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ES132320
SMEC TE
19399 36

Sub-Matrix: SOIL

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	SpikeRecovery(%)	Recovery Limits (%)	
EP080: BTEXN (QCLot: 3128057) - continued						Low	High
ES1323100-001	Anonymous	EP080: Toluene	108-88-3	2.5 mg/kg	89.8	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	88.2	70	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	88.5	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	91.8	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	89.6	70	130
EP080: BTEXN (QCLot: 3129674)							
ES1323205-001	S1	EP080: Benzene	71-43-2	2.5 mg/kg	80.6	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	83.4	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	88.4	70	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	90.4	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	93.2	70	130
EP080: Naphthalene	91-20-3	2.5 mg/kg	89.1	70	130		
EP080: BTEXN (QCLot: 3129675)							
ES1323147-020	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	110	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	118	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	117	70	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	120	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	115	70	130
EP080: Naphthalene	91-20-3	2.5 mg/kg	86.8	70	130		

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report											
Sub-Matrix: SOIL	Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						MS	MSD	Low	High	Value	Control Limit
EP074E: Halogenated Aliphatic Compounds (QCLot: 3128056)											
ES1323100-001	Anonymous		EP074: 1,1-Dichloroethene	75-35-4	2.5 mg/kg	91.0	---	70	130	---	---
			EP074: Trichloroethene	79-01-6	2.5 mg/kg	94.4	---	70	130	---	---
EP074F: Halogenated Aromatic Compounds (QCLot: 3128056)											
ES1323100-001	Anonymous		EP074: Chlorobenzene	108-90-7	2.5 mg/kg	97.2	---	70	130	---	---
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3128057)											
ES1323100-001	Anonymous		EP080: C6 - C9 Fraction	---	32.5 mg/kg	93.7	---	70	130	---	---
EP080/071: Total Recoverable Hydrocarbons - NEPM-2013 (QCLot: 3128057)											



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL			Matrix Spike (MS) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery(%)		Recovery Limits (%)	
					MS	Low	High	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3128447) - continued								
ES1323205-001	S1	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	106		70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	112		70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3128457)								
ES1323205-035	S38	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	114		70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	124		70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3128057)								
ES1323100-001	Anonymous	EP080: C6 - C9 Fraction	---	32.5 mg/kg	93.7		70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3128446)								
ES1323205-001	S1	EP071: C10 - C14 Fraction	---	640 mg/kg	83.4		73	137
		EP071: C15 - C28 Fraction	---	3140 mg/kg	78.4		53	131
		EP071: C29 - C36 Fraction	---	2860 mg/kg	65.6		52	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3128456)								
ES1323205-035	S38	EP071: C10 - C14 Fraction	---	640 mg/kg	78.4		73	137
		EP071: C15 - C28 Fraction	---	3140 mg/kg	87.6		53	131
		EP071: C29 - C36 Fraction	---	2860 mg/kg	86.6		52	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3128674)								
ES1323205-001	S1	EP080: C6 - C9 Fraction	---	32.5 mg/kg	102		70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3129675)								
ES1323147-020	Anonymous	EP080: C6 - C9 Fraction	---	32.5 mg/kg	121		70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3128057)								
ES1323100-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	91.1		70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3128446)								
ES1323205-001	S1	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	103		73	137
		EP071: >C16 - C34 Fraction	---	4800 mg/kg	71.0		53	131
		EP071: >C34 - C40 Fraction	---	2400 mg/kg	52.8		52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3128456)								
ES1323205-035	S38	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	101		73	137
		EP071: >C16 - C34 Fraction	---	4800 mg/kg	85.0		53	131
		EP071: >C34 - C40 Fraction	---	2400 mg/kg	66.4		52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3129674)								
ES1323205-001	S1	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	98.9		70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3129675)								
ES1323147-020	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	119		70	130
EP080: BTEXN (QCLot: 3128057)								
ES1323100-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	85.9		70	130

Sub-Matrix: SOIL

Sub-Matrix: SOIL									
Laboratory sample ID				Client sample ID	Method: Compound	Matrix Spike (MS) Report			
Laboratory sample ID		Client sample ID		Method: Compound	CAS Number	Spike Concentration	SpikeRecovery(%)	Recovery Limits (%)	High
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 3129515) - continued									
ES1323017-001		Anonymous		EK026SF: Total Cyanide	57-12-5	20 mg/kg	95.9	70	130
EP035G: Total Phenol by Discrete Analyser (QCLot: 3132350)									
ES1323205-034		S37		EP035G: Phenols (Total)	---	4.2 mg/kg	86.1	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3128275)									
ES1323205-002		S2		EP066: Total Polychlorinated biphenyls	---	1 mg/kg	111	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 3128274)									
ES1323205-002		S2		EP068: gamma-BHC	58-89-9	0.5 mg/kg	81.9	70	130
				EP068: Heptachlor	76-44-8	0.5 mg/kg	89.4	70	130
				EP068: Aldrin	309-00-2	0.5 mg/kg	79.9	70	130
				EP068: Dieldrin	60-57-1	0.5 mg/kg	86.3	70	130
				EP068: Endrin	72-20-8	2 mg/kg	86.0	70	130
				EP068: 4,4'-DDT	50-29-3	2 mg/kg	102	70	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3128274)									
ES1323205-002		S2		EP068: Diazinon	333-41-5	0.5 mg/kg	90.4	70	130
				EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	87.9	70	130
				EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	89.6	70	130
				EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	84.5	70	130
				EP068: Prothiofos	34643-46-4	0.5 mg/kg	88.4	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 3128056)									
ES1323100-001		Anonymous		EP074: 1,1-Dichloroethene	75-35-4	2.5 mg/kg	91.0	70	130
				EP074: Trichloroethene	79-01-6	2.5 mg/kg	94.4	70	130
EP074F: Halogenated Aromatic Compounds (QCLot: 3128056)									
ES1323100-001		Anonymous		EP074: Chlorobenzene	108-90-7	2.5 mg/kg	97.2	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3128447)									
ES1323205-001		S1		EP075(SIM): Phenol	108-95-2	10 mg/kg	90.9	70	130
				EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	94.0	70	130
				EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	75.8	60	130
				EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	98.8	70	130
				EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	77.3	20	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3128457)									
ES1323205-035		S38		EP075(SIM): Phenol	108-95-2	10 mg/kg	111	70	130
				EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	103	70	130
				EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	103	60	130
				EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	111	70	130
				EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	113	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3128447)									

Matrix Spike (MS) Report

Sub-Matrix: SOIL

Sub-Matrix: SOIL									
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Matrix Spike (MS) Report				
					MS	SpikeRecovery(%)	Recovery Limits (%)		
EG005T: Total Metals by ICP-AES (QCLot: 3130765)									
ES1323038-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	105	70	130		
		EG005T: Cadmium	7440-43-9	50 mg/kg	106	70	130		
		EG005T: Chromium	7440-47-3	50 mg/kg	106	70	130		
		EG005T: Copper	7440-50-8	125 mg/kg	113	70	130		
		EG005T: Lead	7439-92-1	125 mg/kg	109	70	130		
		EG005T: Nickel	7440-02-0	50 mg/kg	110	70	130		
		EG005T: Zinc	7440-66-6	125 mg/kg	107	70	130		
EG005T: Total Metals by ICP-AES (QCLot: 3130767)									
ES1323205-037	S40	EG005T: Arsenic	7440-38-2	50 mg/kg	107	70	130		
		EG005T: Cadmium	7440-43-9	50 mg/kg	108	70	130		
		EG005T: Chromium	7440-47-3	50 mg/kg	100	70	130		
		EG005T: Copper	7440-50-8	125 mg/kg	106	70	130		
		EG005T: Lead	7439-92-1	125 mg/kg	108	70	130		
		EG005T: Nickel	7440-02-0	50 mg/kg	102	70	130		
		EG005T: Zinc	7440-66-6	125 mg/kg	91.8	70	130		
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3130766)									
ES1323038-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	102	70	130		
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3130768)									
ES1323205-037	S40	EG035T: Mercury	7439-97-6	5 mg/kg	96.7	70	130		
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 3129515)									



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Spike Concentration	Laboratory Control Spike (LCS) Report	
						Spike Recovery (%)	Recovery Limits (%)
				Result		LCS	Low High
EP080/074: Total Petroleum Hydrocarbons (QCLot: 3128456)							
EP071: C10 - C14 Fraction	---	50	mg/kg	<50	200 mg/kg	106	71 131
EP071: C15 - C28 Fraction	---	100	mg/kg	<100	300 mg/kg	101	74 138
EP071: C29 - C36 Fraction	---	100	mg/kg	<100	200 mg/kg	95.9	64 128
EP080/074: Total Petroleum Hydrocarbons (QCLot: 3129674)							
EP080: C6 - C9 Fraction	---	10	mg/kg	<10	26 mg/kg	116	68.4 128
EP080/074: Total Petroleum Hydrocarbons (QCLot: 3129675)							
EP080: C6 - C9 Fraction	---	10	mg/kg	<10	26 mg/kg	83.1	58.4 128
EP080/074: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3128057)							
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	102	68.4 128
EP080/074: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3128446)							
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	105	70 130
EP071: >C16 - C34 Fraction	---	100	mg/kg	<100	350 mg/kg	124	74 138
EP071: >C34 - C40 Fraction	---	100	mg/kg	<100	---	---	---
	---	50	mg/kg	---	150 mg/kg	115	63 131
EP080/074: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3128456)							
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	105	70 130
EP071: >C16 - C34 Fraction	---	100	mg/kg	<100	350 mg/kg	98.0	74 138
EP071: >C34 - C40 Fraction	---	100	mg/kg	<100	---	---	---
	---	50	mg/kg	---	150 mg/kg	92.8	63 131
EP080/074: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3128674)							
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	108	68.4 128
EP080/074: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3129675)							
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	84.0	68.4 128
EP080: BTEXN (QCLot: 3128057)							
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	101	62 116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	103	62 128
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	98.4	58 118
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	99.9	60 120
	106-42-3						
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	103	60 120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	93.5	62 138
EP080: BTEXN (QCLot: 3129674)							
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	111	62 116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	107	62 128
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	107	58 118
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	105	60 120
	106-42-3						
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	114	60 120



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL			Method Blank (MB) Report		Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3128447) - continued								
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	102	77 123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	# 75.0	79 123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	82.7	77 123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	82.1	79 123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	80.7	79 123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	85.0	79 123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	81.6	79 125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	94.2	73 121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	96.7	81 123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	92.4	70 118	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	94.1	77 123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	97.1	76 122	
EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	86.1	71 113	
EP075(SIM): Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	87.9	71.7 113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	91.7	72.4 114	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3128457)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	112	80 124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	111	77 123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	110	79 123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	110	77 123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	108	79 123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	106	79 123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	109	79 123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	112	79 125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	109	73 121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	110	81 123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	93.4	70 118	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	109	77 123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	110	76 122	
EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	71.2	71 113	
EP075(SIM): Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	71.8	71.7 113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	79.9	72.4 114	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3128057)								
EP080: C6 - C9 Fraction	---	10	mg/kg	<10	26 mg/kg	102	68.4 128	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3128446)								
EP071: C10 - C14 Fraction	---	50	mg/kg	<50	200 mg/kg	102	71 131	
EP071: C15 - C28 Fraction	---	100	mg/kg	<100	300 mg/kg	122	74 138	
EP071: C29 - C36 Fraction	---	100	mg/kg	<100	200 mg/kg	119	64 128	



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Work Order : ES1323205
Client : SMEC TESTING SERVICES PTY LTD
Project : 19399 3606C

Sub-Matrix: SOIL

Sub-Matrix: SOIL			Method Blank (MB) Report		Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
EP074F: Halogenated Aromatic Compounds (QCLot: 3128056) - continued								
EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	1 mg/kg	97.6	63 129	
EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	1 mg/kg	98.3	63 129	
EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	1 mg/kg	96.0	66 128	
EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	1 mg/kg	92.3	54 134	
EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	1 mg/kg	96.5	60 132	
EP074G: Trihalomethanes (QCLot: 3128056)								
EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	1 mg/kg	95.2	62 120	
EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	1 mg/kg	82.8	61 121	
EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	1 mg/kg	84.8	63 121	
EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	1 mg/kg	86.4	60 126	
EP075(SIM)A: Phenolic Compounds (QCLot: 3128447)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	81.1	74 116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	92.4	74 116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	90.4	72 116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	74.2	69 123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	74.0	60.3 117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	82.6	69 117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	86.2	68 112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	86.1	73 117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	84.8	76.4 114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	88.5	57 111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	85.2	68.9 112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	32.8	3.9 57	
EP075(SIM)A: Phenolic Compounds (QCLot: 3128457)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	82.2	74 116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	87.3	74 116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	109	72 116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	113	69 123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	81.8	60.3 117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	109	69 117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	101	68 112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	108	73 117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	104	76.4 114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	87.3	57 111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	86.9	68.9 112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	27.0	3.9 57	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3128447)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	95.0	80 124	



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL		Method: Compound		Method Blank (MB) Report		Laboratory Control Spike (LCS) Report				
		CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)	LCS	Low	High
EP074E: Halogenated Aliphatic Compounds (QCLot: 3128056)										
EP074: Dichlorodifluoromethane		75-71-8	1	mg/kg	---	10 mg/kg	---	40.2	30	148
			5	mg/kg	<5	---	---	---	---	---
EP074: Chloromethane		74-87-3	1	mg/kg	---	10 mg/kg	---	51.0	41	141
			5	mg/kg	<5	---	---	---	---	---
EP074: Vinyl chloride		75-01-4	1	mg/kg	---	10 mg/kg	---	70.8	43	147
			5	mg/kg	<5	---	---	---	---	---
EP074: Bromomethane		74-83-9	1	mg/kg	---	10 mg/kg	---	64.2	47	141
			5	mg/kg	<5	---	---	---	---	---
EP074: Chloroethane		75-00-3	1	mg/kg	---	10 mg/kg	---	74.3	49	143
			5	mg/kg	<5	---	---	---	---	---
EP074: Trichlorofluoromethane		75-69-4	1	mg/kg	---	10 mg/kg	---	75.6	49	135
			5	mg/kg	<5	---	---	---	---	---
EP074: 1,1-Dichloroethene		75-35-4	0.5	mg/kg	<0.5	1 mg/kg	---	83.7	54	126
EP074: Iodomethane		74-88-4	0.5	mg/kg	<0.5	1 mg/kg	---	71.9	43	129
EP074: trans-1,2-Dichloroethene		156-60-5	0.5	mg/kg	<0.5	1 mg/kg	---	85.0	62	130
EP074: 1,1-Dichloroethane		75-34-3	0.5	mg/kg	<0.5	1 mg/kg	---	90.4	66	132
EP074: cis-1,2-Dichloroethene		156-59-2	0.5	mg/kg	<0.5	1 mg/kg	---	96.0	66	132
EP074: 1,1,1-Trichloroethane		71-55-6	0.5	mg/kg	<0.5	1 mg/kg	---	85.4	62	126
EP074: 1,1-Dichloropropylene		563-58-6	0.5	mg/kg	<0.5	1 mg/kg	---	97.0	64	128
EP074: Carbon Tetrachloride		56-23-5	0.5	mg/kg	<0.5	1 mg/kg	---	82.9	59	125
EP074: 1,2-Dichloroethane		107-06-2	0.5	mg/kg	<0.5	1 mg/kg	---	98.7	65	123
EP074: Trichloroethene		79-01-6	0.5	mg/kg	<0.5	1 mg/kg	---	95.6	64	120
EP074: Dibromomethane		74-95-3	0.5	mg/kg	<0.5	1 mg/kg	---	96.8	65	127
EP074: 1,1,2-Trichloroethane		79-00-5	0.5	mg/kg	<0.5	1 mg/kg	---	98.8	70	130
EP074: 1,3-Dichloropropane		142-28-9	0.5	mg/kg	<0.5	1 mg/kg	---	97.2	72	128
EP074: Tetrachloroethene		127-18-4	0.5	mg/kg	<0.5	1 mg/kg	---	99.6	67	143
EP074: 1,1,1,2-Tetrachloroethane		630-20-6	0.5	mg/kg	<0.5	1 mg/kg	---	86.9	62	122
EP074: trans-1,4-Dichloro-2-butene		110-57-6	0.5	mg/kg	<0.5	1 mg/kg	---	91.8	54	128
EP074: cis-1,4-Dichloro-2-butene		1476-11-5	0.5	mg/kg	<0.5	1 mg/kg	---	93.1	55	129
EP074: 1,1,2,2-Tetrachloroethane		79-34-5	0.5	mg/kg	<0.5	1 mg/kg	---	94.2	56	132
EP074: 1,2,3-Trichloropropane		96-18-4	0.5	mg/kg	<0.5	1 mg/kg	---	98.3	65	135
EP074: Pentachloroethane		76-01-7	0.5	mg/kg	<0.5	1 mg/kg	---	74.4	19.8	134
EP074: 1,2-Dibromo-3-chloropropane		96-12-8	0.5	mg/kg	<0.5	1 mg/kg	---	85.3	53	129
EP074: Hexachlorobutadiene		87-68-3	0.5	mg/kg	<0.5	1 mg/kg	---	91.8	48	136
EP074F: Halogenated Aromatic Compounds (QCLot: 3128056)										
EP074: Chlorobenzene		108-90-7	0.5	mg/kg	<0.5	1 mg/kg	---	98.0	70	128
EP074: Bromobenzene		108-86-1	0.5	mg/kg	<0.5	1 mg/kg	---	95.0	67	127
EP074: 2-Chlorotoluene		95-49-8	0.5	mg/kg	<0.5	1 mg/kg	---	95.5	64	130
EP074: 4-Chlorotoluene		106-43-4	0.5	mg/kg	<0.5	1 mg/kg	---	93.5	62	130



Sub-Matrix: SOIL				Method Blank (MB) Report				Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)	LCS	Low	High	Recovery Limits (%)	
EP068A: Organochlorine Pesticides (OC) (QCLot: 3128274) - continued											
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	85.0	68	68	120		
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	87.0	69	69	119		
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	90.8	67	67	121		
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	82.2	66	66	118		
EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	80.5	69	69	117		
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	82.1	67	67	123		
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	88.5	76	76	120		
EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	93.9	76	76	120		
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	91.5	57.3	57.3	115		
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	109	60	60	124		
EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	86.2	67	67	127		
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	109	65	65	123		
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	96.3	65	65	129		
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3128274)											
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	103	56	56	126		
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	82.0	64	64	128		
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	85.7	54	54	122		
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	85.8	64	64	124		
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	83.6	73	73	117		
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	77.6	55	55	119		
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	75.7	69	69	123		
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	90.6	70	70	120		
EP068: Fenitrothion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	85.7	71	71	115		
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	82.0	68	68	114		
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	95.2	68	68	122		
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	91.8	69	69	115		
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	91.5	70	70	118		
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	86.8	68	68	116		
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	99.0	64	64	120		
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	84.4	68	68	116		
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	88.1	70	70	118		
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	110	67	67	123		
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	90.6	42	42	126		
EP074D: Fumigants (QCLot: 3128056)											
EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	1 mg/kg	83.3	55	55	133		
EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	1 mg/kg	93.1	69	69	127		
EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	1 mg/kg	102	54	54	124		
EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	1 mg/kg	80.8	51	51	125		
EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	1 mg/kg	91.4	66	66	126		



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL	Method/Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Result	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
EG005T: Total Metals by ICP-AES (QCLot: 3130765)									
	EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	112	87	129
	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	103	80	122
	EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	128	71	133
	EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	117	86	128
	EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	111	81	123
	EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	118	84	130
	EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	114	81	133
EG005T: Total Metals by ICP-AES (QCLot: 3130767)									
	EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	112	87	129
	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	106	80	122
	EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	126	71	133
	EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	115	86	128
	EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	116	81	123
	EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	120	84	130
	EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	120	81	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3130766)									
	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	86.2	66	112
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3130768)									
	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	84.5	66	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 3129515)									
	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	91.4	83	123
EP035G: Total Phenol by Discrete Analyser (QCLot: 3132350)									
	EP035G: Phenols (Total)	---	1	mg/kg	<1	5 mg/kg	84.2	60	102
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3128275)									
	EP066: Total Polychlorinated biphenyls	---	0.1	mg/kg	<0.1	1 mg/kg	84.0	57.4	117
EP068A: Organochlorine Pesticides (OC) (QCLot: 3128274)									
	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	87.6	71	113
	EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	87.1	66	122
	EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	87.6	69	119
	EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	75.9	71	115
	EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	80.6	65	113
	EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	77.6	68	116
	EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	96.2	68	118
	EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	82.8	68	116



Sub-Matrix: SOIL										
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Laboratory Duplicate (DUP) Report				
EP080: BTEXN (QC Lot: 3129675) - continued						Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
ES1323147-020	Anonymous	EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
	S40	EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Naphthalene	91-20-3	1	mg/kg	14	14	0.0	0% - 50%	
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		106-42-3								
	EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	



Sub-Matrix: SOIL			Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3128455) - continued									
ES1323205-047	S51	EP071: >C34 - C40 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3129674)									
ES1323205-001	S1	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1323205-019	S20	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3129675)									
ES1323147-020	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1323205-037	S40	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080: BTEXN (QC Lot: 3128057)									
ES1323100-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES1323101-004	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP080: BTEXN (QC Lot: 3129674)									
ES1323205-001	S1	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES1323205-019	S20	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP080: BTEXN (QC Lot: 3129675)									
ES1323147-020	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit



Page : 12 of 27
Work Order : ES1323205
Client : SMEC TESTING SERVICES PTY LTD
Project : 19399 3606C

Sub-Matrix: SOIL		Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3128457) - continued									
ES1323205-047	S51	EP075(SIM): Benzo(a)pyrene TEQ (zero)	---	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3128057)									
ES1323100-001	Anonymous	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.0	No Limit
ES1323101-004	Anonymous	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3128446)									
ES1323205-001	S1	EP071: C15 - C28 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.0	No Limit
ES1323205-020	S21	EP071: C15 - C28 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3128456)									
ES1323205-035	S38	EP071: C15 - C28 Fraction	---	100	mg/kg	270	230	15.1	No Limit
		EP071: C29 - C36 Fraction	---	100	mg/kg	340	320	8.7	No Limit
		EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.0	No Limit
ES1323205-047	S51	EP071: C15 - C28 Fraction	---	100	mg/kg	100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3128574)									
ES1323205-001	S1	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.0	No Limit
ES1323205-019	S20	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3128575)									
ES1323147-020	Anonymous	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.0	No Limit
ES1323205-037	S40	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3128057)									
ES1323100-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1323101-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3128446)									
ES1323205-001	S1	EP071: >C16 - C34 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1323205-020	S21	EP071: >C16 - C34 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3128456)									
ES1323205-035	S38	EP071: >C16 - C34 Fraction	---	100	mg/kg	530	470	11.9	No Limit
		EP071: >C34 - C40 Fraction	---	100	mg/kg	160	150	8.3	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1323205-047	S51	EP071: >C16 - C34 Fraction	---	100	mg/kg	160	140	12.5	No Limit



ALS Environmental

QUALITY CONTROL REPORT

Work Order : **ES1323293**

Page : 1 of 17

Client : **SMEC TESTING SERVICES PTY LTD**
Contact : **ALL REPORTS**
Address : **P O BOX 6989
WETHERILL PARK NSW, AUSTRALIA 2164**

Laboratory : **Environmental Division Sydney**
Contact : **Client Services**
Address : **277-289 Woodpark Road Smithfield NSW Australia 2164**

E-mail : **enquiries@smectesting.com.au**

E-mail : **sydney@alsglobal.com**

Telephone : **---**

Telephone : **+61-2-8784 8555**

Facsimile : **---**

Facsimile : **+61-2-8784 8500**

Project : **GORDON 19399**

QC Level : **NEPM 2013 Schedule B(3) and ALS QCS3 requirement**

Site : **---**

C-O-C number

: **210997**

Sampler

: **JK**

Order number

: **10574**

No. of samples received

: **7**

No. of samples analysed

: **6**

Quote number

: **EN/025/13**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



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Work Order ES1323293
Client SMEC TESTING SERVICES PTY LTD
Project GORDON 19399

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot

CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed QC



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics



Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: SOIL

Sub-Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (QC Lot: 3132136)									
ES1323276-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	10.6	9.9	7.0	0% - 50%
ES1323293-004	S57	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	14.9	15.2	2.6	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 3133398)									
ES1323288-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	14	15	7.7	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	5	6	26.4	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	13	12	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	274	264	3.8	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	411	361	13.0	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	208	186	11.0	0% - 20%
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	3	4	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	17	14	18.2	No Limit
ES1323345-008	Anonymous	EG005T: Lead	7439-92-1	5	mg/kg	12	12	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	6	33	142	No Limit
		EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3133397)							
ES1322766-043	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.1	0.1	0.0	No Limit
ES1323227-003	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3129345)									
ES1323286-001	Anonymous	EP066: Total Polychlorinated biphenyls	---	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3129344)									
ES1323286-001	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit



Sub-Matrix: SOIL									
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3129344) - continued									
ES1323286-001	Anonymous	EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068B: Organophosphorus Pesticides (OP) (QC Lot: 3129344)							
ES1323286-001	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Pirimiphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit		
EP074D: Fumigants (QC Lot: 3134482)									
ES1323489-002	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3134482)									
ES1323489-002	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL									
Laboratory sample ID	Client sample ID	Method/Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3134482) - continued									
Anonymous									
ES1323489-002	EP074: cis-1,2-Dichloroethene		156-59-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: 1,1,1-Trichloroethane		71-55-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: 1,1-Dichloropropylene		563-59-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: Carbon Tetrachloride		56-23-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: 1,2-Dichloroethane		107-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: Trichloroethene		79-01-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: Dibromomethane		74-95-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: 1,1,2-Trichloroethane		79-00-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: 1,3-Dichloropropane		142-28-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: Tetracloroethene		127-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: 1,1,1,2-Tetrachloroethane		630-20-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: trans-1,4-Dichloro-2-butene		110-57-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: cis-1,4-Dichloro-2-butene		1476-11-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: 1,1,2,2-Tetrachloroethane		79-34-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: 1,2,3-Trichloropropane		96-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: Pentachloroethane		76-01-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: 1,2-Dibromo-3-chloropropane		96-12-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: Hexachlorobutadiene		87-68-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: Dichlorodifluoromethane		75-71-8	5	mg/kg	<5	<5	0.0	No Limit
	EP074: Chloromethane		74-87-3	5	mg/kg	<5	<5	0.0	No Limit
EP074: Vinyl chloride		75-01-4	5	mg/kg	<5	<5	0.0	No Limit	
EP074: Bromomethane		74-83-9	5	mg/kg	<5	<5	0.0	No Limit	
EP074: Chloroethane		75-00-3	5	mg/kg	<5	<5	0.0	No Limit	
EP074: Trichlorofluoromethane		75-69-4	5	mg/kg	<5	<5	0.0	No Limit	
EP074F: Halogenated Aromatic Compounds (QC Lot: 3134482)									
Anonymous									
ES1323489-002	EP074: Chlorobenzene		108-90-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: Bromobenzene		108-86-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: 2-Chlorotoluene		95-49-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: 4-Chlorotoluene		106-43-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: 1,3-Dichlorobenzene		541-73-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: 1,4-Dichlorobenzene		106-46-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: 1,2-Dichlorobenzene		95-50-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: 1,2,4-Trichlorobenzene		120-82-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: 1,2,3-Trichlorobenzene		87-61-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074G: Trihalomethanes (QC Lot: 3134482)								
Anonymous									
ES1323489-002	EP074: Chloroform		67-66-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: Bromodichloromethane		75-27-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: Dibromochloromethane		124-48-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP074: Bromoform		75-25-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3129343)									



Sub-Matrix: SOIL		Laboratory Duplicate (DUP) Report									
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)		
EP075(SIM)A: Phenolic Compounds (QC Lot: 3129343) - continued											
ES1323279-001	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit	No Limit	
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit	No Limit	
		EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit			
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit	No Limit			
EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit	No Limit			
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3129343)											
ES1323279-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	
		EP075(SIM): Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	No Limit	



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Work Order : ES1323293
Client : SMEC TESTING SERVICES PTY LTD
Project : GORDON 19399

