

File: T:\GIS\CONTRACT\0189570\Mxd\0189570_Marine_Sediment_Sampling_Point.mxd Date: 20/4/2015

Management



ALS Environmental



CEDD Contract No. GE/2012/24

Chemical and Biological Testing (Service Contract)

Service Order No. GE/2012/24.13

Desalination Plant at Tseung Kwan O – Feasibility Study

Laboratory Chemical Testing Report (Draft Report)

Prepared for

Civil Engineering and Development Department

Prepared By

ALS Technichem (HK) Pty Ltd

26 November, 2013



CEDD Contract No. GE/2012/24

Chemical and Biological Testing (Service Contract) Service Order No. GE/2012/24.13

Desalination Plant at Tseung Kwan O - Feasibility Study

Laboratory Chemical Testing Report (Draft Report)

CLIENT:

Civil Engineering and Development Department Ground Investigation Sections 23/F, Kwun Tong View 410 Kwun Tong Road Kowloon, Hong Kong

Tel: 852-2716 8609 Fax: 852-2715 7572

PREPARED BY:

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CERTIFIED BY:

Mr Fung Lim Cheek Richard

Person Appointed to Act for the Contractor

Date: November 26, 2013

Contract No. GE/2012/24 Chemical and Biological Testing Service Order No. GE/2012/24.13 Desalination Plant at Tseung Kwan O – Feasibility Study



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Section 1 Summary Report

Date of Issue:

25/10/2013

Client:

Civil Engineering and Development Department

Service Order No.:

GE/2012/24.13

Project:

Desalination Plant at Tseung Kwan O - Feasibility Study

ALS Lab ID		HK1327406001	HK1327406002	HK1327406003	HK1327406004
Client Sample ID		GS 1	GS 2	GS 3	GS 4
Sampling Date	Unit	2/10/2013	2/10/2013	2/10/2013	2/10/2013
Physical and Aggregate Propertie	s				
Ammonia as N	mg/kg	11.5	13.4	13.8	15.1
Reactive Phosphorus as P (Sol.)	mg/kg	2.0	<0.1	0.6	0.6
Total Kjeldahl Nitrogen as N	mg/kg	2600	730	940	870
Total Phosphorus as P	mg/kg	1020	864	788	844
Nitrate as N (Sol.)	mg/kg	<1.0	<1.0	<1.0	<1.0
Nitrite as N (Sol.)	mg/kg	<1.0	<1.0	<1.0	<1.0
Organichlorine Pesticides (OC)					
alpha-BHC	mg/kg	<0.50	<0.50	<0.50	<0.50
beta-BHC	mg/kg	<0.50	<0.50	<0.50	<0.50
gamma-BHC	mg/kg	<0.50	<0.50	<0.50	<0.50
delta-BHC	mg/kg	<0.50	<0.50	<0.50	<0.50
Heptachlor	mg/kg	<0.50	<0.50	<0.50	<0.50
Aldrin	mg/kg	<0.50	<0.50	<0.50	<0.50
Heptachlor epoxide	mg/kg	<0.50	<0.50	<0.50	<0.50
Endosulfan 1	mg/kg	<0.50	<0.50	<0.50	<0.50
4.4`-DDE	mg/kg	<0.50	<0.50	<0.50	<0.50
4.4`-DDD	mg/kg	<0.50	<0.50	<0.50	<0.50
Endosulfan sulfate	mg/kg	<0.50	<0.50	<0.50	<0.50
4.4`-DDT	mg/kg	< 0.50	< 0.50	<0.50	<0.50

Sediment Quality Report

Project: AGREEMENT NO CE 21_2012 (WS) DESALINATION PLANT AT TSEUNG KWAN O - FEASIBILITY STUDY Order No.: CONTRACT NO. GE/2012/24.13

		Analyte Description	Silver	Arsenic	Cadmium	Chromium	Copper	Nickel	Lead	Zinc	Mercury	Total Polychlorinated biphenyls	Low M.W. PAHs	High M.W. PAHs	Tributyl Tin	ion
		Jnit (In dry Wt basis)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	μg/kg	µg/kg	μg/kg	ug TBT/L	ča
		Reporting Limits	0.1	1	0.2	1	1	1	1	1	0.05	18	550	1700	0.015	<u> </u>
	Lower Chemical Exc	edance Level (LCEL)	1	12	1.5	80	65	40	75	200	0.5	23	550	1700	0.15	10
	Upper Chemical Exc	edance Level (UCEL)	2	42	4	<i>160</i>	110	<u>40</u>	110	270	1	<u>180</u>	<u>3160</u>	9600	0.15	ū
		10 x (LCEL)	10	120	15	800	<u>650</u>	<u>400</u>	<u> 750</u>	2000	<u>5</u>	230	5500	17000	1.5	
	Sample Description															
ALS Lab ID	Sample ID	Sampling Date														
HK1327374001	REFERENCE	05/10/2013	0.1	7	<0.2	32	13	21	36	85	<0.05	<18	<550	<1700	<0.015	"L

Bold: Value that exceed LCEL

Bold Italic and Underlined: Value that exceed UCEL, Bold and Underlined: Value that exceed 10 x LCEL

Total PCB:

Total PCBs calculated through summation of the 18 PCB congeners, based on raw data above the limit of detection of lug/kg.

For detailed information on the individual congeners please refer to the certificate of analysis for the work order.

Category L:

Analytical results less than or equal to Lower Chemical Exceedance Level (LCEL)

Category M:

Analytical results greater than Lower Chemical Exceedance Level (LCEL), but less than or equal to Upper Chemical Exceedance Level (UCEL)

Category H:

Analytical results greater than Upper Chemical Exceedance Level (UCEL)

Category 10xLCEL:

xLCEL: Analytical results greater than 10x Lower Chemical Exceedance Level (10xLCEL)

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT **Sediment Quality Report**

Project: AGREEMENT NO CE 21_2012 (WS) DESALINATION PLANT AT TSEUNG KWAN O - FEASIBILITY STUDY Order No.: CONTRACT NO. GE/2012/24.13

		Analyte Description				Chromium	Copper	Nickel	Lead	Zinc	Mercury	Total Polychlorinated biphenyls	Low M.W. PAHs	High M.W. PAHs	Tributyl Tin	ion
		Unit (in dry Wt basis)		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	μg/kg	μg/kg	μg/kg	ug TBT/L	ğ
		Reporting Limits	0.1	1	0.2	1	1	1	1	1	0.05	18	550	1700	0.015	=
		eedance Level (LCEL)	1	12	1.5	80	65	40	75	200	0.5	23	550	1700	0.15	98.6
	Upper Chemical Exc	eedance Level (UCEL)	2	42	4	<u> 160</u>	<u>110</u>	40	110	270	Į.	<u>180</u>	3160	9600	0.15	℧
	***************************************	10 x (LCEL)	10	120	15	800	650	400	750	2000	5	230	5500	17000	1.5	
	Sample Description												***************************************	***************************************	······································	
ALS Lab ID	Sample ID	Sampling Date														
HK1327299001	GS 1	02/10/2013	0.4	- 8	<0.2	32	24	17	35	102	0.10	<18	<550	<1700	<0.015	·····
HK1327299002	GS 2	02/10/2013	0.2	5	<0.2	23	17	12	28	79	0.08	<18	<550	<1700	<0.015	1
HK1327299003	GS 3	02/10/2013	0.2	4	<0.2	26	18	14	25	74	0.06	<18	<550	<1700	< 0.015	1.
HK1327299004	GS 4	02/10/2013	0.3	3	<0.2	25	18	13	22	68	0.07	<18	<550	<1700	<0.015	

Bold: Value that exceed LCEL

Bold Italic and Underlined: Value that exceed UCEL

Bold and Underlined: Value that exceed 10 x LCEL

Total PCB:

Total PCBs calculated through summation of the 18 PCB congeners, based on raw data above the limit of detection of 1ug/kg.

For detailed information on the individual congeners please refer to the certificate of analysis for the work order.

Category L:

Analytical results less than or equal to Lower Chemical Exceedance Level (LCEL)

Category M:

Analytical results greater than Lower Chemical Exceedance Level (LCEL), but less than or equal to Upper Chemical Exceedance Level (UCEL)

Category H:

Analytical results greater than Upper Chemical Exceedance Level (UCEL)

Category 10xLCEL: Analytical results greater than 10x Lower Chemical Exceedance Level (10xLCEL)

Sediment Quality Report

Project: AGREEMENT NO CE 21_2012 (WS) DESALINATION PLANT AT TSEUNG KWAN O - FEASIBILITY STUDY Order No.: CONTRACT NO. GE/2012/24.13

-		_					_					Total Polychlorinated		High M.W.	Tributyl	Ē
		nalyte Description			Cadmium	Chromium	Copper	Nickel	Lead	Zinc	Mercury	biphenyls	PAHs	PAHs	Tin	, , ,
	Uni	t (In dry Wt basis)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	μg/kg	μg/kg	μg/kg	ug TBT/L	.E
		Reporting Limits	0.1	1	0.2	1	1	1	1	1	0.05	18	550	1700	0.015	¥
	Lower Chemical Exceed	lance Level (LCEL)	1	12	1.5	80	65	40	75	200	0.5	23	550	1700	0.15	as
	Upper Chemical Exceed	ance Level (UCEL)	2	<u>42</u>	4	160	110	<u>40</u>	110	270	1	180	3160	9600	0.15	ט
		10 x (LCEL)	10	120	<u>15</u>	800	<u>650</u>	400	<u>750</u>	2000	5	230	5500	17000	1.5	
	Sample Description															
ALS Lab ID	Sample ID	Sampling Date														
HK1327131001	SD2 0.00-0.90M	02/10/2013	0.6	8	<0.2	40	30	22	38	113	0.19	<18	<550	<1700	<0.015	L
HK1327131002	SD2 0.90-1.90M	02/10/2013	<0.1	6	<0.2	36	11	24	25	84	<0.05	<18	<550	<1700	<0.015	L
HK1327131003	SD2 1.90-2.90M	02/10/2013	<0.1	3	<0.2	32	7	22	15	69	<0.05	<18	<550	<1700	<0.015	L
HK1327131004	SD2 4.90-5.90M	02/10/2013	<0.1	5	<0.2	40	10	26	22	79	<0.05	<18	<550	<1700	IS	L
HK1327131005	SD2 7.90~8.90M	02/10/2013	<0.1	8	<0.2	49	14	33	29	93	< 0.05	<18	<550	<1700	IS	Ĺ
HK1327131006	SD2 10.90-11.90M	02/10/2013	<0.1	(14)	<0.2	36	12	23	29	78	<0.05	<18	<550	<1700	IS	М

Bold: Value that exceed LCEL

Bold Italic and Underlined: Value that exceed UCEL

Bold and Underlined: Value that exceed 10 x LCEL

Total PCB: Total PCBs calculated through summation of the 18 PCB congeners, based on raw data above the limit of detection of lug/kg.

For detailed information on the individual congeners please refer to the certificate of analysis for the work order.

IS Denoted: Insufficient interstitial water generated for TBT analysis.

Category L: Analytical results less than or equal to Lower Chemical Exceedance Level (LCEL)

Category M: Analytical results greater than Lower Chemical Exceedance Level (LCEL), but less than or equal to Upper Chemical Exceedance Level (UCEL)

Category H: Analytical results greater than Upper Chemical Exceedance Level (UCEL) Category 10xLCEL: Analytical results greater than 10x Lower Chemical Exceedance Level (10xLCEL)

Sediment Quality Report

Project: AGREEMENT NO CE 21_2012 (WS) DESALINATION PLANT AT TSEUNG KWAN O - FEASIBILITY STUDY Order No.: CONTRACT NO. GE/2012/24.13

		Analyte Description				Chromium	Copper	Nickel	Lead	Zinc	Mercury	Total Polychlorinated biphenyls	Low M.W. PAHs	High M.W. PAHs	Tributyl Tin	ioi
	U	nit (In dry Wt basis)		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	μg/kg	μg/kg	μg/kg	ug TBT/L	쩅
		Reporting Limits		1	0.2	1	1	1	1	1	0.05	18	550	1700	0.015	<u> </u>
	Lower Chemical Exce			12	1.5	80	65	40	75	200	0.5	23	550	1700	0.15	Se
	Upper Chemical Exce	edance Level (UCEL)	2	42	4	<u> 160</u>	<i>110</i>	40	110	<u>270</u>	1	180	3160	9600	0.15	Ū
		10 x (LCEL)	10	120	15	800	<u>650</u>	400	<u>750</u>	2000	<u>5</u>	230	5500	17000	1.5	
	Sample Description												· · · · · · · · · · · · · · · · · · ·	1		
ALS Lab ID	Sample ID	Sampling Date														
HK1327039001	SD4 0.00-0.90M	30/09/2013	<0.1	3	<0.2	24	8	15	19	54	<0.05	<18	<550	<1700	<0.015	1
HK1327039002	SD4 0.90-1.90M	30/09/2013	<0.1	<1	<0.2	11	3	5	7	21	<0.05	<18	<550	<1700	<0.015	<u> </u>

Bold: Value that exceed LCEL

Bold Italic and Underlined: Value that exceed UCEL Bold and Underlined: Value that exceed 10 x LCEL

Total PCB:

Total PCBs calculated through summation of the 18 PCB congeners, based on raw data above the limit of detection of 1ug/kg.

For detailed information on the individual congeners please refer to the certificate of analysis for the work order.

Category L:

Analytical results less than or equal to Lower Chemical Exceedance Level (LCEL)

Category M:

Analytical results greater than Lower Chemical Exceedance Level (LCEL), but less than or equal to Upper Chemical Exceedance Level (UCEL)

Category H:

Analytical results greater than Upper Chemical Exceedance Level (UCEL)

Category 10xLCEL:

Analytical results greater than 10x Lower Chemical Exceedance Level (10xLCEL)

Sediment Quality Report

Project: AGREEMENT NO CE 21_2012 (WS) DESALINATION PLANT AT TSEUNG KWAN O – FEASIBILITY STUDY Order No.: CONTRACT NO. GE/2012/24.13

		Analyte Description	Silver	Arsenic	Cadmium	Chromium	Copper	Nickel	Lead	Zinc	Mercury	Total Polychlorinated biphenyls	Low M.W. PAHs	High M.W. PAHs	Tributyl Tin	ion
	U	nit (In dry Wt basis)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	μg/kg	μg/kg	μg/kg	ug TBT/L	G
		Reporting Limits	0.1	1	0.2	1	1	1	1	1	0.05	18	550	1700	0.015	<u> </u>
	Lower Chemical Exce	edance Level (LCEL)	1	12	1.5	80	65	40	75	200	0.5	23	550	1700	0.15	20
	Upper Chemical Exce	edance Level (UCEL)	2	<u>42</u>	4	<i>160</i>	110	<u>40</u>	<i>110</i>	<u>270</u>	<u></u>	180	3160	9600	0.15	ΰ
		10 x (LCEL)	10	120	<u>15</u>	<u>800</u>	<u>650</u>	400	<u> 750</u>	2000	<u>5</u>	230	5500	17000	1.5	
	Sample Description															
ALS Lab ID	Sample ID	Sampling Date														
HK1324961001	SD1 0.00-0.30M	10/09/2013	0.2	7	<0.2	13	13	4	37	81	0.12	<18	<550	<1700	<0.015	
HK1324961002	SD3 0.00-0.60M	10/09/2013	0.2	5	<0.2	28	18	14	24	65	0.11	<18	<550	<1700	<0.015	<u>_</u>

Bold: Value that exceed LCEL

Bold Italic and Underlined: Value that exceed UCEL

Bold and Underlined: Value that exceed 10 x LCEL

Total PCB:

Total PCBs calculated through summation of the 18 PCB congeners, based on raw data above the limit of detection of lug/kg.

For detailed information on the individual congeners please refer to the certificate of analysis for the work order.

