	
oluene	%	76	70-130	Pass	
thylbenzene	%	73	70-130	Pass	
&p-Xylenes	%	77	70-130	Pass	
Xylene	%	78	70-130	Pass	
ylenes - Total	%	77	70-130	Pass	
CS - % Recovery					
tal Recoverable Hydrocarbons - 2013 NEPM Fractions					
aphthalene	%	70	70-130	Pass	
RH C6-C10	%	85	70-130	Pass	
CS - % Recovery					
lycyclic Aromatic Hydrocarbons					
cenaphthene	%	103	70-130	Pass	
cenaphthylene	%	100	70-130	Pass	
nthracene	%	109	70-130	Pass	
enz(a)anthracene	%	106	70-130	Pass	
enzo(a)pyrene	%	88	70-130	Pass	
enzo(b&j)fluoranthene	%	76	70-130	Pass	
enzo(g.h.i)perylene	%	92	70-130	Pass	
enzo(k)fluoranthene	%	90	70-130	Pass	
hrysene	%	92	70-130	Pass	
ibenz(a.h)anthracene	%	92	70-130	Pass	
luoranthene	%	110	70-130	Pass	
luorene	%	102	70-130	Pass	
deno(1.2.3-cd)pyrene	%	95	70-130	Pass	
aphthalene	%	100	70-130	Pass	
henanthrene	%	111	70-130	Pass	
yrene	%	111	70-130	Pass	
CS - % Recovery					
tal Recoverable Hydrocarbons - 2013 NEPM Fractions					
RH >C10-C16	%	77	70-130	Pass	
CS - % Recovery					
hloride	%	100	70-130	Pass	
ulphate (as SO4)	%	100	70-130	Pass	
CS - % Recovery					
eavy Metals					
rsenic	%	110	70-130	Pass	
admium	%	112	70-130	Pass	
hromium	%	102	70-130	Pass	
opper	%	106	70-130	Pass	
ead	%	107	70-130	Pass	
lercury	%	112	70-130	Pass	
ickel	%	111	70-130	Pass	
inc	%	107	70-130	Pass	
					l



Т	est		Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Chromium Reducible Sulfur			%	101	70-130	Pass	
Acid Neutralising Capacity (AN	Cbt)		%	101	70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery		Couloo			Linito	2	0000
BTEX				Result 1			
Benzene	S15-Se03821	NCP	%	76	70-130	Pass	
Spike - % Recovery							
Total Recoverable Hydrocarbo	ons - 2013 NEPM Fract	ions		Result 1			
Naphthalene	S15-Se03821	NCP	%	82	70-130	Pass	
Spike - % Recovery						_	
Polycyclic Aromatic Hydrocar	bons			Result 1			
Acenaphthene	S15-Se01940	NCP	%	104	70-130	Pass	
Acenaphthylene	S15-Se01940	NCP	%	105	70-130	Pass	
Anthracene	S15-Se01940	NCP	%	108	70-130	Pass	
Benz(a)anthracene	S15-Se01940	NCP	%	122	70-130	Pass	
Benzo(a)pyrene	S15-Se01940	NCP	%	84	70-130	Pass	
Benzo(b&j)fluoranthene	S15-Se01940	NCP	%	92	70-130	Pass	
Benzo(g.h.i)perylene	S15-Se01940	NCP	%	98	70-130	Pass	
Benzo(k)fluoranthene	S15-Se01940	NCP	%	106	70-130	Pass	
Chrysene	S15-Se01940	NCP	%	84	70-130	Pass	
Dibenz(a.h)anthracene	S15-Se01940	NCP	%	100	70-130	Pass	
Fluoranthene	S15-Se01940	NCP	%	115	70-130	Pass	
Fluorene	S15-Se01940	NCP	%	107	70-130	Pass	
Indeno(1.2.3-cd)pyrene	S15-Se01940	NCP	%	101	70-130	Pass	
Naphthalene	S15-Se01940	NCP	%	100	70-130	Pass	
Phenanthrene	S15-Se01940	NCP	%	110	70-130	Pass	
Pyrene	S15-Se01940	NCP	%	116	70-130	Pass	
Spike - % Recovery				·			
Heavy Metals				Result 1			
Arsenic	S15-Se00520	NCP	%	96	70-130	Pass	
Cadmium	S15-Se00520	NCP	%	101	70-130	Pass	
Chromium	S15-Se00520	NCP	%	82	70-130	Pass	
Copper	S15-Se01948	NCP	%	102	70-130	Pass	
Lead	S15-Se01411	NCP	%	107	70-130	Pass	
Mercury	S15-Se00520	NCP	%	111	70-130	Pass	
Nickel	S15-Se00520	NCP	%	95	70-130	Pass	
Zinc	S15-Se00520	NCP	%	86	70-130	Pass	
Spike - % Recovery							
				Result 1			
Chloride	S15-Se00379	CP	%	113	70-130	Pass	
Sulphate (as SO4)	S15-Se00379	CP	%	83	70-130	Pass	
Spike - % Recovery							
Total Recoverable Hydrocarbo	ons - 1999 NEPM Fract	ions		Result 1			
TRH C6-C9	S15-Se00380	CP	%	87	70-130	Pass	
TRH C10-C14	S15-Se00380	CP	%	80	70-130	Pass	
Spike - % Recovery							
BTEX				Result 1			
Toluene	S15-Se00380	CP	%	93	70-130	Pass	
Ethylbenzene	S15-Se00380	CP	%	88	70-130	Pass	
m&p-Xylenes	S15-Se00380	CP	%	92	70-130	Pass	
o-Xylene	S15-Se00380	CP	%	92	70-130	Pass	
Xylenes - Total	S15-Se00380	CP	%	92	70-130	Pass	
Spike - % Recovery							
Total Recoverable Hydrocarbo	ons - 2013 NEPM Fract	ions		Result 1			



Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH C6-C10	S15-Se00380	CP	%	96			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1					
TRH >C10-C16	S15-Se00380	CP	%	84			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C6-C9	S15-Se00378	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S15-Se00378	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S15-Se00378	CP	mg/kg	210	170	18	30%	Pass	
TRH C29-C36	S15-Se00378	CP	mg/kg	790	870	10	30%	Pass	
Duplicate								_	
втех				Result 1	Result 2	RPD			
Benzene	S15-Se00378	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S15-Se00378	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S15-Se00378	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S15-Se00378	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S15-Se00378	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S15-Se00378	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1	Result 2	RPD			
Naphthalene	S15-Se00378	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S15-Se00378	СР	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH >C10-C16	S15-Se00378	СР	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S15-Se00378	СР	mg/kg	670	690	2.0	30%	Pass	
TRH >C34-C40	S15-Se00378	СР	mg/kg	850	690	21	30%	Pass	
Duplicate									
•				Result 1	Result 2	RPD			
Chloride	S15-Se00379	CP	mg/kg	71	54	28	30%	Pass	
pH (1:5 Aqueous extract)	S15-Se00379	СР	pH Units	6.8	6.9	pass	30%	Pass	
Sulphate (as SO4)	S15-Se00379	СР	mg/kg	600	490	21	30%	Pass	
Duplicate							-	1	
Chromium Suite				Result 1	Result 2	RPD			
pH-KCL	S15-Se00379	СР	pH Units	7.5	7.5	<1	30%	Pass	
Acid trail - Titratable Actual Acidity	S15-Se00379	СР	mol H+/t	< 2	< 2	<1	30%	Pass	
sulfidic - TAA equiv. S% pyrite	S15-Se00379	СР	% pyrite S	< 0.02	< 0.02	<1	30%	Pass	
Chromium Reducible Sulfur	S15-Se00379	CP	% S	0.090	0.086	5.0	30%	Pass	
Chromium Reducible Sulfur -acidity units	S15-Se00379	СР	mol H+/t	56	53	5.0	30%	Pass	
Sulfur - KCI Extractable	S15-Se00379	CP	% S	n/a	n/a	n/a	30%	Pass	
HCI Extractable Sulfur	S15-Se00379	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur	S15-Se00379	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - acidity units	S15-Se00379	СР	mol H+/t	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - equivalent S% pyrite	S15-Se00379	СР	% S	n/a	n/a	n/a	30%	Pass	
Acid Neutralising Capacity (ANCbt)	S15-Se00379	CP	%CaCO3	0.76	0.76	<1	30%	Pass	
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)	S15-Se00379	СР	% S	0.24	0.24	<1	30%	Pass	
ANC Fineness Factor	S15-Se00379	CP	factor	1.5	1.5	<1	30%	Pass	
Net Acidity (Sulfur Units)	S15-Se00379	CP	% S	< 0.02	< 0.02	<1	30%	Pass	
Net Acidity (Acidity Units)	S15-Se00379	CP	mol H+/t	< 10	< 10	<1	30%	Pass	
Liming Rate	S15-Se00379	CP	kg CaCO3/t	< 1	< 1	<1	30%	Pass	