Sub-Matrix: SOIL		Laboratory Duplicate (DUP) Report								
Laboratory sample ID	Client sample ID	Method/Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3129343) - continued										
ES1323279-001	Anonymous	EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	---	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
ES1323293-001	S54	EP075(SIM): Benzo(a)pyrene TEQ (zero)	---	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	---	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3129342)										
ES1323279-001	Anonymous	EP071: C15 - C28 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C29 - C36 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.0	No Limit	
		EP071: C15 - C28 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C29 - C36 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit	
ES1323293-001	S54	EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.0	No Limit	
		EP071: C15 - C28 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C29 - C36 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.0	No Limit	
		EP071: C15 - C28 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3129679)										
ES1323038-003	Anonymous	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.0	No Limit	
ES1323286-001	Anonymous	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.0	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3134481)										
ES1323489-002	Anonymous	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.0	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3129342)										
ES1323279-001	Anonymous	EP071: >C16 - C34 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C34 - C40 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit	
		EP071: >C16 - C34 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit	
ES1323293-001	S54	EP071: >C16 - C34 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit	



Sub-Matrix: SOIL		Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3129342) - continued									
ES1323293-001	S54	EP071 >C34 - C40 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071 >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3129679)									
ES1323038-003	Anonymous	EP080 C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1323286-001	Anonymous	EP080 C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3134481)									
ES1323489-002	Anonymous	EP080 C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080: BTEXN (QC Lot: 3129679)									
ES1323038-003	Anonymous	EP080 Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080 Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080 Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080 meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080 ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080 Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
		EP080 Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080 Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080 Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080 meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
ES1323286-001	Anonymous	EP080 ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080 Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP080: BTEXN (QC Lot: 3134481)									
ES1323489-002	Anonymous	EP080 Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080 Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080 Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080 meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080 ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080 Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
		EP080 Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080 Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080 Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080 meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	106-42-3								
EP080 ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP080 Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit		



Sub-Matrix: soil

Sub-Matrix: SOIL	Method Blank (MB) Report			Laboratory Control Spike (LCS) Report					
	Method: Compound	CAS Number	LOR	Unit	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG005T: Total Metals by ICP-AES (QCLot: 3133398)									
EG005T: Arsenic	7440-38-2	5	mg/kg	21.7 mg/kg	114	87	129		
EG005T: Cadmium	7440-43-9	1	mg/kg	4.64 mg/kg	107	80	122		
EG005T: Chromium	7440-47-3	2	mg/kg	43.9 mg/kg	99.8	71	133		
EG005T: Copper	7440-50-8	5	mg/kg	32.0 mg/kg	116	86	128		
EG005T: Lead	7439-92-1	5	mg/kg	40.0 mg/kg	108	81	123		
EG005T: Nickel	7440-02-0	2	mg/kg	55.0 mg/kg	112	84	130		
EG005T: Zinc	7440-66-6	5	mg/kg	60.8 mg/kg	112	81	133		
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3133397)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	2.57 mg/kg	84.7	66	112		
EP066S: Polychlorinated Biphenyls (PCB) (QCLot: 3129345)									
EP066: Total Polychlorinated biphenyls	—	0.1	mg/kg	1 mg/kg	89.0	57.4	117		
EP068A: Organochlorine Pesticides (OC) (QCLot: 3129344)									
EP068: alpha-BHC	319-84-6	0.05	mg/kg	0.5 mg/kg	81.1	71	113		
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	0.5 mg/kg	88.0	66	122		
EP068: beta-BHC	319-85-7	0.05	mg/kg	0.5 mg/kg	85.4	69	119		
EP068: gamma-BHC	58-89-9	0.05	mg/kg	0.5 mg/kg	92.2	71	115		
EP068: delta-BHC	319-86-8	0.05	mg/kg	0.5 mg/kg	89.7	65	113		
EP068: Heptachlor	76-44-8	0.05	mg/kg	0.5 mg/kg	82.4	68	116		
EP068: Aldrin	309-00-2	0.05	mg/kg	0.5 mg/kg	98.8	68	118		
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	0.5 mg/kg	88.3	68	116		
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	0.5 mg/kg	87.3	68	120		
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	0.5 mg/kg	101	69	119		
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	0.5 mg/kg	88.0	67	121		
EP068: Dieldrin	60-57-1	0.05	mg/kg	0.5 mg/kg	87.5	66	118		
EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	0.5 mg/kg	83.7	69	117		
EP068: Endrin	72-20-8	0.05	mg/kg	0.5 mg/kg	83.7	67	123		
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	0.5 mg/kg	95.5	76	120		
EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	0.5 mg/kg	98.0	76	120		
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	0.5 mg/kg	85.1	57.3	115		
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	0.5 mg/kg	92.3	60	124		
EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	0.5 mg/kg	86.8	67	127		
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	0.5 mg/kg	101	65	123		
EP068: Methoxychlor	72-43-5	0.2	mg/kg	0.5 mg/kg	96.8	65	129		
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3129344)									



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Work Order : ES1323293
Client : SMEC TESTING SERVICES PTY LTD
Project : GORDON 19399

Sub-Matrix: SOIL

Sub-Matrix: SOIL			Method Blank (MB) Report		Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3129344) - continued								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	99.5	56	
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	110	64	
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	79.2	54	
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	98.2	64	
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	89.0	73	
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	87.4	55	
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	87.7	69	
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	95.3	70	
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	91.5	71	
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	90.5	68	
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	106	68	
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	87.1	69	
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	93.1	70	
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	89.6	68	
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	85.4	64	
EP068: Prothiofos	34843-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	88.9	68	
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	91.2	70	
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	94.1	67	
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	78.3	42	
EP074D: Fumigants (QCLot: 3134482)								
EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	1 mg/kg	109	55	
EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	1 mg/kg	102	69	
EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	1 mg/kg	92.3	54	
EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	1 mg/kg	89.6	51	
EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	1 mg/kg	91.8	66	
EP074E: Halogenated Aliphatic Compounds (QCLot: 3134482)								
EP074: Dichlorodifluoromethane	75-71-8	1	mg/kg	---	10 mg/kg	44.5	30	
		5	mg/kg	<5	---	---	---	
EP074: Chloromethane	74-87-3	1	mg/kg	---	10 mg/kg	56.2	41	
		5	mg/kg	<5	---	---	---	
EP074: Vinyl chloride	75-01-4	1	mg/kg	<5	10 mg/kg	93.3	43	
		5	mg/kg	<5	---	---	---	
EP074: Bromomethane	74-83-9	1	mg/kg	---	10 mg/kg	71.4	47	
		5	mg/kg	<5	---	---	---	
EP074: Chloroethane	75-00-3	1	mg/kg	---	10 mg/kg	84.9	49	
		5	mg/kg	<5	---	---	---	
EP074: Trichlorofluoromethane	75-69-4	1	mg/kg	---	10 mg/kg	101	49	
		5	mg/kg	<5	---	---	---	
EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	1 mg/kg	92.2	54	



Sub-Matrix: SOIL

Sub-Matrix: SOIL			Method Blank (MB) Report		Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
EP074E: Halogenated Aliphatic Compounds (QCLot: 3134482) - continued								
EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	1 mg/kg	88.6	43 129	
EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	1 mg/kg	96.2	62 130	
EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	1 mg/kg	104	66 132	
EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	1 mg/kg	104	66 132	
EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	1 mg/kg	107	62 126	
EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	1 mg/kg	111	64 128	
EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	1 mg/kg	102	59 125	
EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	1 mg/kg	109	65 123	
EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	1 mg/kg	106	64 120	
EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	1 mg/kg	102	65 127	
EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	1 mg/kg	96.6	70 130	
EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	1 mg/kg	98.6	72 128	
EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	1 mg/kg	102	67 143	
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	1 mg/kg	86.2	62 122	
EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	1 mg/kg	83.5	54 128	
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	1 mg/kg	94.7	55 129	
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	1 mg/kg	94.2	56 132	
EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	1 mg/kg	101	65 135	
EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	1 mg/kg	84.4	19.8 134	
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	1 mg/kg	84.4	53 129	
EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	1 mg/kg	104	48 136	
EP074F: Halogenated Aromatic Compounds (QCLot: 3134482)								
EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	1 mg/kg	92.4	70 128	
EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	1 mg/kg	90.2	67 127	
EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	1 mg/kg	94.7	64 130	
EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	1 mg/kg	98.3	62 130	
EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	1 mg/kg	94.7	63 129	
EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	1 mg/kg	101	63 129	
EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	1 mg/kg	94.1	66 128	
EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	1 mg/kg	91.9	54 134	
EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	1 mg/kg	96.6	60 132	
EP074G: Trihalomethanes (QCLot: 3134482)								
EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	1 mg/kg	105	62 120	
EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	1 mg/kg	92.2	61 121	
EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	1 mg/kg	87.8	63 121	
EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	1 mg/kg	77.4	60 126	
EP075(SIM)A: Phenolic Compounds (QCLot: 3129343)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	87.5	74 116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	83.3	74 116	



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Work Order : ES1323293
Client : SMEC TESTING SERVICES PTY LTD
Project : GORDON 19399

Method Blank (MB) Report				Laboratory Control Spike (LCS) Report			
Result				Spike Recovery (%)			
Concentration				LCS			
Unit				Recovery Limits (%)			
LOR				Low			
High							
Sub-Matrix: SOIL							
Method: Compound							
CAS Number							
LOR							
EP075(SIM)A: Phenolic Compounds (QCLot: 3129343) - continued							
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	87.8	72
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	85.0	69
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	89.7	60.3
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	87.4	69
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	83.8	68
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	86.1	73
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	82.5	76.4
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	96.7	57
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	88.7	58.9
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	23.2	3.9
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3129343)							
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	89.0	80
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	88.9	77
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	89.3	79
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	88.2	77
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	86.8	79
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	87.6	79
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	87.8	79
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	88.6	79
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	85.9	73
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	92.8	81
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	83.7	70
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	97.2	77
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	93.5	76
EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	82.6	71
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	82.9	71.7
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	85.2	72.4
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3129342)							
EP071: C10 - C14 Fraction	---	50	mg/kg	<50	200 mg/kg	105	71
EP071: C15 - C28 Fraction	---	100	mg/kg	<100	300 mg/kg	112	74
EP071: C29 - C36 Fraction	---	100	mg/kg	<100	200 mg/kg	89.3	64
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3129379)							
EP080: C6 - C9 Fraction	---	10	mg/kg	<10	26 mg/kg	96.4	68.4
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3134481)							
EP080: C6 - C9 Fraction	---	10	mg/kg	<10	26 mg/kg	92.5	68.4
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3129342)							
EP071: >C10 - C16 Fraction	---	50	mg/kg	<50	250 mg/kg	101	70
EP071: >C16 - C34 Fraction	---	100	mg/kg	<100	350 mg/kg	107	74



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Work Order : ES1323293
Client : SMEC TESTING SERVICES PTY LTD
Project : GORDON 19399

Sub-Matrix: SOIL				Method Blank (MB) Report		Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3129342) - continued									
EP071: >C34 - C40 Fraction	---	100	mg/kg	<100	---	---	---	---	---
		50	mg/kg	---	150 mg/kg	74.1	63	131	---
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3129679)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	94.0	68.4	128	---
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3134481)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	91.7	68.4	128	---
EP080: BTEXN (QCLot: 3129679)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	92.2	62	116	---
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	98.4	62	128	---
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	95.1	58	118	---
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	94.4	60	120	---
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	96.8	60	120	---
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	81.5	62	138	---
EP080: BTEXN (QCLot: 3134481)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	90.2	62	116	---
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	92.9	62	128	---
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	85.9	58	118	---
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	89.3	60	120	---
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	88.2	60	120	---
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	78.1	62	138	---

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	Matrix Spike (MS) Report				
			Spike Concentration	SpikeRecovery(%)	Recovery Limits (%)	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 3133398)							
ES1323288-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	109	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	106	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	119	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	103	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	92.2	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	111	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	92.0	70	130



Sub-Matrix: SOIL

Sub-Matrix: SOIL			Matrix Spike (MS) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3133397)							
ES1322766-043	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	95.2	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3129345)							
ES1323286-001	Anonymous	EP066: Total Polychlorinated biphenyls	---	1 mg/kg	95.2	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 3129344)							
ES1323286-001	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	98.2	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	90.4	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	81.6	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	86.3	70	130
		EP068: Endrin	72-20-8	2 mg/kg	88.6	70	130
		EP068: 4,4'-DDT	50-29-3	2 mg/kg	100	70	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3129344)							
ES1323286-001	Anonymous	EP068: Diazinon	333-41-5	0.5 mg/kg	92.9	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	94.6	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	89.0	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	81.7	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	89.6	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 3134482)							
ES1323489-002	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	2.5 mg/kg	114	70	130
		EP074: Trichloroethene	79-01-6	2.5 mg/kg	108	70	130
EP074F: Halogenated Aromatic Compounds (QCLot: 3134482)							
ES1323489-002	Anonymous	EP074: Chlorobenzene	108-90-7	2.5 mg/kg	95.5	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3129343)							
ES1323279-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	91.7	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	88.3	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	80.0	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	77.4	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	46.9	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3129343)							
ES1323279-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	85.0	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	82.6	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3129342)							
ES1323279-001	Anonymous	EP071: C10 - C14 Fraction	---	640 mg/kg	81.4	73	137
		EP071: C15 - C28 Fraction	---	3140 mg/kg	80.5	53	131
		EP071: C29 - C36 Fraction	---	2860 mg/kg	70.6	52	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3128679)							
ES1323038-003	Anonymous	EP080: C6 - C9 Fraction	---	32.5 mg/kg	103	70	130



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL		Matrix Spike (MS) Report						
		Spike		SpikeRecovery(%)		Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3134481)								
ES1323489-002	Anonymous	EP080: C6 - C9 Fraction	---	32.5 mg/kg	88.8	70	130	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3129342)								
ES1323279-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	102	73	137	
		EP071: >C16 - C34 Fraction	---	4800 mg/kg	73.6	53	131	
		EP071: >C34 - C40 Fraction	---	2400 mg/kg	54.5	52	132	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3129679)								
ES1323038-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	96.1	70	130	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3134481)								
ES1323489-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	88.4	70	130	
EP080: BTEXN (QCLot: 3129679)								
ES1323038-003	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	87.3	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	97.4	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	96.8	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	97.2	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	97.4	70	130	
ES1323489-002	Anonymous	EP080: Naphthalene	91-20-3	2.5 mg/kg	88.5	70	130	
		EP080: Benzene	71-43-2	2.5 mg/kg	81.9	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	88.0	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	87.3	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	88.7	70	130	
ES1323038-003	Anonymous	EP080: ortho-Xylene	95-47-6	2.5 mg/kg	90.4	70	130	
		EP080: Naphthalene	91-20-3	2.5 mg/kg	95.2	70	130	

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL

Laboratory sample ID		Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3129342)											
ES1323279-001	Anonymous		EP071: C10 - C14 Fraction	----	640 mg/kg	81.4	----	73	137	----	----
			EP071: C15 - C28 Fraction	----	3140 mg/kg	80.5	----	53	131	----	----
			EP071: C29 - C36 Fraction	----	2860 mg/kg	70.6	----	52	132	----	----



Sub-Matrix: **SOIL**

Laboratory sample ID		Client sample ID	Method: Compound	CAS Number	Spike Concentration	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report				
						MS	MSD	Recovery Limits (%)	Value	RPDs (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3129342)										
ES1323279-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16		850 mg/kg	102	---	73	137	---
		EP071: >C16 - C34 Fraction	---	4800 mg/kg	73.6	---	53	131	---	
		EP071: >C34 - C40 Fraction	---	2400 mg/kg	54.5	---	52	132	---	
EP075(SIM)A: Phenolic Compounds (QCLot: 3129343)										
ES1323279-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	91.7	---	---	70	130	---
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	88.3	---	---	70	130	---
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	80.0	---	---	60	130	---
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	77.4	---	---	70	130	---
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	46.9	---	---	20	130	---
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3129343)										
ES1323279-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	85.0	---	---	70	130	---
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	82.6	---	---	70	130	---
EP068A: Organochlorine Pesticides (OC) (QCLot: 3129344)										
ES1323286-001	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	98.2	---	---	70	130	---
		EP068: Heptachlor	76-44-8	0.5 mg/kg	90.4	---	---	70	130	---
		EP068: Aldrin	309-00-2	0.5 mg/kg	81.6	---	---	70	130	---
		EP068: Dieldrin	60-57-1	0.5 mg/kg	86.3	---	---	70	130	---
		EP068: Endrin	72-20-8	2 mg/kg	88.6	---	---	70	130	---
		EP068: 4,4'-DDT	50-29-3	2 mg/kg	100	---	---	70	130	---
		EP068: Diazinon	333-41-5	0.5 mg/kg	92.9	---	---	70	130	---
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3129344)										
ES1323286-001	Anonymous	EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	94.6	---	---	70	130	---
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	89.0	---	---	70	130	---
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	81.7	---	---	70	130	---
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	89.6	---	---	70	130	---
		EP066: Total Polychlorinated biphenyls	---	1 mg/kg	95.2	---	---	70	130	---
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3129345)										
ES1323286-001	Anonymous	EP066: Total Polychlorinated biphenyls	---	1 mg/kg	95.2	---	---	70	130	---
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3129679)										
ES1323038-003	Anonymous	EP080: C6 - C9 Fraction	---	32.5 mg/kg	103	---	---	70	130	---
		EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	96.1	---	---	70	130	---
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3129679)										
ES1323038-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	96.1	---	---	70	130	---
EP080: BTEXN (QCLot: 3129679)										
ES1323038-003	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	87.3	---	---	70	130	---
		EP080: Toluene	108-88-3	2.5 mg/kg	97.4	---	---	70	130	---
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	96.8	---	---	70	130	---
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	97.2	---	---	70	130	---
		EP080: ortho-Xylene	106-42-3	2.5 mg/kg	97.4	---	---	70	130	---

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL

Laboratory sample ID			Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
						Spike		Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						Concentration	MS	MSD	Low	High	Value	Control Limit	
EP080: BTEXN (QCLot: 3129679) - continued													
ES1323038-003	Anonymous	EP080: Naphthalene	91-20-3	2.5 mg/kg	88.5	---	70	130	---	---			
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3133397)													
ES1322766-043	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	95.2	---	70	130	---	---			
EG005T: Total Metals by ICP-AES (QCLot: 3133398)													
ES1323288-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	109	---	70	130	---	---			
		EG005T: Cadmium	7440-43-9	50 mg/kg	106	---	70	130	---	---			
		EG005T: Chromium	7440-47-3	50 mg/kg	119	---	70	130	---	---			
		EG005T: Copper	7440-50-8	125 mg/kg	103	---	70	130	---	---			
		EG005T: Lead	7439-92-1	125 mg/kg	92.2	---	70	130	---	---			
		EG005T: Nickel	7440-02-0	50 mg/kg	111	---	70	130	---	---			
		EG005T: Zinc	7440-66-6	125 mg/kg	92.0	---	70	130	---	---			
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3134481)													
ES1323489-002	Anonymous	EP080: C6 - C9 Fraction	---	32.5 mg/kg	88.8	---	70	130	---	---			
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3134481)													
ES1323489-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	88.4	---	70	130	---	---			
EP080: BTEXN (QCLot: 3134481)													
ES1323489-002	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	81.9	---	70	130	---	---			
		EP080: Toluene	108-88-3	2.5 mg/kg	88.0	---	70	130	---	---			
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	87.3	---	70	130	---	---			
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	88.7	---	70	130	---	---			
			106-42-3										
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	90.4	---	70	130	---	---			
		EP080: Naphthalene	91-20-3	2.5 mg/kg	95.2	---	70	130	---	---			
EP074E: Halogenated Aliphatic Compounds (QCLot: 3134482)													
ES1323489-002	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	2.5 mg/kg	114	---	70	130	---	---			
		EP074: Trichloroethene	79-01-6	2.5 mg/kg	108	---	70	130	---	---			
EP074F: Halogenated Aromatic Compounds (QCLot: 3134482)													
ES1323489-002	Anonymous	EP074: Chlorobenzene	108-90-7	2.5 mg/kg	95.5	---	70	130	---	---			



Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1323293	Page	: 1 of 6
Client	: SMEC TESTING SERVICES PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: ALL REPORTS	Contact	: Client Services
Address	: P O BOX 6989 WETHERILL PARK NSW, AUSTRALIA 2164	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: enquiries@smectesting.com.au	E-mail	: sydney@alsglobal.com
Telephone	: ---	Telephone	: +61-2-8784 8555
Facsimile	: ---	Facsimile	: +61-2-8784 8500
Project	: GORDON 19399	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ---	Date Samples Received	: 28-OCT-2013
C-O-C number	: 210997	Issue Date	: 04-NOV-2013
Sampler	: JK	No. of samples received	: 7
Order number	: 10574	No. of samples analysed	: 6
Quote number	: EN/025/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Page : 2 of 6
Work Order : ES1323293
Client : SMEC TESTING SERVICES PTY LTD
Project : GORDON 19399

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: SOIL

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation		Analysis	
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Due for analysis
EA055: Moisture Content					
Soil Glass Jar - Unpreserved (EA055-103) S54, S56, S58, S59	28-OCT-2013	---	---	---	30-OCT-2013 11-NOV-2013
EG005T: Total Metals by ICP-AES					
Soil Glass Jar - Unpreserved (EG005T) S55, S59	28-OCT-2013	30-OCT-2013	26-APR-2014	✓	31-OCT-2013 26-APR-2014
EG035T: Total Recoverable Mercury by FIMS					
Soil Glass Jar - Unpreserved (EG035T) S55, S59	28-OCT-2013	30-OCT-2013	25-NOV-2013	✓	01-NOV-2013 25-NOV-2013
EP066: Polychlorinated Biphenyls (PCB)					
Soil Glass Jar - Unpreserved (EP066) S59	28-OCT-2013	29-OCT-2013	11-NOV-2013	✓	30-OCT-2013 08-DEC-2013
EP068A: Organochlorine Pesticides (OC)					
Soil Glass Jar - Unpreserved (EP068) S59	28-OCT-2013	29-OCT-2013	11-NOV-2013	✓	30-OCT-2013 08-DEC-2013
EP068B: Organophosphorus Pesticides (OP)					
Soil Glass Jar - Unpreserved (EP068) S59	28-OCT-2013	29-OCT-2013	11-NOV-2013	✓	30-OCT-2013 08-DEC-2013
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013					
Soil Glass Jar - Unpreserved (EP071) S55, S56, S57, S58, S59	28-OCT-2013	29-OCT-2013	11-NOV-2013	✓	30-OCT-2013 08-DEC-2013
EP074D: Fumigants					
Soil Glass Jar - Unpreserved (EP074) S55	28-OCT-2013	31-OCT-2013	04-NOV-2013	✓	31-OCT-2013 04-NOV-2013
EP074E: Halogenated Aliphatic Compounds					
Soil Glass Jar - Unpreserved (EP074) S55	28-OCT-2013	31-OCT-2013	04-NOV-2013	✓	31-OCT-2013 04-NOV-2013



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 Work Order ES1323293
 Client SMEC TESTING SERVICES PTY LTD
 Project GORDON 19399

Matrix: SOIL		Evaluation: * = Holding time breach ; ✓ = Within holding time.					
Method	Sample Date	Extraction / Preparation		Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074F: Halogenated Aromatic Compounds							
Soil Glass Jar - Unpreserved (EP074)							
S55	28-OCT-2013	31-OCT-2013	04-NOV-2013	✓	31-OCT-2013	04-NOV-2013	✓
EP074G: Trihalomethanes							
Soil Glass Jar - Unpreserved (EP074)							
S55	28-OCT-2013	31-OCT-2013	04-NOV-2013	✓	31-OCT-2013	04-NOV-2013	✓
EP075(SIM)A: Phenolic Compounds							
Soil Glass Jar - Unpreserved (EP075(SIM))							
S59	28-OCT-2013	29-OCT-2013	11-NOV-2013	✓	30-OCT-2013	08-DEC-2013	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
S54, S56, S57, S59	28-OCT-2013	29-OCT-2013	11-NOV-2013	✓	30-OCT-2013	08-DEC-2013	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
S56, S57, S59	28-OCT-2013	29-OCT-2013	11-NOV-2013	✓	30-OCT-2013	11-NOV-2013	✓
Soil Glass Jar - Unpreserved (EP080)							
S55	28-OCT-2013	31-OCT-2013	11-NOV-2013	✓	31-OCT-2013	11-NOV-2013	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
S56, S57, S59	28-OCT-2013	29-OCT-2013	11-NOV-2013	✓	30-OCT-2013	11-NOV-2013	✓
Soil Glass Jar - Unpreserved (EP080)							
S55	28-OCT-2013	31-OCT-2013	11-NOV-2013	✓	31-OCT-2013	11-NOV-2013	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Method	Count		Actual	Rate (%)		Evaluation	Quality Control Specification
Analytical Methods			QC	Regular		Expected			
Laboratory Duplicates (DUP)									
Moisture Content	EA055-103	2	17	11.8	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
PAH/Phenols (SIM)	EP075(SIM)	2	16	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
Pesticides by GCMS	EP068	1	6	16.7	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.7	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
Total Mercury by FIMS	EG035T	2	18	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
Total Metals by ICP-AES	EG005T	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
TPH - Semivolatile Fraction	EP071	2	17	11.8	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
TPH Volatiles/BTEX	EP080	3	23	13.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
Volatile Organic Compounds	EP074	1	4	25.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
Laboratory Control Samples (LCS)									
PAH/Phenols (SIM)	EP075(SIM)	1	16	6.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
Pesticides by GCMS	EP068	1	6	16.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
Total Mercury by FIMS	EG035T	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
TPH - Semivolatile Fraction	EP071	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
TPH Volatiles/BTEX	EP080	2	23	8.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
Volatile Organic Compounds	EP074	1	4	25.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
Method Blanks (MB)									
PAH/Phenols (SIM)	EP075(SIM)	1	16	6.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
Pesticides by GCMS	EP068	1	6	16.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
Total Mercury by FIMS	EG035T	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
TPH - Semivolatile Fraction	EP071	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
TPH Volatiles/BTEX	EP080	2	23	8.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
Volatile Organic Compounds	EP074	1	4	25.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
Matrix Spikes (MS)									
PAH/Phenols (SIM)	EP075(SIM)	1	16	6.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
Pesticides by GCMS	EP068	1	6	16.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
Total Mercury by FIMS	EG035T	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
TPH - Semivolatile Fraction	EP071	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
TPH Volatiles/BTEX	EP080	2	23	8.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		
Volatile Organic Compounds	EP074	1	4	25.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement		



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In-house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	APHA 21st ed., 3120; USEPA SW 846 - 6010 (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
Pesticides by GCMS	EP068	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504.505)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
Volatile Organic Compounds	EP074	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Preparation Methods	Method	Matrix	Method Descriptions
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	In-house, Mechanical agitation (tumbler), 20g of sample, Na ₂ SO ₄ and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler), 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QW/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.