Category L:

Analytical results less than or equal to Lower Chemical Exceedance Level (LCEL)

Category M:

Analytical results greater than Lower Chemical Exceedance Level (LCEL), but less than or equal to Upper Chemical Exceedance Level (UCEL)

Category H:

Analytical results greater than Upper Chemical Exceedance Level (UCEL)

Category 10xLCEL:

Analytical results greater than 10x Lower Chemical Exceedance Level (10xLCEL)

Section 2 Certificate of Analysis

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

Client : CIVIL ENGINEERING AND DEVELOPMENT

DEPARTMENT

: MR SUN NG

: GEOTECHNICAL PROJECTS DIVISION,

GEOTECHNICAL ENGINEERING OFFICE.

23/F., KWUN TONG VIEW,

410 KWUN TONG ROAD, KOWLOON, HONG

KONG

F-mail : sunng@cedd.gov.hk

Telephone Facsimile

Project : AGREEMENT NO CE 21 2012 (WS)

DESALINATION PLANT AT TSEUNG KWAN

O - FEASIBILITY STUDY

Order number

Contact

Address

: GE/2012/24.13

C-O-C number : H028782

from the testing laboratory.

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in

Hong Kong Accreditation Service (HKAS) has accedited this laboratory (ALS Technichem (HK) Pty Ltd) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories. The results shown in this certificate were determined by this laboratory in accordance with its terms of accreditation.

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: ALS Technichem HK Pty Ltd

: Fung Lim Chee, Richard

: 11/F., Chung Shun Knitting Centre, 1 - 3

Wing Yip Street, Kwai Chung, N.T., Hong

Kong

Laboratory

Contact

Address

E-mail : Richard.Fung@alsglobal.com

Telephone : +852 2610 1044

Facsimile : +852 2610 2021

Quote number

issue Date

Date Samples Received

Page

Work Order

: 26-SEP-2013

No. of samples received

: 2 No. of samples analysed : 2

compliance with procedures specified in the Electronic Transactions Ordinance of Hong Kong, Chapter 553, Section 6,

Anh Ngọc Huynh W Tai Yuk Lun, Stephep Wong Wing, Kenneth

Senior Chemist - Organics Senior Chemist - Organics Assistant Supervisor - Metals Authorised results for

: 10-SEP-2013

: 1 of 9

*HK1324961

Organics **Organics** Inorganics

ALS Laboratory Group

Trading Name: ALS Technichem (HK) Pty Ltd

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong Tel: +852 2610 1044 Fax: +852 2610 2021 www.alsenviro.com

A Campbell Brothers Limited Company

Page Number : 2 of 9

Client : CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order HK1324961



General Comments

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. 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. The completion date of analysis is: 19-SEP-2013

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society. Specific comments for Work Order: **HK1324961**

Sample(s) were received in an ambient condition.

Sediment sample(s) analysed on an as received basis. Result(s) reported on a dry weight basis.

Sediment sample(s) as received, digested by In-house method E-ASTM D3974-09 based on ASTM D3974-09, prior to determination of metals.

Total PCBs results (Method: EP065) are not HOKLAS accredited. The values are calculated from summation of the 18 PCB congeners, based on Limit of Detection (LOD) of 1 µg/kg.

Page Number : 3 of 9

Client

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order

HK1324961



Analytical Results							
Sub-Matrix: SEDIMENT			Client sample ID	SD1 0.00-0.30M	SD3 0.00-0.60M		
		Client sam	pling date / time	10-SEP-2013 15:15	10-SEP-2013 13:15		
Compound	CAS Number	LOR	Unit	HK1324961-001	, HK1324961-002		
EA/ED: Physical and Aggregate Properties	S						
EA055: Moisture Content (dried @ 103° C)	+ + + + + + + + + + + + + + + + + + +	0.1	%	44.5	39.5		and the second s
EG: Metals and Major Cations			***************************************				
EG020: Arsenic	7440-38-2	1	mg/kg	7	5		<u> </u>
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2		-
EG020: Chromium	7440-47-3	1	mg/kg	13	28		····
EG020: Copper	7440-50-8	1	mg/kg	13	18		
EG020: Lead	7439-92-1	1	mg/kg	37	24		
EG020: Mercury	7439-97-6	0.05	mg/kg	0.12	0.11		}
EG020: Nickel	7440-02-0	1	mg/kg	4	14	4	
EG020: Silver	7440-22-4	0.1	mg/kg	0.2	0.2		
EG020: Zinc	7440-66-6	1	mg/kg	81	65		
EP-065: PCB Single Congeners			·			and accommensation of the control of	The second secon
PCB 8	34883-43-7	3	μg/kg	<3	<3		[
PCB 18	37680-65-2	3	µg/kg	<3	<3		
PCB 28	7012-37-5	3	µg/kg	<3	<3	······································	
PCB 44	41464-39-5	3	μg/kg	<3	<3		
PCB 52	35693-99-3	3	μg/kg	<3	<3		
PCB 66	32598-10-0	3	μg/kg	<3	<3		
PCB 77	32598-13-3	3	µg/kg	<3	<3		
PCB 101	37680-73-2	3	μg/kg	<3	<3	······································	
PCB 105	32598-14-4	3	μg/kg	<3	<3		
PCB 118	31508-00-6	3	μg/kg	<3	<3		
PCB 126	57465-28-8	3	µg/kg	<3	<3		
PCB 128	38380-07-3	3	µg/kg	<3	<3		
PCB 138	35065-28-2	3	μg/kg	<3	<3		
PCB 153	35065-27-1	3	µg/kg	<3	<3		
PCB 169	32774-16-6	3	μg/kg	<3	<3		
PCB 170	35065-30-6	3	μg/kg	<3	<3		
PCB 180	35065-29-3	3	μg/kg	<3	<3		
PCB 187	52663-68-0	3	μg/kg	<3	<3		
Total Polychlorinated biphenyls		18	μg/kg	<18	<18		
P-076A: Polycyclic Aromatic Hydrocarbo	ns (PAHs)		·			and the control of the control of the control of the special property of the control of the cont	
Naphthalene	91-20-3	50	μg/kg	<50	<50		an men appendix a mendapan mendapan mendapan appendix and a personal form
Acenaphthylene	208-96-8	50	μg/kg	<50	<50	· }	
Acenaphthene	83-32-9	50	µg/kg	<50	<50		
Fluorene	86-73-7	50	µg/kg	<50	<50		
Phenanthrene	85-01-8	50	μg/kg	<50	<50		·

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Page Number Client : 4 of 9

: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order



Sub-Matrix: SEDIMENT			Client sample ID	SD1 0.00-0.30M	SD3 0.00-0.60M			
			pling date / time	10-SEP-2013 15:15	10-SEP-2013 13:15			
Compound	CAS Number	LOR	Unit	HK1324961-001	HK1324961-002	<u> </u>	1	
EP-076A: Polycyclic Aromatic Hydr	ocarbons (PAHs) - Co	ontinued						
Anthracene	120-12-7	50	μ g/k g	<50	<50			ANIMA
Fluoranthene	206-44-0	150	µg/kg	<150	<150			
Pyrene	129-00-0	150	μg/kg	<150	<150			
Benz(a)anthracene	56-55-3	150	µg/kg	<150	<150		The second secon	
Chrysene	218-019	150	µg/kg	<150	<150			
Benzo(b)fluoranthene	205-99-2	150	μg/kg	<150	<150			
Benzo(k)fluoranthene	207-08-9	150	µg/kg	<150	<150	[
Benzo(a)pyrene	50-32-8	150	μ g/k g	<150	<150			
Indeno(1.2.3.cd)pyrene	193-39-5	150	μg/kg	<150	<150			
Dibenz(a.h)anthracene	53-70-3	150	µg/kg	<150	<150			
Benzo(g.h.i)perylene	19124-2	150	μg/kg	<150	<150			
Low M.W. PAHs		550	μg/kg	<550	<550	1		
High M.W. PAHs	****]	1700	µg/kg	<1700	<1700			
EP-076S: Polycyclic Aromatics Hydr	ocarbons (PAHs) Su	rrogates					Surrogate control lim	its listed at end of this report.
2-Fluorobiphenyl	32160-8	0.1	%	67.6	69.0		THE COLUMN TWO IS NOT THE PARTY OF THE PARTY	
4-Terphenyl-d14	1718-51-0	0.1	%	76.6	78.8			
EP-065S: PCB Congeners and Orga	nochlorine Pesticide	s Surroga	ate	· · · · · · · · · · · · · · · · · · ·			Surrogate control lim	its listed at end of this report.
Decachlorobiphenyl	2051-24-3	0.1	% }	55.6	55.8			

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Client

: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order



Sub-Matrix; INTERSTITIAL WATER			Client sample ID	SD1 0.00-0.30M	SD3 0.00-0.60M			
		Client san	npling date / time	10-SEP-2013 15:15	10-SEP-2013 13:15	 	E	
Compound	CAS Number	LOR	Unit	HK1324961-001	HK1324961-002		-	
EP-390: Triorganotins			41.5%		Alleged to the			
Tributyltin	56573-85-4	0.015	µg TBT /L	<0.015	<0.015			

Page Number Client

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: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order



trix: SOIL			1		L	aboratory Duplicate (DUP) F	leport	
aboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
/ED: Physical	and Aggregate Prop	erties (QC Lot: 3062556)				,	'	
(1324792-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	- %	21.8	20.1	7.9
(1324806-002	Anonymous	EA055: Moisture Content (dried @ 103°C)	****	0,1	%	13,3	12.9	3.0
: Metals and N	lajor Cations (QC L		i			,	1210	0.0
(1324966-002	Anonymous	EG020: Mercury	7439-97-6	0.05	mg/kg	0.13	0.12	9.0
	•	EG020: Cadmium	7440-43-9	0.2	mg/kg	0.7	0.7	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	14	14	0.0
		EG020: Chromium	7440-47-3	1	mg/kg	25	26	0.0
	:	EG020: Copper	7440-50-8	1	mg/kg	40	41	0.0
		EG020: Lead	7439-92-1	1	mg/kg	108	107	0.0
		EG020: Nickel	7440-02-0	1	mg/kg	10	10	0.0
		EG020: Silver	7440-22-4	1	mg/kg	<1	<1	0.0
		EG020: Zinc	7440-66-6	1	mg/kg	193	207	7.0
K1324966-009	Ananymous	EG020: Mercury	7439-97-6	0.05	mg/kg	0.43	0.38	10.7
		EG020: Cadmium	7440-43-9	0.2	mg/kg	4.4	4.0	8.1
		EG020: Arsenic	7440-38-2	1	mg/kg	112	124	10.8
	:	EG020: Chromium	7440-47-3	1	mg/kg	33	38	13.9
	EG020: Copper	7440-50-8	1	mg/kg	1010	1020	0.7	
		EG020: Lead	7439-92-1	1	mg/kg	123	141	13.6
		EG020: Nickel	7440-02-0	1	mg/kg	28	32	13.7
		EG020: Silver	7440-22-4	1	mg/kg	<1	<1	0.0
		EG020: Zinc	7440-66-6	1	mg/kg	283	292	2.9
P-065-PCR-Sinc	gle Congeners (QC	,		. ,		3	, ,	
<1324961-001	SD1 0.00-0.30M	Total Polychlorinated biphenyls		18	μg/kg	<18	<18	0,0
111021001 001	0010.0000.000	PCB 8	34883-43-7	3	μg/kg	<3	<3	0.0
		PCB 18	37680-65-2	3	μg/kg	<3	<3	0.0
		PCB 28	7012-37-5	3	µg/kg	<3	<3	0.0
		PCB 44	41464-39-5	3	µg/kg	<3	<3	0.0
	:	PCB 52	35693-99-3	3	µg/kg	<3	<3	0.0
		PCB 66	32598-10-0	3	µg/kg	<3	<3	0.0
		PCB 77	32598-13-3	3	μg/kg	<3	<3	0.0
		PCB 101	37680-73-2	3	μg/kg	<3	<3	0.0
		PCB 105	32598-14-4	3	µg/kg	<3	<3	0.0
		PCB 118	31508-00-6	3	µg/kg	<3	<3	0.0
		PCB 126	57465-28-8	3	µg/kg	<3	<3	0.0
	-	PCB 128	38380-07-3	3	μg/kg	<3	<3	0.0
		PCB 138	35065-28-2	3	µg/kg	<3	<3	0.0
		PCB 153	35065-27-1	3	μg/kg	<3	<3	0.0
	1	PCB 169	32774-16-6	3	µg/kg	<3	<3	0.0
		PCB 170	35065-30-6	3	μg/kg	<3	<3	0.0
		PCB 180	35065-29-3	3	μg/kg	<3	<3	0.0
		PCB 187	52663-68-0	3	μg/kg	<3	<3	0.0

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Client

: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order

HK1324961



atrix: SOIL					La	boratory Duplicate (DUP) F	Report	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
P-076A: Polycy	lic Aromatic Hydroca	rbons (PAHs) (QC Lot: 3060197) - Conti	nued	,				
HK1324961-001	SD1 0.00-0.30M	Fluoranthene	206-44-0	150	μg/kg	<150	<150	0.0
		Pyrene	129-00-0	150	µg/kg	<150	<150	0.0
		Benz(a)anthracene	56-55-3	150	μg/kg	<150	<150	0.0
		Chrysene	218-01-9	150	μg/kg	<150	<150	0.0
	1	Benzo(b)fluoranthene	205-99-2	150	µg/kg	<150	<150	0.0
		Benzo(k)fluoranthene	207-08-9	150	μg/kg	<150	<150	0.0
	1 - -	Benzo(a)pyrene	50-32-8	150	µg/kg	<150	<150	0.0
		Indeno(1.2.3.cd)pyrene	193-39-5	150	µg/kg	<150	<150	0.0
		Dibenz(a.h)anthracene	53-70-3	150	µg/kg	<150	<150	0.0
		Benzo(g.h.i)perylene	191-24-2	150	µg/kg	<150	<150	0.0
		High M.W. PAHs		1700	µg/kg	<1700	<1700	0.0
	1	Naphthalene	91-20-3	50	μg/kg	<50	<50	0.0
		Acenaphthylene	208-96-8	50	μg/kg	<50	<50	0.0
		Acenaphthene	83-32-9	50	µg/kg	<50	<50	0.0
	s print and a second	Fluorene	86-73-7	50	μg/kg	<50	<50	0.0
	A desired as	Phenanthrene	85-01-8	50	μg/kg	<50	<50	0.0
	ž L	Anthracene	120-12-7	50	µg/kg	<50	<50	0.0
		Low M.W. PAHs	*****	550	μg/kg	<550	<550	0,0
rix: WATER					Le	nboratory Duplicate (DUP) F	Report	
aboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
P-390: Triorgan	otins (QC Lot: 30688	90)						
K1324961-002	SD3 0.00-0.60M	Tributyltin	56573-85-4	6	ngSn/L	<6	<6	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: SOIL	[Method Blank (MB)	Report		Laboratory Control	Spike (LCS) and La	boratory Control	Spike Duplicate (DCS) Report	
					Spike	Spike Red	covery (%)	Recovery	Limits (%)	R	PD (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cation	ns (QC Lot: 3061717)		1.27			•				:	•
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	92.2		77	109		
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	93.9	*****	86	110		
EG020: Chromium	7440-47-3	1	mg/kg	<1	5 mg/kg	94.5		88	120		
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	94.6		85	109	****	
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	93.2	****	84	106		
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	99.8	*****	80	112		-
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	93.1	******	87	111		
EG020: Silver	7440-22-4	0,1	mg/kg	<0.1	5 mg/kg	86.8		83	105		-
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	96.5	****	82	126		
EP-065: PCB Single Congen	ers (QC Lot: 3060196)			:							
PCB 8	34883-43-7	3	μg/kg	<3	5 μg/kg	117	·	40	142		
PCB 18	37680-65-2	3	µg/kg	<3	5 μg/kg	113		39	131		
PCB 28	7012-37-5	3	μg/kg	<3	5 μg/kg	107		26	134		****
PCB 44	41464-39-5	3	μg/kg	<3	5 μg/kg	110		32	130		
PCB 52	35693-99-3	3	μg/kg	<3	5 μg/kg	106		42	126	****	