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Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S15-Se00383	CP	%	20	21	7.0	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocar	bons			Result 1	Result 2	RPD			
Acenaphthene	S15-Se00385	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S15-Se00385	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S15-Se00385	СР	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S15-Se00385	СР	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S15-Se00385	СР	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S15-Se00385	СР	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S15-Se00385	СР	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S15-Se00385	СР	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S15-Se00385	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S15-Se00385	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S15-Se00385	СР	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S15-Se00385	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S15-Se00385	СР	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S15-Se00385	СР	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S15-Se00385	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S15-Se00385	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S15-Se00386	CP	%	28	24	13	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S15-Se00390	CP	mg/kg	5.6	6.0	9.0	30%	Pass	
Cadmium	S15-Se00390	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S15-Se00390	CP	mg/kg	11	12	10	30%	Pass	
Copper	S15-Se00390	CP	mg/kg	10	12	15	30%	Pass	
Lead	S15-Se00390	CP	mg/kg	91	87	5.0	30%	Pass	
Mercury	S15-Se00390	CP	mg/kg	0.31	0.34	9.0	30%	Pass	
Nickel	S15-Se00390	CP	mg/kg	6.4	7.1	11	30%	Pass	
Zinc	S15-Se00390	CP	mg/kg	47	62	28	30%	Pass	

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Comments

Sample Integrity	
Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

mgt

Qualifier Codes/Comments

Code Description

N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
S01	Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil' multiply 'reported results' x 'wet bulk density of soil in t/m3'
S02	Retained Acidity is Reported when the pHKCl is less than pH 4.5
S03	Acid Neutralising Capacity is only required if the pHKCI if greater than or equal to pH 6.5

S04 Acid Sulfate Soil Samples have a 24 hour holding time unless frozen or dried within that period

Authorised By

Charl Du Preez	Analytical Services Manager
Bob Symons	Senior Analyst-Inorganic (NSW)
Bryan Wilson	Senior Analyst-Metal (QLD)
Ivan Taylor	Senior Analyst-Metal (NSW)
Nibha Vaidya	Senior Analyst-Asbestos (NSW)
Richard Corner	Senior Analyst-Inorganic (QLD)
Ryan Hamilton	Senior Analyst-Organic (NSW)
Ryan Hamilton	Senior Analyst-Volatile (NSW)

Glenn Jackson National Laboratory Manager Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Appendix C – Pressure (Packer) Test Results



		Borehole	BH03
Boreho	ble Water Pressure Test	Depth Interval	6.00 m to 12.95 m
Client	Wanda One Sydney Pty Ltd	Job No.	GEOTLCOV24001AF
Principal		Test date	25/8/2015
Project	Australia Sydney One Project	Interpreted by	BR
Location	Pitt Street, Sydney, NSW	Checked	RJB
			

Test Details	Packer type			Borehole diam.	50 mm	
	Type of pump			Borehole inclination	-90 degrees	
	Pressure gauge			Test interval length	6.95 m	
time	gauge	water	flow	pressure	water loss	corrected
interval	pressure	loss	rate	correction	rate	pressure
(min)	(kPa)	(L)	(L/min)	(kPa)	(L/min/m)	(kPa)
5	15	1.1	0.22	0	0.03	15
5	15	1.1	0.22	0	0.03	15
5	15	0.6	0.12	0	0.02	15
5	15	0.3	0.06	0	0.01	15
5	15	0.3	0.06	0	0.01	15
5	30	0.3	0.05	0	0.01	30
5 5	30 45	0.3 0.2	0.05 0.05	0 0	0.01 0.01	30 45
5	45	0.0	0.00	0	0.00	45
5	45	0.0	0.00	0	0.00	45
5	30	0.0	0.00	0	0.00	30
5	30	0.0	0.00	0	0.00	30
5	15	0.1	0.02	0	0.00	15
0.010						_
0.009	-					
		, P				
0.008						
ິຊ໌ 0.007				@		
0 0 0 a .						
3				\ \ \		
s 0.005		<i>, , , , , , , , , ,</i>			`` `	
Mater Loss (Lmin/m) Mater Loss (Lmin/m) Mater Loss (Lmin/m) Mater Loss (Lmin/m)					· · · · · · · · · · · · · · · · · · ·	
0 003					× x	
Š					1	
0.002						
0.001	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			*****		<u>``</u>
0.000	1					·•
0.000	0 5	10 15	20	25 30	35 40	45 50
	-			ressure (kPa)	-	
			Corrected P	iessuie (Nrd)		

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		Borehole	BH03
Boreho	ble Water Pressure Test	Depth Interval	13.00 m to 19.95 m
Client	Wanda One Sydney Pty Ltd	Job No.	GEOTLCOV24001AF
Principal		Test date	25/8/2015
Project	Australia Sydney One Project	Interpreted by	BR
Location	Pitt Street, Sydney, NSW	Checked	RJB

Fest Details	Packer type	-		Borehole diam.	50 mm	
l est Details	Packer type			Borehole inclination		
	Type of pump				-90 degrees 6.95 m	
time	Pressure gauge	water	flow	Test interval length	water loss	corrected
interval	gauge	loss	rate	pressure correction	rate	pressure
(min)	pressure (kPa)	(L)	(L/min)	(kPa)	(L/min/m)	(kPa)
5	35	11.9	2.38	0	0.34	35
5	35	11.9	2.38	0	0.34	35
5	35	10.9	2.18	0	0.31	35
5 5	75 75	16.3 14.6	3.26 2.92	0	0.47 0.42	75 75
5 5	75 115	21.4	2.92 4.28	0 0	0.42	75 115
5	115	19.6	3.92	0	0.56	115
5	75	12.4	2.48	0	0.36	75
5	75	13.0	2.60	0	0.37	75
5	35	6.9	1.38	0	0.20	35
5	35	9.0	1.80	0	0.26	35
5	35	9.4	1.88	0	0.27	35
5						
0.70	1					
	-					
0.60	-					
-					·····	
(m/uju/) 0.40	-			0		
nin				······		
<u>ප</u> 0.40	-					
S		0				
š 0.30	-	<u> </u>				
ter	-	8				
0.30 Mater Loss 0.20	-	<u> </u>				
0.10						
0.00						
0.00	0 20	40	60	80	100 1	20 140
	5 20	0		ressure (kPa)		
Interprete	ed Lugeon Perme	eability:	5.2 uL	(L/min/m @ 100	00 kPa)	
				<u>,</u>		