Environmental

CERTIFICATE OF ANALYSIS

Work Order	: ES1323721	Page	: 1 of 5
Client	: SMEC TESTING SERVICES PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: ALL REPORTS	Contact	: Client Services
Address	: P O BOX 6989 WETHERILL PARK NSW, AUSTRALIA 2164 enquiries@smectesting.com.au	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: -----	E-mail	: sydney@alsglobal.com
Telephone	: -----	Telephone	: +61-2-8784 8555
Facsimile	: -----	Facsimile	: +61-2-8784 8500
Project	: 19399 3606C	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 10589	Date Samples Received	: 01-NOV-2013
C-O-C number	: P19399-COC2	Issue Date	: 06-NOV-2013
Sampler	: -----	No. of samples received	: 1
Site	: -----	No. of samples analysed	: 1
Quote number	: EN/025/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



WORLD RECOGNISED
ACCREDITATION

NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Ashesh Patel	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Edwandy Fadjar	Organic Coordinator	Sydney Organics

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Page : 2 of 5
Work Order : ES1323721
Client : SMEC TESTING SERVICES PTY LTD
Project : 19399 3606C

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	
Client sampling date / time				GW1-1	
CAS Number				31-OCT-2013 15:00	
LOR				ES1323721-001	
Unit					
Compound					
EG020F: Dissolved Metals by ICP-MS					
Arsenic	7440-38-2	0.001	mg/L	<0.001	---
Cadmium	7440-43-9	0.0001	mg/L	0.0004	---
Chromium	7440-47-3	0.001	mg/L	<0.001	---
Copper	7440-50-8	0.001	mg/L	0.002	---
Nickel	7440-02-0	0.001	mg/L	0.004	---
Lead	7439-92-1	0.001	mg/L	<0.001	---
Zinc	7440-66-6	0.005	mg/L	0.067	---
EG035F: Dissolved Mercury by FIMS					
Mercury	7439-97-6	0.0001	mg/L	<0.0001	---
EK055G: Ammonia as N by Discrete Analyser					
Ammonia as N	7664-41-7	0.01	mg/L	5.34	---
EP080/071: Total Petroleum Hydrocarbons					
C6 - C9 Fraction	---	20	µg/L	<20	---
C10 - C14 Fraction	---	50	µg/L	<50	---
C15 - C28 Fraction	---	100	µg/L	<100	---
C29 - C36 Fraction	---	50	µg/L	<50	---
^ C10 - C36 Fraction (sum)	---	50	µg/L	<50	---
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013					
C6 - C10 Fraction	C6_C10	20	µg/L	<20	---
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	---
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	---
>C16 - C34 Fraction	---	100	µg/L	<100	---
>C34 - C40 Fraction	---	100	µg/L	<100	---
^ >C10 - C40 Fraction (sum)	---	100	µg/L	<100	---
^ >C10 - C16 Fraction minus Naphthalene (F2)	---	100	µg/L	<100	---
EP080: BTEXN					
Benzene	71-43-2	1	µg/L	<1	---
Toluene	108-88-3	2	µg/L	<2	---
Ethylbenzene	100-41-4	2	µg/L	<2	---
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	---
ortho-Xylene	95-47-6	2	µg/L	<2	---
^ Total Xylenes	1330-20-7	2	µg/L	<2	---



Analytical Results

Sub-Matrix: **WATER (Matrix: WATER)**

Sub-Matrix: WATER (Matrix: WATER)					Client sample ID			
					Client sampling date / time		GW1-1	
					31-OCT-2013 15:00			
					ES1323721-001			
Compound	CAS Number	LOR	Unit					
EP080: BTEXN - Continued								
Sum of BTEX	91-20-3	1	µg/L	<1				
Naphthalene	91-20-3	5	µg/L	<5				
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	119				
Toluene-D8	2037-26-5	0.1	%	117				
4-Bromofluorobenzene	460-00-4	0.1	%	108				



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Work Order : ES1323721
Client : SMEC TESTING SERVICES PTY LTD
Project : 19399 3606C

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

**Environmental****QUALITY CONTROL REPORT**

Work Order	: ES1323721	Page	: 1 of 7
Client	: SMEC TESTING SERVICES PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: ALL REPORTS	Contact	: Client Services
Address	: P O BOX 6989 WETHERILL PARK NSW, AUSTRALIA 2164	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: enquiries@smectesting.com.au	E-mail	: sydney@alsglobal.com
Telephone	: ---	Telephone	: +61-2-8784 8555
Facsimile	: ---	Facsimile	: +61-2-8784 8500
Project	: 19399 3606C	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ---	Date Samples Received	: 01-NOV-2013
C-O-C number	: P19399-COC2	Issue Date	: 06-NOV-2013
Sampler	: ---	No. of samples received	: 1
Order number	: 10589	No. of samples analysed	: 1
Quote number	: EN/025/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



WORLD RECOGNISED
ACCREDITATION

NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Ashesh Patel	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Edwandy Fadjar	Organic Coordinator	Sydney Organics



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Work Order : ES1323721
Client : SMEC TESTING SERVICES PTY LTD
Project : 19399 3606C

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :

Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot

CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed QC



Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER			Laboratory Duplicate (DUP) Report									
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)			
EG020F: Dissolved Metals by ICP-MS (QC Lot: 3141483)												
ES1323716-002	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit			
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit			
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit			
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.003	0.003	0.0	No Limit			
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit			
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.003	0.003	0.0	No Limit			
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.021	0.019	7.9	No Limit			
		EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit			
ES1323717-007	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit			
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.008	0.008	0.0	No Limit			
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.001	0.0	No Limit			
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit			
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit			
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.011	0.014	19.6	No Limit			
		EG035F: Dissolved Mercury by FIMS (QC Lot: 3141481)										
		EB1326613-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit	
ES1323721-001	GW1-1	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit			
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 3140354)												
ES1323682-002	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.82	0.82	0.0	0% - 20%			
ES1323752-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	63.0	63.0	0.0	0% - 20%			
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3140648)												
ES1323682-002	Anonymous	EP080: C6 - C9 Fraction	---	20	µg/L	60	70	0.0	No Limit			
ES1323682-004	Anonymous	EP080: C6 - C9 Fraction	---	20	µg/L	<20	<20	0.0	No Limit			
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3140648)												
ES1323682-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	60	70	16.0	No Limit			
ES1323682-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit			
EP080: BTEXN (QC Lot: 3140648)												
ES1323682-002	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit			
		EP080: Toluene	108-88-3	2	µg/L	30	29	0.0	0% - 50%			
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit			
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit			
			106-42-3									
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit			
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit			
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit			
ES1323682-004	Anonymous											



Sub-Matrix: WATER

Sub-Matrix: WATER									
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 3140648) - continued									
ES1323682-004	Anonymous	EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) Report			
Method/Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)	LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 3141483)									
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	90.4	80	118	
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	89.5	82	112	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	93.3	81	111	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	92.9	80	112	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	94.2	83	111	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	100	81	113	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	93.0	80	116	
EG035F: Dissolved Mercury by FIMS (QCLot: 3141481)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	95.8	78	114	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 3140354)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1.00 mg/L	106	86	112	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3138119)									
EP071: C10 - C14 Fraction	---	50	µg/L	<50	2000 µg/L	97.8	59	129	
EP071: C15 - C28 Fraction	---	100	µg/L	<100	3000 µg/L	103	71	131	
EP071: C29 - C36 Fraction	---	50	µg/L	<50	2000 µg/L	96.5	62	120	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3140648)									
EP080: C6 - C9 Fraction	---	20	µg/L	<20	260 µg/L	79.8	75	127	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3138119)									
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	101	58.9	131	
EP071: >C16 - C34 Fraction	---	100	µg/L	<100	3500 µg/L	96.8	73.9	138	
EP071: >C34 - C40 Fraction	---	100	µg/L	<100	---	---	---	---	
		50	µg/L	---	1500 µg/L	102	67	127	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3140648)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	80.4	75	127	
EP080: BTEXN (QCLot: 3140648)									
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	83.6	70	124	
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	82.7	65	129	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	76.3	70	120	
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	85.4	69	121	
	106-42-3								
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	89.9	72	122	
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	95.7	70	124	

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Sub-Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report				
				Spike Concentration	SpikeRecovery(%)		Recovery Limits (%)	
					MS	Low	High	
EG020F: Dissolved Metals by ICP-MS (QCLot: 3141483)								
ES1323717-006	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	113	70	130	
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	109	70	130	
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	108	70	130	
		EG020A-F: Copper	7440-50-8	0.2 mg/L	104	70	130	
		EG020A-F: Lead	7439-92-1	0.2 mg/L	104	70	130	
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	105	70	130	
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	110	70	130	
EG035F: Dissolved Mercury by FIMS (QCLot: 3141481)								
EB1326613-002	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	96.0	70	130	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 3140354)								
ES1323752-001	Anonymous	EK055G: Ammonia as N	7664-41-7	100 mg/L	101	70	130	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3138119)								
ES1323633-001	Anonymous	EP071: C10 - C14 Fraction	---	200 µg/L	109	74	150	
		EP071: C15 - C28 Fraction	---	300 µg/L	102	77	153	
		EP071: C29 - C36 Fraction	---	200 µg/L	86.6	67	153	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3140648)								
ES1323682-002	Anonymous	EP080: C6 - C9 Fraction	---	325 µg/L	97.4	70	130	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3138119)								
ES1323633-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	109	74	150	
		EP071: >C16 - C34 Fraction	---	350 µg/L	94.2	77	153	
		EP071: >C34 - C40 Fraction	---	150 µg/L	70.6	67	153	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3140648)								
ES1323682-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	96.4	70	130	
EP080: BTEXN (QCLot: 3140648)								
ES1323682-002	Anonymous	EP080: Benzene	71-43-2	25 µg/L	77.6	70	130	
		EP080: Toluene	108-88-3	25 µg/L	77.7	70	130	
		EP080: Ethylbenzene	100-41-4	25 µg/L	81.2	70	130	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	86.6	70	130	
		EP080: ortho-Xylene	106-42-3					
		EP080: Naphthalene	95-47-6	25 µg/L	92.2	70	130	
		91-20-3	97.6	70	130			



Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are to monitor potential matrix effects on analyte recoveries, Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report										
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
				Concentration	MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3138119)										
ES1323633-001	Anonymous	EP071: C10 - C14 Fraction	---	200 µg/L	109	---	74	150	---	---
		EP071: C15 - C28 Fraction	---	300 µg/L	102	---	77	153	---	---
		EP071: C29 - C36 Fraction	---	200 µg/L	86.6	---	67	153	---	---
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3138119)										
ES1323633-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	109	---	74	150	---	---
		EP071: >C16 - C34 Fraction	---	350 µg/L	94.2	---	77	153	---	---
		EP071: >C34 - C40 Fraction	---	150 µg/L	70.6	---	67	153	---	---
EK055G: Ammonia as N by Discrete Analyser (QCLot: 3140354)										
ES1323752-001	Anonymous	EK055G: Ammonia as N	7664-41-7	100 mg/L	101	---	70	130	---	---
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3140648)										
ES1323682-002	Anonymous	EP080: C6 - C9 Fraction	---	325 µg/L	97.4	---	70	130	---	---
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3140648)										
ES1323682-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	96.4	---	70	130	---	---
EP080: BTEXN (QCLot: 3140648)										
ES1323682-002	Anonymous	EP080: Benzene	71-43-2	25 µg/L	77.6	---	70	130	---	---
		EP080: Toluene	108-88-3	25 µg/L	77.7	---	70	130	---	---
		EP080: Ethylbenzene	100-41-4	25 µg/L	81.2	---	70	130	---	---
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	86.6	---	70	130	---	---
			106-42-3							
		EP080: ortho-Xylene	95-47-6	25 µg/L	92.2	---	70	130	---	---
		EP080: Naphthalene	91-20-3	25 µg/L	97.6	---	70	130	---	---
EG035F: Dissolved Mercury by FIMS (QCLot: 3141481)										
EB1326613-002	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	96.0	---	70	130	---	---
EG020F: Dissolved Metals by ICP-MS (QCLot: 3141483)										
ES1323717-006	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	113	---	70	130	---	---
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	109	---	70	130	---	---
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	108	---	70	130	---	---
		EG020A-F: Copper	7440-50-8	0.2 mg/L	104	---	70	130	---	---
		EG020A-F: Lead	7439-92-1	0.2 mg/L	104	---	70	130	---	---
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	105	---	70	130	---	---
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	110	---	70	130	---	---



Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1323721	Page	: 1 of 5
Client	: SMEC TESTING SERVICES PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: ALL REPORTS	Contact	: Client Services
Address	: P O BOX 6989 WETHERILL PARK NSW, AUSTRALIA 2164	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: enquiries@smectesting.com.au	E-mail	: sydney@alsglobal.com
Telephone	: ---	Telephone	: +61-2-8784 8555
Facsimile	: ---	Facsimile	: +61-2-8784 8500
Project	: 19399 3606C	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ---	Date Samples Received	: 01-NOV-2013
C-O-C number	: P19399-COC2	Issue Date	: 06-NOV-2013
Sampler	: ---	No. of samples received	: 1
Order number	: 10589	No. of samples analysed	: 1
Quote number	: EN/025/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Page : 2 of 5
Work Order : ES1323721
Client : SMEC TESTING SERVICES PTY LTD
Project : 19399 3606C

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation		Analysis		
Container / Client Sample ID(s)	Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS						
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)	31-OCT-2013	---	29-APR-2014	---	05-NOV-2013	29-APR-2014 ✓
EG035F: Dissolved Mercury by FIMS						
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)	31-OCT-2013	---	28-NOV-2013	---	05-NOV-2013	28-NOV-2013 ✓
EK055G: Ammonia as N by Discrete Analyser						
Clear Plastic Bottle - Sulfuric Acid (EK055G)	31-OCT-2013	---	28-NOV-2013	---	05-NOV-2013	28-NOV-2013 ✓
EP080J071: Total Recoverable Hydrocarbons - NEPM 2013						
Amber Glass Bottle - Unpreserved (EP071)	31-OCT-2013	04-NOV-2013	07-NOV-2013	✓	05-NOV-2013	14-DEC-2013 ✓
EP080: BTEXN						
Amber VOC Vial - Sulfuric Acid (EP080)	31-OCT-2013	04-NOV-2013	14-NOV-2013	✓	04-NOV-2013	14-NOV-2013 ✓
EP080J071: Total Recoverable Hydrocarbons - NEPM 2013						
Amber VOC Vial - Sulfuric Acid (EP080)	31-OCT-2013	04-NOV-2013	14-NOV-2013	✓	04-NOV-2013	14-NOV-2013 ✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification	
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser Dissolved Mercury by FIMS Dissolved Metals by ICP-MS - Suite A TPH Volatiles/BTEX	EK055G	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
	EG035F	2	13	15.4	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
	EG020A-F	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
	EP080	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser Dissolved Mercury by FIMS Dissolved Metals by ICP-MS - Suite A TPH - Semivolatile Fraction TPH Volatiles/BTEX	EK055G	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
	EG035F	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
	EG020A-F	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
	EP071	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement	
Method Blanks (MB)							
Ammonia as N by Discrete analyser Dissolved Mercury by FIMS Dissolved Metals by ICP-MS - Suite A TPH - Semivolatile Fraction TPH Volatiles/BTEX	EK055G	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
	EG035F	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
	EG020A-F	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
	EP071	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement	
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser Dissolved Mercury by FIMS Dissolved Metals by ICP-MS - Suite A TPH - Semivolatile Fraction TPH Volatiles/BTEX	EK055G	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
	EG035F	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
	EG020A-F	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
	EP071	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement	



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QMI-ENEG020); Samples are 0.45 um filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45 um filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Ammonia as N by Discrete analyser	EK055G	WATER	APHA 21st ed., 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWIEN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.



Environmental

CERTIFICATE OF ANALYSIS

Work Order	EB1326372	Page	1 of 6
Client	SMC TESTING SERVICES PTY LTD	Laboratory	Environmental Division Brisbane
Contact	DAVID YONGE	Contact	Customer Services
Address	P O BOX 6989 WETHERILL PARK NSW, AUSTRALIA 2164 dyonge@smctesting.com.au	Address	2 Byth Street Stafford QLD Australia 4053
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Telephone	+61 02 9756 2166	Telephone	+61 7 3243 7222
Facsimile	+61 02 9756 1137	Facsimile	+61 7 3243 7218
Project	19399 3606C	QC Level	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	10490	Date Samples Received	29-OCT-2013
C-O-C number	---	Issue Date	05-NOV-2013
Sampler	---	No. of samples received	4
Site	---	No. of samples analysed	1
Quote number	EN/025/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



WORLD RECOGNISED
ACCREDITATION

NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Ryan Story	2IC Organic Instrument Chemist	Brisbane Organics



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Work Order EB1326372
Client SMEC TESTING SERVICES PTY LTD
Project 19399 3606C

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

* = This result is computed from individual analyte detections at or above the level of reporting

Sub-Matrix: SOIL (Matrix: SOIL)

Sub-Matrix: SOIL (Matrix: SOIL)									
Client sample ID									
Client sampling date / time									
S42									
23-OCT-2013 15:00									
EB1326372-004									
Compound	CAS Number	LOR	Unit						
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	---	1.0	%	10.5					
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	<5					
Cadmium	7440-43-9	1	mg/kg	<1					
Chromium	7440-47-3	2	mg/kg	8					
Copper	7440-50-8	5	mg/kg	16					
Lead	7439-92-1	5	mg/kg	13					
Nickel	7440-02-0	2	mg/kg	4					
Zinc	7440-66-6	5	mg/kg	16					
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5					
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5					
Acenaphthene	83-32-9	0.5	mg/kg	<0.5					
Fluorene	86-73-7	0.5	mg/kg	<0.5					
Phenanthrene	85-01-8	0.5	mg/kg	<0.5					
Anthracene	120-12-7	0.5	mg/kg	<0.5					
Fluoranthene	206-44-0	0.5	mg/kg	<0.5					
Pyrene	129-00-0	0.5	mg/kg	<0.5					
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5					
Chrysene	218-01-9	0.5	mg/kg	<0.5					
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5					
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5					
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5					
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5					
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5					
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5					
Sum of polycyclic aromatic hydrocarbons	---	0.5	mg/kg	<0.5					
Benzo(a)pyrene TEQ (zero)	---	0.5	mg/kg	<0.5					
Benzo(a)pyrene TEQ (half LOR)	---	0.5	mg/kg	0.6					
Benzo(a)pyrene TEQ (LOR)	---	0.5	mg/kg	1.2					
EP080/071: Total Petroleum Hydrocarbons									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	
				S42	
				23-OCT-2013 15:00	
				EB1326372-004	
Compound	CAS Number	LOR	Unit		
EP080/071: Total Petroleum Hydrocarbons - Continued					
C6 - C9 Fraction	---	10	mg/kg	<10	---
C10 - C14 Fraction	---	50	mg/kg	<50	---
C15 - C28 Fraction	---	100	mg/kg	<100	---
C29 - C36 Fraction	---	100	mg/kg	<100	---
^ C10 - C36 Fraction (sum)	---	50	mg/kg	<50	---
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013					
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	---
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	---
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	---
>C16 - C34 Fraction	---	100	mg/kg	<100	---
>C34 - C40 Fraction	---	100	mg/kg	<100	---
^ >C10 - C40 Fraction (sum)	---	50	mg/kg	<50	---
^ >C10 - C16 Fraction minus Naphthalene (F2)	---	50	mg/kg	<50	---
EP080: BTEXN					
Benzene	71-43-2	0.2	mg/kg	<0.2	---
Toluene	108-88-3	0.5	mg/kg	<0.5	---
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	---
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	---
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	---
^ Sum of BTEX	---	0.2	mg/kg	<0.2	---
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	---
Naphthalene	91-20-3	1	mg/kg	<1	---
EP075(SIM)S: Phenolic Compound Surrogates					
Phenol-d6	13127-88-3	0.1	%	115	---
2-Chlorophenol-D4	93951-73-6	0.1	%	117	---
2,4,6-Tribromophenol	118-79-6	0.1	%	74.6	---
EP075(SIM)T: PAH Surrogates					
2-Fluorobiphenyl	321-60-8	0.1	%	154	---
Anthracene-d10	1719-06-8	0.1	%	107	---
4-Terphenyl-d14	1718-51-0	0.1	%	114	---
EP080S: TPH(V)/BTEX Surrogates					
1,2-Dichloroethane-D4	17060-07-0	0.1	%	95.0	---

Analytical Results

Sub-Matrix: **SOIL (Matrix: SOIL)**

Sub-Matrix: SOIL (Matrix: SOIL)					
Compound	CAS Number		Client sampling date / time		Client sample ID
		LOR	Unit		
EP080S: TPH(V)/BTEX Surrogates - Continued					
Toluene-D8	2037-26-5	0.1	%	96.4	S42
4-Bromofluorobenzene	460-00-4	0.1	%	88.5	EB1326372-004



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Work Order : EB1326372
Client : SMEC TESTING SERVICES PTY LTD
Project : 19399 3606C

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	34.8	154.5
2-Chlorophenol-D4	93951-73-6	41.9	152.8
2,4,6-Tribromophenol	118-79-6	26.0	156.8
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	33.8	156.5
Anthracene-d10	1719-06-8	36.9	153.1
4-Terphenyl-d14	1718-51-0	41.8	172.2
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	52.7	133.7
Toluene-D8	2037-26-5	60.3	131.1
4-Bromofluorobenzene	460-00-4	59.2	126.6



Environmental

QUALITY CONTROL REPORT

Work Order	EB1326372	Page	1 of 8
Client	SMEC TESTING SERVICES PTY LTD	Laboratory	Environmental Division Brisbane
Contact	DAVID YONGE	Contact	Customer Services
Address	P O BOX 6989 WETHERILL PARK NSW, AUSTRALIA 2164	Address	2 Byth Street Stafford QLD Australia 4053
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Telephone	+61 02 9756 2166	Telephone	+61 7 3243 7222
Facsimile	+61 02 9756 1137	Facsimile	+61 7 3243 7218
Project	19399 3606C	QC Level	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	---	Date Samples Received	29-OCT-2013
C-O-C number	---	Issue Date	05-NOV-2013
Sampler	---	No. of samples received	4
Order number	10490	No. of samples analysed	1
Quote number	EN/025/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



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compliance with
ISO/IEC 17025.

WORLD RECOGNISED
ACCREDITATION

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Ryan Story	2IC Organic Instrument Chemist	Brisbane Organics



Page 2 of 8
Work Order EB1326372
Client SMEC TESTING SERVICES PTY LTD
Project 19399 3606C

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :

- Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
- CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
- LOR = Limit of reporting
- RPD = Relative Percentage Difference
- # = Indicates failed QC



Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

Sub-Matrix: SOIL

Sub-Matrix: SOIL		Laboratory Duplicate (DUP) Report									
Laboratory sample ID	Client sample ID	Method/Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)		
EA055: Moisture Content (QC Lot: 3134870)											
EB1326379-009	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	40.7	41.1	0.9	0% - 20%		
EM1311324-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	6.8	7.1	4.0	No Limit		
EG005T: Total Metals by ICP-AES (QC Lot: 3134857)											
EB1326369-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit		
		EG005T: Chromium	7440-47-3	2	mg/kg	11	12	10.1	No Limit		
		EG005T: Nickel	7440-02-0	2	mg/kg	23	29	21.9	0% - 50%		
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	6	21.7	No Limit		
		EG005T: Copper	7440-50-8	5	mg/kg	32	38	16.3	No Limit		
		EG005T: Lead	7439-92-1	5	mg/kg	21	26	18.2	No Limit		
		EG005T: Zinc	7440-66-6	5	mg/kg	71	64	11.7	0% - 50%		
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3134858)											
EB1326369-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit		
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3134848)											
EB1326369-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
				EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3134846)											
EB1326369-001	Anonymous	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.0	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3134847)											
EB1326369-001	Anonymous	EP071: C15 - C28 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit		
		EP071: C29 - C36 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit		



Sub-Matrix: SOIL			Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method/Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3134847) - continued									
EB1326369-001	Anonymous	EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3134846)									
EB1326369-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3134847)									
EB1326369-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
EP080: BTEXN (QC Lot: 3134846)									
EB1326369-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit



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Work Order : EB1326372
Client : SMEC TESTING SERVICES PTY LTD
Project : 19399 3606C

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: SOIL

Sub-Matrix: SOIL					Method Blank (MB) Report		Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)	LCS	Low	High	
EG005T: Total Metals by ICP-AES (QCLot: 3134857)										
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	109	84	124		
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	108	88	118		
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	96.7	73	127		
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	111	86	122		
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	108	84	121		
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	110	89	126		
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	114	87	127		
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3134858)										
EG035T: Mercury	7439-97-6	0.10	mg/kg	<0.1	2.57 mg/kg	99.8	78	114		
EP075(SIM): Polynuclear Aromatic Hydrocarbons (QCLot: 3134848)										
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	103	74	119		
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	102	74	118		
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	114	83	121		
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	105	81	116		
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	105	72	117		
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	101	72	115		
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	107	70	116		
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	104	70	134		
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	104	64	120		
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	100	66	119		
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	101	59	129		
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	107	70	129		
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	91.2	76	121		
EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	74.6	53	135		
EP075(SIM): Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	77.9	45	134		
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	68.6	64	133		
EP080/074: Total Petroleum Hydrocarbons (QCLot: 3134846)										
EP080: C6 - C9 Fraction	---	10	mg/kg	<10	16 mg/kg	75.1	66	124		
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3134847)										
EP071: C10 - C14 Fraction	---	50	mg/kg	<50	312 mg/kg	102	84	117		
EP071: C15 - C28 Fraction	---	100	mg/kg	<100	500 mg/kg	99.4	80	118		
EP071: C29 - C36 Fraction	---	100	mg/kg	<100	---	---	---	---		
EP080/074: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3134846)										
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	75.0	66	126		



Sub-Matrix: SOIL	Method: Compound				CAS Number	LOR	Unit	Method Blank (MB)		Laboratory Control Spike (LCS) Report				
								Report	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
											Low	High	Low	High
Method: Compound														
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3134847)														
EP071: >C10 - C16 Fraction		>C10_C16	50	mg/kg	<50	413 mg/kg	107	86	117					
EP071: >C16 - C34 Fraction		---	100	mg/kg	<100	360 mg/kg	91.9	73	113					
EP071: >C34 - C40 Fraction		---	100	mg/kg	<100	---	---	---	---					
EP080: BTEXN (QCLot: 3134846)														
EP080: Benzene		71-43-2	0.2	mg/kg	<0.2	1 mg/kg	73.4	73	108					
EP080: Toluene		108-88-3	0.5	mg/kg	<0.5	1 mg/kg	78.7	73	111					
EP080: Ethylbenzene		100-41-4	0.5	mg/kg	<0.5	1 mg/kg	74.4	67	107					
EP080: meta- & para-Xylene		108-38-3	0.5	mg/kg	<0.5	2 mg/kg	79.0	66	109					
EP080: ortho-Xylene		106-42-3	0.5	mg/kg	<0.5	1 mg/kg	81.4	68	108					
EP080: Naphthalene		95-47-6	1	mg/kg	<1	1 mg/kg	81.1	72	115					

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL

Laboratory sample ID		Client sample ID	Method: Compound	Matrix Spike (MS) Report			
				CAS Number	Spike Concentration	Spike Recovery(%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QCLot: 3134857)							
EB1326372-004	S42	EG005T: Arsenic	7440-38-2	50 mg/kg	103	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	110	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	114	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	120	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	115	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	111	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	115	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3134858)							
EB1326372-004	S42	EG035T: Mercury	7439-97-6	5.0 mg/kg	100	70	130
EP075(SIM): Polynuclear Aromatic Hydrocarbons (QCLot: 3134848)							
EB1326372-004	S42	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	111	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	114	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3134846)							
EB1326372-004	S42	EP080: C6 - C9 Fraction	---	8 mg/kg	81.3	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3134847)							
EB1326369-001	Anonymous	EP071: C10 - C14 Fraction	---	312 mg/kg	97.9	70	130
		EP071: C15 - C28 Fraction	---	500 mg/kg	106	70	130



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Work Order : EB1326372
Client : SMEC TESTING SERVICES PTY LTD
Project : 19399 3608C

Sub-Matrix: SOIL

Sub-Matrix: SOIL			Matrix Spike (MS) Report				
			CAS Number	Spike Concentration	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound			MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3134846)							
EB1326372-004	S42	EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	80.1	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3134847)							
EB1326369-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	413 mg/kg	98.9	70	130
		EP071: >C16 - C34 Fraction	—	360 mg/kg	112	70	130
EP080: BTEXN (QCLot: 3134846)							
EB1326372-004	S42	EP080: Benzene	71-43-2	2 mg/kg	76.8	70	130
		EP080: Toluene	108-88-3	2 mg/kg	70.0	70	130

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL

Sub-Matrix: SOIL		Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report										
		Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	MS	Spike Recovery (%)	MSD	Recovery Limits (%)	Value	Control Limit
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3134846)		EB1326372-004	S42	EP080: C6 - C9 Fraction	---	8 mg/kg	81.3	---	---	70	130	---
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3134846)				EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	80.1	---	---	70	130	---
EP080: BTEXN (QCLot: 3134846)		EB1326372-004	S42	EP080: Benzene	71-43-2	2 mg/kg	76.8	---	---	70	130	---
				EP080: Toluene	108-88-3	2 mg/kg	70.0	---	---	70	130	---
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3134847)		EB1326369-001	Anonymous	EP071: C10 - C14 Fraction	---	312 mg/kg	97.9	---	---	70	130	---
				EP071: C15 - C28 Fraction	---	500 mg/kg	106	---	---	70	130	---
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3134847)		EB1326369-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	413 mg/kg	98.9	---	---	70	130	---
				EP071: >C16 - C34 Fraction	---	360 mg/kg	112	---	---	70	130	---
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3134848)		EB1326372-004	S42	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	111	---	---	70	130	---
				EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	114	---	---	70	130	---
EG005T: Total Metals by ICP-AES (QCLot: 3134857)		EB1326372-004	S42	EG005T: Arsenic	7440-38-2	50 mg/kg	103	---	---	70	130	---
				EG005T: Cadmium	7440-43-9	25 mg/kg	110	---	---	70	130	---
				EG005T: Chromium	7440-47-3	50 mg/kg	114	---	---	70	130	---
				EG005T: Copper	7440-50-8	50 mg/kg	120	---	---	70	130	---
				EG005T: Lead	7439-92-1	50 mg/kg	115	---	---	70	130	---