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: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order

HK1324961



Matrix: SOIL	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
					Spike	Spike Re	covery (%)	Recovery	Limits (%)	RPD (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
EP-065: PCB Single Congeners (C	QC L.ot: 3060196) - (ontinued	l:								
PCB 66	32598-10-0	3	μg/kg	<3	5 μg/kg	115	****	33	123	****	
PCB 77	32598-13-3	3	μg/kg	<3	5 µg/kg	114		59	125	*****	
PCB 101	37680-73-2	3	μg/kg	<3	5 µg/kg	110		60	119		
PCB 105	32598-14-4	3	μg/kg	<3	5 µg/kg	116		56	121		
PCB 118	31508-00-6	3	μg/kg	<3	5 µg/kg	115		60	119	****	
PCB 126	57465-28-8	3	μg/kg	<3	5 µg/kg	116	*****	60	117		
PCB 128	38380-07-3	3	μg/kg	<3	5 μg/kg	116		58	117		
PCB 138	35065-28-2	3	μg/kg	<3	5 µg/kg	115		59	128	*****	
PCB 153	35065-27-1	3	μg/kg	<3	5 μg/kg	114		61	120		
PCB 169	32774-16-6	3	µg/kg	<3	5 μg/kg	115		50	123		
PCB 170	35065-30-6	3	µg/kg	<3	5 μg/kg	116		50	130	*****	
PCB 180	35065-29-3	3	µg/kg	<3	5 µg/kg	114	······································	56	124		
PCB 187	52663-68-0	3	μg/kg	<3	5 μg/kg	110	<u> </u>	56	122		
Total Polychlorinated biphenyls		18	μg/kg	<18		*****				****	
EP-076A: Polycyclic Aromatic Hyd	rocarbone (PAHe)	OC Late 3	Contract to the second Contract to the second contract to the second						4		
Naphthalene	91-20-3	25		<u> </u>	25 valka	400			1 447		
Napittilalelle	91-20-3	25	μg/kg	<50	25 μg/kg	102		63	117		
Acenaphthylene	208-96-8	50	μg/kg	<50 <50					****		
Acenaphunyene	200-90-0	30	pg/kg	\ 50	25 μg/kg	99.9		54	119	~~~~	
Acenaphthene	83-32-9	50	μg/kg	<50	20 pg/kg	99.9					-
Hoonaphatelle	00-02-3	- 55	Parka		25 μg/kg	90.8		59	122	*****	
Fluorene	86-73-7	25	μg/kg		25 μg/kg	92.3		60	126	****	
1 Idorone	00-10-1	20	pg//g	<50	25 pg/kg	02.J			120)
Phenanthrene	85-01-8	50	μg/kg	<50					 		
	00 01 0		Parka		25 μg/kg	99.2		60	127	*****	
Anthracene	120-12-7	50	μg/kg	<50			· • · · · · · · · · · · · · · · · · · ·		1-1		· · · · · · · · · · · · · · · · · · ·
	1		r9//\9		25 μg/kg	92.3		56	124	****	
Fluoranthene	206-44-0	25	μg/kg		25 μg/kg	101	destruction	61	132		-
			:	<50	2- 15/19	****) !			****	
Pyrene	129-00-0	50	µg/kg	<50				*****	Manager 1		
					25 µg/kg	101	j]	61	133		
Benz(a)anthracene	56-55-3	25	μg/kg	****	25 µg/kg	95.5		57	124		
			13.3	<50		****					
Chrysene	218-01-9	25	μg/kg		25 µg/kg	101		60	128	****	
			13.13	<50						****	
Benzo(b)fluoranthene	205-99-2	25	μg/kg		25 μ g /kg	99.9		48	135		T 1
			100	<50		*****					
Benzo(k)fluoranthene	207-08-9	25	μg/kg	****	25 μg/kg	98.5		58	133		
				<50		******					
Benzo(a)pyrene	50-32-8	25	μg/kg		25 μg/kg	90.0		50	124		
	2		-	<50		****					
Indeno(1.2.3.cd)pyrene	193-39-5	25	μg/kg	****	25 μg/kg	98.0		48	134		
: :			_	<50							
Dibenz(a.h)anthracene	53-70-3	25	μg/kg		25 µg/kg	95.7		50	137		

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Client

: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order

HK1324961



Matrix: SOIL	Ī		Method Blank (M	B) Report	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
					Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)		
Method: Compound	CAS Number	LOR	Unit	Resuit	Concentration	LCS	DCS	Low	High	Value	Control Limit	
EP-076A: Polycyclic Aromatic Hy	drocarbons (PAHs) (QC Lot:	3060197) - Co	ontinued					4.4			
Dibenz(a.h)anthracene	53-70-3	50	μg/kg	<50	T	area area			girlanda kanana kanana kanana kangdan Ramanan			
Benzo(g.h.i)perylene	191-24-2	25	μg/kg		25 μg/kg	97.5		55	140	*****		
				<50								
Low M.W. PAHs	*****	550	µg/kg	<550								
High M.W. PAHs		1700	μg/kg	<1700	I	764-					****	
Matrix: WATER			Method Blank (M	B) Report	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
					Spike	Spike Red	overy (%)	Recovery	Limits (%)	RF	פס (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit	
EP-390: Triorganotins (QC Lot: 3	068890)	1.7			1		d	•				
Tributyltin	56573-85-4	5	ngSn/L	<5	2 ngSn/L	103		73	152		· · · · · · · · · · · · · · · · · · ·	

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

Matrix: SOIL					Matrix Spike	(MS) and Matr	ix Spike Dupl	icate (MSD)	Report	
				Spike	Spike Recovery (%)		Recovery	Limits (%)	RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS	Concentration	MS	MSD	Low	High	Value	Control
sample ID			Number							Limit
EG: Metals	and Major Cations (QC L	ot: 3061717)					and a trigger en			
HK1324961-0	01 SD1 0.00-0.30M	EG020: Arsenic	7440-38-2	5 mg/kg	85.9		75	125	*****	
:		EG020: Cadmium	7440-43-9	5 mg/kg	94.0		75	125		
		EG020: Chromium	7440-47-3	5 mg/kg	87,7		75	125		
•		EG020: Copper	7440-50-8	5 mg/kg	75.1	****	75	125		
:		EG020: Lead	7439-92-1	5 mg/kg	# Not Determined		75	125	****	
i.		EG020: Mercury	7439-97-6	0.1 mg/kg	75.4		75	125	****	
i I		EG020: Nickel	7440-02-0	5 mg/kg	85.0	*****	75	125	****	
:		EG020: Silver	7440-22-4	5 mg/kg	85.7	****	75	125		
· ·		EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined		75	125		and the state of t

Surrogate Control Limits

Sub-Matrix: SEDIMENT		Recovery Limits (%)			
Compound	CAS Number	Low	High		
EP-076S: Polycyclic Aromatics Hyd	rocarbons (PAHs) Surrogates				
2-Fluorobiphenyl	321-60-8	50	130		
4-Terphenyl-d14	1718-51-0	50	130		
EP-065S: PCB Congeners and Orga	nochlorine Pesticides Surrog	ate	in a liveri a la		
Decachlorobiphenyl	2051-24-3	50	130		

ALS Technichem (HK) Pty Ltd





ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

Client

Contact

Address

Order number

C-O-C number

: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 9
: MR SUN NG	Contact	: Fung Lim Chee, Richard	Work Order	· HK1327039
: GEOTECHNICAL PROJECTS DIVISION, GEOTECHNICAL ENGINEERING OFFICE, 23/F., KWUN TONG VIEW, 410 KWUN TONG ROAD, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		

E-mail E-mail : Richard.Fung@alsglobal.com : sunng@cedd.gov.hk Telephone Telephone : +852 2610 1044

Facsimile : +852 2610 2021

Date Samples Received Quote number : 30-SEP-2013 Project : AGREEMENT NO CE 21 2012 (WS) ; ----

> **DESALINATION PLANT AT TSEUNG KWAN** O - FEASIBILITY STUDY Issue Date : 17-OCT-2013

CERTIFICATE OF ANALYSIS

: GE/2012/24.13 No. of samples received : 2 : H018128

No. of samples analysed Site : 2 : ----

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Signatories Hong Kong Accreditation Service (HKAS) has accedited this laboratory Anh Ngọc Huynh (ALS Technichem (HK) Pty Ltd) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as Tai Yuk Lun, Stephen listed in the HOKLAS Directory of Accredited Laboratories. The results Wong Wing, Kenneth shown in this certificate were determined by this laboratory in accordance with its terms of accreditation.

Authorised results for Senior Chemist - Organics **Organics Organics** Senior Chemist - Organics **Assistant Supervisor - Metals** Inorganics

ALS Laboratory Group Trading Name: ALS Technichem (HK) Pty Ltd

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong Tel: +852 2610 1044 Fax: +852 2610 2021 www.aisenviro.com

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Client

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order HK1327039



General Comments

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. 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. The completion date of analysis is: 11-OCT-2013

Key: Lor = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society. Specific comments for Work Order: **HK1327039**

Sample(s) were received in an ambient condition.

Sediment sample(s) analysed on an as received basis. Result(s) reported on a dry weight basis.

Sediment sample(s) as received, digested by In-house method E-ASTM D3974-09 based on ASTM D3974-09, prior to determination of metals.

Total PCBs results (Method: EP065) are not HOKLAS accredited. The values are calculated from summation of the 18 PCB congeners, based on Limit of Detection (LOD) of 1 µg/kg.

Page Number : 3 of 9

Work Order

Client : CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

HK1327039



Analytical Results

Analytical Results						
Sub-Matrix: SEDIMENT			lient sample ID	SD4 0.00-0.90M	SD4 0.90-1.90M	
			oling date / time	30-SEP-2013 13:40	30-SEP-2013 13:40	
Compound	CAS Number	LOR	Unit	HK1327039-001	HK1327039-002	
A/ED: Physical and Aggregate Properties					·	
EA055: Moisture Content (dried @ 103°C)	de	0,1	%	40.3	35.2	
G: Metals and Major Cations		W. W				
EG020: Arsenic	7440-38-2	1	mg/kg	3	<1	
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	
EG020: Chromium	7440-47-3	1	mg/kg	24	11	
EG020: Copper	7440-50-8	1	mg/kg	8	3	
EG020: Lead	7439-92-1	1	mg/kg	19	7	
EG020: Mercury	7439-97-6	0.05	mg/kg	<0,05	<0.05	
EG020: Nickel	7440-02-0	1	mg/kg	15	5	
EG020: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	······································
EG020: Zinc	7440-66-6	1	mg/kg	54	21	
P-065: PCB Single Congeners					·	
PCB 8	34883-43-7	3	µg/kg	<3	<3	
PCB 18	37680-65-2	3	µg/kg	<3	<3	
PCB 28	7012-37-5	3	μg/kg	<3	<3	
PCB 44	41464-39-5	3	μg/kg	<3	<3	
PCB 52	35693-99-3	3	μg/kg	<3	<3	
PCB 66	32598-10-0	3	μg/kg	<3	<3	
PCB 77	32598-13-3	3	μg/kg	<3	<3	
PCB 101	37680-73-2	3	μg/kg	<3	<3	
PCB 105	3259B-14-4	3	μg/kg	<3	<3	
PCB 118	31508-00-6	3	μg/kg	<3	<3	
PCB 126	57465-28-8	3	μg/kg	<3	<3	
PCB 128	38380-07-3	3	μg/kg	<3	<3	
PCB 138	35065-28-2	3	μg/kg	<3	<3	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
PCB 153	35065-27-1	3	μg/kg	<3	<3	
PCB 169	32774-16-6	3	μg/kg	<3	<3	
PCB 170	35065-30-6	3	μg/kg	<3	<3	
PCB 180	35065-29-3	з	μg/kg	<3	<3	
PCB 187	52663-68-0	3	μg/kg	<3	<3	
Total Polychlorinated biphenyls		18	μg/kg	<18	<18	·
EP-076A: Polycyclic Aromatic Hydrocarbon	s (PAHs)				<u> </u>	
Naphthalene	91-20-3	50	µg/kg	<50	<50	
Acenaphthylene	208-96-8	50	µg/kg	<50	<50	
Acenaphthene	83-32-9	50	μg/kg	<50	<50	
Fluorene	86-73-7	50	µg/kg	<50	<50	
Phenanthrene	85-01-8	50	μg/kg	<50	<50	

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Client

: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order



Sub-Matrix: SEDIMENT		C	lient sample ID	SD4	SD4					
		Client semi	oling date / time	0.00-0.90M 30-SEP-2013 13:40	0.90-1.90M 30-SEP-2013 13:40					
Compound	CAS Number	LOR	Unit	HK1327039-001	HK1327039-002			***************************************		
			Unit	TR (32/039-001	HK132/039-002	1				
EP-076A: Polycyclic Aromatic Hydroc	بسينيب وبرب بأبيث وسيشت بينات معمم			<u> المنظم المنطقة والمنطقة والم</u>		,	<u> </u>			<u> </u>
Anthracene	120-12-7	50	hâykâ	<50	<50					
Fluoranthene	205-44-0	150	μg/kg	<150	<150					
Pyrene	129-00-0	150	hãykā	<150	<150					/ / / / / / / / / / / / / / / / /
Benz(a)anthracene	56-55-3	150	µg/kg	<150	<150		1	,	*** ***********************************	
Chrysene	218-019	150	µg/kg	<150	<150	ļ	<u>-</u>			
Benzo(b)fluoranthene	205-99-2	150	µg/kg	<150	<150			***************************************		
Benzo(k)fluoranthene	207-08-9	150	µg/kg	<150	<150					
Benzo(a)pyrene	50-32-8	150	μg/kg	<150	<150					
indeno(1.2.3.cd)pyrene	193-39-5	150	μg/kg	<150	<150	ļ				
Dibenz(a.h)anthracene	53-70-3	150	µg/kg	<150	<150			*···		
Benzo(g.h.i)perylene	19124-2	150	µg/kg	<150	<150					
Low M.W. PAHs		550	μg/kg	<550	<550					
High M.W. PAHs		1700	µg/kg	<1 7 00	<1700					
EP-076S: Polycyclic Aromatics Hydrod	arbons (PAHs) Su	rrogates			··································			Surrogate contro	l limits listed at end	of this report.
2-Fluorobiphenyl	321-60-8	0.1	%	96.2	105					
4-Terphenyl-d14	1718-51-0	0.1	%	97.4	95.4					
EP-065S: PCB Congeners and Organo	chlorine Pesticide:	s Surroga	ite		***************************************			Surrogate contro	I limits listed at end	of this report.
Decachlorobiphenyl	2051-24-3	0.1	%	54.0	57.5		1	ک پیسیون کاملیک به هم است. و گزارته از این	riter and riterature and in the international beautiful and an expension which are and	

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Client : (

: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order



Sub-Matrix: INTERSTITIAL WATER			Client samp	le ID	SD4	SD4		
				1	0.00-0.90M	0.90-1.90M		The second
		Client san	npling date /	time	30-SEP-2013 13:40	30-SEP-2013 13:40		
Compound	CAS Number	LOR	Unit		HK1327039-001	HK1327039-002		
EP-390: Triorganotins	The second secon	Law to the total of		* * * ********************************				
Tributyltin	56573-85-4	0.015	μg TB1	ſ/L	<0.015	<0.015		