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	SPECIALISTS MANAGING THE EARTH	Borehole	BH05	
Boreho	le Water Pressure Test	Depth Interval	7.00 m to 13.00 m	
Client	Wanda One Sydney Pty Ltd		Job No.	GEOTLCOV24001AF
Principal			Test date	18/8/2015
Project	Australia Sydney One Project		Interpreted by	BR
Location	Pitt Street, Sydney, NSW		Checked	RJB
Test Dataila	Desker time Broumatic NO	Derehole diem	76 mm	

est Details	Packer type	Pneumatic NQ		Borehole diam.	76 mm	
	Type of pump			Borehole inclination	-90 degrees	
time	Pressure gauge	watar	flow	Test interval length	6.0 m	oo mo ata d
time interval	gauge pressure	water loss	flow rate	pressure correction	water loss rate	corrected pressure
	(kPa)	(L)	(L/min)	(kPa)	(L/min/m)	
(min)						(kPa)
5	20	1.1	0.22	0	0.04	20
5	20	1.1	0.22	0	0.04	20
5	20	0.7	0.13	0	0.02	20
5	20	0.5	0.11	0	0.02	20
5	40	1.0	0.19	0	0.03	40
5	40 60	1.0 0.0	0.21 0.01	0	0.03 0.00	40 60
5 5	60	0.0	0.01	0 0	0.00	00
5	40	0.0		0		
5	40	8.1	1.61	0	0.27	40
5	40	15.2	3.04	0	0.51	40
5	40	15.8	3.16	0	0.53	40
5	20	10.0	1.99	0	0.33	20
0.60 0.50 ਦ੍ਰਿ						
Ľ Ľ	-	an an an an an an an an an an an an an a	*****		X	
sso 0.30						
Nater Los		****				
0.10]					
0.00		<u></u>				
0.00	0 10	20	30	40	50 60	70
			Corrected I	Pressure (kPa)		
	d Lugeon Pern		13.2 uL	(L/min/m @ 100		

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Appendix D – Rising Head Test Results



			Hole ID.	BH02
Diamana	tor Installation		sheet:	1 of 1
	ter Installation	LOG	project no.	GEOTLCOV24001A
client: Wand	a One Sydney Pty Ltd		date started:	27 Aug 2015
principal:			date completed:	29 Aug 2015
project: Sydn	ey One Project		logged by:	НТ
-	y Place - northern Pitt Sti	checked by:	MG	
_		urface elevation: 2.40 m (AHD)	angle from horizontal: 90°	
equipment type: Geo-20	5, Track mounted		casing diameter : HW	
drilling information	material substance	piezometer construction d		
method & support water RL (m) depth (m)	60 00 19 19 19 19 10 10 10 10 10 10 10 10 10 10 10 10 10		bore construction bore construction drilling company: driller: driller's permit no.	
адин радика видения очи в видения очи в видения	ASPHALT FILL: Sandy GRAVEL FILL: Silty SAND SAND SANDSTONE	8.80 m 9.80 m 11.00 m	Bentapite RIPTION	02-well PVC TYPE: uPVC DD/D: 51/60.2 mm IO/D: 51/60.2 mm Slot width = 0.5 mm
16 _ 20 - 20 _ 24 -	SILTSTONE SANDSTONE	20.00 m	Sand	- - - - - - - - - - - - - - - - - - -
24	Borehole BH02 terminated at 2 Target depth	25.00 m		
28				
method & support see engineering log water 10-Oct-12, wate level on date st water inflow complete drillin partial drilling fl water pressure te (lugeons) for dept	r core recovered (graphic symbols indicate material) no core recovered still loss st result	ID type BH02-well standpipe	stick up & RL tip depth & RL 20.00 m -17.60 m AHD	install. date water level 29/08/2015

RISING OR FALLING HEAD TEST ANALYSIS

Bore Data	Units	Value
Initial groundwater level	m	5.09
Groundwater level at t=0	m	12.7
Casing radius (r)	m	0.025
Bore radius (R)	m	0.05
Screened interval length (L)	m	8
Match time start	min	3
Match time end	min	60
Characteristic Time (t ₀)	min	99.90
Hydraulic Conductivity (K)	m/day	0.0029

Borehole: BH02





drawn	BR		client:	WANDA ONE SYDNEY PTY LTD
approved	RJB		project:	SYDNEY ONE PROJECT
date	28 Sep 2015	coffey		PITT STREET, SYDNEY
scale	AS SHOWN	concy	title:	RISING HEAD TEST - BH02
original size	A4		project no:	GEOTLCOV24001AF



									Hole ID.	BH03	
Diz	~~	~ m	otor	Installation I	~~				sheet:	1 of 1	
	θΖ(^r Installation I	_og				project no.	GEOTLCO	V24001A
client:		Wai	nda On	e Sydney Pty Ltd					date started:	24 Aug 201	15
princip	pal:								date completed:	26 Aug 201	15
projec	:t:	Sya	lney Oi	ne Project					logged by:	HT	
locatio	on:	Rug	yby Pla	ce - northern Pitt Stree	t Syd	ney			checked by:	MG	
positior	n: E::	334305	; N: 625168	33 (WGS84 Zone 56) surfac	ce elevat	ion: 2.40 m (AF	HD)	anç	gle from horizontal: 90°		
				k mounted					e diameter : 100 mm		
Irilling	infor	mation	mate	rial substance material name		piezometer c	onstruction o	letails	bore construction	license:	
method & support	water	RL (m)	deptn (m) graphic log	naterial haine				BH03-well	drilling company: driller: driller's permit no.		
-	<u>_</u>				[
- DN	25/08/15 07:30			ROAD SURFACE: CONCRETE]						
- CASING	5/08/15)		FILL: Silty SAND					Bentonite		
	2		4-	Silty SAND		4.50 m					
	-		-	SANDSTONE		5.00 m					
		4									
			_								
	_		8								
			-						ID: BH	03-well PVC TYPE: uPV	c
		8	-						Sand	ID/OD: 51/60.2 mm OF SLOTS: Slot Spacin Slot width = 0.5 mm	
										SIOL WIGHT = 0.5 MIN	
	-	1	2								
		12									
		1	6			<u>16.00 m</u> 16.00 m					
	-					10.00 11					
		16	-								
	[16									
		2	20 - 20 - 10	SHALE BRECCIA							
			- · · · · ·	SANDSTONE							
		20									
	-	2	24								
			-	Borehole BH03 terminated at 25.00 Target depth) m						
	-	24	-								
		2	- 28 —								
	F		-								
		20	-								
	-	28	-								
metho	d & eu	pport	-	graphic log / core recovery	ID		type	stick up & RL	tip depth & RL	install. date	water level
			og for detail	s 🛛	BH03-we	ell s	tandpipe		15.00 m -12.60 m AHD	26/08/2015	
_	level		ater shown	(graphic symbols indicate material)							
		⁻ inflow lete dri	lling fluid la	X no core recovered							
$ - \langle$			g fluid loss								
			test result								
		s) for d shown									

