Table 1
Soil Analytical Data Assessed for Acid Sulfate Soils
Australia Sydney One Project
Bounded by George Street, Alfred Street, Herald Square and Pitt Street, Sydney

				Field_ID	BH02_(2.1-2.3)	BH02_(3.3-3.5)	BH02_(3.5-3.95)	BH02_(4.5-4.95)	BH03_(1.0-1.1)	BH03_(3.4-3.5)	BH03_(3.5-3.9)	BH03_(4.5-4.52)
				Material	Fill	Alluvium	Alluvium	Alluvium	Fill	Alluvium	Alluvium	Alluvium
				Sampled_Date-Time	27/08/2015	27/08/2015	27/08/2015	27/08/2015	24/08/2015	24/08/2015	24/08/2015	24/08/2015
				Lab_Report_Number	470640	470640	470640	470640	470640	470640	470640	470640
				ASS Adopted Criteria								
Method_Type	**ChemName**	**Units**	**EQL**									
CRS	pH-KCL	pH Units	0.1		8.9	8.8	8.8	9.1	7.5	6.7	8.6	9.1
	Chromium Reducible Sulfur^{SO4}	% S	0.005	0.03	0.021	0.23	0.42	0.22	0.09	0.22	0.28	0.17
	Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)^{S03}	% S	0.01		0.37	0.32	1.2	1.7	0.24	0.49	1.8	0.16
	Liming Rate	kg CaCO3/t	1		<1	1	<1	<1	<1	<1	<1	3

Notes:
Concentration reported above adopted criteria

Table 2
Soil Analytical Data Compared to Waste Classification Criteria (2014)
Australia Sydney One Project
Bounded by George Street, Alfred Street, Herald Square and Pitt Street, Sydney