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Client

: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order HK1327039



Laboratory	y Duplicate	(DUP) I	Report
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atrix: SOIL				···	Li	aboratory Duplicate (DUP) I	Report	,
aboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%
A/ED: Physical	and Aggregate Prop	erties (QC Lot: 3097645)						
HK1326937-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	36.0	34.9	3.3
HK1326938-004	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	35.0	35.2	0.6
G: Metals and N	lajor Cations (QC Le			,			Bar I garagi	
HK1326772-002	Anonymous	EG020: Mercury	7439-97-6	0.05	mg/kg	1.21	1.22	0.0
		EG020: Silver	7440-22-4	0,1	mg/kg	2.1	1.7	19.0
	1	EG020: Cadmium	7440-43-9	0.2	mg/kg	0.8	0.8	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	14	12	12.1
		EG020: Chromium	7440-47-3	1	mg/kg	72	67	7.7
		EG020: Copper	7440-50-8	1	mg/kg	109	113	3.9
		EG020: Lead	7439-92-1	1	mg/kg	206	233	12.2
		EG020: Nickel	7440-02-0	1	mg/kg	31	31	0.0
		EG020: Zinc	7440-66-6	1	mg/kg	248	265	6.9
łK1327039-001	SD4 0.00-0.90M	EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	<0.05	0.0
	- - 	EG020: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0,0
		EG020: Cadmium	7440-43-9	0.2	mg/kg	<0,2	<0.2	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	3	3	0.0
		EG020: Chromium	7440-47-3	1	mg/kg	24	22	8.7
		EG020: Copper	7440-50-8	1	mg/kg	8	8	0.0
		EG020: Lead	7439-92-1	1	mg/kg	19	18	6.7
		EG020: Nickel	7440-02-0	1	mg/kg	15	13	9.6
		EG020: Zinc	7440-66-6		mg/kg	54	49	9.1
P-065: PCB Sin	gle Congeners (QC l	5				i . .		
HK1326772-001	Anonymous	Total Polychlorinated biphenyls		18	μg/kg	<18	<18	0.0
	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	PCB 8	34883-43-7	3	μg/kg	<3	<3	0,0
	:	PCB 18	37680-65-2	3	μg/kg	<3	<3	0.0
		PCB 28	7012-37-5	3	µg/kg	<3	<3	0.0
	: - #	PCB 44	41464-39-5	3	μg/kg	<3	<3	0.0
		PCB 52	35693-99-3	3	μg/kg	<3	<3	0.0
		PCB 66	32598-10-0	3	μg/kg	<3	<3	0.0
	-	PCB 77	32598-13-3	3	µg/kg	<3	<3	0.0
		PCB 101	37680-73-2	3	µg/kg	<3	<3	0.0
		PCB 105	32598-14-4	3	μg/kg	<3	<3	0.0
		PCB 118	31508-00-6	3	μg/kg	<3	<3	0.0
		PCB 126	57465-28-8	3	μg/kg	<3	<3	0.0
		PCB 128	38380-07-3	3	μg/kg	<3	<3	0.0
		PCB 138	35065-28-2	3	μg/kg	<3	<3	0.0
		PCB 153	35065-27-1	3	µg/kg	<3	<3	0.0
		PCB 169	32774-16-6	3	μg/kg	<3	<3	0.0
		PCB 170	35065-30-6	3	μg/kg	<3	<3	0.0
		PCB 180	35065-29-3	3	μg/kg	<3	<3	0,0
	in the second se	PCB 187	52663-68-0	3	μg/kg	<3	<3	0.0

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Client

: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order HK1327039



atrix: SOIL					Labo	ratory Duplicate (DUP) I) Report			
aboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)		
P-076A: Polycy	clic Aromatic Hydrocarbo	ns (PAHs) (QC Lot: 3088811) - Continued								
HK1326772-001	Anonymous	Fluoranthene	206-44-0	150	μg/kg	<150	<150	0.0		
		Pyrene	129-00-0	150	μg/kg	<150	<150	0.0		
	:	Benz(a)anthracene	56-55-3	150	μg/kg	<150	<150	0.0		
		Chrysene	218-01-9	150	μg/kg	<150	<150	0.0		
		Benzo(b)fluoranthene	205-99-2	150	μg/kg	<150	<150	0.0		
	\$	Benzo(k)fluoranthene	207-08-9	150	μg/kg	<150	<150	0.0		
	1	Benzo(a)pyrene	50-32-8	150	μg/kg	<150	<150	0.0		
		indeno(1.2.3.cd)pyrene	193-39-5	150	μg/kg	<150	<150	0.0		
	# #	Dibenz(a.h)anthracene	53-70-3	150	μg/kg	<150	<150	0.0		
		Benzo(g.h.i)perylene	191-24-2	150	μg/kg	<150	<150	0.0		
	:	High M.W. PAHs		1700	μg/kg	<1700	<1700	0.0		
	·	Naphthalene	91-20-3	50	µg/kg	<50	<50	0.0		
		Acenaphthylene	208-96-8	50	μg/kg	<50	<50	0.0		
		Acenaphthene	83-32-9	50	μg/kg	<50	<50	0.0		
		Fluorene	86-73-7	50	μg/kg	<50	<50	0.0		
		Phenanthrene	85-01-8	50	μg/kg	<50	<50	0.0		
	1	Anthracene	120-12-7	50	μg/kg	<50	<50	0.0		
		Low M.W. PAHs		550	μg/kg	<550	<550	0.0		
nx: WATER		Market			Labo	oratory Duplicate (DUP) I	Report			
boratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)		
P-390: Triorgan	otins (QC Lot: 3102282)									
K1327374-001	Anonymous	Tributyitin	56573-85-4	6	ngSn/L	<6	<6	0.0		

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: SOIL			Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
					Spike	Spike Red	overy (%)	Recovery	Limits (%)	Ri	PD (%)		
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit		
EG: Metals and Major Cation	is (QC Lot: 3097552)					Ser Line 1141							
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	95.2		77	109				
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	103		86	110		****		
EG020: Chromium	7440-47-3	1	mg/kg	<1	5 mg/kg	98.7		88	120				
EG020: Copper	7440-50-8	1 :	mg/kg	<1	5 mg/kg	93.4		85	109	30-10-00-00			
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	93.3		84	106				
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	89.0	*****	80	112	****			
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	92.3		87	111				
EG020: Silver	7440-22-4	0.1	mg/kg	<0.1	5 mg/kg	85.3		83	105		<u> </u>		
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	100	·	82	126				
EP-065: PCB Single Congen	ers (QC Lot: 3088810)												
PCB 8	34883-43-7	3	μg/kg	<3	5 μg/kg	102		40	142				
PCB 18	37680-65-2	3	μg/kg	<3	5 μg/kg	104		39	131				
PCB 28	7012-37-5	3	μg/kg	<3	5 μg/kg	114		26	134	****			
PCB 44	41464-39-5	3	μg/kg	<3	5 μg/kg	115		32	130				
PCB 52	35693-99-3	3	μg/kg	<3	5 μg/kg	110		42	126	****			

A Campbell Brothers Limited Company

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Client

: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order HK1327039



Matrix: SOIL	Ī		Method Blank (Mi	9) Report	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS)						
					Spike	Spike Recovery (%)		Recovery	Limits (%)	RPD (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limi
EP-065: PCB Single Congeners(Q	C Lot: 3088810) - C	ontinued	e estado e está do la								
PCB 66	32598-10-0	3	μg/kg	<3	5 μg/kg	110		33	123	<u></u>	entropy values remains a contain a constain a
PCB 77	32598-13-3	3	μg/kg	<3	5 µg/kg	115		59	125	···············	
PCB 101	37680-73-2	3	µg/kg	<3	5 µg/kg	108	;	60	119		****
PCB 105	32598-14-4	3	μg/kg	<3	5 μg/kg	78.4		56	121		
PCB 118	31508-00-6	3	µg/kg	<3	5 μg/kg	78.7		60	119		
PCB 126	57465-28-8	3	μg/kg	<3	5 μg/kg	103		60	117		
PCB 128	38380-07-3	3	μg/kg	<3	5 μg/kg	104	*****	58	117	*****	
PCB 138	35065-28-2	3	µg/kg	<3	5 µg/kg	106	<u>{</u>	59	128		
PCB 153	35065-27-1	3	μg/kg	<3	5 μg/kg	105		61	120		
PCB 169	32774-16-6	3	μg/kg	<3	5 μg/kg	91.0		50	123		
PCB 170	35065-30-6	3	μg/kg	<3	5 μg/kg	106	· · · · · · · · · · · · · · · · · · ·	50	130		
PCB 180	35065-29-3	3	μg/kg	<3	5 μg/kg	89.6		56	124		
PCB 187	52663-68-0	3	µg/kg	<3	5 μg/kg	100		56	122		
Total Polychlorinated biphenyls	****	18	μg/kg	<18			<u> </u>				
EP-076A: Polycyclic Aromatic Hydr	ocarbons (PAHs)	QC Lot: 30			- la companya da manaka d				بلــــــــــــــــــــــــــــــــــــ	141, 141,	
Naphthalene	91-20-3	25	μg/kg	<u> </u>	25 μg/kg	94.0	F	63	117		
Tach treatments	01-20-0	20	pgrig	<50	20 pg/kg	34.0	-	0.5		*****	
Acenaphthylene	208-96-8	50	μg/kg	<50			<u> </u>				+
· comprinity one	20000		P8''18		25 μg/kg	86.9		54	119		
Acenaphthene	83-32-9	25	μg/kg	******	25 μg/kg	91.8		59	122		
			P9***9	<50	Lo pg/kg						
Fluorene	86-73-7	25	μg/kg	*****	25 μg/kg	97.3		60	126	*****	
	, - ,		F3: · · 3	<50		*****				****	
Phenanthrene	85-01-8	25	μg/kg		25 μg/kg	93.5		60	. 127	****	
			1.00	<50		****					
Anthracene	120-12-7	25	μg/kg	ļ ——	25 μg/kg	86.0		56	124		
		-	, , ,	<50							
Fluoranthene	206-44-0	25	μg/kg	****	25 μg/kg	102		61	132	****	
		Trades.		<50							
Pyrene	129-00-0	25	μg/kg		25 μg/kg	101		61	133		
	and the second			<50			-				
Benz(a)anthracene	56-55-3	25	μg/kg		25 μg/kg	85.4		57	124	*****	
				<50				ļ			
Chrysene	218-01-9	50	μg/kg	<50							
					25 µg/kg	92.0	<u></u>	60	128		ļ
Beпzo(b)fluoranthene	205-99-2	25	µg/kg		25 µg/kg	99.9		48	135		****
				<50			*****		l l		
Benzo(k)fluoranthene	207-08-9	25	µg/kg		25 µg/kg	95.9		58	133	*****	
				<50			·				
Вепzо(а)ругепе	50-32-8	50	μg/kg	<50		*****					
F1				***************************************	25 μg/kg	77.4		50	124	*****	
Indeno(1.2.3.cd)pyrene	193-39-5	50	µg/kg	<50							
D2h /- 12 /-					25 μg/kg	87.7		48	134		
Dibenz(a.h)anthracene	53-70-3	50	μg/kg	<50			ļ	i		****	·

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Client

: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order

HK1327039



Matrix: SOIL	**************************************	Method Blank (Mi	B) Report	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
	11 100				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
EP-076A: Polycyclic Aromatic	Hydrocarbons (PAHs)	(QC Lot: 3	3088811) - Co	ntinued						577	
Dibenz(a.h)anthracene	53-70-3	25	μg/kg		25 µg/kg	87.5		50	137		
Benzo(g.h.i)perylene	191-24-2	50	μg/kg	<50							
				****	25 µg/kg	78.0		55	140		
Low M.W. PAHs		550	μg/kg	<550						******	
High M.W. PAHs	****	1700	μg/kg	<1700							<u> </u>
Matrix: WATER			Method Blank (Mi	B) Report	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike	Spike R	ecovery (%)	Recovery	Limits (%)	R	PD (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
EP-390: Triorganotins (QC Lo	t: 3102282)	i strat									
Tributyitin	56573-85-4	5	ngSn/L	<5	5 ngSn/L	114	****	73	152	*****	

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

Matrix: SOIL			Matrix Spike	(MS) and Matr	ix Spike Dupl	icate (MSD) i	Report	rt	
			Spike		covery (%)	Recovery	Limits (%)	RPD (%)	
Laboratory Client sample I sample ID	D Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Catio	ons (QC Lot: 3097552)								
HK1326772-001 Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	85.3		75	125		
	EG020: Cadmium	7440-43-9	5 mg/kg	101	****	7 5	125		
	EG020: Chromium	7440-47-3	5 mg/kg	# Not Determined		75	125		L-W-W
	EG020: Copper	7440-50-8	5 mg/kg	# Not Determined		75	125	****	
	EG020: Lead	7439-92-1	5 mg/kg	# Not Determined		75	125		
; ; ;	EG020: Mercury	7439-97-6	0.1 mg/kg	# Not Determined		75	125		
: }	EG020: Nickel	7440-02-0	5 mg/kg	# Not Determined	****	75	125		
4	EG020: Silver	7440-22-4	5 mg/kg	90.0		75	125	****	
) * *	EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	*****	75	125		

Surrogate Control Limits

Sub-Matrix: SEDIMENT		Recov	covery Limits (%)			
Compound	CAS Number	Low	High			
EP-076S: Polycyclic Aromatics Hyd	rocarbons (PAHs) Surrogates					
2-Fluorobiphenyl	321-60-8	50	130			
4-Terphenyl-d14	1718-51-0	50	130			
EP-065S: PCB Congeners and Orga	nochlorine Pesticides Surrog	ate				
Decachlorobiphenyl	2051-24-3	50	130			

A Campbell Brothers Limited Company

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

Client : CIVIL ENGINEERING AND DEVELOPMENT

DEPARTMENT

Laboratory Contact

Address

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: Fung Lim Chee, Richard

Page

Work Order

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· HK1327131

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Telephone Facsimile

Address

Project : AGREEMENT NO CE 21 2012 (WS)

accordance with its terms of accreditation.

DESALINATION PLANT AT TSEUNG KWAN

O - FEASIBILITY STUDY

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(ALS Technichem (HK) Pty Ltd) under Hong Kong Laboratory

shown in this certificate were determined by this laboratory in

Order number : GE/2012/24.13

C-O-C number : H018129

.

from the testing laboratory.

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: +852 2610 2021

Quote number

Date Samples Received

: 02-OCT-2013

Issue Date

: 18-OCT-2013

No. of samples received No. of samples analysed

: 6 : 6

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the Electronic Transactions Ordinance of Hong Kong, Chapter 553, Section 6.

Hong Kong Accreditation Service (HKAS) has accedited this laboratory Signatories

Anh Ngoc Huynh Tai Yuk Lun, Stephen Wong Wing, Kenneth

Senior Chemist - Organics

Senior Chemist - Organics **Assistant Supervisor - Metals** Authorised results for

Organics Organics Inorganics

ALS Laboratory Group

Trading Name: ALS Technichem (HK) Pty Ltd

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Page Number : 2 of 12

Client : CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order HK1327131



General Comments

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. 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. The completion date of analysis is:

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society. Specific comments for Work Order: **HK1327131**

Sample(s) were received in an ambient condition.

Sediment sample(s) analysed on an as received basis. Result(s) reported on a dry weight basis.

Sediment sample(s) as received, digested by In-house method E-ASTM D3974-09 based on ASTM D3974-09, prior to determination of metals.

Analysis of Tributyltin in interstitial water was cancelled due to insufficient volume of interstitial water except Sample #1 SD2 0.00-0.90M, Sample #2 SD2 0.90-1.90M and Sample #3 SD2 1.90-2.90M.

Total PCBs results (Method: EP065) are not HOKLAS accredited. The values are calculated from summation of the 18 PCB congeners, based on Limit of Detection (LOD) of 1 µg/kg.