Sub-Matrix: SOIL

Sub-Matrix: SOIL												
				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report								
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)			Recovery Limits (%)		RPDs (%)		
					MS	MSD	Value	Low	High	Value	Control Limit	
EG005T: Total Metals by ICP-AES (QCLot: 3134857) - continued												
EB1326372-004	S42	EG005T: Nickel	7440-02-0	50 mg/kg	111	---	---	70	130	---	---	
		EG005T: Zinc	7440-66-6	50 mg/kg	115	---	---	70	130	---	---	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3134858)												
EB1326372-004	S42	EG035T: Mercury	7439-97-6	5.0 mg/kg	100	---	---	70	130	---	---	



Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	EB1326372	Page	1 of 5
Client	SMEC TESTING SERVICES PTY LTD	Laboratory	Environmental Division Brisbane
Contact	DAVID YONGE	Contact	Customer Services
Address	P O BOX 6989 WETHERILL PARK NSW, AUSTRALIA 2164	Address	2 Byth Street Stafford QLD Australia 4053
E-mail	dyonge@smectesting.com.au	E-mail	Brisbane.Enviro.Services@alsglobal.com
Telephone	+61 02 9756 2166	Telephone	+61 7 3243 7222
Facsimile	+61 02 9756 1137	Facsimile	+61 7 3243 7218
Project	19399 3606C	QC Level	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	---	Date Samples Received	29-OCT-2013
C-O-C number	---	Issue Date	05-NOV-2013
Sampler	---	No. of samples received	4
Order number	10490	No. of samples analysed	1
Quote number	EN/025/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g., TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for *VOC in soils* vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: SOIL

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation		Analysis	
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Due for analysis
EA055: Moisture Content					
Soil Glass Jar - Unpreserved (EA055-103) S42	23-OCT-2013	---	---	---	06-NOV-2013
EG005T: Total Metals by ICP-AES					
Soil Glass Jar - Unpreserved (EG005T) S42	23-OCT-2013	01-NOV-2013	21-APR-2014	✓	21-APR-2014
EG035T: Total Recoverable Mercury by FIMS					
Soil Glass Jar - Unpreserved (EG035T) S42	23-OCT-2013	01-NOV-2013	20-NOV-2013	✓	20-NOV-2013
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013					
Soil Glass Jar - Unpreserved (EP071) S42	23-OCT-2013	31-OCT-2013	06-NOV-2013	✓	10-DEC-2013
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons					
Soil Glass Jar - Unpreserved (EP075(SIM)) S42	23-OCT-2013	31-OCT-2013	06-NOV-2013	✓	10-DEC-2013
EP080: BTEXN					
Soil Glass Jar - Unpreserved (EP080) S42	23-OCT-2013	31-OCT-2013	06-NOV-2013	✓	06-NOV-2013
EP080/071: Total Petroleum Hydrocarbons					
Soil Glass Jar - Unpreserved (EP080) S42	23-OCT-2013	31-OCT-2013	06-NOV-2013	✓	06-NOV-2013



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**
 Evaluation: **x** = Quality Control frequency not within specification ; **✓** = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)						
Moisture Content	EA055-103	2	12	16.7	10.0	✓
PAH/Phenols (SIM)	EP075(SIM)	1	9	11.1	10.0	✓
Total Mercury by FIMS	EG035T	1	9	11.1	10.0	✓
Total Metals by ICP-AES	EG005T	1	9	11.1	10.0	✓
TPH - SemiVolatile Fraction	EP071	1	9	11.1	10.0	✓
TPH Volatiles/BTEX	EP080	1	9	11.1	10.0	✓
Laboratory Control Samples (LCS)						
PAH/Phenols (SIM)	EP075(SIM)	1	9	11.1	5.0	✓
Total Mercury by FIMS	EG035T	1	9	11.1	5.0	✓
Total Metals by ICP-AES	EG005T	1	9	11.1	5.0	✓
TPH - SemiVolatile Fraction	EP071	1	9	11.1	5.0	✓
TPH Volatiles/BTEX	EP080	1	9	11.1	5.0	✓
Method Blanks (MB)						
PAH/Phenols (SIM)	EP075(SIM)	1	9	11.1	5.0	✓
Total Mercury by FIMS	EG035T	1	9	11.1	5.0	✓
Total Metals by ICP-AES	EG005T	1	9	11.1	5.0	✓
TPH - SemiVolatile Fraction	EP071	1	9	11.1	5.0	✓
TPH Volatiles/BTEX	EP080	1	9	11.1	5.0	✓
Matrix Spikes (MS)						
PAH/Phenols (SIM)	EP075(SIM)	1	9	11.1	5.0	✓
Total Mercury by FIMS	EG035T	1	9	11.1	5.0	✓
Total Metals by ICP-AES	EG005T	1	9	11.1	5.0	✓
TPH - SemiVolatile Fraction	EP071	1	9	11.1	5.0	✓
TPH Volatiles/BTEX	EP080	1	9	11.1	5.0	✓



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG0035T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Preparation Methods	Method	Matrix	Method Descriptions
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QW/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.



Legend

1 Bedroom Unit
1 Bedroom + Study Unit
2 Bedroom Unit
3 Bedroom Unit

- SEPP 65 RECOMMENDATIONS**
- Item 3.13 - Awning
 - Item 7.2 - Internalised room (Wall-Door Removed)
 - Item 7.3 - External Window
 - Item 7.4 - Kitchen Window
 - Item 9.1 - Label adaptable units



1. Item 7.4 - Kitchen Window
2. Item 7.2 - Internalised room (Wall-Door-Removed)
3. Item 7.3 - External Window
4. Item 9.1 - Label adaptable units



SEPP 65 RECOMMENDATIONS

1. Item 7.3 - External Window
2. Items 7.1, 7.4 - Ventilated Clerestory Windows
4. Item 9.1 - Label adaptable units

LEVEL 05
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2838_108[D]
2838_108[D]



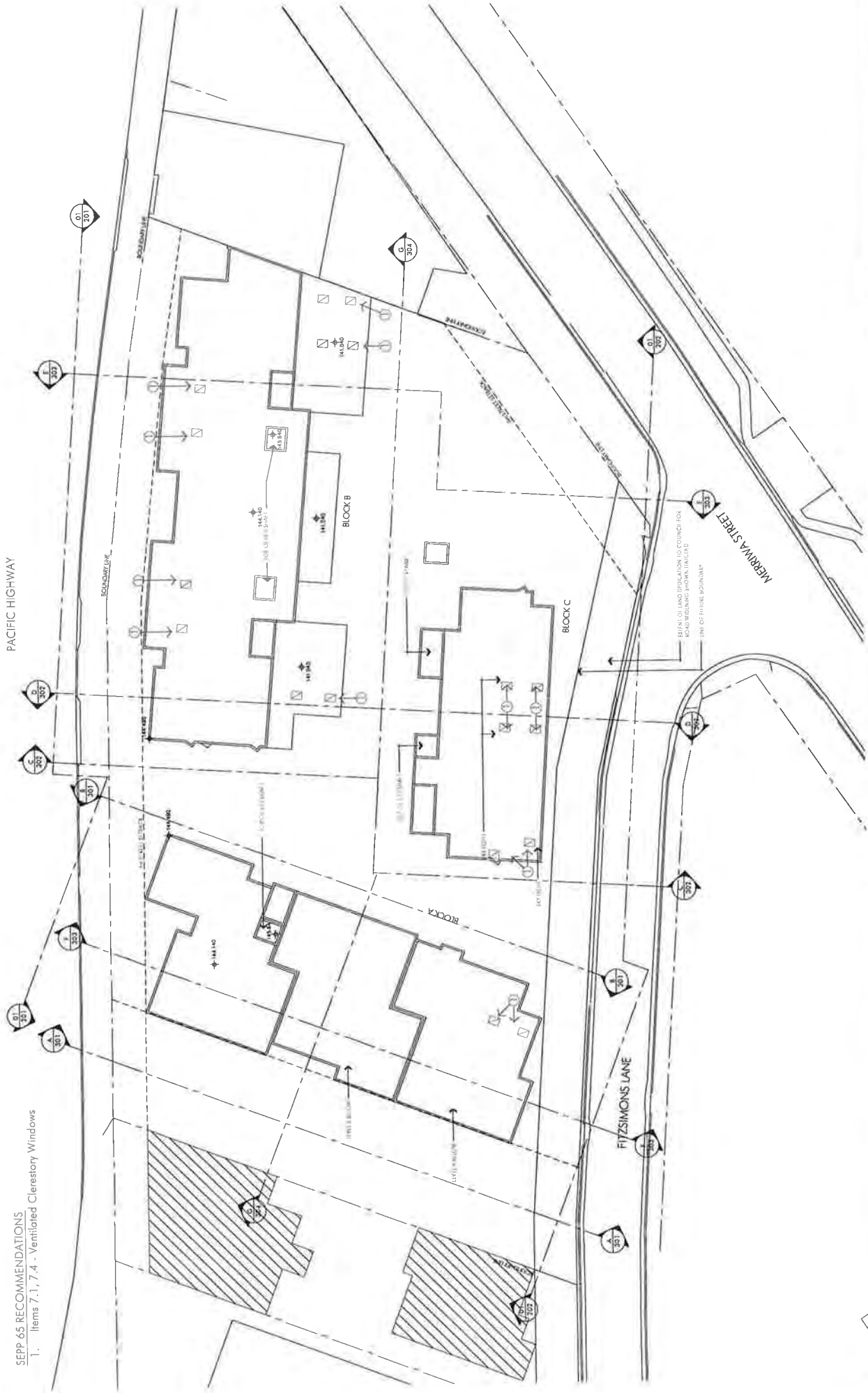
Gordon Mixed Use Development
870-898 Pacific Highway
Gordon NSW

Alto Prestige Pty Ltd
Level 3, 7/9 Merriwa Street, Gordon, NSW 2072
Phone: 02 9371 2000
Fax: 02 9371 2001
Email: info@altopt.com.au





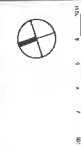
SEPP 65 RECOMMENDATIONS
 1. Items 7.1, 7.4 - Ventilated Clerestory Windows



Alto Prestige Pty Ltd
 Level 3, 7-9 Merrima Street, Gordon, NSW 2072
 Phone: 456 5000 / 2022
 Fax: 456 5000 / 1

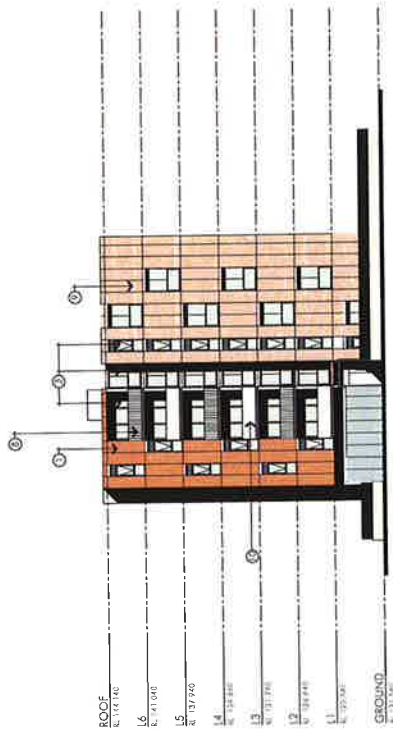
Gordon Mixed Use Development
 870-898 Pacific Highway
 Gordon NSW

ROOF PLAN
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 2022.03.18
 D2838_110[C]





01. STREET ELEVATION



01 BLOCK A NORTH ELEVATION
PNC111197

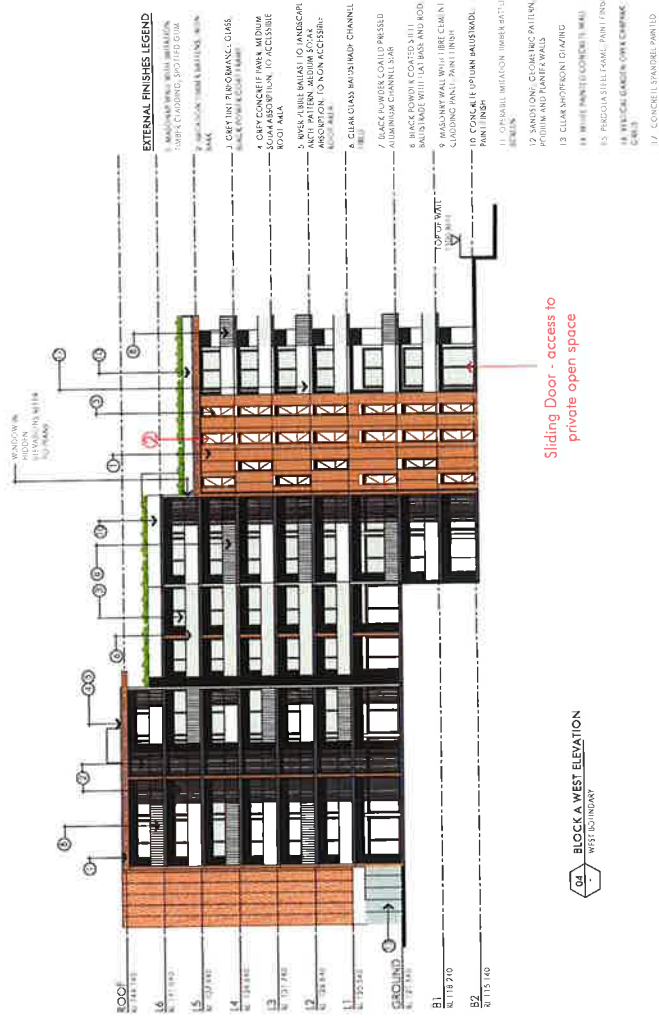
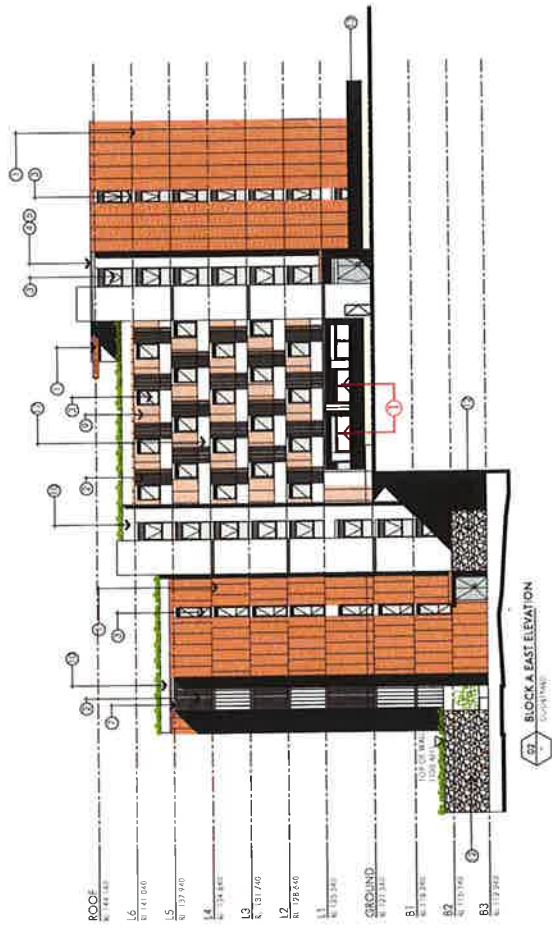


03 BLOCK A SOUTH ELEVATION
111717005 IN

SEPP 65 RECOMMENDATIONS
1. Item 7.8 - Private open Space over 25sqm
2. Item 7.4 - Kitchen Window

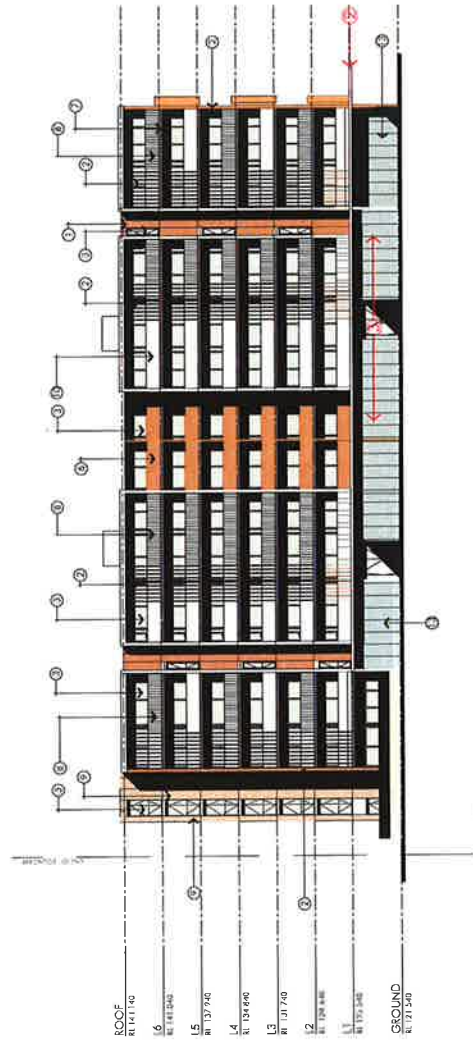
Alto Prestige Pty Ltd
Level 3, 7-9 Merwaa Street, Gordon, NSW 2072
Phone: 02 9458 2000
Fax: 02 9458 2001

Gordon Mixed Use Development
870 Bayside Highway
Gordon NSW

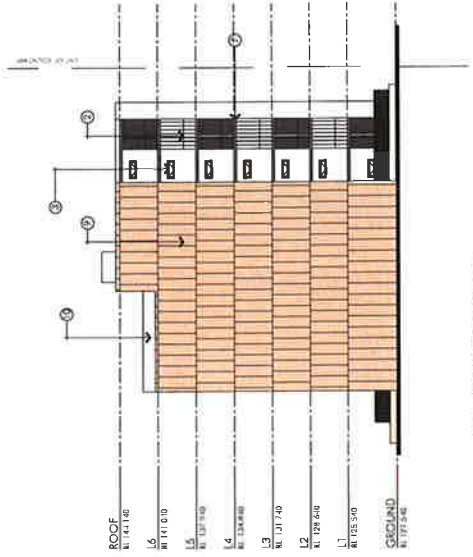


ELEVATIONS BLOCK A
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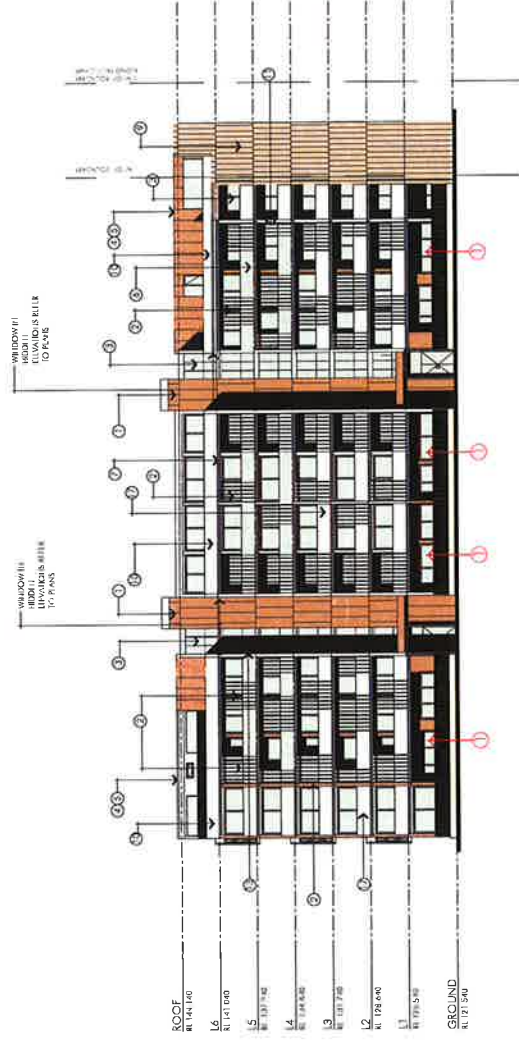
neilston



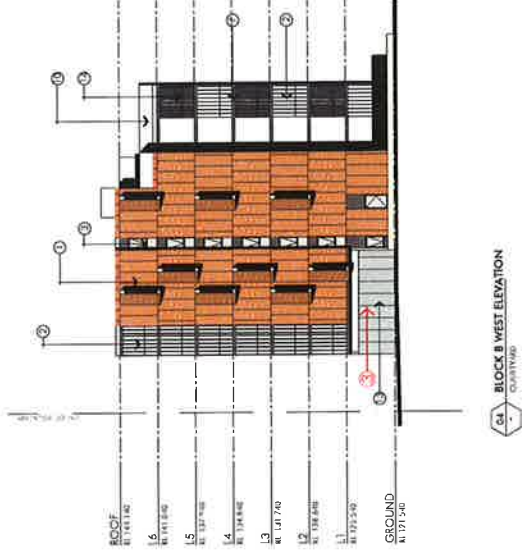
01 BLOCK 8 NORTH ELEVATION
PACIFIC HIGHWAY



02 BLOCK 8 EAST ELEVATION
BULEWER



03 BLOCK 8 SOUTH ELEVATION
TRAVERVIEW RD



04 BLOCK 8 WEST ELEVATION
COURTYARD

EXTERNAL FINISHES LEGEND

1. MAGNETIC WHITE HORIZONTAL PANEL CLADDING, 300x1000mm
2. MAGNETIC WHITE HORIZONTAL PANEL CLADDING, 300x1000mm
3. MAGNETIC WHITE HORIZONTAL PANEL CLADDING, 300x1000mm
4. CONCRETE TO FINISH CLADDING, 300x1000mm
5. CONCRETE TO FINISH CLADDING, 300x1000mm
6. CONCRETE TO FINISH CLADDING, 300x1000mm
7. CONCRETE TO FINISH CLADDING, 300x1000mm
8. CONCRETE TO FINISH CLADDING, 300x1000mm
9. CONCRETE TO FINISH CLADDING, 300x1000mm
10. CONCRETE TO FINISH CLADDING, 300x1000mm
11. CONCRETE TO FINISH CLADDING, 300x1000mm
12. CONCRETE TO FINISH CLADDING, 300x1000mm
13. CONCRETE TO FINISH CLADDING, 300x1000mm
14. CONCRETE TO FINISH CLADDING, 300x1000mm
15. CONCRETE TO FINISH CLADDING, 300x1000mm
16. CONCRETE TO FINISH CLADDING, 300x1000mm
17. CONCRETE TO FINISH CLADDING, 300x1000mm

SEPP 65 RECOMMENDATIONS

1. Item 7.8 - Private open Space over 25sqm
2. Item 3.13 - Awning
3. Items 1, 2, 1, 4, 4.2 - Retail Facing the Pacific HWY

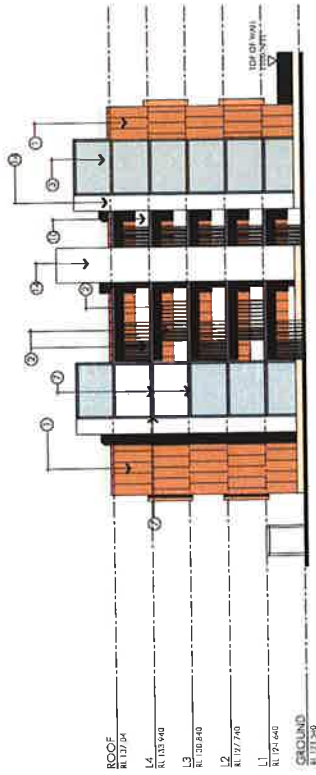
Alto Prestige Pty Ltd
Level 3, 755 Mervin Street, Gordon, NSW 2072
Ph: 02 9339 0000
Fax: 02 9339 0001

Gordon Mixed Use Development
870-880 Pacific Highway
Gordon NSW

ELEVATION BLOCK 8
1:1000
20.08.2018
2838_221 [D]

1:10
1:50
1:200

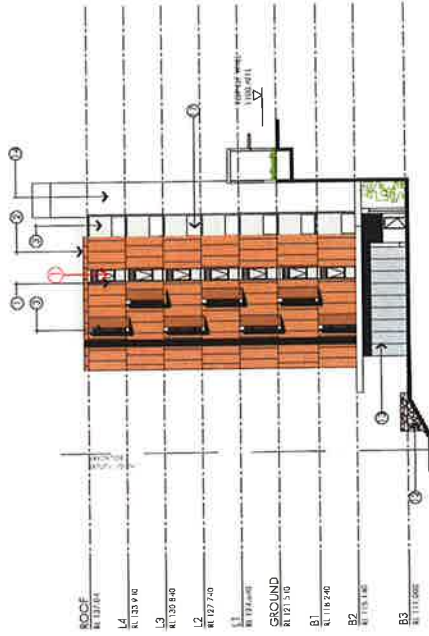




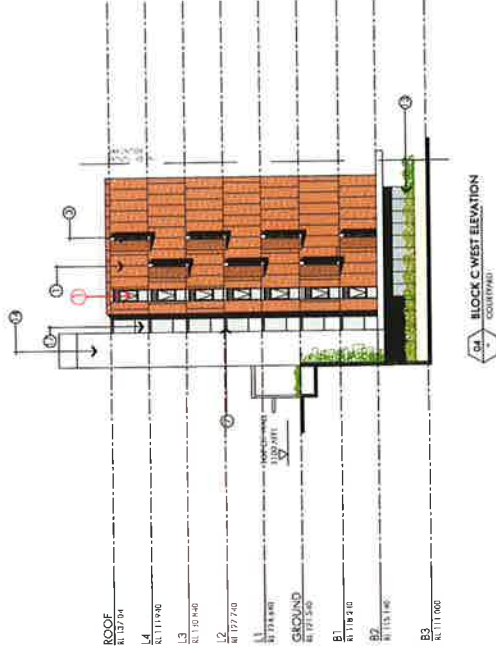
03 BLOCK C NORTH ELEVATION
COURTYARD



03 BLOCK C SOUTH ELEVATION
COURTYARD



03 BLOCK C EAST ELEVATION
COURTYARD



03 BLOCK C WEST ELEVATION
COURTYARD

- EXTERNAL FINISHES LEGEND**
1. EXTERIOR WALL FINISHES
 2. EXTERIOR WALL FINISHES
 3. EXTERIOR WALL FINISHES
 4. EXTERIOR WALL FINISHES
 5. EXTERIOR WALL FINISHES
 6. EXTERIOR WALL FINISHES
 7. EXTERIOR WALL FINISHES
 8. EXTERIOR WALL FINISHES
 9. EXTERIOR WALL FINISHES
 10. EXTERIOR WALL FINISHES
 11. EXTERIOR WALL FINISHES
 12. EXTERIOR WALL FINISHES
 13. EXTERIOR WALL FINISHES
 14. EXTERIOR WALL FINISHES
 15. EXTERIOR WALL FINISHES
 16. EXTERIOR WALL FINISHES
 17. EXTERIOR WALL FINISHES

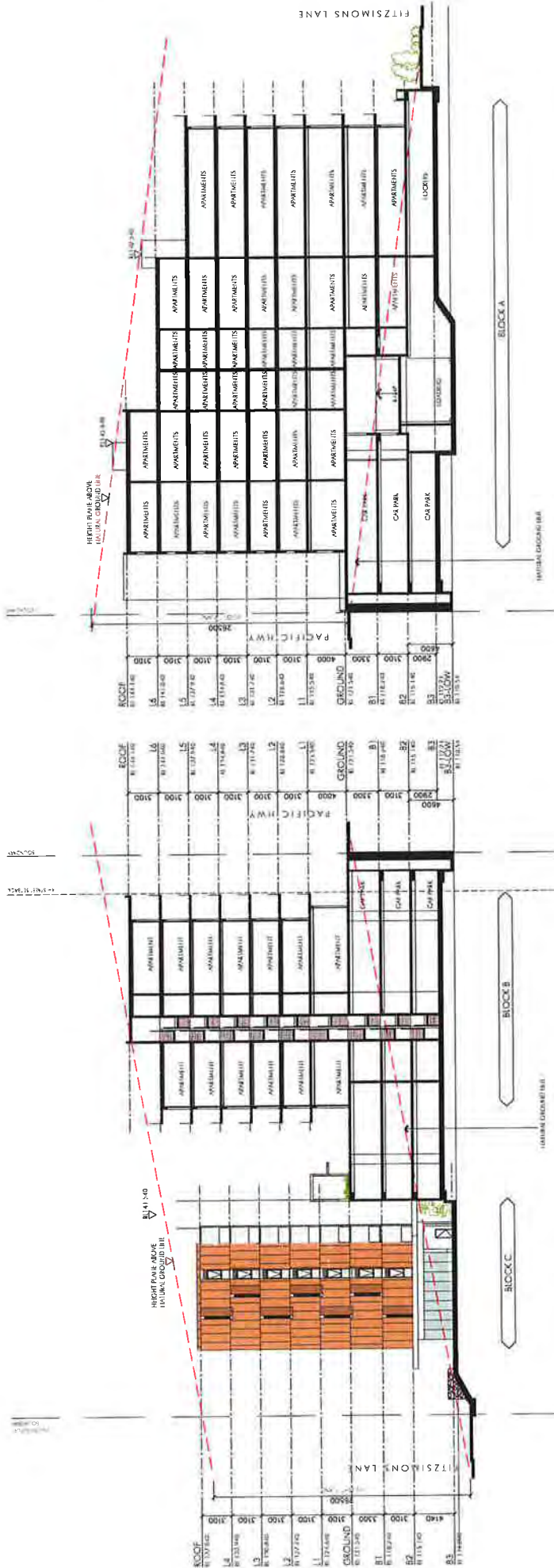
SEPP 65 RECOMMENDATIONS
1 Item 7.3 - External Window.