RISING OR FALLING HEAD TEST ANALYSIS

Bore Data	Units	Value
Initial groundwater level	m	8.57
Groundwater level at t=0	m	10.4
Casing radius (r)	m	0.025
Bore radius (R)	m	0.05
Screened interval length (L)	m	8
Match time start	min	50
Match time end	min	81
Characteristic Time (t ₀)	min	146.18
Hydraulic Conductivity (K)	m/day	0.0020

Borehole: BH03





Reference: Hvorslev, M.J. (1951), Time lag and soil permeability in ground water observations. U.S. Army Corps of Engineers Waterway Experimentation Station, Bulletin 36.

drawn	BR		client:	WANDA ONE SYDNEY PTY LTD
approved	RJB		project:	SYDNEY ONE PROJECT
date	28 Sep 2015	coffey 7		PITT STREET, SYDNEY
scale	AS SHOWN	concy	title:	RISING HEAD TEST - BH03
original size	A4		project no:	GEOTLCOV24001AF

Appendix E – Groundwater Quality Results



Certificate of Analysis

NATA Accredited Accreditation Number 1261 Site Number 1254

Accredited for compliance with ISO/IEC 17025. The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Coffey Geotechnics Pty Ltd Chatswood Level 18, Tower B, Citadel Tower 799 Pacific Highway Chatswood NSW 2067





Bernice Cahill

Report Project name Project ID Received Date 472118-W SYDNEY ONE GEOTLCOV24001AF Sep 11, 2015

Client Sample ID			BH2	BH3	DUP
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			S15-Se11823	S15-Se11824	S15-Se11825
Date Sampled			Sep 11, 2015	Sep 11, 2015	Sep 11, 2015
Test/Reference	LOR	Unit		сор, <u>_</u> с.с	сор, <u>_</u> с.с
Total Recoverable Hydrocarbons - 1999 NEPM F	-	Offic			
TRH C6-C9	0.02	mg/L	0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.02	< 0.05
TRH C15-C28	0.1	mg/L	0.4	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	0.2	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	0.60	< 0.1	< 0.1
BTEX		,			
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	0.002	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	0.002	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	0.005	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	73	88	77
Total Recoverable Hydrocarbons - 2013 NEPM F	Fractions				
Naphthalene ^{N02}	0.02	mg/L	< 0.02	< 0.02	< 0.02
TRH C6-C10	0.02	mg/L	0.03	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	0.18	< 0.05	< 0.05
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Chrysene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Fluorene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Naphthalene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Phenanthrene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001



Client Sample ID			BH2	ВНЗ	DUP
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			S15-Se11823	S15-Se11824	S15-Se11825
Date Sampled			Sep 11, 2015	Sep 11, 2015	Sep 11, 2015
•		11.21	Sep 11, 2015	Sep 11, 2015	Sep 11, 2015
Test/Reference	LOR	Unit			
Polycyclic Aromatic Hydrocarbons					
Total PAH*	0.001	mg/L	< 0.001	< 0.001	< 0.001
2-Fluorobiphenyl (surr.)	1	%	101	95	86
p-Terphenyl-d14 (surr.)	1	%	112	108	102
Organochlorine Pesticides		1			
Chlordanes - Total	0.001	mg/L	< 0.001	< 0.001	-
4.4'-DDD	0.0001	mg/L	< 0.0001	< 0.0001	-
4.4'-DDE	0.0001	mg/L	< 0.0001	< 0.0001	-
4.4'-DDT	0.0001	mg/L	< 0.0001	< 0.0001	-
a-BHC	0.0001	mg/L	< 0.0001	< 0.0001	-
Aldrin	0.0001	mg/L	< 0.0001	< 0.0001	-
b-BHC	0.0001	mg/L	< 0.0001	< 0.0001	-
d-BHC	0.0001	mg/L	< 0.0001	< 0.0001	-
Dieldrin	0.0001	mg/L	< 0.0001	< 0.0001	-
Endosulfan I	0.0001	mg/L	< 0.0001	< 0.0001	-
Endosulfan II	0.0001	mg/L	< 0.0001	< 0.0001	-
Endosulfan sulphate	0.0001	mg/L	< 0.0001	< 0.0001	-
Endrin	0.0001	mg/L	< 0.0001	< 0.0001	-
Endrin aldehyde	0.0001	mg/L	< 0.0001	< 0.0001	-
Endrin ketone	0.0001	mg/L	< 0.0001	< 0.0001	-
g-BHC (Lindane)	0.0001	mg/L	< 0.0001	< 0.0001	-
Heptachlor	0.0001	mg/L	< 0.0001	< 0.0001	-
Heptachlor epoxide	0.0001	mg/L	< 0.0001	< 0.0001	-
Hexachlorobenzene	0.0001	mg/L	< 0.0001	< 0.0001	-
Methoxychlor	0.0001	mg/L	< 0.0001	< 0.0001	-
Toxaphene	0.01	mg/L	< 0.01	< 0.01	-
Dibutylchlorendate (surr.)	1	%	128	144	-
Tetrachloro-m-xylene (surr.)	1	%	120	138	-
Chlorinated Hydrocarbons					
1.2-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	-
1.2.3-Trichlorobenzene	0.001	mg/L	< 0.001	< 0.001	-
1.2.3.4-Tetrachlorobenzene	0.0001	mg/L	< 0.0001	< 0.0001	-
1.2.3.5-Tetrachlorobenzene	0.0001	mg/L	< 0.0001	< 0.0001	-
1.2.4-Trichlorobenzene	0.001	mg/L	< 0.001	< 0.001	-
1.2.4.5-Tetrachlorobenzene	0.0001	mg/L	< 0.0001	< 0.0001	-
1.3-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	-
1.3.5-Trichlorobenzene	0.0001	mg/L	< 0.0001	< 0.0001	-
1.4-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	-
Benzal chloride	0.0001	mg/L	< 0.0001	< 0.0001	-
Benzotrichloride	0.0001	mg/L	< 0.0001	< 0.0001	-
Benzyl chloride	0.001	mg/L	< 0.001	< 0.001	-
Hexachlorobenzene	0.0001	mg/L	< 0.0001	< 0.0001	-
Hexachlorobutadiene	0.0001	mg/L	< 0.0001	< 0.0001	-
Hexachlorocyclopentadiene	0.0001	mg/L	< 0.0001	< 0.0001	-
Hexachloroethane	0.0001	mg/L	< 0.0001	< 0.0001	-
Pentachlorobenzene	0.0001	mg/L	< 0.0001	< 0.0001	-
Tetrachloro-m-xylene (surr.)	1	%	120	138	-