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: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

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Analytical Results			_					
Sub-Matrix: SEDIMENT			Client sample ID	SD2 0.00-0.90M [02-OCT-2013] HK1327131-001	SD2 0.90-1.90M [02-OCT-2013]	SD2 1.90-2.90M [02-OCT-2013]	SD2 4.90-5.90M [02-OCT-2013]	SD2 7.90-8.90M [02-OCT-2013]
Compound	CAS Number	LOR	Unit		HK1327131-002	HK1327131-003	HK1327131-004	HK1327131-005
A/ED: Physical and Aggregate Propertie	S				······································	· ····································		I
EA055: Moisture Content (dried @ 103° C)		0.1	%	52.7	43.5	34.2	45.2	48.9
G: Metals and Major Cations				- / / - V 1/2-7 /				1
EG020: Arsenic	7440-38-2	1	mg/kg	8	6	3	5	8
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EG020: Chromium	7440-47-3	1 1	mg/kg	40	36	32	40	49
EG020: Copper	7440-50-8	1	mg/kg	30	11	7	10	14
EG020: Lead	7439-92-1	1	mg/kg	38	25	15	22	29
EG020: Mercury	7439-97-6	0.05	mg/kg	0.19	<0.05	<0.05	<0.05	<0.05
EG020: Nickel	7440-02-0	1 1	mg/kg	22	24	22	26	33
EG020: Silver	7440-22-4	0.1	mg/kg	0.6	<0.1	<0.1	<0.1	<0.1
EG020: Zinc	7440-66-6	1	mg/kg	113	84	69	79	93
P-065: PCB Single Congeners			±		<u> </u>	1	1	L
PCB 8	34883-43-7	3	µg/kg	<3	<3	<3	<3	<3
PCB 18	37680-65-2	3	μg/kg	<3	<3	<3		<3
PCB 28	7012-37-5		μg/kg	····	<3	<3	<3	<3
PCB 44	41464-39-5		μg/kg	<3	<3	<3	<3	
PCB 52	35693-99-3	3	µg/kg	- 3	<3	<3	<3	<3
PCB 66	32598-10-0	3	μg/kg	<3	<3	<3	<3	<3
PCB 77	32598-13-3	. 3	μg/kg	<3	<3	<3	<3	<3
PCB 101	37680-73-2	3	µg/kg	·· ·· // /	<3	<3	<3	/3
PCB 105	32598-14-4		μg/kg	≪3	< 3	<3 · · · · · · · · · · · · · · · · · · ·	<3	<3
PCB 118	31508-00-6	3	μg/kg	3	<3	<3	<3	\ \{3}
PCB 126	57465-28-8	3	μg/kg		<3	<3	<3	<3
PCB 128	38380-07-3	3	μg/kg	<3	<3	<3	<3	<3
PCB 138	35065-28-2	3	μg/kg	<3	3	<3	<3	3
PCB 153	35065-27-1	3	μg/kg		<3	<3	<3	<3
PCB 169	32774-16-6	3 -	μg/kg		<3	<3	<3	,
PCB 170	35065-30-6	3	μg/kg	<3		<3	<3	<3
PCB 180	35065-29-3	3	μg/kg	<3	<3	<3	<3	<3
PCB 187	52663-68-0	3	μg/kg	<3	<3	<3	<3	<3 <3
Total Polychlorinated biphenyls	-144	18	µg/kg	~18	<18	<18	<18	<18
P-076A: Polycyclic Aromatic Hydrocarbo	ons (PAHs)		l		1	1		
Naphthalene	91-20-3	50	µg/kg	<50	<50	<50	<50	<50
Acenaphthylene	208-96-8	50	µg/kg	<50	<50	<50	<50 <50	<50 <50
Acenaphthene	83-32-9	50	µд/кд	<50	<50	<50	<50 <50	<50 <50
Fluorene	86-73-7	50	μg/kg	<50	<50 <50	<50 <50	<50 <50	<50 <50
Phenanthrene	85-01-8	50	µg/kg	<50	<50	<50 <50	<50 <50	<50 <50

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Sub-Matrix: SEDIMENT			t sample ID	SD2 0.00-0.90M	SD2 0.90-1.90M	SD2 1.90-2.90M	SD2 4.90-5.90M	SD2 7.90-8.90M
	· · · · · · · · · · · · · · · · · · ·	Client sampling	date / time	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]
Compound	CAS Number	LOR	Unit	HK1327131-001	HK1327131-002	HK1327131-003	HK1327131-004	HK1327131-005
EP-076A: Polycyclic Aromatic Hyd	rocarbons (PAHs) - Co	ontinued						
Anthracene	120-12-7	50	µg/kg	<50	<50	<50	<50	<50
Fluoranthene	206-44-0	150	µg/kg	<150	<150	<150	<150	<150
Pyrene	129-00-0	150	µg/kg	<150	<150	<150	<150	<150
Benz(a)anthracene	56-55-3	150	µg/kg	<150	<150	<150	<150	<150
Chrysene	218-019	150	µg/kg	<150	<150	<150	<150	<150
Benzo(b)fluoranthene	205-99-2	150	μg/kg	<150	<150	<150	<150	<150
Benzo(k)fluoranthene	207-08-9	150	μg/kg	<150	<150	<150	<150	<150
Benzo(a)pyrene	50-32-8	150	μg/kg	<150	<150	<150	<150	<150
Indeno(1.2.3.cd)pyrene	193-39-5	150	μg/kg	<150	<150	<150	<150	<150
Dibenz(a.h)anthracene	53-70-3	150	µg/kg	<150	<150	<150	<150	<150
Benzo(g.h.i)perylene	19124-2	150	µg/kg	<150	<150	<150	<150	<150
Low M.W. PAHs	****	550	µg/kg	<550	<550	<550	<550	<550
High M.W. PAHs		1700	µg/kg	<1700	<1700	<1700	<1700	<1700
EP-076S: Polycyclic Aromatics Hyd	rocarbons (PAHs) Sui	rrogates				*	Surrogate control limits	listed at end of this repor
2-Fluorobiphenyl	32160-8	0.1	%	88.6	93.3	96.8	103	89.2
4-Terphenyl-d14	1718-51-0	0.1	%	91.0	102	107	98.2	97.9
P-065S: PCB Congeners and Orga	nochlorine Pesticides	s Surrogate			1		Surrogate control limits	listed at end of this repor
Decachlorobiphenyl	2051-24-3	0.1	%	53.6	58.3	54.7	51.5	54.9

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: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

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Sub-Matrix: SEDIMENT		Client sample ID	SD2				
		nucleon a	10.90-11.90M	* American Co	,		
	Cli	ent sampling date / time	[02-OCT-2013]				Parameter 1 de
Compound	CAS Number L	OR Unit	HK1327131-006				
A/ED: Physical and Aggregate Propertic					<u> </u>	1	i
EA055: Moisture Content (dried @ 103°		0.1 %	43.7	(1	<u> </u>
C)			-14.1	77			
EG: Metals and Major Cations					t		L
EG020: Arsenic	7440-38-2	1 mg/kg	14				Ĭ
EG020: Cadmium	7440-43-9 (0.2 mg/kg	<0.2				
EG020: Chromium	7440-47-3	1 mg/kg	36				
EG020: Copper	7440-50-8	1 mg/kg	12				
EG020: Lead	7439-92-1	1 mg/kg	29				
EG020: Mercury	7439-97-6 0	.05 mg/kg	<0.05				1
EG020: Nickel	7440-02-0	1 mg/kg	23				<u></u>
EG020: Silver	7440-22-4 (0.1 mg/kg	<0.1				LLE TOP STATE OF THE STATE OF T
EG020: Zinc	7440-66-6	1 mg/kg	78	***************************************			
EP-065: PCB Single Congeners				/.*			1:::::::::::::::::::::::::::::::::
PCB 8	34883-43-7	3 µg/kg	<3				1
PCB 18	37680-65-2	3 µg/kg	<3				ţ
PCB 28	7012-37-5	3 µg/kg	<3		···· - ·· · · · · · · · · · · · · · · ·		
PCB 44	41464-39-5	3 µg/kg	<3				
PCB 52	35693-99-3	3 µg/kg	<3				
PCB 66	32598-10-0	3 µg/kg	<3				
PCB 77	32598-13-3	3 µg/kg	<3				
PCB 101	37680-73-2	3 µg/kg	<3				
PCB 105	32598-14-4	3 µg/kg	<3				·····
PCB 118	31508-00-6	3 µg/kg	<3				
PCB 126	57465-28-8	3 µg/kg	<3				
PCB 128	38380-07-3	3 µg/kg	<3				<u></u>
PCB 138	35065-28-2	3 μg/kg	<3				§
PCB 153	35065-27-1	3 µg/kg	<3		 		
PCB 169	32774-16-6	3 µg/kg	<3	· · · · · · · · · · · · · · · · · · ·			
PCB 170	35065-30-6	3 µg/kg	<3				
PCB 180	35065-29-3	3 µg/kg	<3				· · · · · · · · · · · · · · · · · · ·
PCB 187	52663-68-0	3 µg/kg	<3				
Total Polychlorinated biphenyls		18 µg/kg	<18				
P-076A: Polycyclic Aromatic Hydrocarb	ons (PAHs)				J	. 	I
Naphthalene		50 μ g/k g	<50	1	Ţ		1
Acenaphthylene	208-96-8	50 μg/kg	<50				
Acenaphthene	83-32-9	50 µg/k g	<50				
Fluorene	86-73-7	50 µg/kg	<50				
Phenanthrene	85-01-8	50 µg/kg	<50				
Anthracene	120-12-7	50 µg/kg	<50				<u></u>

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Sub-Matrix: SEDIMENT		(Client sample ID	\$D2				
		Client sam	pling date / time	10.90-11.90M [02-OCT-2013]				vendenty income
Compound	CAS Number	LOR	Unit	HK1327131-006				
EP-076A: Polycyclic Aromatic Hydroca	rbons (PAHs) - Co	ntinued						•
Fluoranthene	206-44-0	150	µg/kg	<150				<u> </u>
Pyrene	129-00-0	150	μg/kg	<150	4	* **		
Benz(a)anthracene	56-55-3	150	µg∕kg	<150				
Chrysene	218-01-9	150	µg/kg	<150				
Benzo(b)fluoranthene	205-99-2	150	μg/kg	<150				
Benzo(k)fluoranthene	207-08-9	150	ug/kg	<150	ty),			
Benzo(a)pyrene	50-32-8	150	рд/кд	<150		· · · · · · · · · · · · · · · · · · ·		
Indeno(1.2.3.cd)pyrene	193-39-5	150	µg/kg	<150				
Dibenz(a.h)anthracene	53-70-3	150	μg/kg	<150				
Benzo(g.h.i)perylene	191-24-2	150	µg/kg	<150				
Low M.W. PAHs		550	μg/kg	<550				
High M.W. PAHs	******	1700	μg/kg	<1700				
EP-076S: Polycyclic Aromatics Hydroca	arbons (PAHs) Sur	rogates		··· · · · · · · · · · · · · · · · · ·	have a second of the contract of		Surrogate control limits	ilisted at end of this report
2-Fluorobiphenyl	321-60-8	0.1	%	81.1				
4-Terphenyl-d14	1718-51-0	0.1	%	86.6				
EP-065S: PCB Congeners and Organoo	hlorine Pesticides	Surroga	ate	· · · · · · · · · · · · · · · · · · ·	der er e		Surrogate control limits	listed at end of this report
Decachlorobiphenyl	2051-24-3	0.1	%	52.8				I

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Sub-Matrix: INTERSTITIAL WATER	Client sample IE Client sampling date / time	0.00-0.90M	SD2 0.90-1.90M	SD2 1.90-2.90M		
Compound	CAS Number LOR Unit	HK1327131-001	HK1327131-002	HK1327131-003		
EP-390: Triorganotins			· · · · · · · · · · · · · · · · · · ·	<u> </u>	<u></u>	
Tributyltin	56573-85-4 0.015 µg TBT /L	<0.015	<0.015	<0.015		

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Laboratory Duplicate (DUP) Report

latrix: SOIL					Li	boratory Duplicate (DUP) F	Report	
aboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
A/ED: Physical	and Aggregate Prop	erties (QC Lot: 3097645)						
HK1326937-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	36,0	34.9	3.3
HK1326938-004	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	35.0	35.2	0.6
	Major Cations (QC L		1				,	
HK1326772-002	Anonymous	EG020: Mercury	7439-97-6	0.05	mg/kg	1.21	1.22	0.0
	7 thorry mods	EG020: Silver	7440-22-4	0.1	mg/kg	2.1	1.7	19.0
		EG020: Cadmium	7440-43-9	0.2	mg/kg	0.8	0.8	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	14	12	12.1
		EG020: Chromium	7440-47-3	- i i	mg/kg	72	67	7.7
		EG020: Copper	7440-50-8		mg/kg	109	113	3.9
		EG020: Lead	7439-92-1		mg/kg	206	233	12.2
		EG020: Nickel	7440-02-0		mg/kg	31	31	0.0
		EG020: Vince	7440-66-6	<u>1</u>	mg/kg	248	265	6.9
HK1327039-001	Anonymous	EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	<0.05	0.0
	, , wierry mode	EG020: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.0
		EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	3	3	0.0
		EG020: Chromium	7440-47-3	- 1	mg/kg	24	22	8.7
		EG020: Copper	7440-50-8		mg/kg	8	8	0.0
		EG020: Lead	7439-92-1	1	mg/kg	19	18	6.7
		EG020: Nickel	7440-02-0		mg/kg	15	13	9.6
		EG020: Zinc	7440-66-6		mg/kg	54	49	9.1
C. Motole and R	Major Cations (QC L	·	7440 00 0;	•	mgatg	, 04	, 10	3.1
HK1327131-004	SD2 4.90-5.90M	EG020: Mercury	7439-97-6	0.05	malka	<0.05	<0.05	0.0
111(1321131-004	3D2 4.90~3.90M	i e e e e e e e e e e e e e e e e e e e	7440-22-4	0.05	mg/kg	<0.03	<0.03	0.0
		EG020: Silver EG020: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.0
			7440-38-2	1	mg/kg	\0.2	\0.2	0.0
		EG020: Arsenic EG020: Chromium	7440-38-2		mg/kg mg/kg	40	41	2.8
	•		7440-50-8			10	11	0.0
		EG020: Copper EG020: Lead	7439-92-1		mg/kg mg/kg	22	22	0.0
		EG020: Lead EG020: Nickel	7440-02-0		mg/kg	26	27	0.0
		EG020: Zinc	7440-66-6	4	mg/kg	79	81	2.5
-D 065. DCD 0:-	mla Cammanana (OC		7440-00-0		mg/kg	19	. 01	2.5
	gle Congeners (QC						3 40 5	0.0
HK1326772-001	Anonymous	Total Polychlorinated biphenyls	0.4000 40.7	18	μg/kg	<18	<18	0.0
		PCB 8	34883-43-7	3	μg/kg	<3	<3	0.0
		PCB 18	37680-65-2	3	μg/kg	<3	<3	0.0
		PCB 28	7012-37-5	3	μg/kg	<3	<3	0.0
		PCB 44	41464-39-5	3	μg/kg	<3	<3	0,0
		PCB 52	35693-99-3	3	μg/kg		<3	0.0
		PCB 66	32598-10-0	3	μg/kg		<3	0.0
		PCB 77	32598-13-3	3	μg/kg	<3	<3	0.0
		PCB 101	37680-73-2	3	µg/kg	<3	<3	0.0
		PCB 105	32598-14-4	3	μg/kg	<3	<3	0.0