Alto Prestige Pty Ltd
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E: info@altoprestige.com.au

Gordon Mixed Use Development
870-898 Pacific Highway
Gordon NSW

ELEVATION BLOCK C
1/2020
2838_231(D)
30.03.2015

netition



01 SECTION E-E

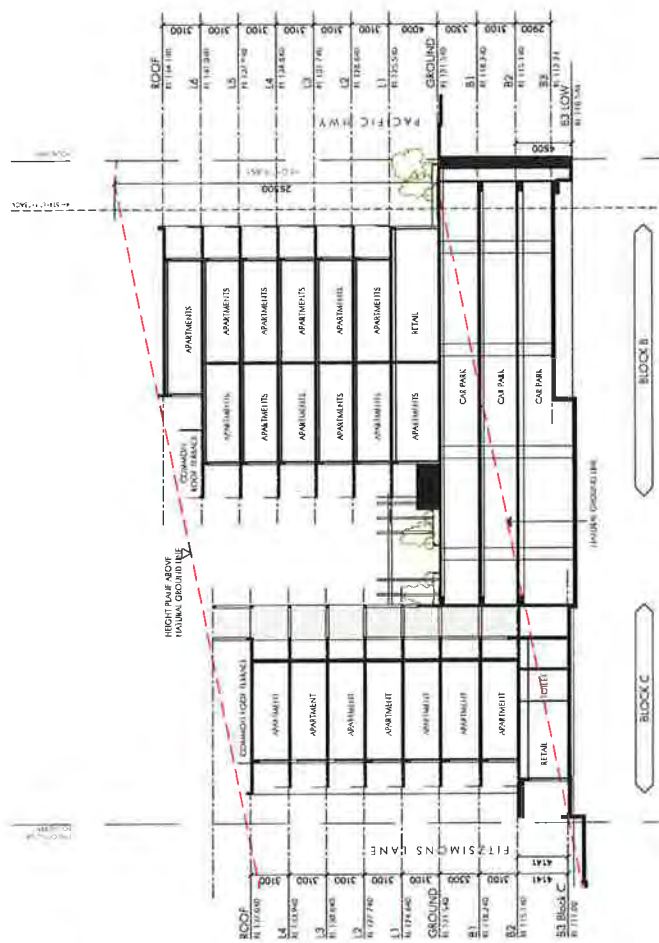
02 SECTION F-F

SECTION E-E AND F-F
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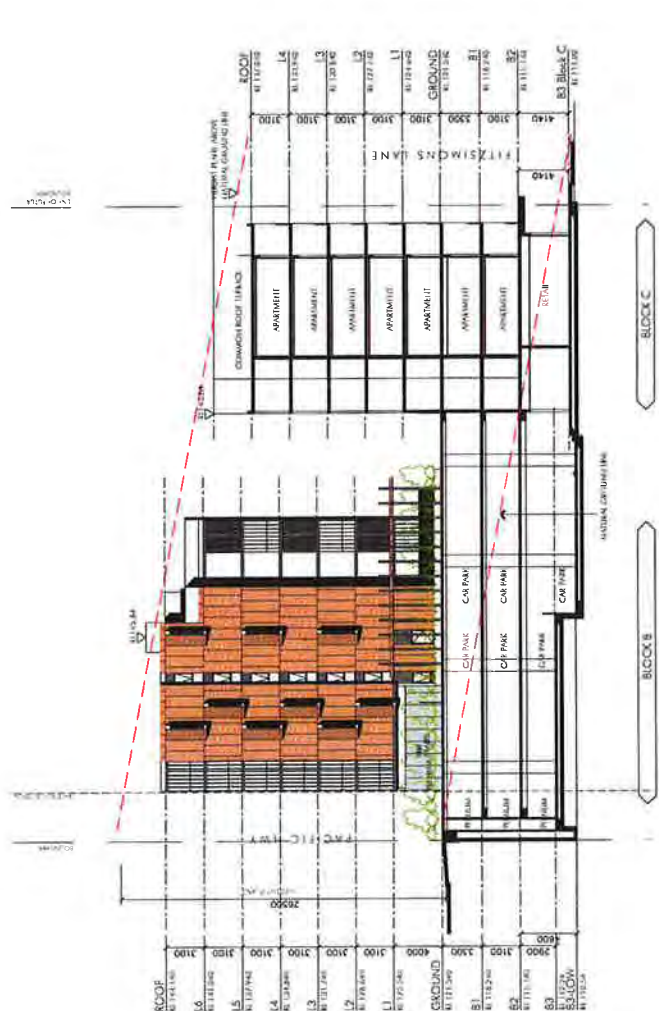
Scale
Date
Author

Gordon Mixed Use Development
870-898 Pacific Highway
Gordon NSW

Alto Prestige Pty Ltd
Level 3, 7-9 Merriwa Street, Gordon, NSW 2072
P.O. Box 446 Gordon NSW 2072
1 800 444 3333



SECTION D-D



SECTION C-C

BASIX® Certificate

Building Sustainability Index www.basix.nsw.gov.au

Multi Dwelling

Certificate number: 538100M_04

This certificate confirms that the proposed development will meet the NSW government's requirements for sustainability, if it is built in accordance with the commitments set out below. Terms used in this certificate, or in the commitments, have the meaning given by the document entitled "BASIX Definitions" dated 18/09/2014 published by Planning & Infrastructure. This document is available at www.basix.nsw.gov.au

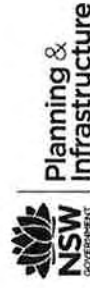
This certificate is a revision of certificate number 538100M lodged with the consent authority or certifier on 16 May 2014 with application DA0180/14.

It is the responsibility of the applicant to verify with the consent authority that the original, or any revised certificate, complies with the requirements of Schedule 1 Clause 2A, 4A or 6A of the Environmental Planning and Assessment Regulation 2000

Director-General

Date of issue: Wednesday, 15 July 2015

To be valid, this certificate must be lodged within 3 months of the date of issue.



Project summary

Project name	EC 227 870-890 Pacific Hwy Gordon_04
Street address	870-890 Pacific Highway Gordon 2072
Local Government Area	Ku-ring-gai Council
Plan type and plan number	deposited 299171
Lot no.	16
Section no.	-
No. of residential flat buildings	3
No. of units in residential flat buildings	144
No. of multi-dwelling houses	0
No. of single dwelling houses	0

Project score

Water	✓ 41	Target 40
Thermal Comfort	✓ Pass	Target Pass
Energy	✓ 20	Target 20

Certificate Prepared by

Name / Company Name: Eco Certificates Pty Ltd
ABN (if applicable): 166705488

Project address	
Project name	EC 227 870-890 Pacific Hwy Gordon_04
Street address	870-890 Pacific Highway Gordon 2072
Local Government Area	Ku-ring-gai Council
Plan type and plan number	deposited 299171
Lot no.	15
Section no.	-
Project type	
No. of residential flat buildings	3
No. of units in residential flat buildings	144
No. of multi-dwelling houses	0
No. of single dwelling houses	0
Site details	
Site area (m ²)	6060
Roof area (m ²)	1786
Non-residential floor area (m ²)	243
Residential car spaces	223
Non-residential car spaces	0

Common area landscape	
Common area lawn (m ²)	0
Common area garden (m ²)	2102
Area of indigenous or low water use species (m ²)	0
Assessor details	
Assessor number	BDAV/12/1462
Certificate number	14620090
Climate zone	56
Project score	
Water	✓ 41 Target 40
Thermal Comfort	✓ Pass Target Pass
Energy	✓ 20 Target 20

Description of project

The tables below describe the dwellings and common areas within the project

Residential flat buildings - Block A, 54 dwellings, 9 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)	Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
A0101	2	88.0	0.0	7	0	A0102	2	91.0	0.0	94.6	0
A0202	2	91.0	0.0	0	0	A0203	1	51.0	0.0	0	0
A0303	2	74.0	0.0	29.8	0	A0304	2	74.0	0.0	72	0
A0307	1	45.0	0.0	13.3	0	A0401	2	88.0	0.0	0	0
A0404	2	83.0	0.0	0	0	A0405	2	83.0	0.0	0	0
A0408	1	64.0	0.0	0	0	A0501	2	88.0	0.0	0	0
A0504	2	83.0	0.0	0	0	A0505	2	83.0	0.0	0	0
A0508	1	64.0	0.0	0	0	A0601	2	88.0	0.0	0	0
A0604	2	83.0	0.0	0	0	A0605	2	83.0	0.0	0	0
A0608	1	64.0	0.0	0	0	A0701	2	88.0	0.0	0	0
A0704	2	83.0	0.0	0	0	A0705	2	83.0	0.0	0	0
A0708	1	64.0	0.0	0	0	A0801	1	52.0	0.0	0	0
A0804	1	52.0	0.0	0	0	A0805	1	52.0	0.0	0	0
A0902	1	52.0	0.0	0	0	A0903	1	64.0	0.0	0	0

Residential flat buildings - Block B, 69 dwellings, 8 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)	Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
A0103	1	51.0	0.0	21.8	0	A0201	2	88.0	0.0	0	0
A0301	2	88.0	0.0	0	0	A0302	2	91.0	0.0	0	0
A0305	1	51.0	0.0	80.4	0	A0306	1	45.0	0.0	8.5	0
A0402	2	91.0	0.0	0	0	A0403	1	52.0	0.0	0	0
A0406	1	52.0	0.0	0	0	A0407	1	52.0	0.0	0	0
A0502	2	91.0	0.0	0	0	A0503	1	52.0	0.0	0	0
A0506	1	52.0	0.0	0	0	A0507	1	52.0	0.0	0	0
A0602	2	91.0	0.0	0	0	A0603	1	52.0	0.0	0	0
A0606	1	52.0	0.0	0	0	A0607	1	52.0	0.0	0	0
A0702	2	91.0	0.0	0	0	A0703	1	52.0	0.0	0	0
A0706	1	52.0	0.0	0	0	A0707	1	52.0	0.0	0	0
A0802	2	83.0	0.0	0	0	A0803	2	83.0	0.0	0	0
A0806	1	64.0	0.0	0	0	A0901	1	52.0	0.0	0	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
B0301	2	68.0	0.0	0	0
B0305	1	61.3	0.0	0	0
B0403	1	53.0	0.0	0	0
B0407	1	52.0	0.0	0	0
B0411	2	77.1	0.0	0	0
B0504	1	52.0	0.0	0	0
B0508	1	52.0	0.0	0	0
B0601	2	77.9	0.0	0	0
B0605	2	52.0	0.0	0	0
B0609	1	52.0	0.0	0	0
B0702	2	52.0	0.0	0	0
B0706	2	52.0	0.0	0	0
B0710	1	52.0	0.0	0	0
B0803	1	52.0	0.0	0	0
B0807	1	77.0	0.0	0	0
B0811	2	77.1	0.0	0	0
B0904	1	52.0	0.0	0	0
B0908	3	77.0	0.0	0	0
Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
B0302	1	48.6	0.0	18.8	0
B0306	1	61.3	0.0	0	0
B0404	1	53.0	0.0	0	0
B0408	1	52.0	0.0	0	0
B0501	2	77.9	0.0	0	0
B0505	2	52.0	0.0	0	0
B0509	1	52.0	0.0	0	0
B0602	2	48.0	0.0	0	0
B0606	2	52.0	0.0	0	0
B0610	1	52.0	0.0	0	0
B0703	1	48.0	0.0	0	0
B0707	1	52.0	0.0	0	0
B0711	2	77.1	0.0	0	0
B0804	1	52.0	0.0	0	0
B0808	1	77.0	0.0	0	0
B0901	3	81.0	0.0	0	0
B0905	1	48.0	0.0	0	0
Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
B0303	1	61.5	0.0	36.8	0
B0401	2	77.9	0.0	0	0
B0405	2	77.0	0.0	0	0
B0409	1	48.0	0.0	0	0
B0502	2	61.0	0.0	0	0
B0506	2	77.0	0.0	0	0
B0510	1	48.0	0.0	0	0
B0603	1	61.0	0.0	0	0
B0607	1	77.0	0.0	0	0
B0611	2	77.1	0.0	0	0
B0704	1	61.0	0.0	0	0
B0708	1	77.0	0.0	0	0
B0801	2	77.9	0.0	0	0
B0805	2	48.0	0.0	0	0
B0809	1	83.0	0.0	0	0
B0902	1	51.8	0.0	0	0
B0906	1	51.8	0.0	0	0
Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
B0304	1	67.8	0.0	0	0
B0402	2	67.0	0.0	0	0
B0406	2	83.0	0.0	0	0
B0410	1	52.0	0.0	0	0
B0503	1	77.0	0.0	0	0
B0507	1	83.0	0.0	0	0
B0511	2	77.1	0.0	0	0
B0604	1	77.0	0.0	0	0
B0608	1	83.0	0.0	0	0
B0701	2	77.9	0.0	0	0
B0705	2	77.0	0.0	0	0
B0709	1	83.0	0.0	0	0
B0802	2	81.0	0.0	0	0
B0806	2	61.0	0.0	0	0
B0810	1	52.0	0.0	0	0
B0903	1	51.8	0.0	0	0
B0907	1	51.8	0.0	0	0

Residential flat buildings - Block C, 21 dwellings, 6 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
C0101	2	82.0	0.0	0	0
C0202	1	55.0	0.0	0	0
C0303	3	105.0	0.0	0	0
C0501	2	82.0	0.0	0	0
C0602	1	55.0	0.0	0	0
C0703	3	105.0	0.0	0	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
C0102	1	55.0	0.0	0	0
C0203	3	105.0	0.0	0	0
C0401	2	82.0	0.0	0	0
C0502	1	55.0	0.0	0	0
C0603	3	105.0	0.0	0	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
C0103	3	105.0	0.0	0	0
C0301	2	82.0	0.0	0	0
C0402	1	55.0	0.0	0	0
C0503	3	105.0	0.0	0	0
C0701	2	82.0	0.0	0	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
C0201	2	82.0	0.0	0	0
C0302	1	55.0	0.0	0	0
C0403	3	105.0	0.0	0	0
C0601	2	82.0	0.0	0	0
C0702	1	55.0	0.0	0	0

Description of project

The tables below describe the dwellings and common areas within the project

Common areas of unit building - Block A

Common area	Floor area (m ²)
Lift car (No. 1)	-

Common areas of unit building - Block B

Common area	Floor area (m ²)
Lift car (No. 2)	-

Common area	Floor area (m ²)
Lift car (No. 3)	-

Common areas of unit building - Block C

Common area	Floor area (m ²)
Lift car (No. 4)	-

Common areas of the development (non-building specific)

Common area	Floor area (m ²)
Basement 02 Car Park	2542
Basement 03 Garbage room (No. 1)	53
Basement 02 Plant Room (No. 1)	26
Basement 01 Plant Room (No. 2)	41
Basement 02 Storage Area	99
Hallways	1918

Common area	Floor area (m ²)
Basement 01 Car Park	2979
Basement 03 Garbage room (No. 2)	43
Basement 02 Plant Room (No. 2)	84
Basement 03 Plant Room (No. 1)	27
Basement 01 Storage Area	201

Common area	Floor area (m ²)
Basement 03 Car Park	3356
Basement 03 Garbage room (No. 3)	47
Basement 01 Plant Room (No. 1)	26
Basement 03 Plant Room (No. 2)	108
Basement 03 Storage Area	346

Schedule of BASix commitments

1. Commitments for Residential flat buildings - Block A

- (a) Dwellings
 - (i) Water
 - (ii) Energy
 - (iii) Thermal Comfort
- (b) Common areas and central systems/facilities
 - (i) Water
 - (ii) Energy

2. Commitments for Residential flat buildings - Block B

- (a) Dwellings
 - (i) Water
 - (ii) Energy
 - (iii) Thermal Comfort
- (b) Common areas and central systems/facilities
 - (i) Water
 - (ii) Energy

3. Commitments for Residential flat buildings - Block C

- (a) Dwellings
 - (i) Water
 - (ii) Energy
 - (iii) Thermal Comfort
- (b) Common areas and central systems/facilities
 - (i) Water
 - (ii) Energy

4. Commitments for multi-dwelling houses

5. Commitments for single dwelling houses

6. Commitments for common areas and central systems/facilities for the development (non-building specific)

- (i) Water
- (ii) Energy

Schedule of BASIX commitments

The commitments set out below regulate how the proposed development is to be carried out. It is a condition of any development consent granted, or complying development certificate issued, for the proposed development, that BASIX commitments be complied with.

1. Commitments for Residential flat buildings - Block A

(a) Dwellings

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must plant indigenous or low water use species of vegetation throughout the area of land specified for the dwelling in the "Indigenous species" column of the table below, as private landscaping for that dwelling. (This area of indigenous vegetation is to be contained within the "Area of garden and lawn" for the dwelling specified in the "Description of Project" table).	✓	✓	✓
(c) If a rating is specified in the table below for a fixture or appliance to be installed in the dwelling, the applicant must ensure that each such fixture and appliance meets the rating specified for it.		✓	✓
(d) The applicant must install an on demand hot water recirculation system which regulates all hot water use throughout the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below.		✓	✓
(e) The applicant must install: (aa) a hot water diversion system to all showers, kitchen sinks and all basins in the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below; and (bb) a separate diversion tank (or tanks) connected to the hot water diversion systems of at least 100 litres. The applicant must connect the hot water diversion tank to all toilets in the dwelling.		✓ ✓	✓ ✓
(e) The applicant must not install a private swimming pool or spa for the dwelling, with a volume exceeding that specified for it in the table below.	✓	✓	
(f) If specified in the table, that pool or spa (or both) must have a pool cover or shading (or both).		✓	
(g) The pool or spa must be located as specified in the table.	✓	✓	
(h) The applicant must install, for the dwelling, each alternative water supply system, with the specified size, listed for that dwelling in the table below. Each system must be configured to collect run-off from the areas specified (excluding any area which supplies any other alternative water supply system), and to divert overflow as specified. Each system must be connected as specified.	✓	✓	✓

Dwelling no.	Fixtures					Appliances			Individual pool				Individual spa		
	All shower-heads	All toilet flushing systems	All kitchen taps	All bathroom taps	HW recirculation or diversion	All clothes washers	All dish-washers	Volume (max volume)	Pool cover	Pool location	Pool shaded	Volume (max volume)	Spa cover	Spa shaded	
All dwellings	3 star (> 6 but <= 7.5 L/min)	3 star	3 star	3 star	no	-	2 star	-	-	-	-	-	-	-	

Alternative water source								
Dwelling no.	Alternative water supply systems	Size	Configuration	Landscape connection	Toilet connection (s)	Laundry connection	Pool top-up	Spa top-up
All dwellings	central water tank (no. 1)	See central systems	See central systems	no	yes	no	no	no
None	-	-	-	-	-	-	-	-

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must install each hot water system specified for the dwelling in the table below, so that the dwelling's hot water is supplied by that system. If the table specifies a central hot water system for the dwelling, then the applicant must connect that central system to the dwelling, so that the dwelling's hot water is supplied by that central system.	✓	✓	✓
(c) The applicant must install, in each bathroom, kitchen and laundry of the dwelling, the ventilation system specified for that room in the table below. Each such ventilation system must have the operation control specified for it in the table.		✓	✓
(d) The applicant must install the cooling and heating system/s specified for the dwelling under the "Living areas" and "Bedroom areas" headings of the "Cooling" and "Heating" columns in the table below, in/for at least 1 living/bedroom area of the dwelling. If no cooling or heating system is specified in the table for "Living areas" or "Bedroom areas", then no systems may be installed in any such areas. If the term "zoned" is specified beside an air conditioning system, then the system must provide for day/night zoning between living areas and bedrooms.		✓	✓
(e) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Artificial lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that the "primary type of artificial lighting" for each such room in the dwelling is fluorescent lighting or light emitting diode (LED) lighting. If the term "dedicated" is specified for a particular room or area, then the light fittings in that room or area must only be capable of being used for fluorescent lighting or light emitting diode (LED) lighting.		✓	✓

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(f) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Natural lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that each such room or area is fitted with a window and/or skylight.	✓	✓	✓
(g) This commitment applies if the applicant installs a water heating system for the dwelling's pool or spa. The applicant must: (aa) install the system specified for the pool in the "Individual Pool" column of the table below (or alternatively must not install any system for the pool). If specified, the applicant must install a timer, to control the pool's pump; and (bb) install the system specified for the spa in the "Individual Spa" column of the table below (or alternatively must not install any system for the spa). If specified, the applicant must install a timer to control the spa's pump.		✓ ✓	
(h) The applicant must install in the dwelling: (aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below; (bb) each appliance for which a rating is specified for that dwelling in the "Appliances & other efficiency measures" column of the table, and ensure that the appliance has that minimum rating; and (cc) any clothes drying line specified for the dwelling in the "Appliances & other efficiency measures" column of the table.		✓ ✓ ✓	✓
(i) If specified in the table, the applicant must carry out the development so that each refrigerator space in the dwelling is "well ventilated".		✓	

Dwelling no.	Hot water		Bathroom ventilation system		Kitchen ventilation system		Laundry ventilation system	
	Hot water system	Each bathroom	Each bathroom	Operation control	Each kitchen	Operation control	Each laundry	Operation control
All dwellings	gas instantaneous 5.5 star	individual fan, ducted to façade or roof	interlocked to light	interlocked to light	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual switch on/off

Dwelling no.	Cooling			Heating		Artificial lighting					Natural lighting		
	living areas	bedroom areas	living areas	bedroom areas		No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
A0102, A0202, A0305	1-phase airconditioning 3.5 Star (new rating)	1-phase airconditioning 3.5 Star (new rating)	1-phase airconditioning 3.5 Star (new rating)	1-phase airconditioning 3.5 Star (new rating)		0	0	no	yes (dedicated)	yes (dedicated)	no	0	yes

	Cooling		Heating		Artificial lighting						Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
A0101, A0103, A0201, A0203, A0301, A0302, A0303, A0304, A0306, A0307, A0401, A0402, A0403, A0404, A0405, A0406, A0407, A0408, A0501, A0502, A0503, A0504, A0505, A0506, A0507, A0508, A0601, A0602, A0603, A0604, A0605, A0606, A0607, A0608, A0701, A0702, A0703, A0704, A0705,	1-phase airconditioning 3.5 Star (new rating)	1-phase airconditioning 3.5 Star (new rating)	1-phase airconditioning 3.5 Star (new rating)	1-phase airconditioning 3.5 Star (new rating)	0	0	no	yes (dedicated)	yes (dedicated)	no	0	no

	Cooling			Heating		Artificial lighting					Natural lighting	
	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
Dwelling no.												
A0706,												
A0707,												
A0708,												
A0801,												
A0802,												
A0803,												
A0804,												
A0805,												
A0806,												
A0901,												
A0902,												
A0903												

Dwelling no.	Individual pool		Individual spa		Appliances & other efficiency measures							
	Pool heating system	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Refrigerator	Well ventilated fridge space	Dishwasher	Clothes washer	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	gas cooktop & electric oven	-	yes	3 star	-	-	yes	no

(iii) Thermal Comfort				Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must attach the certificate referred to under "Assessor details" on the front page of this BASIX certificate (the "Assessor Certificate") to the development application and construction certificate application for the proposed development (or, if the applicant is applying for a complying development certificate for the proposed development, to that application). The applicant must also attach the Assessor Certificate to the application for a final occupation certificate for the proposed development.						
(b) The Assessor Certificate must have been issued by an Accredited Assessor in accordance with the Thermal Comfort Protocol.						
(c) The details of the proposed development on the Assessor Certificate must be consistent with the details shown in this BASIX Certificate, including the details shown in the "Thermal Loads" table below.						