Client Sample ID Sample Matrix			BH2 Water	BH3 Water	DUP Water
•					
Eurofins mgt Sample No.			S15-Se11823	S15-Se11824	S15-Se11825
Date Sampled			Sep 11, 2015	Sep 11, 2015	Sep 11, 2015
Test/Reference	LOR	Unit			
Polychlorinated Biphenyls					
Aroclor-1016	0.001	mg/L	< 0.001	< 0.001	-
Aroclor-1221	0.001	mg/L	< 0.001	< 0.001	-
Aroclor-1232	0.001	mg/L	< 0.001	< 0.001	-
Aroclor-1242	0.001	mg/L	< 0.001	< 0.001	-
Aroclor-1248	0.001	mg/L	< 0.001	< 0.001	-
Aroclor-1254	0.001	mg/L	< 0.001	< 0.001	-
Aroclor-1260	0.001	mg/L	< 0.001	< 0.001	-
Total PCB*	0.001	mg/L	< 0.001	< 0.001	-
Dibutylchlorendate (surr.)	1	%	128	144	-
Tetrachloro-m-xylene (surr.)	1	%	120	138	-
Phenols (Halogenated)	0.000				
2-Chlorophenol	0.003	mg/L	< 0.003	< 0.003	-
2.4-Dichlorophenol	0.003	mg/L	< 0.003	< 0.003	-
2.4.5-Trichlorophenol	0.01	mg/L	< 0.01	< 0.01	-
2.4.6-Trichlorophenol	0.01	mg/L	< 0.01	< 0.01	-
2.6-Dichlorophenol	0.003	mg/L	< 0.003	< 0.003	-
4-Chloro-3-methylphenol	0.01	mg/L	< 0.01	< 0.01	-
Pentachlorophenol	0.01	mg/L	< 0.01	< 0.01	-
Tetrachlorophenols - Total	0.03	mg/L	< 0.03	< 0.03	-
Total Halogenated Phenol*	0.01	mg/L	< 0.01	< 0.01	-
Phenols (non-Halogenated)	0.4				
2-Cyclohexyl-4.6-dinitrophenol	0.1	mg/L	< 0.1	< 0.1	-
2-Methyl-4.6-dinitrophenol	0.03	mg/L	< 0.03	< 0.03	-
2-Methylphenol (o-Cresol)	0.003	mg/L	< 0.003	< 0.003	-
2-Nitrophenol	0.01	mg/L	< 0.01	< 0.01	-
2.4-Dimethylphenol	0.003	mg/L	< 0.003	< 0.003	-
2.4-Dinitrophenol	0.03	mg/L	< 0.03	< 0.03	-
3&4-Methylphenol (m&p-Cresol)		mg/L	< 0.006	< 0.006	-
4-Nitrophenol	0.03	mg/L	< 0.03	< 0.03	-
Dinoseb Phenol	0.1	mg/L	< 0.1	< 0.1	
Total Non-Halogenated Phenol*	0.003	mg/L mg/L	< 0.003	< 0.003	-
Phenol-d6 (surr.)	1	111g/L %	79	65	-
Total Recoverable Hydrocarbons - 2013 NEPM Frac		/0	19	05	-
		mall	0.19	< 0.05	< 0.05
TRH >C10-C16 TRH >C16-C34	0.05	mg/L mg/L	0.18	< 0.05	< 0.05
TRH >C16-C34 TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1
	0.1	I IIIg/L	<u> </u>	< 0.1	< 0.1
Chloride	1	ma/l	2200	1700	
Cyanide (total)	0.005	mg/L mg/L	< 0.005	< 0.005	-
pH	0.005	pH Units		5.7	-
Sulphate (as SO4)	5	mg/L	270	150	-
Heavy Metals	5	⊥ mg/∟	210	100	
Antimony	0.005	ma/l	< 0.005	< 0.005	
Antimony Arsenic	0.005	mg/L	< 0.005	< 0.005	< 0.001
	0.001	mg/L	< 0.001	< 0.001	< 0.001
Beryllium	0.001	mg/L	0.26		-
Boron Cadmium	0.0002	mg/L mg/L	< 0.0002	< 0.05	0.0004



Client Sample ID Sample Matrix			BH2 Water	BH3 Water	DUP Water
Eurofins mgt Sample No.			S15-Se11823	S15-Se11824	S15-Se11825
Date Sampled			Sep 11, 2015	Sep 11, 2015	Sep 11, 2015
Test/Reference	LOR	Unit			
Heavy Metals					
Cobalt	0.001	mg/L	0.021	0.13	-
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	19	220	-
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	2.6	11	-
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Molybdenum	0.005	mg/L	0.009	< 0.005	-
Nickel	0.001	mg/L	0.014	0.084	0.084
Selenium	0.001	mg/L	< 0.001	< 0.001	-
Silver	0.005	mg/L	< 0.005	< 0.005	-
Tin	0.005	mg/L	< 0.005	< 0.005	-
Zinc	0.001	mg/L	0.018	1.1	1.2



Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B7			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Sep 14, 2015	7 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Melbourne	Sep 11, 2015	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Sep 11, 2015	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	Sep 14, 2015	7 Day
- Method: USEPA 8270 Polycyclic Aromatic Hydrocarbons			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Sep 14, 2015	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Metals M8	Melbourne	Sep 11, 2015	28 Day
- Method: LTM-MET-3040 Metals in Waters by ICP-MS			
Organochlorine Pesticides	Melbourne	Sep 14, 2015	7 Day
- Method: USEPA 8081 Organochlorine Pesticides			
Chlorinated Hydrocarbons	Melbourne	Sep 14, 2015	7 Day
- Method: USEPA 8121 Chlorinated Hydrocarbons			
Polychlorinated Biphenyls	Melbourne	Sep 14, 2015	7 Day
- Method: USEPA 8082 Polychlorinated Biphenyls			
Phenols (Halogenated)	Melbourne	Sep 14, 2015	7 Day
- Method: USEPA 8270 Phenols			
Phenols (non-Halogenated)	Melbourne	Sep 14, 2015	7 Day
- Method: USEPA 8270 Phenols			
Cyanide (total)	Melbourne	Sep 14, 2015	14 Day
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
ANZECC Metals : Metals M17AN	Melbourne	Sep 11, 2015	28 Day
- Method: LTM-MET-3040 Metals in Waters by ICP-MS			
Eurofins mgt Suite B18			
Chloride	Melbourne	Sep 11, 2015	28 Day
- Method: MGT 1100A			
Sulphate (as SO4)	Melbourne	Sep 11, 2015	28 Day
- Method: APHA 4500-SO4 Sulfate by FIA			
рН	Melbourne	Sep 14, 2015	0 Hours
- Method: LTM-GEN-7090 pH in water by ISE			
Heavy Metals	Melbourne	Sep 11, 2015	180 Day
- Method: LTM-MET-3040 Metals in Waters by ICP-MS			



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Melbourne 3-5 Kingston Town Close Oakleigh VIC 3166 Phone : +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271 **Sydney** Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone : +61 2 9900 8400 NATA # 1261 Site # 18217 Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 20794

Company Name:Coffey Geotechnics Pty Ltd ChatswoodAddress:Level 18, Tower B, Citadel Tower 799 Pacific HighwayChatswoodNSW 2067				R P	order epor hone ax:	t #:		472118 +61 2 9406 1000 +61 2 9406 1002	Received: Due: Priority: Contact Name:	Sep 11, 2015 4:20 PM Sep 18, 2015 5 Day Bernice Cahill		
Project Name:SYDNEY ONEProject ID:GEOTLCOV24001AF										Eurofins mg	t Client Manager: Charl Du Preez	
		Sample Detail			Iron	рН	Eurofins mgt Suite B18	ANZECC Screen	Eurofins mgt Suite B7			
Laboratory whe	ere analysis is c	onducted										
	oratory - NATA		271		Х	Х	Х	Х	Х			
Sydney Laboratory - NATA Site # 18217 Brisbane Laboratory - NATA Site # 20794												
External Labora												
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID								
BH2	Sep 11, 2015		Water	S15-Se11823	Х	Х	Х	Х				
BH3	Sep 11, 2015		Water	S15-Se11824	Х	Х	Х	Х				
DUP	Sep 11, 2015		Water	S15-Se11825					Х			