								Field_ID	BH02_(2.1-2.3)	BH02_(3.3-3.5)	BH02_(3.5-3.95)	BH02_(4.5-4.95)	BH03_(0.5-0.6)	QC1	BH03_(1.0-1.1)	BH03_(2.0-2.1)	BH03_(3.4-3.5)	BH03_(3.5-3.9)	BH03_(4.5-4.52)
								Material	Fill	Alluvium	Alluvium	Alluvium	Fill		Fill	Fill	Alluvium	Alluvium	Alluvium
								Sampled_Date-Time	27/08/2015	27/08/2015	27/08/2015	27/08/2015	24/08/2015	27/08/2015	24/08/2015	24/08/2015	24/08/2015	24/08/2015	24/08/2015
								Lab_Report_Number	470640	470640	470640	470640	470640	470640	470640	470640	470640	470640	470640
				CT1 NSW 2014 General Solid Waste (No Leaching)		CT2 NSW 2014 Restricted Solid Waste (No Leaching)		SCC1 NSW 2014 General Solid Waste (leached)		SCC2 NSW 2014 Restricted Solid Waste (leached)									
Method_Type	**ChemName**	**Units**	**EQL**																
CRS	Acid Neutralising Capacity	%CaCO3	0.01								1.2	1	3.8	5.4	-	-	0.76	-	1.5	5.7	0.51
	Liming Rate	kg CaCO3/t	1								<1	1	<1	<1	-	-	<1	-	<1	<1	3
Heavy Metal	Arsenic	mg/kg	2		100		400		500	2000	<2	-	-	-	14	5.6	-	4.4	<2	-	-
	Cadmium	mg/kg	0.4		20		80		100	400	<0.4	-	-	-	<0.4	<0.4	-	<0.4	<0.4	-	-
	Chromium	mg/kg	5		100		400		1900	7600	<5	-	-	-	21	11	-	6.3	<5	-	-
	Copper	mg/kg	5								15	-	-	-	30	10	-	220	11	-	-
	Lead	mg/kg	5		100		400		1500	6000	22	-	-	-	43	91	-	150	15	-	-
	Mercury	mg/kg	0.05		4		16		50	200	0.08	-	-	-	0.24	0.31	-	0.25	0.11	-	-
	Nickel	mg/kg	5		40		160		1050	4200	<5	-	-	-	5.9	6.4	-	<5	<5	-	-
	Zinc	mg/kg	5								21	-	-	-	43	47	-	66	5.6	-	-
Inorganic	Chloride	mg/kg	10								-	1400	-	-	-	-	71	45	56	-	-
	Moisture Content (dried @ 103°C)	%	0.1								22	28	24	19	13	13	11	11	18	20	12
	pH (aqueous extract)	pH_Units	0.1								-	8.2	-	-	-	-	6.8	7.4	7.3	-	-
	Sulphate	mg/kg	10								-	330	-	-	-	-	600	140	300	-	-
Organic	Naphthalene	mg/kg	0.5								<0.5	-	-	-	<0.5	<0.5	-	<0.5	<0.5	-	-
	F2-NAPHTHALENE	mg/kg	50								<50	-	-	-	<50	<50	-	<50	<50	-	-
	C6 - C9	mg/kg	20		650		2600		650	2600	<20	-	-	-	<20	<20	-	<20	<20	-	-
	C6-C10 less BTEX (F1)	mg/kg	20								<20	-	-	-	<20	<20	-	<20	<20	-	-
	C10-C16	mg/kg	50								<50	-	-	-	<50	<50	-	<50	<50	-	-
	C16-C34	mg/kg	100								<100	-	-	-	670	790	-	<100	<100	-	-
	C34-C40	mg/kg	100								<100	-	-	-	850	630	-	<100	<100	-	-
	C6 - C10	mg/kg	20								<20	-	-	-	<20	<20	-	<20	<20	-	-
PAH	Acenaphthene	mg/kg	0.5								<0.5	-	-	-	<0.5	<0.5	-	<0.5	<0.5	-	-
	Acenaphthylene	mg/kg	0.5								<0.5	-	-	-	<0.5	<0.5	-	<0.5	<0.5	-	-
	Anthracene	mg/kg	0.5								<0.5	-	-	-	<0.5	<0.5	-	<0.5	<0.5	-	-
	Benzo(a)anthracene	mg/kg	0.5								<0.5	-	-	-	1.3	1.1	-	<0.5	<0.5	-	-
	Benzo(a)pyrene	mg/kg	0.5		0.8		3.2		10	23	<0.5	-	-	-	1.2	0.8	-	<0.5	<0.5	-	-
	Benzo(a)pyrene TEQ (lower bound) *	MG/KG	0.5								<0.5	-	-	-	1.6	1	-	<0.5	<0.5	-	-
	Benzo(a)pyrene TEQ (medium bound) *	MG/KG	0.5								0.6	-	-	-	1.9	1.3	-	0.6	0.6	-	-
	Benzo(a)pyrene TEQ (upper bound) *	MG/KG	0.5								1.2	-	-	-	2.1	1.6	-	1.2	1.2	-	-
	Benzo(g,h,i)perylene	mg/kg	0.5								<0.5	-	-	-	0.8	0.8	-	<0.5	<0.5	-	-
	Benzo(k)fluoranthene	mg/kg	0.5								<0.5	-	-	-	0.9	0.6	-	<0.5	<0.5	-	-
	Chrysene	mg/kg	0.5								<0.5	-	-	-	0.9	0.7	-	<0.5	<0.5	-	-
	Benzo[b+j]fluoranthene	mg/kg	0.5								<0.5	-	-	-	1.2	0.6	-	<0.5	<0.5	-	-
	Dibenz(a,h)anthracene	mg/kg	0.5								<0.5	-	-	-	<0.5	<0.5	-	<0.5	<0.5	-	-
	Fluoranthene	mg/kg	0.5								<0.5	-	-	-	2.3	2	-	<0.5	<0.5	-	-
	Fluorene	mg/kg	0.5								<0.5	-	-	-	<0.5	<0.5	-	<0.5	<0.5	-	-
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.5								<0.5	-	-	-	0.6	<0.5	-	<0.5	<0.5	-	-
	Naphthalene	mg/kg	0.5								<0.5	-	-	-	<0.5	<0.5	-	<0.5	<0.5	-	-
	Phenanthrene	mg/kg	0.5								<0.5	-	-	-	1.2	1	-	<0.5	<0.5	-	-
	Pyrene	mg/kg	0.5								<0.5	-	-	-	2.5	2.2	-	<0.5	<0.5	-	-
	Total PAHs	mg/kg	0.5		200		800		200	800	<0.5	-	-	-	13	9.8	-	<0.5	<0.5	-	-
SPOCAS	Analysed Material	%	0.1								100	100	83	55	-	-	100	-	100	73	78
	Extraneous Material	%	0.1								<0.1	<0.1	17	45	-	-	<0.1	-	<0.1	27	22
TPH	C10 - C14	mg/kg	20								<20	-	-	-	<20	<20	-	<20	<20	-	-
	C15 - C28	mg/kg	50								<50	-	-	-	210	170	-	<50	<50	-	-
	C29 - C36	mg/kg	50								<50	-	-	-	790	780	-	<50	<50	-	-
	C10 - C36 (Sum of total)	mg/kg	50		10000		40000		10000	40000	<50	-	-	-	1000	950	-	<50	<50	-	-
Volatile	Benzene	mg/kg	0.1		10		40		18	72	<0.1	-	-	-	<0.1	<0.1	-	<0.1	<0.1	-	-
	Ethylbenzene	mg/kg	0.1		600		2400		1080	4320	<0.1	-	-	-	<0.1	<0.1	-	<0.1	<0.1	-	-
	Toluene	mg/kg	0.1		288		1152		518	2073	<0.1	-	-	-	<0.1	<0.1	-	<0.1	<0.1	-	-
	Xylene (m & p)	mg/kg	0.2								<0.2	-	-	-	<0.2	<0.2	-	<0.2	<0.2	-	-
	Xylene (o)	mg/kg	0.1								<0.1	-	-	-	<0.1	<0.1	-	<0.1	<0.1	-	-
	Xylene Total	mg/kg	0.3		1000		4000		1800	7200	<0.3	-	-	-	<0.3	<0.3	-	<0.3	<0.3	-	-
Material	Asbestos		Detection												ND			ND			