(iii) Thermal Comfort	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(d) The applicant must show on the plans accompanying the development application for the proposed development, all matters which the Thermal Comfort Protocol requires to be shown on those plans. Those plans must bear a stamp of endorsement from the Accredited Assessor, to certify that this is the case.			
(e) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all thermal performance specifications set out in the Assessor Certificate, and all aspects of the proposed development which were used to calculate those specifications.			
(f) The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.		✓	✓
(g) Where there is an in-slab heating or cooling system, the applicant must: (aa) Install insulation with an R-value of not less than 1.0 around the vertical edges of the perimeter of the slab; or (bb) On a suspended floor, install insulation with an R-value of not less than 1.0 underneath the slab and around the vertical edges of the perimeter of the slab.	✓	✓	✓
(h) The applicant must construct the floors and walls of the development in accordance with the specifications listed in the table below.	✓	✓	✓

Thermal loads		
Dwelling no.	Area adjusted heating load (in mJ/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)
A0101	39.5	18.4
A0102	65.8	39.2
A0103	55.4	27.4
A0203	49.5	31
A0303	40.4	23.6
A0304	40.8	23.3
A0305	34.4	5.8
A0306	52.9	21
A0307	33.7	24.1
A0701	48.1	13
A0702	49.2	39.2

		Thermal loads	
Dwelling no.	Area adjusted heating load (in mJ/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)	
A0801	48.8	11.8	
A0802	38.4	32.5	
A0803	39	33.8	
A0901	49.1	11.6	
A0902	56.8	28	
A0903	43.2	17.1	
A0201, A0301	34.7	24.1	
A0502, A0602	61.5	32	
A0202, A0302, A0402	52.9	42.7	
A0401, A0501, A0601	37.3	17.8	
A0404, A0504, A0604, A0704	26.5	36.8	
A0405, A0505, A0605, A0705	27.3	37.7	
A0407, A0507, A0607, A0707, A0805	49.9	35.4	
A0408, A0508, A0608, A0708, A0806	33.1	22.1	
All other dwellings	40	18.4	

(b) Common areas and central systems/facilities

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a showerhead, toilet, tap or clothes washer into a common area, then that item must meet the specifications listed for it in the table.		✓	✓
(b) The applicant must install (or ensure that the development is serviced by) the alternative water supply system(s) specified in the "Central systems" column of the table below. In each case, the system must be sized, be configured, and be connected, as specified in the table.	✓	✓	✓
(c) A swimming pool or spa listed in the table must not have a volume (in kLs) greater than that specified for the pool or spa in the table.	✓	✓	
(d) A pool or spa listed in the table must have a cover or shading if specified for the pool or spa in the table.		✓	
(e) The applicant must install each fire sprinkler system listed in the table so that the system is configured as specified in the table.		✓	✓
(f) The applicant must ensure that the central cooling system for a cooling tower is configured as specified in the table.		✓	✓

Common area	Showerheads rating	Toilets rating	Taps rating	Clothes washers rating
All common areas	no common facility	no common facility	no common facility	no common laundry facility

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a ventilation system to service a common area specified in the table below, then that ventilation system must be of the type specified for that common area, and must meet the efficiency measure specified.		✓	✓
(b) In carrying out the development, the applicant must install, as the "primary type of artificial lighting" for each common area specified in the table below, the lighting specified for that common area. This lighting must meet the efficiency measure specified. The applicant must also install a centralised lighting control system or Building Management System (BMS) for the common area, where specified.		✓	✓
(c) The applicant must install the systems and fixtures specified in the "Central energy systems" column of the table below. In each case, the system or fixture must be of the type, and meet the specifications, listed for it in the table.	✓	✓	✓

Common area	Common area ventilation system		Common area lighting		
	Ventilation system type	Ventilation efficiency measure	Primary type of artificial lighting	Lighting efficiency measure	Lighting control system/BMS
Lift car (No. 1)	-	-	light-emitting diode	connected to lift call button	No

Central energy systems	Type	Specification
Lift (No. 1)	gearless traction with V V V F motor	Number of levels (including basement): 10

2. Commitments for Residential flat buildings - Block B

(a) Dwellings

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must plant indigenous or low water use species of vegetation throughout the area of land specified for the dwelling in the "Indigenous species" column of the table below, as private landscaping for that dwelling. (This area of indigenous vegetation is to be contained within the "Area of garden and lawn" for the dwelling specified in the "Description of Project" table).	✓	✓	
(c) If a rating is specified in the table below for a fixture or appliance to be installed in the dwelling, the applicant must ensure that each such fixture and appliance meets the rating specified for it.		✓	✓
(d) The applicant must install an on demand hot water recirculation system which regulates all hot water use throughout the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below.		✓	✓
(e) The applicant must install: (aa) a hot water diversion system to all showers, kitchen sinks and all basins in the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below; and (bb) a separate diversion tank (or tanks) connected to the hot water diversion systems of at least 100 litres. The applicant must connect the hot water diversion tank to all toilets in the dwelling.		✓	✓
(e) The applicant must not install a private swimming pool or spa for the dwelling, with a volume exceeding that specified for it in the table below.	✓	✓	
(f) If specified in the table, that pool or spa (or both) must have a pool cover or shading (or both).		✓	
(g) The pool or spa must be located as specified in the table.	✓	✓	
(h) The applicant must install, for the dwelling, each alternative water supply system, with the specified size, listed for that dwelling in the table below. Each system must be configured to collect run-off from the areas specified (excluding any area which supplies any other alternative water supply system), and to divert overflow as specified. Each system must be connected as specified.	✓	✓	✓

Dwelling no.	Fixtures				Appliances				Individual pool				Individual spa			
	All shower-heads	All toilet flushing systems	All kitchen taps	All bathroom taps	HW recirculation or diversion	All clothes washers	All dish-washers	Volume (max volume)	Pool cover	Pool location	Pool shaded	Volume (max volume)	Spa cover	Spa shaded	Volume (max volume)	Spa shaded
All dwellings	3 star (> 6 but <= 7.5 L/min)	3 star	3 star	3 star	no	-	2 star	-	-	-	-	-	-	-	-	-

Alternative water source									
Dwelling no.	Alternative water supply systems	Size	Configuration	Landscape connection	Toilet connection (s)	Laundry connection	Pool top-up	Spa top-up	
All dwellings	central water tank (no. 1)	See central systems	See central systems	no	yes	no	no	no	
None	-	-	-	-	-	-	-	-	

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must install each hot water system specified for the dwelling in the table below, so that the dwelling's hot water is supplied by that system. If the table specifies a central hot water system for the dwelling, then the applicant must connect that central system to the dwelling, so that the dwelling's hot water is supplied by that central system.	✓	✓	✓
(c) The applicant must install, in each bathroom, kitchen and laundry of the dwelling, the ventilation system specified for that room in the table below. Each such ventilation system must have the operation control specified for it in the table.		✓	✓
(d) The applicant must install the cooling and heating system/s specified for the dwelling under the "Living areas" and "Bedroom areas" headings of the "Cooling" and "Heating" columns in the table below, in/for at least 1 living/bedroom area of the dwelling. If no cooling or heating system is specified in the table for "Living areas" or "Bedroom areas", then no systems may be installed in any such areas. If the term "zoned" is specified beside an air conditioning system, then the system must provide for day/night zoning between living areas and bedrooms.		✓	✓
(e) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Artificial lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that the "primary type of artificial lighting" for each such room in the dwelling is fluorescent lighting or light emitting diode (LED) lighting. If the term "dedicated" is specified for a particular room or area, then the light fittings in that room or area must only be capable of being used for fluorescent lighting or light emitting diode (LED) lighting.		✓	✓

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(f) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Natural lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that each such room or area is fitted with a window and/or skylight.	✓	✓	✓
(g) This commitment applies if the applicant installs a water heating system for the dwelling's pool or spa. The applicant must: (aa) install the system specified for the pool in the "Individual Pool" column of the table below (or alternatively must not install any system for the pool). If specified, the applicant must install a timer, to control the pool's pump; and (bb) install the system specified for the spa in the "Individual Spa" column of the table below (or alternatively must not install any system for the spa). If specified, the applicant must install a timer to control the spa's pump.		✓ ✓	
(h) The applicant must install in the dwelling: (aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below; (bb) each appliance for which a rating is specified for that dwelling in the "Appliances & other efficiency measures" column of the table, and ensure that the appliance has that minimum rating; and (cc) any clothes drying line specified for the dwelling in the "Appliances & other efficiency measures" column of the table.		✓ ✓ ✓	✓
(i) If specified in the table, the applicant must carry out the development so that each refrigerator space in the dwelling is "well ventilated".		✓	

Dwelling no.	Hot water		Bathroom ventilation system		Kitchen ventilation system		Laundry ventilation system	
	Hot water system	Each bathroom	Each bathroom	Operation control	Each kitchen	Operation control	Each laundry	Operation control
All dwellings	gas instantaneous 5.5 star	individual fan, ducted to façade or roof	interlocked to light	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual switch on/off	manual switch on/off

Dwelling no.	Cooling			Heating		Artificial lighting					Natural lighting	
	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
B0402, B0502, B0602, B0702, B0802, B0901	1-phase airconditioning 3.5 Star (new rating)	1-phase airconditioning 3.5 Star (new rating)	1-phase airconditioning 3.5 Star (new rating)	1-phase airconditioning 3.5 Star (new rating)	0	0	no	yes (dedicated)	yes (dedicated)	no	0	yes

	Cooling		Heating		Artificial lighting						Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
B0301, B0302, B0303, B0304, B0305, B0306, B0401, B0403, B0404, B0405, B0406, B0407, B0408, B0409, B0410, B0411, B0501, B0503, B0504, B0505, B0506, B0507, B0508, B0509, B0510, B0511, B0601, B0603, B0604, B0605, B0606, B0607, B0608, B0609, B0610, B0611, B0701, B0703, B0704,	1-phase airconditioning 3.5 Star (new rating)	1-phase airconditioning 3.5 Star (new rating)	1-phase airconditioning 3.5 Star (new rating)	1-phase airconditioning 3.5 Star (new rating)	0	0	no	yes (dedicated)	yes (dedicated)	no	0	no

	Cooling			Heating		Artificial lighting					Natural lighting	
	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
Dwelling no.												
B0705,												
B0706,												
B0707,												
B0708,												
B0709,												
B0710,												
B0711,												
B0801,												
B0803,												
B0804,												
B0805,												
B0806,												
B0807,												
B0808,												
B0809,												
B0810,												
B0811,												
B0902,												
B0903,												
B0904,												
B0905,												
B0906,												
B0907,												
B0908												

Dwelling no.	Individual pool		Individual spa		Appliances & other efficiency measures							
	Pool heating system	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Refrigerator	Well ventilated fridge space	Dishwasher	Clothes washer	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	gas cooktop & electric oven	-	yes	3 star	-	-	yes	no

(iii) Thermal Comfort	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must attach the certificate referred to under "Assessor details" on the front page of this BASIX certificate (the "Assessor Certificate") to the development application and construction certificate application for the proposed development (or, if the applicant is applying for a complying development certificate for the proposed development, to that application). The applicant must also attach the Assessor Certificate to the application for a final occupation certificate for the proposed development.			
(b) The Assessor Certificate must have been issued by an Accredited Assessor in accordance with the Thermal Comfort Protocol.			
(c) The details of the proposed development on the Assessor Certificate must be consistent with the details shown in this BASIX Certificate, including the details shown in the "Thermal Loads" table below.			
(d) The applicant must show on the plans accompanying the development application for the proposed development, all matters which the Thermal Comfort Protocol requires to be shown on those plans. Those plans must bear a stamp of endorsement from the Accredited Assessor, to certify that this is the case.			
(e) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all thermal performance specifications set out in the Assessor Certificate, and all aspects of the proposed development which were used to calculate those specifications.			
(f) The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.		✓	✓
(g) Where there is an in-slab heating or cooling system, the applicant must: (aa) Install insulation with an R-value of not less than 1.0 around the vertical edges of the perimeter of the slab; or (bb) On a suspended floor, install insulation with an R-value of not less than 1.0 underneath the slab and around the vertical edges of the perimeter of the slab.	✓	✓	✓
(h) The applicant must construct the floors and walls of the development in accordance with the specifications listed in the table below.	✓	✓	✓

Thermal loads	
Dwelling no.	Area adjusted heating load (in mJ/m ² /yr)
B0301	61.9
B0302	29.9
B0303	29.5
B0304	64.9
B0305	41.5

Thermal loads	
Dwelling no.	Area adjusted cooling load (in mJ/m ² /yr)
B0301	12.1
B0302	17.3
B0303	26.4
B0304	13.4
B0305	23.5

Thermal loads		
Dwelling no.	Area adjusted heating load (in mJ/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)
B0306	40.3	23.6
B0801	62.1	11.8
B0811	57.8	11.6
B0901	40	18.1
B0904	45	10.6
B0905	46.9	10.7
B0908	27.9	15.7
B0902, B0906	21.8	22.2
B0903, B0907	22.5	24.9
B0401, B0501, B0601, B0701	59	11.8
B0411, B0511, B0611, B0711	51	10.7
B0402, B0502, B0602, B0702, B0802	29.8	19.3
B0405, B0505, B0605, B0705, B0805	35	10.6
B0406, B0506, B0606, B0706, B0806	35.2	11.1
B0409, B0509, B0609, B0709, B0809	23.7	20.2
B0410, B0510, B0610, B0710, B0810	29.7	26.2
B0403, B0407, B0503, B0507, B0603, B0607, B0703, B0707, B0803, B0807	27.6	19.3
All other dwellings	29.2	15.2

(b) Common areas and central systems/facilities

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a showerhead, toilet, tap or clothes washer into a common area, then that item must meet the specifications listed for it in the table.		✓	✓
(b) The applicant must install (or ensure that the development is serviced by) the alternative water supply system(s) specified in the "Central systems" column of the table below. In each case, the system must be sized, be configured, and be connected, as specified in the table.	✓	✓	✓
(c) A swimming pool or spa listed in the table must not have a volume (in kLs) greater than that specified for the pool or spa in the table.	✓	✓	
(d) A pool or spa listed in the table must have a cover or shading if specified for the pool or spa in the table.		✓	
(e) The applicant must install each fire sprinkler system listed in the table so that the system is configured as specified in the table.		✓	✓
(f) The applicant must ensure that the central cooling system for a cooling tower is configured as specified in the table.		✓	✓

Common area	Showerheads rating	Toilets rating	Taps rating	Clothes washers rating
All common areas	no common facility	no common facility	no common facility	no common laundry facility

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a ventilation system to service a common area specified in the table below, then that ventilation system must be of the type specified for that common area, and must meet the efficiency measure specified.		✓	✓
(b) In carrying out the development, the applicant must install, as the "primary type of artificial lighting" for each common area specified in the table below, the lighting specified for that common area. This lighting must meet the efficiency measure specified. The applicant must also install a centralised lighting control system or Building Management System (BMS) for the common area, where specified.		✓	✓
(c) The applicant must install the systems and fixtures specified in the "Central energy systems" column of the table below. In each case, the system or fixture must be of the type, and meet the specifications, listed for it in the table.	✓	✓	✓

Common area	Common area ventilation system		Common area lighting		
	Ventilation system type	Ventilation efficiency measure	Primary type of artificial lighting	Lighting efficiency measure	Lighting control system/BMS
Lift car (No. 2)	-	-	light-emitting diode	connected to lift call button	No
Lift car (No. 3)	-	-	light-emitting diode	connected to lift call button	No

Central energy systems	Type	Specification
Lift (No. 2)	gearless traction with V V V F motor	Number of levels (including basement): 11
Lift (No. 3)	gearless traction with V V V F motor	Number of levels (including basement): 11

3. Commitments for Residential flat buildings - Block C

(a) Dwellings

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must plant indigenous or low water use species of vegetation throughout the area of land specified for the dwelling in the "Indigenous species" column of the table below, as private landscaping for that dwelling. (This area of indigenous vegetation is to be contained within the "Area of garden and lawn" for the dwelling specified in the "Description of Project" table).	✓	✓	
(c) If a rating is specified in the table below for a fixture or appliance to be installed in the dwelling, the applicant must ensure that each such fixture and appliance meets the rating specified for it.		✓	✓
(d) The applicant must install an on demand hot water recirculation system which regulates all hot water use throughout the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below.		✓	✓
(e) The applicant must install: (aa) a hot water diversion system to all showers, kitchen sinks and all basins in the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below; and (bb) a separate diversion tank (or tanks) connected to the hot water diversion systems of at least 100 litres. The applicant must connect the hot water diversion tank to all toilets in the dwelling.		✓ ✓	✓ ✓
(e) The applicant must not install a private swimming pool or spa for the dwelling, with a volume exceeding that specified for it in the table below.	✓	✓	
(f) If specified in the table, that pool or spa (or both) must have a pool cover or shading (or both).		✓	
(g) The pool or spa must be located as specified in the table.	✓	✓	
(h) The applicant must install, for the dwelling, each alternative water supply system, with the specified size, listed for that dwelling in the table below. Each system must be configured to collect run-off from the areas specified (excluding any area which supplies any other alternative water supply system), and to divert overflow as specified. Each system must be connected as specified.	✓	✓	✓

Dwelling no.	Fixtures					Appliances		Individual pool				Individual spa		
	All shower-heads	All toilet flushing systems	All kitchen taps	All bathroom taps	HW recirculation or diversion	All clothes washers	All dish-washers	Volume (max volume)	Pool cover	Pool location	Pool shaded	Volume (max volume)	Spa cover	Spa shaded
All dwellings	3 star (> 6 but <= 7.5 L/min)	3 star	3 star	3 star	no	-	2 star	-	-	-	-	-	-	-

Alternative water source									
Dwelling no.	Alternative water supply systems	Size	Configuration	Landscape connection	Toilet connection (s)	Laundry connection	Pool top-up	Spa top-up	
All dwellings	central water tank (no. 1)	See central systems	See central systems	no	yes	no	no	no	
None	-	-	-	-	-	-	-	-	

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must install each hot water system specified for the dwelling in the table below, so that the dwelling's hot water is supplied by that system. If the table specifies a central hot water system for the dwelling, then the applicant must connect that central system to the dwelling, so that the dwelling's hot water is supplied by that central system.	✓	✓	✓
(c) The applicant must install, in each bathroom, kitchen and laundry of the dwelling, the ventilation system specified for that room in the table below. Each such ventilation system must have the operation control specified for it in the table.		✓	✓
(d) The applicant must install the cooling and heating system/s specified for the dwelling under the "Living areas" and "Bedroom areas" headings of the "Cooling" and "Heating" columns in the table below, in/for at least 1 living/bedroom area of the dwelling. If no cooling or heating system is specified in the table for "Living areas" or "Bedroom areas", then no systems may be installed in any such areas. If the term "zoned" is specified beside an air conditioning system, then the system must provide for day/night zoning between living areas and bedrooms.		✓	✓
(e) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Artificial lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that the "primary type of artificial lighting" for each such room in the dwelling is fluorescent lighting or light emitting diode (LED) lighting. If the term "dedicated" is specified for a particular room or area, then the light fittings in that room or area must only be capable of being used for fluorescent lighting or light emitting diode (LED) lighting.		✓	✓

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(f) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Natural lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that each such room or area is fitted with a window and/or skylight.	✓	✓	✓
(g) This commitment applies if the applicant installs a water heating system for the dwelling's pool or spa. The applicant must: (aa) install the system specified for the pool in the "Individual Pool" column of the table below (or alternatively must not install any system for the pool). If specified, the applicant must install a timer, to control the pool's pump; and (bb) install the system specified for the spa in the "Individual Spa" column of the table below (or alternatively must not install any system for the spa). If specified, the applicant must install a timer to control the spa's pump.		✓ ✓	
(h) The applicant must install in the dwelling: (aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below; (bb) each appliance for which a rating is specified for that dwelling in the "Appliances & other efficiency measures" column of the table, and ensure that the appliance has that minimum rating; and (cc) any clothes drying line specified for the dwelling in the "Appliances & other efficiency measures" column of the table.		✓ ✓ ✓	✓
(i) If specified in the table, the applicant must carry out the development so that each refrigerator space in the dwelling is "well ventilated".		✓	

Dwelling no.	Hot water system	Bathroom ventilation system		Kitchen ventilation system		Laundry ventilation system	
		Each bathroom	Operation control	Each kitchen	Operation control	Each laundry	Operation control
All dwellings	gas instantaneous 5.5 star	individual fan, ducted to façade or roof	interlocked to light	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual switch on/off

Dwelling no.	Cooling			Heating		Artificial lighting						Natural lighting	
	living areas	bedroom areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
All dwellings	1-phase airconditioning 3.5 Star (new rating)	1-phase airconditioning 3.5 Star (new rating)	1-phase airconditioning 3.5 Star (new rating)	1-phase airconditioning 3.5 Star (new rating)	1-phase airconditioning 3.5 Star (new rating)	0	0	no	yes (dedicated)	yes (dedicated)	no	0	no

	Individual pool			Individual spa		Appliances & other efficiency measures						
Dwelling no.	Pool heating system	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Refrigerator	Well ventilated fridge space	Dishwasher	Clothes washer	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	gas cooktop & electric oven	-	yes	3 star	-	-	yes	no

(iii) Thermal Comfort

(a) The applicant must attach the certificate referred to under "Assessor details" on the front page of this BASIX certificate (the "Assessor Certificate") to the development application and construction certificate application for the proposed development (or, if the applicant is applying for a complying development certificate for the proposed development, to that application). The applicant must also attach the Assessor Certificate to the application for a final occupation certificate for the proposed development.	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(b) The Assessor Certificate must have been issued by an Accredited Assessor in accordance with the Thermal Comfort Protocol.			
(c) The details of the proposed development on the Assessor Certificate must be consistent with the details shown in this BASIX Certificate, including the details shown in the "Thermal Loads" table below.			
(d) The applicant must show on the plans accompanying the development application for the proposed development, all matters which the Thermal Comfort Protocol requires to be shown on those plans. Those plans must bear a stamp of endorsement from the Accredited Assessor, to certify that this is the case.			
(e) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all thermal performance specifications set out in the Assessor Certificate, and all aspects of the proposed development which were used to calculate those specifications.			

(iii) Thermal Comfort	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(f) The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.		✓	✓
(g) Where there is an in-slab heating or cooling system, the applicant must: (aa) Install insulation with an R-value of not less than 1.0 around the vertical edges of the perimeter of the slab; or (bb) On a suspended floor, install insulation with an R-value of not less than 1.0 underneath the slab and around the vertical edges of the perimeter of the slab.	✓	✓	✓
(h) The applicant must construct the floors and walls of the development in accordance with the specifications listed in the table below.	✓	✓	✓

Thermal loads		
Dwelling no.	Area adjusted heating load (in mJ/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)
C0701	61.3	15.1
C0702	48.8	12.3
C0703	53.7	11
C0101, C0201, C0301	45	25.2
C0102, C0202, C0302	29.8	17.4
C0103, C0203, C0303	35	16.8
C0401, C0501, C0601	48	20.2
C0402, C0502, C0602	33.3	12.4
All other dwellings	38.1	12.9

(b) Common areas and central systems/facilities

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a showerhead, toilet, tap or clothes washer into a common area, then that item must meet the specifications listed for it in the table.		✓	✓
(b) The applicant must install (or ensure that the development is serviced by) the alternative water supply system(s) specified in the "Central systems" column of the table below. In each case, the system must be sized, be configured, and be connected, as specified in the table.	✓	✓	✓
(c) A swimming pool or spa listed in the table must not have a volume (in kLs) greater than that specified for the pool or spa in the table.	✓	✓	
(d) A pool or spa listed in the table must have a cover or shading if specified for the pool or spa in the table.		✓	
(e) The applicant must install each fire sprinkler system listed in the table so that the system is configured as specified in the table.		✓	✓
(f) The applicant must ensure that the central cooling system for a cooling tower is configured as specified in the table.		✓	✓

Common area	Showerheads rating	Toilets rating	Taps rating	Clothes washers rating
All common areas	no common facility	no common facility	no common facility	no common laundry facility

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a ventilation system to service a common area specified in the table below, then that ventilation system must be of the type specified for that common area, and must meet the efficiency measure specified.		✓	✓
(b) In carrying out the development, the applicant must install, as the "primary type of artificial lighting" for each common area specified in the table below, the lighting specified for that common area. This lighting must meet the efficiency measure specified. The applicant must also install a centralised lighting control system or Building Management System (BMS) for the common area, where specified.		✓	✓
(c) The applicant must install the systems and fixtures specified in the "Central energy systems" column of the table below. In each case, the system or fixture must be of the type, and meet the specifications, listed for it in the table.	✓	✓	✓

Common area ventilation system		Common area lighting			
Common area	Ventilation system type	Ventilation efficiency measure	Primary type of artificial lighting	Lighting efficiency measure	Lighting control system/BMS
Lift car (No. 4)	-	-	light-emitting diode	connected to lift call button	No

Central energy systems	Type	Specification
Lift (No. 4)	gearless traction with V V V F motor	Number of levels (including basement): 6

6. Commitments for common areas and central systems/facilities for the development (non-building specific)

(b) Common areas and central systems/facilities

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a showerhead, toilet, tap or clothes washer into a common area, then that item must meet the specifications listed for it in the table.		✓	✓
(b) The applicant must install (or ensure that the development is serviced by) the alternative water supply system(s) specified in the "Central systems" column of the table below. In each case, the system must be sized, be configured, and be connected, as specified in the table.	✓	✓	✓
(c) A swimming pool or spa listed in the table must not have a volume (in kLs) greater than that specified for the pool or spa in the table.	✓	✓	
(d) A pool or spa listed in the table must have a cover or shading if specified for the pool or spa in the table.		✓	
(e) The applicant must install each fire sprinkler system listed in the table so that the system is configured as specified in the table.		✓	✓
(f) The applicant must ensure that the central cooling system for a cooling tower is configured as specified in the table.		✓	✓

Common area	Showerheads rating	Toilets rating	Taps rating	Clothes washers rating
All common areas	no common facility	no common facility	no common facility	no common laundry facility

Central systems	Size	Configuration	Connection (to allow for...)
Central water tank - rainwater or stormwater (No. 1)	28000	- To collect run-off from at least: - 1786 square metres of roof area of buildings in the development - 0 square metres of impervious area in the development - 0 square metres of garden/lawn area in the development - 0 square metres of planter box area in the development (excluding, in each case, any area which drains to, or supplies, any other alternative water supply system).	

Central systems	Size	Configuration	Connection (to allow for...)
Fire sprinkler system (No. 1)	-	So that fire sprinkler test water is contained within the fire sprinkler system for re-use, rather than disposed.	-
Fire sprinkler system (No. 2)	-	So that fire sprinkler test water is contained within the fire sprinkler system for re-use, rather than disposed.	-
Fire sprinkler system (No. 3)	-	So that fire sprinkler test water is contained within the fire sprinkler system for re-use, rather than disposed.	-

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a ventilation system to service a common area specified in the table below, then that ventilation system must be of the type specified for that common area, and must meet the efficiency measure specified.		✓	✓
(b) In carrying out the development, the applicant must install, as the "primary type of artificial lighting" for each common area specified in the table below, the lighting specified for that common area. This lighting must meet the efficiency measure specified. The applicant must also install a centralised lighting control system or Building Management System (BMS) for the common area, where specified.		✓	✓
(c) The applicant must install the systems and fixtures specified in the "Central energy systems" column of the table below. In each case, the system or fixture must be of the type, and meet the specifications, listed for it in the table.	✓	✓	✓

Common area ventilation system					Common area lighting	
Common area	Ventilation system type	Ventilation efficiency measure	Primary type of artificial lighting	Lighting efficiency measure	Lighting control system/BMS	
Basement 02 Car Park	ventilation exhaust only	carbon monoxide monitor + VSD fan	fluorescent	time clocks	No	
Basement 01 Car Park	ventilation exhaust only	carbon monoxide monitor + VSD fan	fluorescent	time clocks	No	
Basement 03 Car Park	ventilation exhaust only	carbon monoxide monitor + VSD fan	fluorescent	time clocks	No	
Basement 03 Garbage room (No. 1)	ventilation exhaust only	-	compact fluorescent	manual on / manual off	No	
Basement 03 Garbage room (No. 2)	ventilation exhaust only	-	compact fluorescent	manual on / manual off	No	

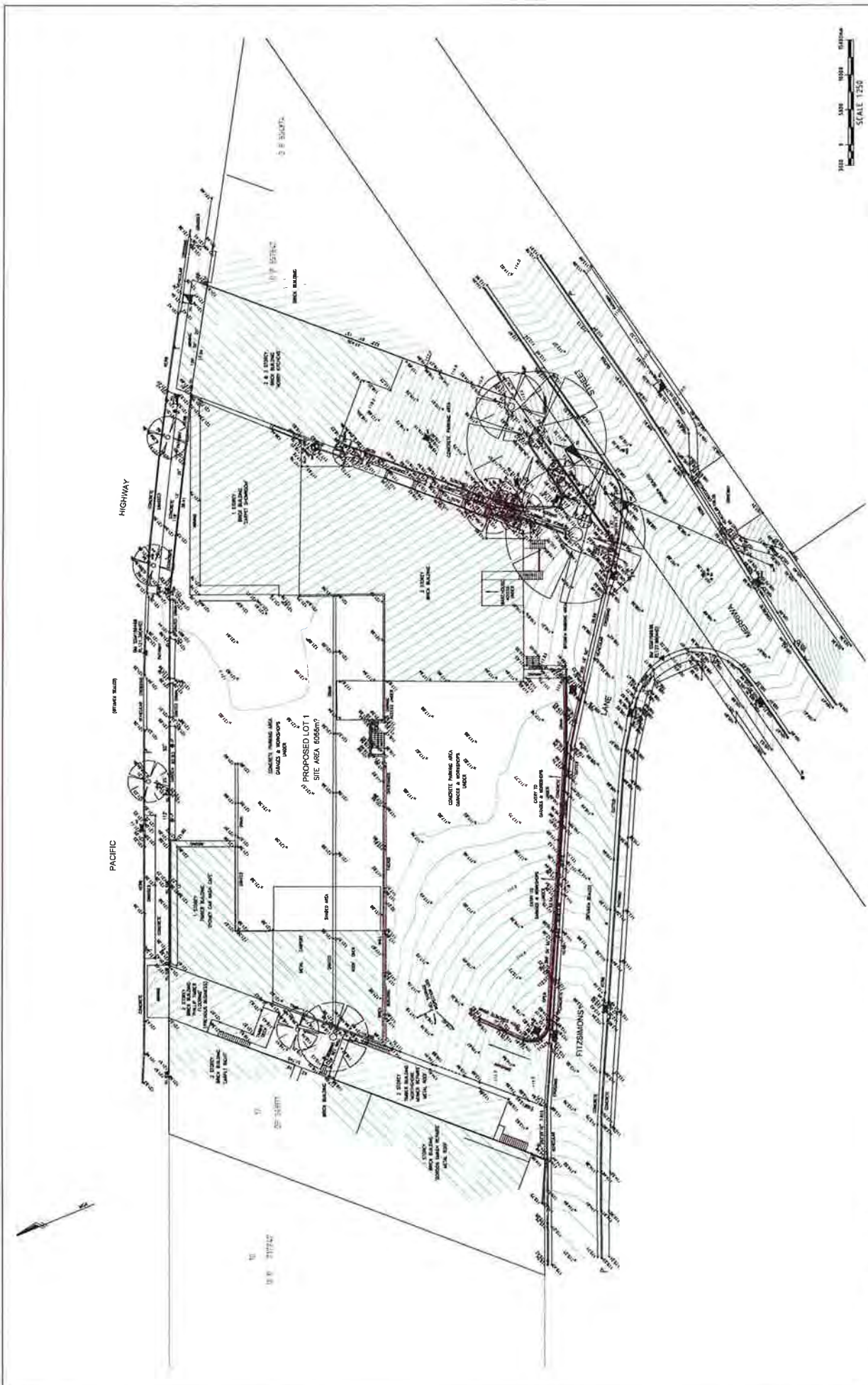
Common area	Common area ventilation system		Common area lighting		
	Ventilation system type	Ventilation efficiency measure	Primary type of artificial lighting	Lighting efficiency measure	Lighting control system/BMS
Basement 03 Garbage room (No. 3)	ventilation exhaust only	-	compact fluorescent	manual on / manual off	No
Basement 02 Plant Room (No. 1)	no mechanical ventilation	-	compact fluorescent	manual on / manual off	No
Basement 02 Plant Room (No. 2)	no mechanical ventilation	-	compact fluorescent	manual on / manual off	No
Basement 01 Plant Room (No. 1)	no mechanical ventilation	-	compact fluorescent	manual on / manual off	No
Basement 01 Plant Room (No. 2)	no mechanical ventilation	-	compact fluorescent	manual on / manual off	No
Basement 03 Plant Room (No. 1)	no mechanical ventilation	-	compact fluorescent	manual on / manual off	No
Basement 03 Plant Room (No. 2)	no mechanical ventilation	-	compact fluorescent	manual on / manual off	No
Basement 02 Storage Area	no mechanical ventilation	-	compact fluorescent	motion sensors	No
Basement 01 Storage Area	no mechanical ventilation	-	fluorescent	motion sensors	No
Basement 03 Storage Area	no mechanical ventilation	-	fluorescent	motion sensors	No
Hallways	no mechanical ventilation	-	fluorescent	manual on / timer off	No

Notes

1. In these commitments, "applicant" means the person carrying out the development.
2. The applicant must identify each dwelling, building and common area listed in this certificate, on the plans accompanying any development application, and on the plans and specifications accompanying the application for a construction certificate / complying development certificate, for the proposed development, using the same identifying letter or reference as is given to that dwelling, building or common area in this certificate.
3. This note applies if the proposed development involves the erection of a building for both residential and non-residential purposes (or the change of use of a building for both residential and non-residential purposes). Commitments in this certificate which are specified to apply to a "common area" of a building or the development, apply only to that part of the building or development to be used for residential purposes.
4. If this certificate lists a central system as a commitment for a dwelling or building, and that system will also service any other dwelling or building within the development, then that system need only be installed once (even if it is separately listed as a commitment for that other dwelling or building).
5. If a star or other rating is specified in a commitment, this is a minimum rating.
6. All alternative water systems to be installed under these commitments (if any), must be installed in accordance with the requirements of all applicable regulatory authorities. NOTE: NSW Health does not recommend that stormwater, recycled water or private dam water be used to irrigate edible plants which are consumed raw, or that rainwater be used for human consumption in areas with potable water supply.