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Eurofins | mgt Internal Quality Control Review and Glossary

General

- 1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- 2. All soil results are reported on a dry basis, unless otherwise stated.
- 3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 4. Results are uncorrected for matrix spikes or surrogate recoveries.
- 5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- 6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported. Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

**NOTE: pH duplicates are reported as a range NOT as RPD

UNITS

 mg/kg: milligrams per Kilogram
 mg/l: milligrams per litre

 ug/l: micrograms per litre
 ppm: Parts per million

 ppb: Parts per billion
 %: Percentage

 org/100ml: Organisms per 100 millilitres
 NTU: Nephelometric Turbidity Units

 MPN/100mL: Most Probable Number of organisms per 100 millilitres
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TERMS

TERMS	
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands.
	In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed w
TEQ	Toxic Equivalency Quotient

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

 $Surrogate \ Recoveries: Recoveries \ must \ lie \ between \ 50-150\% \ - \ Phenols \ 20-130\%.$

QC DATA GENERAL COMMENTS

- 1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. Organochlorine Pesticide analysis where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
- 4. Organochlorine Pesticide analysis where reporting Spike data, Toxophene is not added to the Spike.
- 5. Total Recoverable Hydrocarbons where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- 6. pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- 7. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- 8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
- 9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
- 10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

within

eurofins mgt

Quality Control Results

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Method Blank			Elinito	Linito	ooue
Total Recoverable Hydrocarbons - 1999 NEPM F	ractions				
TRH C6-C9	mg/L	< 0.02	0.02	Pass	
TRH C10-C14	mg/L	< 0.05	0.05	Pass	
TRH C15-C28	mg/L	< 0.1	0.1	Pass	
TRH C29-C36	mg/L	< 0.1	0.1	Pass	
Method Blank	, č				
BTEX					
Benzene	mg/L	< 0.001	0.001	Pass	
Toluene	mg/L	< 0.001	0.001	Pass	
Ethylbenzene	mg/L	< 0.001	0.001	Pass	
m&p-Xylenes	mg/L	< 0.002	0.002	Pass	
o-Xylene	mg/L	< 0.001	0.001	Pass	
Xylenes - Total	mg/L	< 0.003	0.003	Pass	
Method Blank					
Total Recoverable Hydrocarbons - 2013 NEPM F	ractions				
Naphthalene	mg/L	< 0.02	0.02	Pass	
TRH C6-C10	mg/L	< 0.02	0.02	Pass	
Method Blank					
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	mg/L	< 0.001	0.001	Pass	
Acenaphthylene	mg/L	< 0.001	0.001	Pass	
Anthracene	mg/L	< 0.001	0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001	0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001	0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001	0.001	Pass	
Benzo(g.h.i)perylene	mg/L	< 0.001	0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001	0.001	Pass	
Chrysene	mg/L	< 0.001	0.001	Pass	
Dibenz(a.h)anthracene	mg/L	< 0.001	0.001	Pass	
Fluoranthene	mg/L	< 0.001	0.001	Pass	
Fluorene	mg/L	< 0.001	0.001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.001	0.001	Pass	
Naphthalene	mg/L	< 0.001	0.001	Pass	
Phenanthrene	mg/L	< 0.001	0.001	Pass	
Pyrene	mg/L	< 0.001	0.001	Pass	
Method Blank		1 1			
Organochlorine Pesticides					
Chlordanes - Total	mg/L	< 0.001	0.001	Pass	
4.4'-DDD	mg/L	< 0.0001	0.0001	Pass	
4.4'-DDE	mg/L	< 0.0001	0.0001	Pass	
4.4'-DDT	mg/L	< 0.0001	0.0001	Pass	
a-BHC	mg/L	< 0.0001	0.0001	Pass	
Aldrin	mg/L	< 0.0001	0.0001	Pass	
b-BHC	mg/L	< 0.0001	0.0001	Pass	
d-BHC	mg/L	< 0.0001	0.0001	Pass	
Dieldrin	mg/L	< 0.0001	0.0001	Pass	
Endosulfan I	mg/L	< 0.0001	0.0001	Pass	
Endosulfan II	mg/L	< 0.0001	0.0001	Pass	
Endosulfan sulphate	mg/L	< 0.0001	0.0001	Pass	
Endrin	mg/L	< 0.0001	0.0001	Pass	
Endrin aldehyde	mg/L	< 0.0001	0.0001	Pass	



Endrin ketone

Test

Endrin ketone	mg/L	< 0.0001	0.0001	Pass
g-BHC (Lindane)	mg/L	< 0.0001	0.0001	Pass
Heptachlor	mg/L	< 0.0001	0.0001	Pass
Heptachlor epoxide	mg/L	< 0.0001	0.0001	Pass
Hexachlorobenzene	mg/L	< 0.0001	0.0001	Pass
Methoxychlor	mg/L	< 0.0001	0.0001	Pass
Toxaphene	mg/L	< 0.01	0.01	Pass
Method Blank		· ·		
Chlorinated Hydrocarbons				
1.2-Dichlorobenzene	mg/L	< 0.001	0.001	Pass
1.2.3-Trichlorobenzene	mg/L	< 0.001	0.001	Pass
1.2.3.4-Tetrachlorobenzene	mg/L	< 0.0001	0.0001	Pass
1.2.3.5-Tetrachlorobenzene	mg/L	< 0.0001	0.0001	Pass
1.2.4-Trichlorobenzene	mg/L	< 0.001	0.001	Pass
1.2.4.5-Tetrachlorobenzene	mg/L	< 0.0001	0.0001	Pass
1.3-Dichlorobenzene	mg/L	< 0.001	0.001	Pass
1.3.5-Trichlorobenzene	mg/L	< 0.0001	0.0001	Pass
1.4-Dichlorobenzene	mg/L	< 0.001	0.001	Pass
Benzal chloride	mg/L	< 0.0001	0.0001	Pass
Benzotrichloride	mg/L	< 0.0001	0.0001	Pass
Benzyl chloride	mg/L	< 0.001	0.001	Pass
Hexachlorobutadiene	mg/L	< 0.0001	0.0001	Pass
Hexachlorocyclopentadiene	mg/L	< 0.0001	0.0001	Pass
Hexachloroethane	mg/L	< 0.0001	0.0001	Pass
Pentachlorobenzene	mg/L	< 0.0001	0.0001	Pass
Method Blank	ing/E	0.0001	0.0001	
Polychlorinated Biphenyls				
Aroclor-1016	mg/L	< 0.001	0.001	Pass
Aroclor-1221	mg/L	< 0.001	0.001	Pass
Aroclor-1221 Aroclor-1232	mg/L	< 0.001	0.001	Pass
Aroclor-1242	mg/L	< 0.001	0.001	Pass
Aroclor-1248	mg/L	< 0.001	0.001	Pass
Aroclor-1254	mg/L	< 0.001	0.001	Pass
Aroclor-1260	mg/L	< 0.001	0.001	Pass
Total PCB*	mg/L	< 0.001	0.001	Pass
Method Blank	Ing/E	0.001	0.001	1 433
Phenols (Halogenated)				
2-Chlorophenol	mg/L	< 0.003	0.003	Pass
2.4-Dichlorophenol	mg/L	< 0.003	0.003	Pass
2.4.5-Trichlorophenol	mg/L	< 0.01	0.003	Pass
•		< 0.01	0.01	
2.4.6-Trichlorophenol 2.6-Dichlorophenol	mg/L	< 0.003	0.003	Pass
4-Chloro-3-methylphenol	mg/L	< 0.003	0.003	Pass Pass
	mg/L			
Pentachlorophenol	mg/L	< 0.01	0.01	Pass
Tetrachlorophenols - Total	mg/L	< 0.03	0.03	Pass
Method Blank		1		
Phenols (non-Halogenated)				
2-Cyclohexyl-4.6-dinitrophenol	mg/L	< 0.1	0.1	Pass
2-Methyl-4.6-dinitrophenol	mg/L	< 0.03	0.03	Pass
2-Methylphenol (o-Cresol)	mg/L	< 0.003	0.003	Pass
2-Nitrophenol	mg/L	< 0.01	0.01	Pass
2.4-Dimethylphenol	mg/L	< 0.003	0.003	Pass
2.4-Dinitrophenol	mg/L	< 0.03	0.03	Pass
294 Mathylphanal (men Cracal)		1 0 000	0.000	L Deee