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fatrix: SOIL					L	aboratory Duplicate (DUP) I	Report	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
P-065: PCB Sing	jie Congeners (QC	Lot: 3088810) - Continued				······································	mhiorana anno I	
HK1326772-001	Anonymous	PCB 118	31508-00-6	3	μg/k9	<3	<3	0.0
	•	PCB 126	57465-28-8	3	μg/kg	<3	<3	0.0
		PCB 128	38380-07-3	3	μg/kg	<3	<3	0.0
		PCB 138	35065-28-2	3	μg/kg	<3	<3	0.0
		PCB 153	35065-27-1	3	μg/kg	<3	<3	0.0
		PCB 169	32774-16-6	3	μg/kg	<3	<3	0.0
	1	PCB 170	35065-30-6	3	μg/kg	<3	<3	0.0
	+	PCB 180	35065-29-3	3	μg/kg	<3	<3	0.0
	}	PCB 187	52663-68-0	3	μg/kg	<3	<3	0.0
EP-076A: Polycyc	lic Aromatic Hydrod	arbons (PAHs) (QC Lot: 3088811)						
HK1326772-001	Anonymous	Fluoranthene	206-44-0	150	μg/kg	<150	<150	0.0
		Pyrene	129-00-0	150	μg/kg	<150	<150	0.0
		Benz(a)anthracene	56-55-3	150	μg/kg	<150	<150	0.0
		Chrysene	218-01-9	150	μg/kg	<150	<150	0.0
		Benzo(b)fluoranthene	205-99-2	150	μg/kg	<150	<150	0.0
		Benzo(k)fluoranthene	207-08-9	150	μg/kg	<150	<150	0.0
		Benzo(a)pyrene	50-32-8	150	μg/kg	<150	<150	0.0
		Indeno(1.2.3.cd)pyrene	193-39-5	150	μg/kg	<150	<150	0.0
		Dibenz(a.h)anthracene	53-70-3	150	μg/kg	<150	<150	0.0
	•	Benzo(g.h.i)perylene	191-24-2	150	μg/kg	<150	<150	0.0
		High M.W. PAHs		1700	μg/kg	<1700	<1700	0.0
		Naphthalene	91-20-3	50	μg/kg	<50	<50	0.0
		Acenaphthylene	208-96-8	50	μg/kg	<50	<50	0.0
	,	Acenaphthene	83-32-9	50	μg/kg	<50	<50	0.0
	*	Fluorene	86-73-7	50	μg/kg	<50	<50	0.0
		Phenanthrene	85-01-8	50	μg/kg	<50	<50	0.0
		Anthracene	120-12-7	50	μg/kg	<50	<50	0.0
		Low M.W. PAHs		550	μg/kg	<550	<550	0.0
trix: WATER					L	boratory Duplicate (DUP) F	Report	NAMES OF PERSONS ASSESSED ASSESSED ASSESSED ASSESSED.
aboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
P-390: Triorgan	otins (QC Lot: 3102	282)				·····	<u></u>	
HK1327374-001	Anonymous	Tributyltin	56573-85-4	6	ngSn/L	<6	<6	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: SOIL		Method Blank (MB) Report				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
	To a second seco				Spike	Spike Re	covery (%)	Recovery Limits (%)	RPD (%)		
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low High	Value Control		
EG: Metals and Major Cation	s (QC Lot: 3097552)							· · · · · · · · · · · · · · · · · · ·			
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	95.2	;	77 109			
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	103		86 110			
EG020: Chromium	7440-47-3	1	mg/kg	<1	5 mg/kg	98.7	*******	88 120			
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	93.4	*****	85 109			
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	93.3		84 106			

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ALS

Matrix: SOIL	1		Method Blank (MB) Report		Laboratory Con	trol Spike (LCS) and La	boratory Control	Spike Duplicate (DCS) Report	
					Spike		Recovery (%)		Limits (%)		PD (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC L	ot: 3097552) - Co	ntinued									
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	89.0		80	112		
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	92.3		87	111		
EG020: Silver	7440-22-4	0.1	mg/kg	<0.1	5 mg/kg	85.3		83	105		
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	100		82	126		
EG: Metals and Major Cations (QC L	a service and the contract of a service of a		9/119						120		
EG020: Arsenic	7440-38-2		mg/kg	<1	5 mg/kg	90.4		77	400		,
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	99.4		77	109		***************************************
EG020: Chromium	7440-47-3	1	mg/kg	<1		93.6		86	110		
EG020: Copper	7440-50-8	1	mg/kg	<1 <1	5 mg/kg	93.6		88	120		. 1
EG020: Lead	7439-92-1	1	mg/kg		5 mg/kg			85	109		
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	5 mg/kg	88.3		84	106	*****	.)
EG020: Nickel	7440-02-0	1	7 7,	<0.05	0.1 mg/kg	85.5	· · · · · · · · · · · · · · · · · · ·	80	112		****
EG020: Silver	7440-22-4	0.1	mg/kg		5 mg/kg	88.0		87	111		. i
EG020: Zinc	7440-66-6	0.1	mg/kg	<0.1 <1	5 mg/kg	86.6 97.8		83	105	*****	i
Control of the contro		*	mg/kg		5 mg/kg	97.8		82	126		
EP-065: PCB Single Congeners (QC					many management of the second	· · · · · · · · · · · · · · · · · · ·					
PCB 8	34883-43-7	3	µg/kg	<3	5 µg/kg	102		40	142		· · · · · ·
PCB 18	37680-65-2	3	µg/kg	<3	5 μg/kg	104	· · · · · · · · · · · · · · · · · · ·	39	131		<u> </u>
PCB 28	7012-37-5	3	μg/kg	<3	5 μg/kg	114	<u></u>	26	134	****	
PCB 44	41464-39-5	3	μg/kg	<3	5 μg/kg	115		32	130		
PCB 52	35693-99-3	, 3	μg/kg	<3	5 µg/kg	110	i	42	126		
PCB 66	32598-10-0	3 (µg/kg	. <3	5 μg/kg	110	*****	33	123	-to-do see Are	
PCB 77	32598-13-3	3	μg/kg	<3	5 μg/kg	115		59	125		****
PCB 101	37680-73-2	3	μg/kg	<3	5 μg/kg	108		60	119	****	
PCB 105	32598-14-4	3	μg/kg	<3	5 μg/kg	78.4		56	121		
PCB 118	31508-00-6	3	μg/kg	<3	5 μg/kg	78.7		60	119	****	
PCB 126	57465-28-8	3	μg/kg	<3	5 μg/kg	103		60	117	****	
PCB 128	38380-07-3	3	µg/kg	<3	5 μg/kg	104		58	117	****	
PCB 138	35065-28-2	3	μg/kg	<3	5 μg/kg	106		59	128		
PCB 153	35065-27-1	3	μg/kg	<3	5 μg/kg	105	******	61	120	****	
PCB 169	32774-16-6	3	μg/kg	<3	5 μg/kg	91.0		50	123		
PCB 170	35065-30-6		μg/kg	<3	5 μg/kg	106		50	130		
PCB 180	35065-29-3	3	μg/kg	<3	5 μg/kg	89.6		56	124	****	*****
PCB 187	52663-68-0	3	μg/kg	<3	5 μg/kg	100		56	122		·
Total Polychlorinated biphenyls		18	µg/kg	<18		****		****	1		*****
EP-076A: Polycyclic Aromatic Hydrod	carbons (PAHs) (QC Lot: 3	088811)								·· · · · · · · · · · · · · · · · · ·
Naphthalene	91-20-3	25	μg/kg		25 μg/kg	94.0	······································	63	117	*****	· • • • • • • • • • • • • • • • • • • •
				<50		*** -					:
Acenaphthylene	208-96-8	50	μg/kg	<50			*****		! - <u></u> !-	******	
			0		25 μg/kg	86.9		54	119	*****	
Acenaphthene	83-32-9	25	μg/kg	****	25 μg/kg	91.8		59	122		
	and the same of th			<50						******	
Fluorene	86-73-7	25	μg/kg		25 μg/kg	97.3		60	126		
	9			<50	****				į <u> </u>		

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Client Work Order : CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT



Matrix: SOIL			Method Blank (ME) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike	Spike Rec	overy (%)	Recovery	Limits (%)		PD (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
EP-076A: Polycyclic Aromatic Hydroc	arbons (PAHs)	(QC Lot: 3	3088811) - Co	ntinued					· · · · · · · · · · · · · · · · · · ·		
Phenanthrene	85-01-8	25	µg/kg	 <50	25 μg/kg	93.5		60	127		
Anthracene	120-12-7	25	µg/kg	 <50	25 μg/kg	86.0		56	124	~~~	A
Fluoranthene	206-44-0	25	µg/kg	<50	25 μg/kg	102		61	132		
Ругепе	129-00-0	25	µg/kg	 <50	25 μg/kg	101		61	133		
Benz(a)anthracene	56-55-3	25	μg/kg	<50	25 μg/kg	85.4		57	124	~~~	**************************************
Chrysene	218-01-9	50	μg/kg	<50 	 25 μg/kg	92.0		60	128		Administration of the control of the
Вепzo(b)fluoranthene	205-99-2	25	μg/kg	 <50	25 μg/kg	99,9		48	135		******
Benzo(k)fluoranthene	207-08-9	25	μg/kg	<50	25 μg/kg	95.9		58	133	*****	1
Вепzo(а)ругепе	50-32-8	50	μg/kg	<50	25 μg/kg	77,4		50	124		
Indeno(1.2.3.cd)pyrene	193-39-5	50	µg/kg	<50	25 µg/kg	87.7	*******	48	134	******	
Dibenz(a.h)anthracene	53-70-3	50	µg/kg	<50	25 µg/kg	87.5		50	137		
Benzo(g.h.i)perylene	191-24-2	50	µg/kg	<50 	25 µg/kg	78.0		55	140		*****
Low M.W. PAHs High M.W. PAHs		550 1700	µg/kg µg/kg	<550 <1700					140		
Matrix: WATER	~~************************************		Method Blank (MB			Laboratory Control	Spike (LCS) and La	boratory Control	Spike Duplicate (DCS) Report	
		<u></u> .			Spike	Spike Rec	and the second s	Recovery	Limits (%)	R	PD (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
EP-390: Triorganotins (QC Lot: 31022 Tributyltin	8 2) 56573-85-4	5	ngSn/L	<5	5 ngSn/L	114		73	152		

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∴ CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order

HK1327131



Ma	atrix Spike (MS) an	d Matrix Spike	Duplicate (i	MSD) Report	
Mati	rix: SOIL				

Matrix: SOIL					Matrix Spike	(MS) and Matr	ix Spike Dupl	licate (MSD)	Report		
				Spike		covery (%)	Recovery	Limits (%)	RP	D (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit	
EG: Metals	and Major Cations (QC L	ot: 3097552)		-						***************************************	
HK1326772-0	001 Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	85.3		75	125	****	· · · · · · · · · · · · · · · · · · ·	
		EG020: Cadmium	7440-43-9	5 mg/kg	101		75	125		1	
		EG020: Chromium	7440-47-3	5 mg/kg	# Not Determined		75	125		******	
		EG020: Copper	7440-50-8	5 mg/kg	# Not Determined		75	125	********		
		EG020: Lead	7439-92-1	5 mg/kg	# Not Determined		75	125			
		EG020: Mercury	7439-97-6	0.1 mg/kg	# Not Determined		75	125			
	; ;	EG020: Nickel	7440-02-0	5 mg/kg	# Not Determined		75	125	at 44 to the		
	•	EG020: Silver	7440-22-4	5 mg/kg	90,0		75	125			
	: 	EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	******	75	125			
EG: Metals	and Major Cations (QC Lo	ot: 3097554)				A STATE OF THE PERSON NAMED OF		******		palibabili obasay anno malaaman ajigga	
HK1327131-0	03 SD2 1.90-2.90M	EG020: Arseníc	7440-38-2	5 mg/kg	105		75	125			
		EG020: Cadmium	7440-43-9	5 mg/kg	104	·	75	125			
	; ;	EG020: Chromium	7440-47-3	5 mg/kg	# Not Determined	W 9014-W	75	125			
		EG020: Copper	7440-50-8	5 mg/kg	78,4		75	125			
	•	EG020: Lead	7439-92-1	50 mg/kg	88.2	*****	75	125			
	•	EG020: Mercury	7439-97-6	0.1 mg/kg	96.5		75	125			
	:	EG020: Nickel	7440-02-0	50 mg/kg	89.2		75	125	****	*	
	:	EG020: Silver	7440-22-4	5 mg/kg	78.7	· · · · · · · · · · · · · · · · · · ·	75	125	****		
	:	EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	********	75	125			

Surrogate Control Limits

Sub-Matrix: SEDIMENT		Recovery Limits (%)						
Compound	CAS Number	Low	High					
EP-076S: Polycyclic Aromatics Hyd	rocarbons (PAHs) Surrogates	;						
2-Fluorobiphenyl	321-60-8	50	130					
4-Terphenyl-d14	1718-51-0	50	130					
EP-065S: PCB Congeners and Orga	anochlorine Pesticides Surrog	jate						
Decachlorobiphenyl	2051-24-3	50	130					

ALS Technichem (HK) Pty Ltd







CERTIFICATE OF ANALYSIS

: ALS Technichem HK Pty Ltd

: 11/F., Chung Shun Knitting Centre, 1 - 3

Wing Yip Street, Kwai Chung, N.T., Hong

: Fung Lim Chee, Richard

Client : CIVIL ENGINEERING AND DEVELOPMENT

DEPARTMENT

Contact : MR SUN NG Address

: GEOTECHNICAL PROJECTS DIVISION, **GEOTECHNICAL ENGINEERING OFFICE,**

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410 KWUN TONG ROAD, KOWLOON, HONG

KONG

E-mail : sunng@cedd.gov.hk

Telephone : ***** Facsimile

Project

: AGREEMENT NO CE 21 2012 (WS)

DESALINATION PLANT AT TSEUNG KWAN

O - FEASIBILITY STUDY

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listed in the HOKLAS Directory of Accredited Laboratories. The results

Accreditation Scheme (HOKLAS) for specific laboratory activities as

(ALS Technichem (HK) Pty Ltd) under Hong Kong Laboratory

shown in this certificate were determined by this laboratory in

Order number : GE/2012/24.13

accordance with its terms of accreditation.

C-O-C number : H018129

Site ; ----

from the testing laboratory.

Telephone

Laboratory

Contact

Address

E-mail

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,

Kong

Page

: 1 of 9

Work Order

: HK1327299

: Richard.Fung@alsglobal.com

: +852 2610 1044

: +852 2610 2021

Issue Date

Date Samples Received

: 21-OCT-2013

: 02-OCT-2013

No, of samples received

: 4

No. of samples analysed : 4

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the Electronic Transactions Ordinance of Hong Kong, Chapter 553, Section 6.

Signatories

Anh Ngọc Huynh / 👭

Tai Yuk Lun, Stephen≪ Wong Wing, Kenneth

Senior Chemist - Organics

Senior Chemist - Organics Assistant Supervisor - Metals **Organics Organics** Inorganics

Authorised results for

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A Campbell Brothers Limited Company

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Client : CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order

HK1327299



General Comments

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. 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. The completion date of analysis is: 17-OCT-2013

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society. Specific comments for Work Order: HK1327299

Sample(s) were received in an ambient condition.

Sediment sample(s) analysed on an as received basis. Result(s) reported on a dry weight basis.

Sediment sample(s) as received, digested by In-house method E-ASTM D3974-09 based on ASTM D3974-09, prior to determination of metals,

Total PCBs results (Method: EP065) are not HOKLAS accredited. The values are calculated from summation of the 18 PCB congeners, based on Limit of Detection (LOD) of 1 µg/kg.