Legend

1. Commitments identified with a "✓" in the "Show on DA plans" column must be shown on the plans accompanying the development application for the proposed development (if a development application is to be lodged for the proposed development).
2. Commitments identified with a "✓" in the "Show on CC/CDC plans and specs" column must be shown in the plans and specifications accompanying the application for a construction certificate / complying development certificate for the proposed development.
3. Commitments identified with a "✓" in the "Certifier check" column must be certified by a certifying authority as having been fulfilled. (Note: a certifying authority must not issue an occupation certificate (either interim or final) for a building listed in this certificate, or for any part of such a building, unless it is satisfied that each of the commitments whose fulfilment it is required to monitor in relation to the building or part, has been fulfilled).



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NOTES

FOR FILE DRAWING LIST LOCUS ABERRATIONS & NOTES REFER TO DRAWING C-03 L-40

A DEVELOPMENT APPLICATION ISSUE
B CONSTRUCTION ISSUE
C DA REVISED ISSUE
D DA REVISED ISSUE

DATE 21.03.14
BY J. L. L.
SCALE 1:250

PROJECT

GORDON RESIDENTIAL DEVELOPMENT
870 PACIFIC HIGHWAY
GORDON

CLIENT

Alto Group

DATE 21.03.14
BY J. L. L.
SCALE 1:250

WARREN SMITH & PARTNERS Pty Ltd
SINCE 1881
SPECIALISING IN THE CONSTRUCTION INDUSTRY
Geotechnical Engineering
Hydraulic & Civil Engineering
Fire Protection
Design & Project Management

EXISTING SURVEY PLAN

C-03
DECEMBER 2014
4752000

DEVELOPMENT APPLICATION

D

PACIFIC

HIGHWAY

FITSIMONS

LANE

MERRIMA

STREET

LEGEND:

NEW 1000 OVERFLOW SPILLER @ 20 L/S
EXISTING 1000 OVERFLOW SPILLER @ 20 L/S
PREVENT FLOODING IN THE EVENT OF
BLOCKAGE
FALL
1000 OUTLET



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FOR TITLE, DRAWING LIST, LEGEND, ABBREVIATIONS & NOTES REFER TO DRAWING C-01 C-02

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ALTO GROUP
GORDON RESIDENTIAL DEVELOPMENT
870 PACIFIC HIGHWAY
GORDON

STORMWATER DRAINAGE
BASEMENT 02 PLAN
DATE: 12/01/2024
DRAWN BY: C-05
CHECKED BY: D
PROJECT: 4752000
DEVELOPMENT APPLICATION

A1

PACIFIC

HIGHWAY

FIT-SIMONS

LANE

MERRIMA

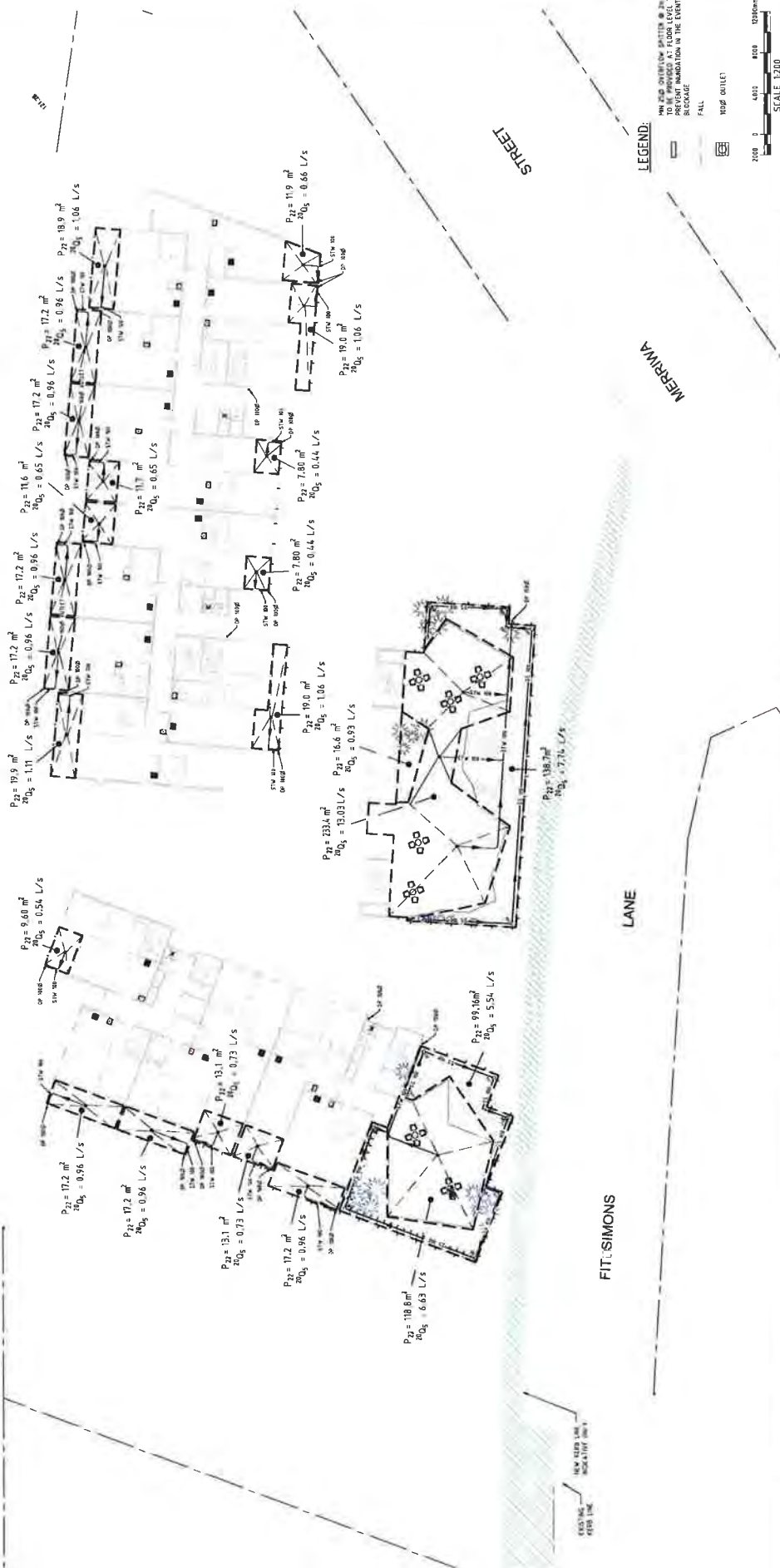
STREET



LEGEND:

- NEW 250 OVERFLOW SPILLER @ 2m L/C
- EXISTING 250 OVERFLOW SPILLER @ 2m L/C
- EXISTING 150 OVERFLOW SPILLER @ 2m L/C
- EXISTING 100 OVERFLOW SPILLER @ 2m L/C
- EXISTING 75 OVERFLOW SPILLER @ 2m L/C
- EXISTING 50 OVERFLOW SPILLER @ 2m L/C
- EXISTING 25 OVERFLOW SPILLER @ 2m L/C
- EXISTING 12.5 OVERFLOW SPILLER @ 2m L/C
- EXISTING 6.25 OVERFLOW SPILLER @ 2m L/C
- EXISTING 3.125 OVERFLOW SPILLER @ 2m L/C
- EXISTING 1.5625 OVERFLOW SPILLER @ 2m L/C
- EXISTING 0.78125 OVERFLOW SPILLER @ 2m L/C
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- EXISTING 0.1953125 OVERFLOW SPILLER @ 2m L/C
- EXISTING 0.09765625 OVERFLOW SPILLER @ 2m L/C
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- EXISTING 0.0244140625 OVERFLOW SPILLER @ 2m L/C
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- EXISTING 0.000000





LEGEND:

MIN 2ND OVERVIEW BATTERY @ 2ND FLOOR
TO BE PROVIDED AT FLOOR LEVEL TO
PREVENT INUNDATION IN THE EVENT OF
BLOCKAGE

FALL

WASH OUTLET

Warren Smith & Partners Pty Ltd
 100/101 Pitt Street, Sydney, NSW 2000
 Tel: 02 222 0000 Fax: 02 222 0000
 Telex: 25222 WSP AUSTRALIA
 E-mail: info@warrensmith.com.au
 A subsidiary of WSP Group Ltd, London, UK

REINFORCING THE CONSTRUCTION INDUSTRY
SINCE 1981

Consulting Engineers
 Hydraulic Services / Civil Engineering / Fire Protection
 Sydney Water Accredited / Water Servicing Co-ordinators
 • Design and Project Management



Alto Group

PROJECT
GORDON RESIDENTIAL DEVELOPMENT
870 PACIFIC HIGHWAY
GORDON

ISSUE	DATE	ISSUED	AMOUNT	DATE
PAID TO JAMES A. BARKER FOR RENT	2-13-14			
PAID TO JAMES A. BARKER FOR RENT	09-05-14			
PAID TO JAMES A. BARKER FOR RENT	09-17-14			
PAID TO JAMES A. BARKER FOR RENT	10-07-15			

FOR TITLE DRAWING LIST LEGEND, ABBREVIATIONS & NOTES REFER TO DRAWING C-11 & C-42

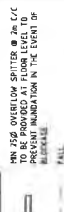
NO TITLE REQUIRED

NO TITLE SCALE FROM DRAWINGS CHECK & VERIFY ALL DIMENSIONS LEVELS BEFORE PRESENT OF ANY WORK

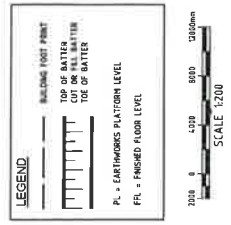
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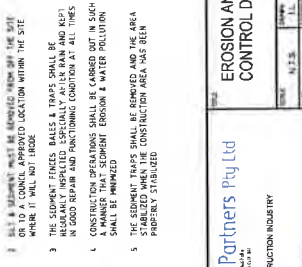
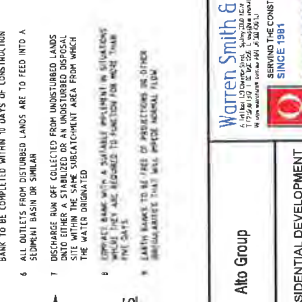
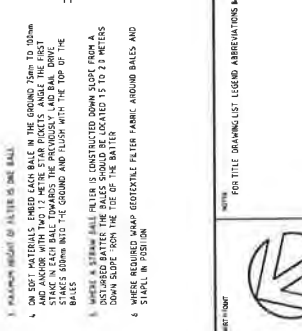
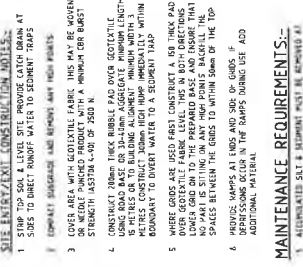
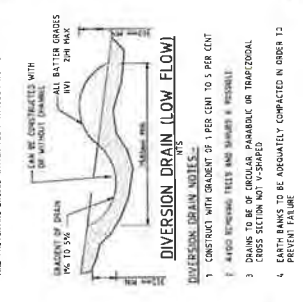
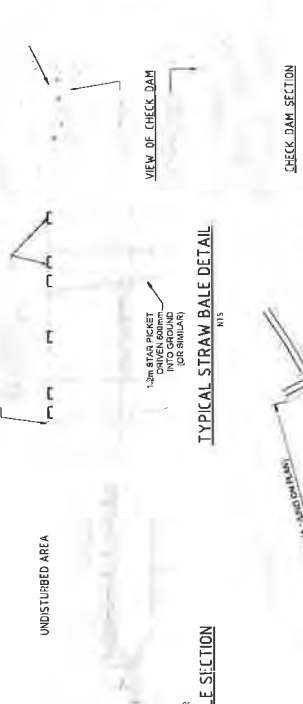
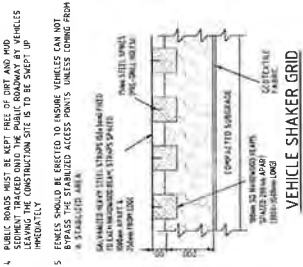
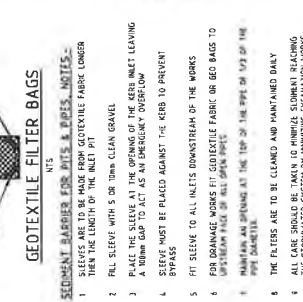
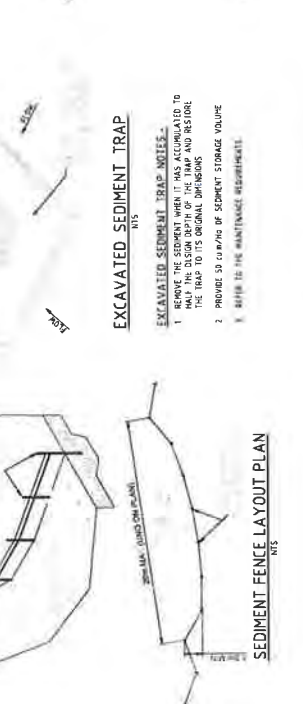
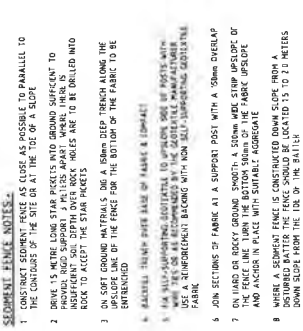
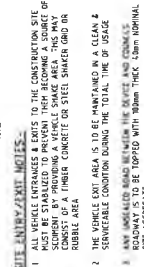
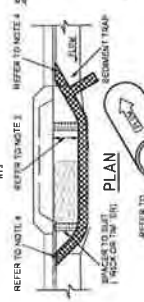
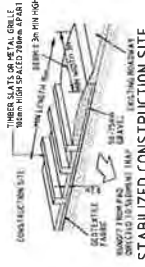
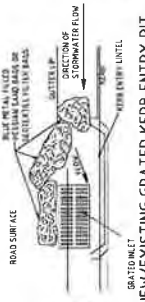
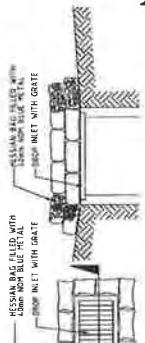
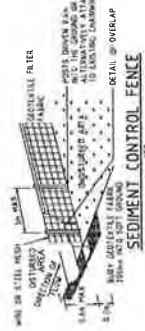


A1





[illegible]

[illegible]

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AMENDMENTS

ISSUE	AMENDMENT	DATE
A	DA feature	01/01/14
B	DA layout	02/06/15

LEGEND



Existing trees - retain

Existing tree - remove

As Selected Paving Tiles

At Selected Times

31

 Wood Bench

Accent Sireliza reginae Cordylina
Turf Shade Master Buffalo

GROUND COVER: CLIMBERS

 *Acetabularia muscosa* (Oyster plant)
Aspidistra elatior (Cast Iron Plant)
Cissus antarctica (Kangaroo Vine)
Clivia miniata (Clivia)
Leonandra lanata (Dwarf Mat Rush)

GROUNDCOVERS/CIMBERS

- *Dianella caerulea* (Flax Lily)
- Liriope muscari* (Turf Lily)
- Scilla* 'Purple Fusion'
- Trachelospermum* 'In-Colour'

SITEDESIGN
+STUDIOS

**landscape architects
outdoor builders+designers**
sydney south office

PO BOX 265 SEAFORTH NSW 2092Z
M: 0417 685 846
E: julian@sdstudios.com.au

www.scribd.com

370-696 Pacific Highway
Gordon NSW

CLIENT: Alto Prestige Pty Ltd

10/11/2019

Level 6
Landscape Plan

DATE:	DRAW:
	10

PROJECT NO: 4.5.24D
SCALE: 1:200 (to A1)

DRAWING NO.	ISSUE:
-------------	--------

LP05 B

SHEET NO:

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LEVEL 6 LANDSCAPE PLAN
SCALE 1:200



Legend: = Good; = Fair; = Poor



Spartan® Rapid Fusion®



Aspidistra elatior



Lomandra Tzavuka

*Elanocarpus reticulatus*

Raphiclapis orientalis



Abstract

ALL DRAWING & DETAIL DIMENSIONS ARE
HORIZONTAL & SUBJECT TO VERIFICATION ON SITE.
WORKING DIMENSIONS SHALL BE SHOWN WITH
DIMENSION LINES. DIMENSIONS SHALL BE SHOWN
WHERE NECESSARY - OTHERWISE, DIMENSIONS
SHALL BE SHOWN AS DIMENSIONS.

AMENDMENTS

ISSUE	AMENDMENT	DATE
A	Drawn	2/13/14
B	City Seal	2/13/14

LEGEND

Extent of Proposed Green Walls



ELEVATION (STREETSCAPE FITZSIMONS LANE)
SCALE 1:200



EXAMPLE OF FYTOWALL BY FYTOGREEN PTY LIMITED
(LOCATION: MELBOURNE CBD)
PHOTO TAKEN IMMEDIATELY FOLLOWING INSTALLATION OF GREEN WALL

SITEDESIGN
+STUDIOS

landscape architects
outdoor builders+designers
sydney south office
PO BOX 265 SEAFORTH NSW 2082
M. 0417 665 846
E. julian@sdstudios.com.au

PROJECT:
FYTOWALL Pacific Highway
Green NSW

CLIENT:
Alto Prestige Pty Ltd

DRAWING:
ELEVATION
(STREETSCAPE FITZSIMONS LANE)

DATE:
23/06/15

PROJECT NO:
14-013

DRAWING NO:
LP06

SCALE:
1:200 @ A1

ISSUE:
B

SHEET NO:

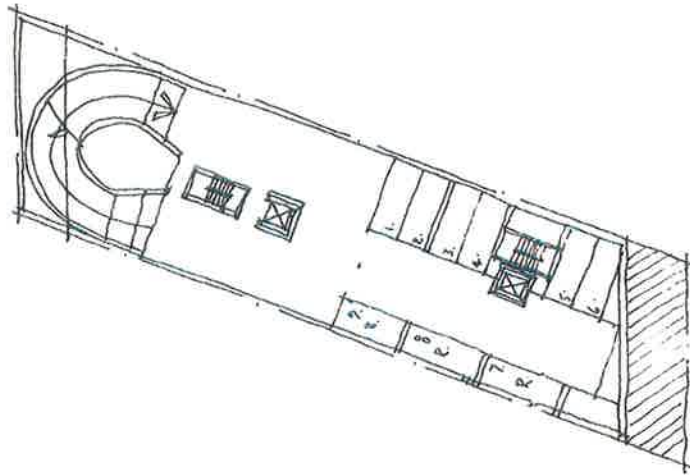
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EXAMPLE OF FYTOWALL BY FYTOGREEN PTY LIMITED
(LOCATION: MELBOURNE CBD)
PHOTO TAKEN IMMEDIATELY FOLLOWING INSTALLATION OF GREEN WALL

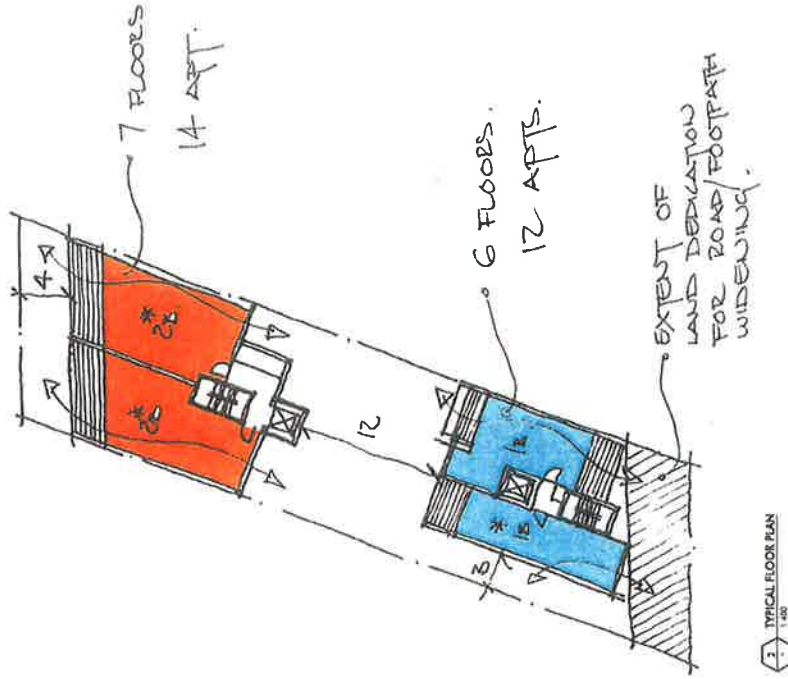
An aerial photograph of a modern building with a prominent green roof. The building is surrounded by lush green trees and a paved parking lot. A road with a white line runs alongside the building. In the background, other buildings and a parking area with several cars are visible.

EXAMPLE OF FYTOWALL BY FYTOGREEN PTY LIMITED
(LOCATION: MELBOURNE CBD)
PHOTO TAKEN IMMEDIATELY FOLLOWING INSTALLATION OF GREEN WALL

SHEET NO:



TYPICAL BASEMENT PLAN
1:400



TYPICAL FLOOR PLAN
1:400

POTENTIAL DEVELOPMENT SCHEME.

Alto Prestige Pty Ltd
Level 3, 7-9 Merriwood Street, Gordon, NSW 2072
Tel: 02 9448 5555
Fax: 02 9448 5555

Gordon Mixed Use Development
870-998 Pacific Highway
Gordon NSW

900 PACIFIC HIGHWAY
1:2000 (A1) 1:2000 (A2)
1:2000 (A3) 1:2000 (A4)
2838_705(8)
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Item 4
JRPP 2014SYW090
DA0180/14
870-898 Pacific Highway
Gordon
Submissions



23rd June 2014
Attention Grant Walsh
Ku-ring-gai Council
Pacific Highway
Gordon NSW 2072

Dear Sir,

I am the Chairman of Strata Plan 69123 26-30 Merriwa street Gordon

I refer to your notification plans DA0180/14

We as residents / ratepayers in this area make the following comments

Whilst this building will not have any major effect on us in regard to most of the items related to in your letter, we do however express great concern that infrastructure in regards to vehicle access will create further problems to those that are existing at present, these being Merriwa street is narrow, parking on this street has increased with the addition of the multi storied apartments which were allowed to be constructed at the top end of Merriwa street, this allows parking on both sides making it very difficult to allow 2 vehicles to pass in the space left between those parked vehicles especially when a large van or truck is the area.

The effect of all the extra vehicular traffic that will be created from the occupants of the proposed building will no doubt create further major traffic problems.

The other problem is the denudation of the area in the fact whilst Trees are not a major factor in this area, removal and no replacement trees presents a disregard to tree preservation. We are under the impression that the preservation trees and along with encouragement to plant more was a feature of Ku-ring-gai Councils overall plan(what has happended)

Yours faithfully

John Seckold
Chairman SP 69123
Unit 9 26-30 Merriwa St
Gordon NSW 2072
Ph 9498 7964
john@protos.com.au



Suzie Jattan

From: Daniel West <dwest@dfpplanning.com.au>
Sent: Tuesday, 8 September 2015 3:43 PM
To: Grant Walsh; KMC
Subject: Submission - DA0180/14
Attachments: 8656A.7DW.pdf

Dear Grant,

On behalf of the owners of No. 860 Pacific Highway, Gordon, please find attached a submission of objection for DA0180/14 at No. 870 Pacific Highway, Gordon. Hard copy is in the mail.

Should you have any queries or wish to discuss please contact me.

Regards

Daniel West | Principal Planner

d: 02 9473 4910 | m: 0410 005 625

e: dwest@dfpplanning.com.au



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8 September 2015
Our Ref: 8656A.7DW

planning consultants

The General Manager
Ku-ring-gai Municipal Council
818 Pacific Highway
Gordon NSW 2072

Dear Sir

**Submission of Objection
DA0180/14: 870 Pacific Highway, Gordon**

We have been engaged by Sakha & Sons Pty Ltd the owners of the adjoining property at No. 860 Pacific Highway, Gordon (No. 860) to review the amended plans and updated material lodged with DA0180/14 at No. 870 Pacific Highway, Gordon (No. 870) for a seven storey mixed use development with basement/podium car park, and prepare a submission if appropriate. In particular, the owners of No. 860 hold significant concerns regarding the potential isolation of their site should DA0180/14 be approved.

Site Amalgamation and Isolation

The subject property is located within the B4 Mixed Use Zone and the provisions of Part 3A.1 of *Ku-ring-gai Local Centres Development Control Plan* apply. This clause provides that *"Within a Business Zone...., sites are to be amalgamated to avoid isolating an adjoining site or sites. In particular potential redevelopment of the adjoining site or sites in accordance with its zoning must not be compromised."*

The development of No. 870 Pacific Highway will result in the isolation of No. 854 and No. 860, as these allotments either individually or combined will not have sufficient area to be developed in accordance with the provisions of Ku-ring-gai Local Environmental Plan (Local Centres) LEP 2012 (LCLEP 2012). These properties could not comply with the area requirement imposed by cl.6.5(2), as they are significantly less than the 1200m² standard. As such, approval of DA0180/14 would prevent out client's land from being redeveloped in accordance with its zoning, which permits the erection of residential flat buildings.

The relevant judgment and Planning Principle of the NSW Land and Environment Court for site amalgamation and isolation is *Cornerstone Property Group Pty Ltd v Warringah Council [2004] NSWLEC 189*. These principles apply when there is an *isolation of a site by redevelopment of adjacent site(s) where an intensification of development is anticipated*.

The **first principle** is to assess whether amalgamation of the isolated site is *"feasible"*. This is determined having regard to the following steps, which were devised in the earlier decision of *Melissa Grech v Auburn City Council [2014] NSWLEC 40*:

- *Firstly where a property will be isolated by a proposed development and that property cannot satisfy the minimum lot requirements then negotiations between the owners of the properties should commence at an early stage and prior to the lodgement of the development application.*

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- *Secondly, and where no satisfactory result is achieved from the negotiations, the development application should include details of the negotiations between the owners of the properties. These details should include offers to the owner of the isolated property. A reasonable offer, for the purposes of determining the development application and addressing the planning implications of an isolated lot, is to be based on at least one recent independent valuation and may include other reasonable expenses likely to be incurred by the owner of the isolated property in the sale of the property.*
- *Thirdly, the level of negotiation and any offers made for the isolated site are matters that can be given weight in the consideration of the development application. The amount of weight will depend on the level of negotiation, whether any offers are deemed reasonable or unreasonable, any relevant planning requirements and the provisions of s 79C of the Environmental Planning and Assessment Act 197*

Adopting these points in regards to the subject development application and the land owned by our client:

- No. 860 will be isolated such that it cannot meet the minimum lot requirements required by cl6.5(2) of LCLEP 2012. There has been no negotiations between the owner of No. 870 and our client either prior to lodgement of the development application or post lodgement;
- There has been no reasonable (or any) offer put to our client nor has an independent valuation been prepared. As such the development application does not contain details of negotiations. Our client is eager to discuss a possible amalgamation with No. 870 Pacific Highway as this would represent the most orderly and economic development of No. 854 and No. 860 Pacific Highway.
- The lack of any negotiations is a significant consideration in Council's assessment under s.79C of the Act.