Units

mg/L

Result 1 < 0.0001

3&4-Methylphenol (m&p-Cresol)

< 0.006

mg/L

Pass

0.006

Acceptance Limits

0.0001

Pass Limits

Pass

Qualifying Code



Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
4-Nitrophenol	mg/L	< 0.03		0.03	Pass	
Dinoseb	mg/L	< 0.1		0.1	Pass	
Phenol	mg/L	< 0.003		0.003	Pass	
Method Blank		•	· · · ·			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	mg/L	< 0.05		0.05	Pass	
TRH >C16-C34	mg/L	< 0.1		0.1	Pass	
TRH >C34-C40	mg/L	< 0.1		0.1	Pass	
Method Blank					1	
Chloride	mg/L	< 1		1	Pass	
Cyanide (total)	mg/L	< 0.005		0.005	Pass	
Sulphate (as SO4)	mg/L	< 5		5	Pass	
Method Blank	i iiig/ E				1 455	
Heavy Metals						
Antimony	mg/L	< 0.005		0.005	Pass	
Antimony		< 0.005		0.005	Pass	
	mg/L					
Beryllium	mg/L	< 0.001		0.001	Pass	
Boron	mg/L	< 0.05		0.05	Pass	
Cadmium	mg/L	< 0.0002		0.0002	Pass	
Chromium	mg/L	< 0.001		0.001	Pass	
Cobalt	mg/L	< 0.001		0.001	Pass	
Copper	mg/L	< 0.001		0.001	Pass	
Iron	mg/L	< 0.05		0.05	Pass	
Lead	mg/L	< 0.001		0.001	Pass	
Manganese	mg/L	< 0.005		0.005	Pass	
Mercury	mg/L	< 0.0001		0.0001	Pass	
Molybdenum	mg/L	< 0.005		0.005	Pass	
Nickel	mg/L	< 0.001		0.001	Pass	
Selenium	mg/L	< 0.001		0.001	Pass	
Silver	mg/L	< 0.005		0.005	Pass	
Tin	mg/L	< 0.005		0.005	Pass	
Zinc	mg/L	< 0.001		0.001	Pass	
LCS - % Recovery		1	r		1	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	-					
TRH C6-C9	%	83		70-130	Pass	
TRH C10-C14	%	119		70-130	Pass	
LCS - % Recovery		1	· · · · · · · · · · · · · · · · · · ·		i	
BTEX						
Benzene	%	101		70-130	Pass	
Toluene	%	93		70-130	Pass	
Ethylbenzene	%	76		70-130	Pass	
m&p-Xylenes	%	76		70-130	Pass	
Xylenes - Total	%	78		70-130	Pass	
LCS - % Recovery	·	·	• • •			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene	%	82		75-125	Pass	
TRH C6-C10	%	74		70-130	Pass	
LCS - % Recovery						
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	%	77		70-130	Pass	
Acenaphthylene	%	77		70-130	Pass	
Anthracene	%	80		70-130	Pass	
Benz(a)anthracene	%	81		70-130	Pass	
Benzo(a)pyrene	%	86		70-130	Pass	



Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Benzo(b&j)fluoranthene	%	79	70-130	Pass	
Benzo(g.h.i)perylene	%	79	70-130	Pass	
Benzo(k)fluoranthene	%	87	70-130	Pass	
Chrysene	%	82	70-130	Pass	
Dibenz(a.h)anthracene	%	80	70-130	Pass	
Fluoranthene	%	76	70-130	Pass	
Fluorene	%	76	70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	88	70-130	Pass	
Naphthalene	%	73	70-130	Pass	
Phenanthrene	%	77	70-130	Pass	
Pyrene	%	74	70-130	Pass	
LCS - % Recovery	,,,		10.00	1 400	
Organochlorine Pesticides					
4.4'-DDD	%	96	70-130	Pass	
4.4'-DDE	%	91	70-130	Pass	
4.4'-DDT	%	117	70-130	Pass	
a-BHC	%	97	70-130	Pass	
Aldrin	%	97 95	70-130	Pass	
b-BHC	%	129	70-130	Pass	
d-BHC	%	129	70-130	Pass	
Dieldrin	%	99	70-130	Pass	
Endosulfan I	%	100	70-130	Pass	
Endosulfan II	%	102	70-130	Pass	
Endosulfan sulphate	%	119	70-130	Pass	
Endrin	%	104	70-130	Pass	
Endrin aldehyde	%	93	70-130	Pass	
Endrin ketone	%	101	70-130	Pass	
g-BHC (Lindane)	%	98	70-130	Pass	
Heptachlor	%	102	70-130	Pass	
Heptachlor epoxide	%	100	 70-130	Pass	
Hexachlorobenzene	%	85	70-130	Pass	
Methoxychlor	%	122	70-130	Pass	
LCS - % Recovery				1	
Chlorinated Hydrocarbons					
1.2-Dichlorobenzene	%	109	70-130	Pass	
1.2.3-Trichlorobenzene	%	110	 70-130	Pass	
1.2.3.4-Tetrachlorobenzene	%	111	 70-130	Pass	
1.2.3.5-Tetrachlorobenzene	%	95	 70-130	Pass	
1.2.4-Trichlorobenzene	%	94	70-130	Pass	
1.2.4.5-Tetrachlorobenzene	%	111	70-130	Pass	
1.3-Dichlorobenzene	%	71	70-130	Pass	
1.3.5-Trichlorobenzene	%	77	70-130	Pass	
1.4-Dichlorobenzene	%	121	70-130	Pass	
Benzal chloride	%	88	70-130	Pass	
Benzotrichloride	%	77	70-130	Pass	
Hexachlorobutadiene	%	83	70-130	Pass	
Hexachloroethane	%	81	70-130	Pass	
LCS - % Recovery					
Polychlorinated Biphenyls					
Aroclor-1260	%	129	70-130	Pass	
LCS - % Recovery					
Phenols (Halogenated)					
2-Chlorophenol	%	76	30-130	Pass	
2.4-Dichlorophenol	%	77	30-130	Pass	