Notes:

Concentration reported above CT1 criteria

ND Not Detected

Appendix G – Laboratory QA/QC Analysis

Laboratory quality assurance / quality control

Field QA/QC

Precision of analytical techniques is measured by the relative percentage difference (RPD) between duplicate results. An RPD acceptance criteria of 50% has been adopted for the purposes of this assessment.

One quality control (QC) field duplicate sample ("DUP") was collected and submitted for laboratory analysis.

Concentrations of analytes for TPH, BTEX and PAH were all below the LOR for both BH03 and the duplicate sample – RPD values are therefore zero for all those analytes. Concentrations of duplicate analytes above the LOR, and their RPD values, are provided in Table 11.

RPD results for key analytes meet the acceptance target of less than 50%.

Table 6 – RPD Values for Key Analytes

Sample	Units	LOR	BH03	DUP	RPD
Arsenic	µg/L	1	< 1	< 1	0
Cadmium	µg/L	0.2	0.3	0.4	33
Chromium	µg/L	1	< 1	< 1	0
Copper	µg/L	1	< 1	< 1	0
Lead	µg/L	1	< 1	< 1	0
Mercury	µg/L	0.1	< 0.1	< 0.1	0
Nickel	µg/L	1	84	84	0
Zinc	µg/L	1	1,100	1,200	9

Notes: LOR is Limit of Reporting

Laboratory quality control

Accuracy of laboratory QC results (laboratory control samples, matrix spikes and surrogates) is measured by percentage recovery (%R) of known additions.

Acceptance targets for laboratory duplicates is generally between 70% and 130% recovery (see laboratory report in Appendix E). However, acceptable accuracy for certain methods may exceed these limits (see laboratory report in Appendix E).

Acceptance targets for surrogates are between 50% and 150% recovery for organics. It should be noted that matrix dependant QC methods (matrix spikes, surrogates) can be affected by the matrix, hence these %R results have been assessed qualitatively.

Analyses were carried out by Eurofins mgt (a NATA accredited analytical laboratory) for the requested analytical suite.

Review of the laboratory data indicated that:

- All laboratory duplicate samples reported RPDs within the acceptable range
- All method blanks reported concentrations below the laboratory LOR
- All surrogate samples reported results within the acceptable range
- All matrix spike samples reported results within the acceptable range

The laboratory QC results indicate an overall acceptable precision and accuracy of the analytical results reported.

Data QA/QC conclusion

Based on field method validation and laboratory QA/QC measures, the groundwater quality data is considered to be of acceptable quality for the purposes of this assessment.