The **second principle** involves an assessment of whether the isolated site can be developed in accordance with Council's controls. The judgment states:

Secondly, can orderly and economic use and development of the separate sites be achieved if amalgamation is not feasible?

- *In answering this question the key principle is whether both sites can achieve a development that is consistent with the planning controls. If variations to the planning controls would be required, such as non compliance with a minimum allotment size, will both sites be able to achieve a development of appropriate urban form and with acceptable level of amenity.*
- *To assist in this assessment, an envelope for the isolated site may be prepared which indicates height, setbacks, resultant site coverage (both building and basement). This should be schematic but of sufficient detail to understand the relationship between the subject application and the isolated site and the likely impacts the developments will have on each other, particularly solar access and privacy impacts for residential development and the traffic impacts of separate driveways if the development is on a main road.*

The applicant has not provided concept plans that demonstrate that No. 860 can be developed in isolation. Indeed, No. 860 is approximately 560m² in area and has a frontage to the Pacific Highway of 13.55m. Council's Pre-Development Application Meeting Report (**Attachment A**) states the following with respect to Ku-ring-gai LEP (Local Centres) 2012:

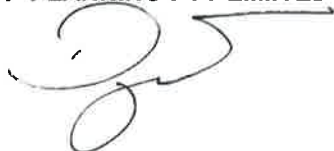
"The proposal would result in breaches of the maximum FSR control of 2.3:1 (Clause 4.4), Minimum Site area requirement of 1200m² (Clause 6.5), minimum site frontage for a residential flat building of 24 metres (Clause 6.5) and minimum frontage for a business zone of 20 metres (Clause 6.7) development standards of the Ku-ring-gai Local Environmental Plan (Local Centres).....Clause 4.6 with the LEP provides flexibility to those development standards, however, given the extent of the proposed breaches, it is unlikely the development would be supported in its current form.

Accordingly, in Council's opinion the site circumstances of No. 860 are such that it could not (or is unlikely to) be developed in isolation. Which would be precisely the situation the owners of No. 860 would find themselves should Council approve DA0180/14 in its current form.

Further, concept designs indicating the amalgamated No. 860 and No. 854 sites provided in the SEE of DA0180/14 by Nettleton Tribe Architects do not adequately satisfy the second bullet point of *Cornerstone Property Group Pty Ltd v Warringah Council [2004] NSWLEC 189* in that only indicative floor plates have been provided and no concept elevation diagrams or development statistics. In any event, the indicative floor plates appear non-compliant with Ku-ring-gai Local Centres DCP 2013 in that the concept mixed use development of No. 860 & No. 854 provides nil setbacks to all boundaries and no street activation of Merriwa Street.

It is requested that the site isolation concerns detailed above be afforded the utmost consideration in the assessment of the DA and that Council not grant development consent to a DA that would give rise to a demonstrable isolation of an adjoining site, namely No. 860. Should you have any questions in regard to the above matter please contact Daniel West or Rob Player on 9980 6933.

Yours faithfully
DFP PLANNING PTY LIMITED



DANIEL WEST
PRINCIPAL PLANNER

dwest@dfpplanning.com.au

Reviewed: 



planning consultants

ATTACHMENT A

PRE-DEVELOPMENT APPLICATION MEETING REPORT

REFERENCE No:	PRE0150/14		
SITE ADDRESS:	860 Pacific Highway GORDON NSW 2072		
PROPOSAL:	Retail/Commercial (over 4 units)		
DATE OF MEETING:	10 December 2014		
PRESENT AT MEETING:	Council		
	Name	Title	
	Grant Walsh	Executive Assessment Planner	
	Janice Buteux-Wheeler	Senior Assessment Planner	
	Kathy Hawken	Team Leader – Engineering	
	Geoff Bird	Senior Landscape Officer	
	Michael Zanardo	Consultant Urban Designer	
	Christopher Mills	Senior Environmental Health Officer (Building)	
	Applicant's representatives		
	Name	Capacity	
	Byron Sakha	(Director - Seraphic Developments)	
	Sam Yasseen	(Design Manager - Seraphic Developments)	
	Robert Player	(Director - Don Fox Planning)	
	Stephen Bowers	(Director - Stephen Bowers Architects)	
PLAN REFERENCES:	Plan no.	Drawn by	Dated
	Unnumbered architectural plans	Stephen Bowers Architects	Undated.
KEY ISSUES:	Non-compliance with minimum site area requirement of LEP Non-compliance with FSR requirement of LEP Non-compliance with minimum frontage requirement for Residential Flat Building of LEP Non-compliance with minimum site frontage for Business zone requirement of LEP Non-compliances with Ku-ring-gai Local Centres DCP 2013 Activation of Street Frontages Need to amalgamate lots.		

THE PROPOSAL:

An eight storey mixed use building comprising small retail spaces and twenty residential units, with three levels of basement car parking. Vehicular access is provided via Merriwa Street.

PLANNING COMMENTS

KU-RING-GAI LOCAL ENVIRONMENTAL PLAN (LOCAL CENTRES) 2012

A mixed use building comprising retail and residential flat building is a permitted land use within the B4 "Mixed use" zone. Any application would have to demonstrate that the zone objectives have been met.

The proposal would result in breaches of the maximum FSR control of 2.3:1 (Clause 4.4), Minimum Site area requirement of 1200m² (Clause 6.5), minimum site frontage for a residential flat building of 24 metres (Clause 6.5) and minimum site frontage for a business zone of 20 metres (Clause 6.7) development standards of the Ku-ring-gai Local Environmental Plan (Local Centres). It is noted that the height has been nominated as compliant at 26.5 metres on the submitted architectural plans (Please refer to definitions of the LEP to ensure the correct definition of existing ground level to ensure compliance). Clause 4.6 within the LEP provides flexibility to those development standards, however, given the extent of the proposed breaches, it is unlikely the development would be supported in its current form.

As discussed at our meeting, further consideration is warranted and should be given to the ground floor uses in a mixed use development. Given the narrow frontage to the Pacific Highway further consideration must be given to providing active (non-residential) uses at the ground floor and a defined street frontage to the Pacific Highway.

Part 4 Principal development standards

4.3 Height of Buildings

26.5 metres maximum permitted - The proposal is nominated as compliant. As discussed above please refer to the definition of existing ground level to ensure compliance.

"The height of a building on any land is not to exceed the maximum height shown for the land on the Height of Buildings Map."

building height (or height of building) means the vertical distance between ground level (existing) and the highest point of the building, including plant and lift overruns, but excluding communication devices, antennae, satellite dishes, masts, flagpoles, chimneys, flues and the like.

ground level (existing) means the existing level of a site at any point.

4.4 Floor space ratio

- Site area 860 Pacific Highway 583.4m²
- Site area 858 Pacific Highway 324.8m²

A maximum FSR of 2.3:1 is permitted for the site(s). The plans have nominated an FSR of 2.407:1 which would breach the development standard. Council preference is for strict compliance with the standard.

858 Pacific Highway has a nominated FSR of 2.27:1.

A Clause 4.6 request to vary development standards could be utilised but would have to be well founded.

The site is constrained, however it is unlikely that the constraints are of a nature to warrant a variation to the FSR standard.

5.9 Preservation of trees and vegetation

Refer to Landscape comments

6.1 Earthworks

Refer to Engineering comments

6.2 Stormwater and water sensitive urban design

Refer to Engineering comments

6.3 Biodiversity Protection

The site is not indicated as affected on the Natural Resource Biodiversity Maps

6.4 Riparian land and waterways

The site is not indicated as affected on the Natural Resources Riparian Lands Map

6.5 Site requirements for multi dwelling housing and residential flat buildings

(1) The objectives of this clause are:

(a) to provide site requirements for development for the purposes of multi dwelling housing and residential flat buildings so as to provide for the orderly and economic development of residential land while maintaining the local character, and

(b) to ensure that lot sizes and dimensions of medium and high density residential sites allow for generous landscaped areas and setbacks to ensure the amenity of adjoining properties and to support the desired future character of those areas.

(2) Development consent must not be granted for the erection of multi dwelling housing or a residential flat building on a lot unless the lot has an area of at least 1,200 square metres and at least 1 street frontage of not less than:

(a) if the area of the lot is less than 1,800 square metres—24 metres, or

(b) if the area of the land is 1,800 square metres or more—30 metres.

(3) Despite subclause (2), development consent must not be granted for the erection of multi dwelling housing or a residential flat building on any

lot on the land identified as "Area 1" on the Lot Size Map unless the lot has an area of 5,000 square metres or more.

(4) For the purposes of this clause, if a lot is a battle-axe lot or other lot with an access handle, the area of the access handle is not to be included in calculating the lot size.

The proposal is for a mixed use building comprising retail and residential flat buildings. As such, the minimum lot size and frontage requirements of Clause 6.5 apply to the development. A clause 4.6 variation must be provided as part of any amended development application. These clauses should be specifically addressed.

6.6 Ground floor development in business zones

(1) The objective of this clause is to ensure that active uses are provided at the street level in business zones to encourage the presence and movement of people.

(2) This clause applies to land in the following zones:

- (a) Zone B2 Local Centre,*
- (b) Zone B4 Mixed Use,*

(3) Development consent must not be granted to development for the purposes of commercial premises or to a mixed use development with a commercial premises component, or a change of use of a building to commercial premises, on land to which this clause applies unless the consent authority is satisfied that the ground floor of the building:

- (a) will not be used for the purposes of residential accommodation or a car park or to provide ancillary car parking spaces, and*
- (b) will provide uses and building design elements that encourage interaction between the inside of the building and the external public areas adjoining the building.*

(4) Subclause (3) (b) does not apply to any part of a building that:

- (a) faces a service lane that does not require active street frontages, or*
- (b) is used for 1 or more of the following purposes:*
 - (i) a lobby for a commercial, residential, serviced apartment or hotel component of the building,*
 - (ii) access for fire service*

Council considers the above clause to be a development standard. Where an application provides good activation to the required frontages, those parts of the building that cannot achieve street activation may be varied where supported by a Clause 4.6 variation.

The ground floor level for the purpose of this clause is the street level, in which case, your development has two. The proposal does not provide sufficient floor space that is allocated to uses that will encourage street activation. The ground floor relationship of building to Merriwa Street is schematic, but does not appear to be a good outcome in this regard.

While the application seeks approval as a mixed-use development, it is noted that the non-residential component is very small and is located on the same level as residential units. This is not supported for the following reasons:

- residential use at ground level is not permitted under Ku-ring-gai development controls for this site (Clause 6.6 KLEP (Local Centres) 2012).
- Ground level residential use with minimal setbacks to the street will not achieve the expected levels of amenity for a residential use.
- The need to provide amenity to ground floor residential with direct frontage in proximity to the street conflicts with the urban objectives of Ku-ring-gai planning policies surrounding

activation of the street frontages. The public/private domain interface with high level walls will not achieve the desired streetscape character and will not activate the street frontage.

The intended future character for this part of the Gordon Local Centre is that of activated street frontages for retail and commercial activity.

6.7 Minimum street frontages for lots in business zones

A minimum of 20 metres is required. Should 860 Pacific Highway be developed in isolation the application will have to demonstrate that the following can be utilised:

(3) Despite subclause (2), the consent authority may grant consent to the erection of a building on land referred to in that subclause if the consent authority is satisfied that:
(a) due to the physical constraints of the land or adjoining land, it is not possible for the building to be erected on land with a primary street frontage of at least 20 metres, and
(b) the development is consistent with the aims and objectives of this Plan.

KU-RING-GAI LOCAL CENTRES DEVELOPMENT CONTROL PLAN 2013

Land amalgamation

Council's preference is that the site would be amalgamated with an adjoining site so as to achieve minimum lot frontages and site area. Any application would have to specifically address the requirements of 3A.1 of the DCP to demonstrate all attempts have been made in this respect.

Building setbacks

The development as proposed would result in non-compliance with the front setback provisions of the DCP to Pacific Highway relating to the lower level requirements of 4m and the 8m requirement to the 4th storey and above requirements fronting the Pacific Highway.

The proposal cannot achieve the required 6 metres setback requirement relating to side property boundaries. It is noted that a mixed use development is able to propose a nil setback in accordance with the DCP. Building separation requirements relating to residential development would still apply in accordance with the DCP and the Residential Flat Design Code.

Justifications would have to be made in this respect and it is noted that the site width does constitute a constraint provided the amalgamation component of the application was supported.

Building separation

The proposal must carefully consider building separation as a key planning consideration for the application will be whether or not the development would inhibit development on adjoining sites. This issue is related to the minimum site area and minimum frontages standards in the LEP in that unsatisfactory amenity impacts in this respect gives further argument toward amalgamation of the site.

It is expected that the development will meet half of the required separation for habitable rooms/balconies in a reciprocal arrangement that will not unreasonably burden the development of adjoining lots.

Access and parking

The proposal includes a carpark that extends out of the ground on the Merriwa Street frontage. Concern was raised at our meeting in this respect relating to this component of the application not meeting a required activation of the street frontages.

Communal open space

The proposal does not indicate Communal Open Space. The DCP requires 10m² of communal open space per dwelling. Further, the COS must have a minimum 80m² and 8 metres dimension with 3 hours of sunlight and disabled access.

Communal Open Space with good amenity outcomes must be provided within the development.

Private open space

Proposed private open space within the development must achieve the minimum 2.4 metre dimension as per the DCP.

Natural ventilation

The proposal appears to satisfactorily meet natural ventilation requirements. The BCA report submitted with the application would have to discuss the issue of openings onto common corridors. Acoustic and privacy impacts would also have to be addressed in this respect.

Solar access

The proposal must meet solar access requirements of the DCP. Shadow diagrams and a solar access report would have to be submitted with any development application to demonstrate compliance. It is noted that solar access requirements for a mixed use development are not as stringent as for a residential flat building.

Apartment mix and sizes

The proposal includes a unit mix of 34X1 and 5X2 bedroom units. Council would prefer a mix of units that included 3 bedrooms. As noted at our meeting by Council's Urban Design consultant, the use of larger apartments may assist in a greater compliance with Council requirements relating to amenity of the units. It is noted that 10% must be "Adaptable" and 70% of units must be "Visitable".

Building entries

Particular concern is raised in how the proposal would address the street frontages and create "Active frontages" as per the requirements of the DCP.

As noted above, carparking structures located within frontages is not considered desirable. The DCP includes specific controls in relation to corner building articulation. Corner buildings are to address both street frontages.

Internal ceiling heights

The following internal clearance (ceiling heights) should be applied to the development:

3.3m ground floor retail or commercial uses
3.0m first floor commercial or residential
2.7m for residential on floors above, or 3.0m for commercial on floors above.

Storage

The minimum storage provisions as required by the DCP and the RFDC should be nominated on the plans. It would be helpful to include a matrix within the submitted statement of environmental effects detailing each unit and the storage provided. In addition, percentages between "in unit" storage and basement storage would also assist.

State Environmental Planning Policy 55 Contaminated land

The site has been mapped as possibly containing contaminated land. A stage 1 assessment would have to be submitted prepared by an appropriately qualified consultant which meets the requirements of the above mentioned SEPP.

SEPP 65 Design Quality Principles and the Residential Flat Design Code

The development must be designed having regard for the 10 design quality principles of SEPP 65

Principle 1: Context

The applicant must demonstrate that the proposed residential flat building is appropriate within the existing surrounding commercial and mixed use context.

Principle 2: Scale

The applicant must demonstrate that the proposed residential flat building is of an appropriate scale. In this regard, it is expected that a proposed application would be compliant with both height and FSR controls contained within Ku-ring-gai Local Environmental Plan (Local Centres) 2012. It is noted the proposal exceeds the allowable height control.

Principle 3: Built form

Refer to discussions in relation to the proposal's compliance with built form controls and anticipated impacts on adjoining properties.

Principle 4: Density

The proposed development in its current form exceeds the maximum permissible FSR under the KLEP (Local Centres) 2012, and has additional non-compliances with minimum frontage and site area. The proposal is unacceptable in this regard.

Principle 5: Resource, energy and water efficiency

The applicant must address design principle 5.

Principle 6: Landscape

The proposal will result in likely conflicts between the existing trees located within adjoining properties and the Merriwa Street road reserve.

Principle 7: Amenity

There are significant amenity issues in relation to the dwellings that need to be addressed. Visual and acoustic privacy, solar access, cross ventilation are all issues in relation to the current proposal.

Principle 8: Safety and security

The applicant must address design principle 8. In this regard, the location of foyer's at entrance levels for pedestrian access must be incorporated within "Active" street frontages to Pacific Highway Merriwa Street.

Principle 9: Social dimensions

The applicant must address design principle 9. A lack of 3 bedroom units is a concern in this respect.

Principle 10: Aesthetics

The schematic designs provided do not allow Council to comment. The applicant must address design principle 10 as part of their application.

The Residential Flat Design Code would be utilised to assess the development. Particular attention should be paid to the provision of disabled access and would require you to submit an accessibility report prepared by an appropriately qualified access consultant. Other issues that have been identified include building separation and an ability to achieve communal open space areas with good amenity. Any proposal should fully meet the requirements of the Residential Flat Design Code. Refer to Council's Urban Design Consultant's discussion points below for further guidance.

State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004

A valid BASIX certificate that demonstrates compliance with the provisions of the SEPP must be submitted. Please ensure all submitted documentation is consistent with the BASIX certificate.

State Environmental Planning Policy (SEPP) Infrastructure 2007

The above mentioned SEPP applies to the proposal due to its location on Pacific Highway. Division 17, Clause 101 and 102 will have to be addressed and will require the submission of an acoustic assessment prepared by an appropriately qualified consultant.

Public domain

Works proposed within the public domain, including landscape elements, should be consistent with the Town Centres Public Domain Plan 2010, which is available from Council's web site.

Services and air conditioning

It is Council's position that they will not allow individual air compressors for air conditioning to be housed on balconies or in visible locations (for example part of the roof). Services shall be housed, preferably in the basement, or in some cases may be appropriate in certain screened rooftop locations.

URBAN DESIGN COMMENTS

Please refer to attached urban design report.

LANDSCAPE COMMENTS

Trees

Eucalypts - The two most significant trees associated with the site are the remnant *Eucalyptus saligna* (Sydney Blue Gum) located adjacent to the southwest site corner within the neighbouring property. The trees are considered to be remnant specimens and part of the critically endangered Blue Gum High Forest plant community. Therefore they have significant broader ecological and landscape value.

While the trees are not located on site, their root zones continue across the site and therefore may be impacted by proposed works. It is recommended that if ANY development works are proposed within the root zone of the tree/s, which may extend greater than 15m from the trees, that an AQF5 arborist undertake a tree impact assessment.

Due to the tree/s ecological significance, if there is ANY impact to the trees as a result of development works, an ecological assessment (seven part test) is necessary (this is in addition to the arboricultural impact assessment). Impacts may include excavation up slope which may impact upon the water table and available moisture regimes to the trees. A hydrological impact report may also be required.

Street trees

The removal of existing street trees within the Pacific Hwy site frontage is supported. No tree replenishment planting within the Pacific Hwy frontage is requested.

The removal of existing trees within the Merriwa St frontage is supported. Replenishment tree planting is required along with public domain works to improve the streetscape character. Street tree planting species will be consistent with Council's Public Domain DCP.

Vehicular access

It is strongly recommended the proposed driveway adjacent to the southwest site corner be deleted to minimise tree impact. It is recommended existing grades and levels be maintained as much as possible within the root zone of the neighbouring Eucalypts (subject to arboricultural impact assessment).

Communal Open Space

The provision of functional COS at ground level is not possible given the site's size and shape constraints. Therefore COS will be provided on podium and the roof top, where there is opportunity for expansive views over the Sydney basin to the south west. COS is to provide a high level of amenity for residents and provide equitable access to the principal COS area. Shared facilities such as shading devices/structures, BBQ, seating and protection from winds shall be provided to encourage resident interaction and use.

ENGINEER COMMENTS

Stormwater drainage

The site has a fall of approximately 6-7m from the front to rear side towards the intersection of Merriwa Street and Fitzsimons Lane. The subject site is located within the B4 'Mixed Use' zone.

The DA must be accompanied by a stormwater management plan prepared by a suitable qualified hydraulic engineer. The stormwater design is to in accordance with Part 4 Water Management of Ku-ring-gai Local Centres Development Control Plan (DCP) 2013.

The Stormwater Management plan shall include the following:

- Show location of detention and retention storages and basement pump out system.
- Only 10% of the site storage requirements (SSR) from OSD can be deducted for on-site retention (Refer to Part 4B.5).
- The BASIX water commitments must be shown on the DA plans where required.
- Water quality measures to be addressed using MUSIC Modelling as required in Part 4B.6 Water Management of KDCP 2013.
- A water balance model (can be done using MUSIC) must be provided to demonstrate compliance with the 50% reduction in runoff days required under Volume C Part 4B.3-4 of the DCP.

Vehicle access and accommodation

Application will be referred to Roads and Maritime Services (RMS).

The site is further than 400 metres from Gordon Station, so the parking rates for the retail component are given in Volume C Part 2R.2 of the DCP and the residential rates in Volume A Part 8B.2-10.

Vol. A Part 8B.2 Car Parking Provisions

Apartment Size	Min. & Max. Parking Space Requirement per dwelling
One bedroom	0.6 - 1 space
Two bedroom	1 – 1.25 spaces
Three or more bedrooms	2 spaces
Visitor car spaces	1 space for every 6 apartments

Proposed – 28 parking spaces with 2 disabled car spaces and 5 visitor spaces. The required on-site parking shall comply with the above parking rates.

- Temporary space for service and removalist vehicles is to be provided. This space is to have a minimum dimension of 3.5m x 6m and a minimum manoeuvring area of 7m wide.
- At least one visitor parking space is to be adaptable by complying with the requirements of AS2890.6.
- Disabled parking spaces shall be designed in accordance with AS2890.6:2009 i.e. 2.4x5.4 with a shared area adjacent to the dedicated space. Ideally the disabled space should be located close to the lift or pathway crossing. Basement plan 1 shows disabled space No.1 to have a shared area between the fire stairs. This is not compliant with the BCA.
- All dimensions of parking spaces, aisles, driveways, circulation roadways, particularly at the minimum thresholds to be shown.
- Driveway gradients / ramps and transitions including reduced levels at transition points.
- Show vehicle swept paths using the AS2890.1:2004 B99 design template demonstrating vehicles can safely manoeuvre within the basement and enter and exit the site in a forward direction.
- Provide on-site, secure bicycle parking spaces and storage at the following rates:
 - 1 bicycle parking space per 5 units (or part thereof) for residents within the residential car park area; and
 - 1 bicycle parking space (in the form of a bicycle rail) per 10 units for visitors in the visitor car park area.

A qualified and experienced civil/traffic engineer must assist in the design of the vehicle access and accommodation arrangements. A traffic report will need to be submitted and confirm that the parking spaces are satisfied and that the car park complies with AS2890.1:2004 *Off-street car parking*.

Traffic and surrounding road network

A Traffic Impact Assessment Report, based on an assessment of the proposal on the surrounding road network, carried out by a consulting civil/traffic engineer. Consideration of the cumulative traffic impact of medium density development in the surrounding lots permitted under zoning, and the effect of this on road network.

Work Zone is to be made available along the site frontage of Merriwa Street. A work zone along Pacific Highway will not be supported by RMS.

Geotechnical investigation

A geotechnical report is required, to address such matters as excavation methods and support, dilapidation survey of neighbouring structures or vibration control, and groundwater inflow. Volume C Part 2.3-4 of the Local Centres DCP requires a tanked basement. This is to be addressed in the report.

Construction management

A Construction Traffic Management Plan must be submitted with the DA demonstrating how construction vehicles will approach and depart from all directions, enter and leave the site and manoeuvre on site.

Waste collection

Plans must indicate location of garbage collection area complying with Volume C Part 3.4 of the Ku-ring-gai Local Centres DCP.

- Plans to show critical control dimensions as specified and garbage collection vehicle manoeuvring area.
- Submit a longitudinal section through the driveway and into the basement car park which clearly demonstrates that there will be 2.6 metres clear headroom along the whole of the travel path required for the small waste collection vehicle. The section is to include realistic slab/beam depths, and be endorsed by a structural engineer.
- Garbage collection vehicle must be able enter the site, collect the garbage, then turn and leave the site in a forwards direction with a maximum three point turn. A modelling computer software Auto Track or equivalent is to be submitted to clarify that the swept paths comply with Australian Standards for Parking Facilities (Part 2: Off-Street commercial vehicle facilities) AS 2890.2:2002.
- Maximum grade negotiable by laden (small) garbage truck is 20%. Manoeuvring area (turning bay) within site to be relatively flat grade to ensure stability of vehicle.

Note: For 'Mixed Use' the development controls is to be referred to Volume C Part 3 of the Ku-ring-gai Local Centres DCP. The applicant is encouraged to contact Council's Waste Services Section to confirm whether waste from the small retail component can be collected on-street.

INFORMATION TO BE SUBMITTED

- Refer to Council's DA Guide

http://www.kmc.nsw.gov.au/resources/documents/DA_Guide.pdf

- All plans (survey plan, architectural plans, landscape plans, stormwater plans, compliance diagrams) must be at a consistent and workable scale (1:100 preferable or 1:200). All plans must show consistent detail.
- The plans must be clear and legible and sharp in detail. Poor photocopied plans will not be accepted.
- Ensure correct and complete owner's consent is provided with development application. Owners consent for adjoining properties also to be supplied where works impact adjoining trees.

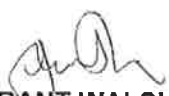
CONCLUSION

The current proposal requires re-design and further refinement. Of particular note, the isolation of the adjoining corner allotment requires substantial further consideration and design detail. It is Council's position that the amalgamation with the corner lot is the best strategic planning outcome for the area, and the applicant is strongly encouraged to pursue this avenue when looking at future development of the subject lot.

The amendments/ additional information needed for your proposal to be acceptable are substantial. Further, given the above issues Council staff cannot guarantee that further issues would not be raised that may be significant in arriving at the optimal environmental outcome for the site. In this regard, we believe your proposal would highly benefit from a further pre-DA meeting prior to lodgement of a formal development application.

While the pre-lodgement meeting and these minutes attempt to identify significant issues during the initial phases of design, the assessment provided in these minutes does not have the benefit of a full planning assessment and should not be considered exhaustive.

We hope that this advice assists you. If you have any further enquires please contact Grant Walsh on 9424 0888 during normal business hours.


GRANT WALSH

EXECUTIVE ASSESSMENT OFFICER

RICHARD KINNINMONT

TEAM LEADER – DEVELOPMENT ASSESSMENT

DATED: 2/3/15

DISCLAIMER

The aim of pre development application consultation is to provide a service to people who wish to obtain the views of Council staff about the various aspects of a preliminary proposal, prior to lodging a development application (DA). The advice can then be addressed or at least known, prior to lodging a DA. This has the following benefits: -

- Allowing a more informed decision about whether to proceed with a DA; and
- Allowing matters and issues to be addressed especially issues of concern, prior to lodging a DA. This could then save time and money once the DA is lodged.

All efforts are made to identify issues of relevance and likely concern with the preliminary proposal. However, the comments and views in this letter are based only on the plans and information submitted for preliminary assessment and discussion at the pre DA consultation. You are advised that: -

- The views expressed may vary once detailed plans and information are submitted and formally assessed in the development application process, or as a result of issues contained in submissions by interested parties;
- Given the complexity of issues often involved and the limited time for full assessment, no guarantee is given that every issue of relevance will be identified;
- Amending one aspect of the proposal could result in changes which would create a different set of impacts from the original plans and therefore require further assessment and advice;
- This Pre-DA advice does not bind Council officers, the elected Council members, or other bodies beyond Council in any way whatsoever.