Test			Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
2.4.5-Trichlorophenol			%	78		30-130	Pass	
2.4.6-Trichlorophenol			%	75		30-130	Pass	
2.6-Dichlorophenol			%	78		30-130	Pass	
4-Chloro-3-methylphenol			%	68		30-130	Pass	
Pentachlorophenol			%	83		30-130	Pass	
Tetrachlorophenols - Total			%	79		30-130	Pass	
LCS - % Recovery					I	-	I	
Phenols (non-Halogenated)								
2-Cyclohexyl-4.6-dinitrophenol			%	75		30-130	Pass	
2-Methyl-4.6-dinitrophenol			%	78		30-130	Pass	
2-Methylphenol (o-Cresol)			%	64		30-130	Pass	
2-Nitrophenol			%	81		30-130	Pass	
2.4-Dimethylphenol			%	74		30-130	Pass	
2.4-Dinitrophenol			%	55		30-130	Pass	
3&4-Methylphenol (m&p-Cresol)			%	57		30-130	Pass	
4-Nitrophenol			%	84		30-130	Pass	
Dinoseb			%	81		30-130	Pass	
Phenol			%	32		30-130	Pass	
LCS - % Recovery				1			1	
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions						
TRH >C10-C16			%	114		70-130	Pass	
LCS - % Recovery			-	1			1	
Chloride			%	101		70-130	Pass	
Cyanide (total)			%	86		70-130	Pass	
Sulphate (as SO4)			%	104		70-130	Pass	
LCS - % Recovery				1	1		1	
Heavy Metals								
Antimony			%	100		80-120	Pass	
Arsenic			%	98		80-120	Pass	
Beryllium			%	94		80-120	Pass	
Boron			%	102		80-120	Pass	
Cadmium			%	96		80-120	Pass	
Chromium			%	97		80-120	Pass	
Cobalt			%	97		80-120	Pass	
Copper			%	96		80-120	Pass	
Iron			%	100		80-120	Pass	
Lead			%	93		80-120	Pass	
Manganese			%	99		80-120	Pass	
Mercury			%	100		75-125	Pass	
Molybdenum			%	96		80-120	Pass	
Nickel			%	96	ļ	80-120	Pass	
Selenium			%	98		80-120	Pass	
Silver			%	86		80-120	Pass	
Tin			%	102	ļ	80-120	Pass	
Zinc			%	97	ļ	80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1				
TRH C6-C9	M15-Se11591	NCP	%	107		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	M15-Se11591	NCP	%	110		70-130	Pass	
Toluene	M15-Se11591	NCP	%	101		70-130	Pass	
Ethylbenzene	M15-Se11591	NCP	%	101		70-130	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
m&p-Xylenes	M15-Se11591	NCP	%	105			70-130	Pass	
o-Xylene	M15-Se11591	NCP	%	99			70-130	Pass	
Xylenes - Total	M15-Se11591	NCP	%	103			70-130	Pass	
Spike - % Recovery				1			T		
Total Recoverable Hydrocarbo	ns - 2013 NEPM Fract	ions		Result 1					
Naphthalene	M15-Se11591	NCP	%	79			70-130	Pass	
TRH C6-C10	M15-Se11591	NCP	%	95			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M15-Se12302	NCP	%	96			70-130	Pass	
Cyanide (total)	B15-Se11689	NCP	%	101			70-130	Pass	
Sulphate (as SO4)	M15-Se12302	NCP	%	101			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Antimony	S15-Se10874	NCP	%	95			70-130	Pass	
Arsenic	S15-Se10874	NCP	%	96			75-125	Pass	
Beryllium	S15-Se10874	NCP	%	92			75-125	Pass	
Boron	M15-Se15602	NCP	%	91			75-125	Pass	
Cadmium	S15-Se10874	NCP	%	100			75-125	Pass	
Chromium	S15-Se10874	NCP	%	99			75-125	Pass	
Cobalt	S15-Se10874	NCP	%	98			75-125	Pass	
Copper	S15-Se10874	NCP	%	98			75-125	Pass	
Lead	S15-Se10874	NCP	%	97			75-125	Pass	
Manganese	S15-Se10874	NCP	%	96			75-125	Pass	
Mercury	S15-Se10874	NCP	%	96			70-120	Pass	
Molybdenum	S15-Se10874	NCP	%	98			75-125	Pass	
Nickel	S15-Se10874	NCP	%	98			75-125	Pass	
Selenium	S15-Se10874	NCP	%	98			75-125	Pass	
Silver	S15-Se10874	NCP	%	98			75-125	Pass	
Tin	S15-Se10874	NCP	%	94			75-125	Pass	
Zinc	S15-Se10874	NCP	%	101			75-125	Pass	
	315-5010074	INCE	70	101			75-125	F 455	
Spike - % Recovery				Desult 1			1	[
Total Recoverable Hydrocarbo	M15-Se11640		0/	Result 1			70.400	Deer	
TRH C10-C14 Spike - % Recovery	10115-5011640	NCP	%	82			70-130	Pass	
		lene		Deput 1				1	
Total Recoverable Hydrocarbo		NCP	%	Result 1			70.400	Deee	
TRH >C10-C16	M15-Se11640	NCP	70	84			70-130	Pass	
Spike - % Recovery				Desult 1			1	[
Heavy Metals	C15 Co10074		0/	Result 1			75 405	Deee	
Test	S15-Se10874		% Units	94 Result 1			75-125 Acceptance	Pass Pass	Qualifying
Duplicate		Source					Limits	Limits	Code
Total Recoverable Hydrocarbo	ne - 1000 NEDM Erect	ione		Result 1	Result 2	RPD			
TRH C6-C9	M15-Se11590	NCP	mc/l	< 0.02	< 0.02		30%	Pass	
	M15-Se11590 M15-Se13835	NCP	mg/L	< 0.02	< 0.02	<1	30%		
TRH C10-C14			mg/L			<1		Pass	
TRH C15-C28	M15-Se13835	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M15-Se13835	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate				Booult 1	Pooult 2	חחק			
BTEX	M46 0-44500		m c /l	Result 1	Result 2	RPD	2007	Dess	
Benzene	M15-Se11590	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M15-Se11590	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M15-Se11590	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	M15-Se11590	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	M15-Se11590	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	M15-Se11590	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	



Duplicate									
Total Recoverable Hydroca	rbons - 2013 NEPM Fract	ions		Result 1	Result 2	RPD			
Naphthalene	M15-Se11590	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C6-C10	M15-Se11590	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Total Recoverable Hydroca	rbons - 2013 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH >C10-C16	M15-Se13835	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	M15-Se13835	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	M15-Se13835	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M15-Se12302	NCP	mg/L	430	430	<1	30%	Pass	
Cyanide (total)	B15-Se11689	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
рН	M15-Se12076	NCP	pH Units	7.9	7.9	pass	30%	Pass	
Sulphate (as SO4)	M15-Se10405	NCP	mg/L	< 5	< 5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Antimony	S15-Se10874	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Arsenic	S15-Se10874	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Beryllium	S15-Se10874	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Boron	M15-Se15602	NCP	mg/L	4.6	4.6	<1	30%	Pass	
Cadmium	S15-Se10874	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	S15-Se10874	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cobalt	S15-Se10874	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	S15-Se10874	NCP	mg/L	0.001	0.001	3.0	30%	Pass	
Lead	S15-Se10874	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	S15-Se10874	NCP	mg/L	0.008	0.007	4.0	30%	Pass	
Mercury	S15-Se10874	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Molybdenum	S15-Se10874	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Nickel	S15-Se10874	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	S15-Se10874	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Silver	S15-Se10874	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Tin	S15-Se10874	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc	S15-Se10874	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Iron	S15-Se10874	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	

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Comments

Sample Integrity	
Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	No
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

mgt

Qualifier Codes/Comments

Code Description

N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX

F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.

N07 Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

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Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Appendix F – Acid Sulfate Soils and Waste Classification