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Client

: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order



Analytical Results Sub-Matrix: SEDIMENT		(Client sample ID	GS 1	GS 2	GS 3	GS 4	
one manni Cevilletti			pling date / time	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	GS 4 [02-OCT-2013]	
Commenced				HK1327299-001	HK1327299-002	HK1327299-003	HK1327299-004	
Compound	CAS Number	LOR	Unit	HK1327299-001	HK132/299-002	HK132/299-003	HK132/299-004	<u> </u>
A/ED: Physical and Aggregate Properties	***************************************					The state of the s		
EA055: Moisture Content (dried @ 103°C)		0.1	%	52.9	38.0	37.6	44.9	
G: Metals and Major Cations						**************************************	* 1990/1 1991 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	***************************************
EG020: Arsenic	7440-38-2	1	mg/kg	8	5	4	3	
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0,2	<0.2	<0.2	<0.2	
EG020: Chromium	7440-47-3	1	mg/kg	32	23	26	25	
EG020: Copper	7440-50-8	1 1	mg/kg	24	17	18	18	
EG020: Lead	7439-92-1	1	mg/kg	35	28	25	22	
EG020: Mercury	7439-97-6	0.05	mg/kg	0.10	0.08	0.06	0.07	
EG020: Nickel	7440-02-0	1	mg/kg	17	12	14	13	
EG020: Silver	7440-22-4	0.1	mg/kg	0.4	0,2	0.2	0.3	
EG020: Zinc	7440-66-6	1	mg/kg	102	79	74	68	
P-065: PCB Single Congeners	i		i		1	L	L	1
PCB 8	34883-43-7	3	µg/kg	<3	<3	<3	<3	Τ
PCB 18	37680-65-2	3	µg/kg	<3	<3	<3	<3	
PCB 28	7012-37-5	3	µg/kg	<3	<3	<3	<3	
PCB 44	41464-39-5	3	µg/kg	<3	<3	<3	<3	.
PCB 52	35693-99-3	3	μg/kg		<3	<3	<3	
PCB 66	32598-10-0	3	μg/kg	<3	<3	<3	<3	
PCB 77	32598-13-3	3	µg/kg	<3	<3	<3	<3	ļ
PCB 101	37680-73-2	. 3	pg/kg		<3	<3	<3	
PCB 101	32598-14-4	3	pg/kg	<3	<3	<3	<3	
PCB 109	31508-00-6	3	pg/kg	<3	<3	<3	<3	-
PCB 116	57465-28-8	3	µg/kg		. k.	<3	<3	·
PCB 126 PCB 128	38380-07-3	3	µg/kg µg/kg	<3 <3	<3	<3	<3	
	35065-28-2	3			<3	<3 <3		
PCB 138	35065-28-2 35065-27-1	 3	µg/kg	<3	<3	È	<3	
PCB 153	32774-16-6	3	μg/kg	<3 <3	<3	<3	<3	
PCB 169	į.	3	µg/kg		<3	<3	<3	
PCB 170	35065-30-6 35065-29-3	3	µg/kg	<3	<3	<3	<3	
PCB 180			µg/kg	<3	<3	<3	<3	
PCB 187	52683-68-0	3	µg/kg	<3	<3	<3	<3	
Total Polychlorinated biphenyls		18	μg/kg	<18	<18	<18	<18	
P-076A: Polycyclic Aromatic Hydrocarbor			·			and an analysis and a complete that a complete an analysis and a complete and a c	gante and the second control of the second c	
Naphthalene	91-20-3	50	µg/kg	<50	<50	<50	<50	
Acenaphthylene	208-96-8	50	µg/kg	<50	<50	<50	<50	
Acenaphthene	83-32-9	50	μg/kg	<50	<50	<50	<50	
Fluorene	86-73-7	50	µg/kg	<50	<50	<50	<50	L
Phenanthrene	85-01-8	50	µg/kg	<50	<50	<50	<50	
Anthracene	120-12-7	50	µg/kg	<50	<50	<50	<50	1

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: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order



Sub-Matrix: SEDIMENT		C	ilient sample ID	GS 1	GS 2	GS 3	GS 4	
		Client sam	oling date / time	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	
Compound	CAS Number	LOR	Unit	HK1327299-001	HK1327299-002	HK1327299-003	HK1327299-004	
EP-076A: Polycyclic Aromatic Hydr	ocarbons (PAHs) - Co	ontinued						· · · · · · · · · · · · · · · · · · ·
Fluoranthene	206-44-0	150	µg/kg	<150	<150	<150	<150	
Pyrene	129-00-0	150	µg/kg	<150	<150	<150	<150	
Benz(a)anthracene	56-55-3	150	µg/kg	<150	<150	<150	<150	
Chrysene	218-01-9	150	μg/kg	<150	<150	<150	<150	
Benzo(b)fluoranthene	205-99-2	150 .	µg/kg	<150	<150	<150	<150	
Benzo(k)fluoranthene	207-08-9	150	µg/kg ∷	<150	<150	<150	<150	
Benzo(a)pyrene	50-32-8	150	μg/kg	<150	<150	<150	<150	
Indeno(1.2.3.cd)pyrene	193-39-5	150	μg/kg	<150	<150	<150	<150	
Dibenz(a.h)anthracene	53-70-3	150	μg/kg	<150	<150	<150	<150	
Benzo(g.h.i)perylene	191-24-2	150	μg/kg	<150	<150	<150	<150	
Low M.W. PAHs	****	550	µg/kg	<550	<550	<550	<550	
High M.W. PAHs		1700	μg/kg	<1700	<1700	<1700	<1700	
P-076S: Polycyclic Aromatics Hydi	rocarbons (PAHs) Su	rrogates	*		*····	-t	Surrogate control limits	isted at end of this report
2-Fluorobiphenyl	321-60-8	0.1	%	83.2	75.7	82.3	70.6	
4-Terphenyl-d14	1718-51-0	0.1	%	93.5	88.6	92.0	80.6	
P-065S: PCB Congeners and Orga	nochlorine Pesticide	s Surroga	ite		4 areas - Francisco		Surrogate control limits I	isted at end of this report
Decachlorobiphenyl	205124-3	0.1	%	54.7	50.7	64.5	51.8	

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Client

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order



Sub-Matrix: INTERSTITIAL WATER			Client sample ID	GS 1	GS 2	GS 3	GS 4	
		Client san	npling date / time	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	
Compound	CAS Number	LOR	Unit	HK1327299-001	HK1327299-002	HK1327299-003	HK1327299-004	
EP-390: Triorganotins							·	
Tributyltin	56573-85-4	0.015	µg TBT /L	<0.015	<0.015	<0.015	<0.015	

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: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order

HK1327299



Laboratory Duplicate (DUP) Report Matrix: SOIL

Aatrix: SOIL					Report			
Laboratory sample ID	Client sample IO	Method: Compaund	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
A/ED: Physical	and Aggregate Prop	perties (QC Lot: 3110109)		· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·		
IK1327374-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	53,2	53.3	0.2
IK1327803-009	Anonymous	EA055: Moisture Content (dried @ 103°C)	****	0.1	%	10.6	9.3	13.1
G: Metals and N	fajor Cations (QC L		,	·				
IK1327131-004	Anonymous	EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	<0.05	0.0
	÷	EG020: Silver	7440-22-4	0.1	mg/kg	<0.1	<0,1	0.0
	•	EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0
		EG020: Arsenic	7440-38-2	1 1	mg/kg	5	4	0.0
		EG020: Chromium	7440-47-3	1	mg/kg	40	41	2.8
		EG020: Copper	7440-50-8	1	mg/kg	10	11	0.0
		EG020: Lead	7439-92-1	1 :	mg/kg	22	22	0.0
		EG020; Nickel	7440-02-0	1	mg/kg	26	27	0.0
		EG020: Zinc	7440-66-6	1	mg/kg	79	81	2.5
P-065: PCB Sind	gle Congeners (QC		- 1		J J			
IK1326772-001	Anonymous	Total Polychlorinated biphenyls	****	18	μg/kg	<18	<18	0.0
	•	PCB 8	34883-43-7	3	μg/kg	<3	<3	0.0
	1	PCB 18	37680-65-2	3	µg/kg	<3	<3	0.0
		PCB 28	7012-37-5	3	µg/kg	<3	<3	0.0
		PCB 44	41464-39-5	3	μg/kg	<3	<3	0.0
	1	PCB 52	35693-99-3	3	μg/kg	<3	<3	0.0
		PCB 66	32598-10-0	3	μg/kg	<3	<3	0.0
	•	PCB 77	32598-13-3	3	μg/kg	<3	<3	0.0
		PCB 101	37680-73-2	3	μg/kg	<3	<3	0.0
		PCB 105	32598-14-4	3	μg/kg	<3	<3	0.0
	4	PCB 118	31508-00-6	3	μg/kg	<3	<3	0.0
	•	PCB 126	57465-28-8	3	μg/kg	<3	<3	0.0
	•	PCB 128	38380-07-3	3	μg/kg	<3	<3	0.0
	•	PCB 138	35065-28-2	3	μg/kg	<3	<3	0.0
		PCB 153	35065-27-1	3	μg/kg	<3	<3	0.0
		PCB 169	32774-16-6	3	μg/kg	<3	<3	0.0
		PCB 170	35065-30-6	3	μg/kg	<3	<3	0.0
		PCB 180	35065-29-3	3	μg/kg	<3	<3	0.0
		PCB 187	52663-68-0	3	µg/kg	<3	<3	0.0
P-076A: Polycyc	lic Aromatic Hydroc	carbons (PAHs) (QC Lot: 3088811)	02000 00 0		בייים	•		. 0.0
IK1326772-001	Anonymous	Fluoranthene	206-44-0	150	μg/kg	<150	<150	0.0
		Pyrene	129-00-0	150	μg/kg	<150	<150	0.0
		Benz(a)anthracene	56-55-3	150	μg/kg	<150	<150	0.0
		Chrysene	218-01-9	150	μg/kg	<150	<150	0.0
	4	Benzo(b)fluoranthene	205-99-2	150	μg/kg	<150	<150	0.0
		Benzo(k)fluoranthene	207-08-9	150	μg/kg	<150 <150	<150	0.0
	+	Benzo(a)pyrene	50-32-8	150	μg/kg μg/kg	<150 <150	<150 <150	0.0
		Indeno(1.2.3.cd)pyrene	193-39-5	150	μg/kg μg/kg	<150	<150	0.0
	4		53-70-3	150		<150	<150 <150	0.0
	•	Dibenz(a.h)anthracene	33-10-3	100	µg/kg	~100	100	0.0

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Client

: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order

HK1327299



Matrix: SOIL					La	boratory Duplicate (DUP) F	Report	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-076A: Polycy	lic Aromatic Hydrod	carbons (PAHs) (QC Lot: 3088811) - Co	ntinued			·		· ·
HK1326772-001	Anonymous	Benzo(g.h.i)perylene	191-24-2	150	μg/kg	<150	<150	0.0
		High M.W. PAHs		1700	μg/kg	<1700	<1700	0.0
		Naphthalene	91-20-3	50	μg/kg	<50	<50	0.0
		Acenaphthylene	208-96-8	50	μg/kg	<50	<50	0.0
		Acenaphthene	83-32-9	50	µg/kg	<50	<50	0.0
		Fluorene	86-73-7	50	µg/kg	<50	<50	0.0
	T.	Phenanthrene	85-01-8	50	μg/kg	<50	<50	0.0
		Anthracene	120-12-7	50	μg/kg	<50	<50	0.0
		Low M.W. PAHs	M-se disease	550	µg/kg	<550	<550	0.0
latrix: WATER					La	boratory Duplicate (DUP) F	Report	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LDR	Unit	Original Result	Duplicate Result	RPD (%)
EP-390: Triorgan	otins (QC Lot: 3102	282)	· · · · · · · · · · · · · · · · · · ·					
HK1327374-001	Anonymous	Tributyltin	56573-85-4	6	ngSn/L	<6	<6	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: SOIL	Ţ.		Method Blank (MB)	Report		Laboratory Control	Spike (LCS) and La	boratory Control	Spike Duplicate (DCS) Report	
					Spike	Spike Red	covery (%)	Recovery	Limits (%)	RI	PD (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cation	ns (QC Lot: 3097554)										
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	90.4		77	109	****	
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	99.4		86	110		****
EG020: Chromium	7440-47-3	1	mg/kg	<1	5 mg/kg	93.6		88	120	****	· · · · · · · · · · · · · · · · · · ·
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	91.2		85	109		*****
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	88.3		84	106		
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	85.5		80	112		
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	88.0		87	111		more a
EG020: Silver	7440-22-4	0.1	mg/kg	<0.1	5 mg/kg	86.6		83	105		
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	97.8		82	126		
EP-065: PCB Single Congen	ers (QC Lot: 3088810)					***************************************					
PCB 8	34883-43-7	3	μg/kg	<3	5 µg/kg	102		40	142	****	
PCB 18	37680-65-2	3	μg/kg	<3	5 μg/kg	104	*****	39	131		
PCB 28	7012-37-5	3	μg/kg	<3	5 μg/kg	114		26	134	****	
PCB 44	41464-39-5	3	μg/kg	<3	5 μg/kg	115		32	130		
PCB 52	35693-99-3	3	μg/kg	<3	5 µg/kg	110		42	126		
PCB 66	32598-10-0	3	μg/kg	<3	5 µg/kg	110	·	33	123		
PCB 77	32598-13-3	3	μg/kg	<3	5 μg/kg	115		59	125		
PCB 101	37680-73-2	3	μg/kg	<3	5 μg/kg	108		60	119		
PCB 105	32598-14-4	3	μg/kg	<3	5 μg/kg	78.4	****	56	121		****
PCB 118	31508-00-6	3	μg/kg	<3	5 μg/kg	78.7	· · · · · ·	60	119	****	
PCB 126	57465-28-8	3	μg/kg	<3	5 μg/kg	103		60	117		
PCB 128	38380-07-3	3	μg/kg	<3	5 µg/kg	104	·	58	117		
PCB 138	35065-28-2	3	µg/kg	<3	5 µg/kg	106	*****	59	128		
PCB 153	35065-27-1	3	μg/kg	<3	5 μg/kg	105	*****	61	120		********

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Work Order



Matrix: SOIL			Method Blank (ME) Report		Laboratory Control	Spike (LCS) and La	boratory Control	Spike Duplicate (DCS) Report	
4 V - Mar					Spike	Spike Red	covery (%)	Recovery	Limits (%)	R	PD (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
EP-065: PCB Single Congeners (QC L	ot: 3088810) <i>-</i> (Continued	T .							. ""	
PCB 169	32774-16-6	3	μg/kg	<3	5 μg/kg	91.0		50	123	****	
PCB 170	35065-30-6	3	μg/kg	<3	5 μg/kg	106		50	130	*****	
PCB 180	35065-29-3	. 3	μg/kg	<3	5 μg/kg	89.6		56	124	*****	· · · · · · · · · · · · · · · · · · ·
PCB 187	52663-68-0	3	μg/kg	<3	5 μg/kg	100		56	122		
Total Polychlorinated biphenyls		18	μg/kg	<18			<u></u>				
EP-076A: Polycyclic Aromatic Hydroca			088811)								
Naphthalene	91-20-3	25	μg/kg		25 µg/kg	94.0		63	117		
and the second s				<50							
Acenaphthylene	208-96-8	50	μg/kg	<50							*****
A	60.00.0	0.5			25 μg/kg	86.9		54	119	*****	
Acenaphthene	83-32-9	25	μg/kg	 <50	25 μg/kg	91.8		59	122		
Fluorene	86-73-7	25	μg/kg		25 μg/kg	97.3		60	126		,
Tidorene	00-70-7	25	pg/kg	<50	23 µg/kg	91.5			120		
Phenanthrene	85-01-8	2 5	μg/kg		25 μg/kg	93.5	Jan 1	60	127		===
			F3/13	<50		****					****
Anthracene	120-12-7	25	μg/kg		25 µg/kg	86.0	·	56	124		
				<50		***	į			****	
Fluoranthene	206-44-0	25	μg/kg		25 µg/kg	102		61	132		
				<50		B-70-74				******	
Pyrene	129-00-0	25	μg/kg	*****	25 µg/kg	101		61	133		
				<50							
Benz(a)anthracene	56-55-3	25	μg/kg		25 μg/kg	85.4		57	124		
Ch	040.04.0			<50		****	<u> </u>				
Chrysene	218-01-9	50	μg/kg	<50	25 ua/ka	92.0			100	****	-
Benzo(b)fluoranthene	205-99-2	25	μg/kg		25 μg/kg 25 μg/kg	99.9		60 48	128 135	B-4-11	
Delizo(b)//docardiene	200-00-2	20	P9/N9	<50	25 pg/kg	<i>59.5</i>		40	155		
Benzo(k)fluoranthene	207-08-9	25	μg/kg		25 μg/kg	95.9		58	133	· · · · · · · · · · · · · · · · · · ·	
			F3***O	<50			: ; 			****	
Benzo(a)pyrene	50-32-8	50	μg/kg	<50			<u></u>	· · · · · · · · · · · · · · · · · · ·	ļ <u></u> - !		
	er i				25 µg/kg	77.4	*****	50	124		
Indeno(1.2.3.cd)pyrene	193-39-5	50	μg/kg	<50				****	****		
·					25 µg/kg	87.7		48	134		
Dibenz(a.h)anthracene	53-70-3	50	μg/kg	<50			*****		467		
Daniel h Daniel	404.04.0		a .		25 µg/kg	87.5	****	50	137		
Benzo(g.h.i)perylene	191-24-2	50	µg/kg	<50	25 ua/ka	78.0	: 	55	140		
Low M.W. PAHs		550	ua/ka	 <550	25 μg/kg		· · · · · · · · · · · · · · · · · · ·	55	140		
High M.W. PAHs		1700	μg/kg μg/kg	<1700					! <u></u>		
	The second s The second secon		eren er ut en er			1 about Ca 1	C=:k= / CC == -	**********************	Caika Dualing	DCCI Sono -	
Matrix: WATER			Method Blank (MB	neport			Spike (LCS) and La		ata a a fee ayar		DD (0.01)
- *********************************					Spike	es un el 🔭 el	overy (%)		Limits (%)		PD (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit

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Client

: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order

HK1327299



Matrix: WATER			Method Blank (MB) Report Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike	Spike R	ecovery (%)	Recovery Limits (%)	RPD (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low High	Value Control Limit
EP-390: Triorganotins (QC Lot: 3	102282)					.			
Tributyltin	56573-85-4	5	ngSn/L	<5	5 ngSn/L	114		73 152	

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

Matrix: SOIL				,	Matrix Spike	(MS) and Matr	ix Spike Dupl	icate (MSD) i	Report	
Asboratory client sample ID EG: Metals and Major Cations (QC Lot: 3097554) K1327131-003 Anonymous EG020: Cadmium EG020: Copper		Spike		covery (%)	Recovery	Limits (%)	RPL) (%)		
Laboratory	Client sample ID	Method: Compound	CAS	Concentration	MS	MSD	Low	High	Value	Control
sample ID		¥	Number				,	1 1		Limit
EG: Metals	and Major Cations (QC Lo	ot: 3097554)	· · · · · · · · · · · · · · · · · · ·		٠					
HK1327131-0	03 Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	105		75	125		*****
		EG020: Cadmium	7440-43-9	5 mg/kg	104		75	125	****	
	: :	EG020: Chromium	7440-47-3	5 mg/kg	# Not Determined	- *****	75	125		
	:	EG020: Copper	7440-50-8	5 mg/kg	78.4	www.	75	125		
		EG020: Lead	7439-92-1	50 mg/kg	88.2	· · · · · · · · · · · · · · · · · · ·	75	125	*****	
		EG020: Mercury	7439-97-6	0.1 mg/kg	96.5		75	125		
		EG020: Nickel	7440-02-0	50 mg/kg	89.2	****	75	125		
		EG020: Silver	7440-22-4	5 mg/kg	78.7	****	75	125	****	
		EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined		75	125	nunu	

Surrogate Control Limits

Sub-Matrix: SEDIMENT		Recovery Limits (%)			
Compound	CAS Number	Low	High		
EP-076S: Polycyclic Aromatics Hyd	rocarbons (PAHs) Surrogates				
2-Fluorobiphenyl	321-60-8	50	130		
4-Terphenyl-d14	1718-51-0	50	130		
EP-065S: PCB Congeners and Orga	anochlorine Pesticides Surro	jate			
Decachlorobiphenyl	2051-24-3	50	130		

ALS Technichem (HK) Ptu Ltd





: 05-OCT-2013

: 21-OCT-2013

ALS Laboratory Group

23/F., KWUN TONG VIEW.

: sunng@cedd.gov.hk

: CIVIL ENGINEERING AND DEVELOPMENT

: GEOTECHNICAL PROJECTS DIVISION,

GEOTECHNICAL ENGINEERING OFFICE,

ANALYTICAL CHEMISTRY & TESTING SERVICES

DEPARTMENT

: MR SUN NG

KONG

.

Client

Contact

Address

E-mail

Telephone

Facsimile

Order number

C-O-C number

Project

Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 9
Contact	: Fung Lim Chee, Richard	Work Order	· HK1327374

410 KWUN TONG ROAD, KOWLOON, HONG

E-mail : Richard.Fung@alsglobal.com Telephone +852 2610 1044 Facsimile

: +852 2610 2021 Quote number : AGREEMENT NO CE 21 2012 (WS)

Address

DESALINATION PLANT AT TSEUNG KWAN O - FEASIBILITY STUDY

CERTIFICATE OF ANALYSIS

: 11/F., Chung Shun Knitting Centre, 1 - 3

Wing Yip Street, Kwai Chung, N.T., Hong

: GE/2012/24.13 issue Date

: H018131 No. of samples received : 1 No. of samples analysed : 1

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Hong Kong Accreditation Service (HKAS) has accedited this laboratory (ALS Technichem (HK) Pty Ltd) under Hong Kong Laboratory Anh Ngọc Huynh Accreditation Scheme (HOKLAS) for specific laboratory activities as Tai Yuk Lun, Stephen listed in the HOKLAS Directory of Accredited Laboratories. The results Wong Wing, Kenneth shown in this certificate were determined by this laboratory in accordance with its terms of accreditation.

Authorised results for Senior Chemist - Organics **Organics** Senior Chemist - Organics **Organics Assistant Supervisor - Metals** Inorganics

Date Samples Received

ALS Laboratory Group Trading Name: ALS Technichem (HK) Pty Ltd

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong Tel: +852 2610 1044 Fax: +852 2610 2021 www.alsenviro.com

A Campbell Brothers Limited Company

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Client

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order

HK1327374



General Comments

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. 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. The completion date of analysis is:

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society. Specific comments for Work Order: **HK1327374**

Sample(s) were received in a chilled condition.

Sediment sample(s) analysed on an as received basis. Result(s) reported on a dry weight basis.

Sediment sample(s) as received, digested by In-house method E-ASTM D3974-09 based on ASTM D3974-09, prior to determination of metals.

Total PCBs results (Method: EP065) are not HOKLAS accredited. The values are calculated from summation of the 18 PCB congeners, based on Limit of Detection (LOD) of 1 µg/kg.

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: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order



Analytical Results		_	P		1			
Sub-Matrix: SEDIMENT	,		lient sample ID iling date / time	REFERENCE				Market and the second of the s
				05-OCT-2013 09:30				
Compound	CAS Number	LOR	Unit	HK1327374-001				
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°		0.1	%	53.2				
C)			and the second			1	1	-
EG: Metals and Major Cations								
EG020: Arsenic	7440-38-2	1	mg/kg	. 7				
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2				
EG020: Chromium	7440-47-3	1	mg/kg	32				
EG020: Copper	7440-50-8	1 .	mg/kg	13				1
EG020: Lead	7439-92-1	1	mg/kg				4	
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05				
EG020: Nickel	7440-02-0	1	mg/kg	21				THE COLUMN TO TH
EG020: Silver	7440-22-4	0.1	mg/kg	0.1	1			
EG020: Zinc	7440-66-6	1	mg/kg	85	1			the same of the sa
EP-065: PCB Single Congeners								
PCB 8	34883-43-7	3	µg/kg	<3		,		1
PCB 18	37680-65-2	3	µg/kg	<3				· ·
PCB 28	7012-37-5	3	μg/kg	<3				(consult)
PCB 44	41464-39-5	3	μg/kg	<3	790	**************************************		1
PCB 52	35693-99-3	3	μg/kg	<3				Parkers III
PCB 66	32598-10-0	3	µg/kg	<3				
PCB 77	32598-13-3	3	µg/kg	<3				- · · · · · · · · · · · · · · · · · · ·
PCB 101	37680-73-2	3	μg/kg	<3				
PCB 105	32598-14-4	3 .	µg/kg	<3			100 mm m	ADJUNET COM
PCB 118	31508-00-6	3	µg/kg	<3				
PCB 126	57465-28-8	3	μg/kg	<3				TIP MALE
PCB 128	38380-07-3	3 :	µg/kg	<3				
PCB 138	35065-28-2	3	μg/kg	<3	4			ž
PCB 153	35065-27-1	3	μg/kg	<3				
PCB 169	32774-16-6	3	µg/kg	<3				
PCB 170	35065-30-6	3	μg/kg		1			i i
PCB 180	35065-29-3	3	µa/kg					
PCB 187	52863-68-0	3	µg/kg	<3	ļ			phone .
Total Polychlorinated biphenyls	0200000	18	μg/kg	<18				dealer appear
· · · · · · · · · · · · · · · · · · ·				710	l	ļ	<u>i</u>	:
EP-076A: Polycyclic Aromatic Hydrocarbon Naphthalene	9120-3	50	µg/kg					
	208-95-8	50		<50			4	
Acenaphthylene		50 50	µg/kg	<50		<u> </u>		
Acenaphthene	83-32-9		μg/kg	<50	ļ	ļ	ļ	ļ
Fiuorene	86-73-7	50	µg/kg	<50				7
Phenanthrene	85-01-8	50	µg/kg	<50				11
Anthracene	120-12-7	50	pg/kg	<50			· ·	

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Client

: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order

HK1327374



Sub-Matrix: SEDIMENT			Client sample ID	REFERENCE			1	
		Client sen	npling date / time	05-OCT-2013 09:30				
Compound	CAS Number	LOR	Unit	HK1327374-001				
EP-076A: Polycyclic Aromatic Hydi	rocarbons (PAHs) - Co	ntinuec	1					
Fluoranthene	206-44-0	150	µg/kg	<150	1		1	
Pyrene	129-00-0	150	µg/kg	<150			i.	· · · · · · · · · · · · · · · · · · ·
Benz(a)anthracene	56-55-3	150	µg/kg	<150				
Chrysene	218-01-9	150	µg/kg	<150	1		1	
Benzo(b)fluoranthene	205-99-2	150	µg/kg	<150				
Benzo(k)fluoranthene	207-08-9	150	µg/kg	<150				
Benzo(a)pyrene	50-32-8	150	µg/kg	<150				
Indeno(1.2.3.cd)pyrene	193-39-5	150	µg/kg	<150				
Dibenz(a.h)anthracene	53-70-3	150	µg/kg	<150				
Benzo(g.h.i)perylene	19124-2	150	µg/kg	<150	-			
Low M.W. PAHs		550	µg/kg	<550	· · · · · · · · · · · · · · · · · · ·			
High M.W. PAHs		1700	µg/kg	<1700	<u> </u>			
EP-076S: Polycyclic Aromatics Hyd	rocarbons (PAHs) Sui	rrogates	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·	F	Surrogate control limits	listed at end of this repor
2-Fluorobiphenyl	32160-8	0.1	%	92.1	[** ***********************************		and the same of the same of the same
4-Terphenyl-d14	1718-51-0	0.1	%	106				
EP-065S: PCB Congeners and Orga	nochlorine Pesticides	Surrog	jate			·	Surrogate control limits	listed at end of this repor
Decachlorobiphenyl	2051-24-3		%	54.2			1	

Work Order

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Client : CIN

: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Sub-Matrix: INTERSTITIAL WATER	····		Client sample ID	REFERENCE				<u>`</u>	***************************************
		Client san	npling date / time	05-OCT-2013 09:30					
Compound	CAS Number	LÓR	Unit	HK1327374-001		 	. A		
EP-390: Triorganotins							***************************************		
Tributyltin	56573-85-4	0.015	μg TBT /L	<0.015	, , , , , , , , , , , , , , , , , , , ,	 1			

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Client

: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order



atrix: SOIL					L	Laboratory Duplicate (DUP) Report			
aboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	
A/ED: Physical a	and Aggregate Prop	erties (QC Lot: 3110109)				*			
IK1327374-001	REFERENCE	EA055: Moisture Content (dried @ 103°C)		0.1	%	53.2	53.3	0.2	
IK1327803-009	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	10.6	9.3	13.1	
	lajor Cations (QC L		ı	*	,,	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	. 0.0	10.1	
1K1327131-004	Anonymous	EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	<0.05	0.0	
	, , , , , , , , , , , , , , , , , , , ,	EG020: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.0	
		EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0	
		EG020: Arsenic	7440-38-2	1	mg/kg	5	4	0.0	
	•	EG020: Arsenic	7440-30-2			40	4		
					mg/kg		41	2.8	
	<i>*</i>	EG020: Copper	7440-50-8		mg/kg	10	11	0.0	
	•	EG020: Lead	7439-92-1	<u></u>	mg/kg	22	22	0.0	
		EG020: Nickel	7440-02-0	1 ;	mg/kg	26	27	0.0	
		EG020: Zinc	7440-66-6	1	mg/kg	79	81	2.5	
	gle Congeners (QC								
K1327374-001	REFERENCE	Total Polychlorinated biphenyls		18	μg/kg	<18	<18	0.0	
		PCB 8	34883-43-7	3	μg/kg	<3	<3	0,0	
		PCB 18	37680-65-2	3	μg/kg	<3	<3	0.0	
		PCB 28	7012-37-5	3	μg/kg	<3	<3	0,0	
	÷	PCB 44	41464-39-5	3	μg/kg	<3	<3	0.0	
		PCB 52	35693-99-3	3	μg/kg	<3	<3	0.0	
		PCB 66	32598-10-0	3	μg/kg	<3	<3	0.0	
		PCB 77	32598-13-3	3	μg/kg	<3	<3	0.0	
		PCB 101	37680-73-2	3		, <u>`3</u> <3	<3	0.0	
		\$	32598-14-4		μg/kg		and the second second		
		PCB 105		3	µg/kg	<3	<3	0.0	
		PCB 118	31508-00-6	3	µg/kg	<3	<3	0.0	
		PCB 126	57465-28-8	3	µg/kg	<3	<3	0.0	
	•	PCB 128	38380-07-3	3	μg/kg	<3	<3	0.0	
		PCB 138	35065-28-2	3	μg/kg	<3	<3	0.0	
		PCB 153	35065-27-1	3	μg/kg	<3	<3	0.0	
	•	PCB 169	32774-16-6	3	μg/kg	<3	<3	0.0	
		PCB 170	35065-30-6	3	µg/kg	<3	<3	0.0	
		PCB 180	35065-29-3	3	μg/kg	<3	<3	0.0	
		PCB 187	52663-68-0	3	μg/kg	<3	<3	0.0	
P-076A: Polycyc	lic Aromatic Hydro	carbons (PAHs) (QC Lot: 3094435)	•						
K1327374-001	REFERENCE	Fluoranthene	206-44-0	150	μg/kg	<150	<150	0.0	
		Pyrene	129-00-0	150	μg/kg	<150	<150	0.0	
	:	Benz(a)anthracene	56-55-3	150	μg/kg	<150 <150	<150	0.0	
			218-01-9						
		Chrysene		150	µg/kg	<150	<150	0.0	
		Benzo(b)fluoranthene	205-99-2	150	μg/kg	<150	<150	0.0	
		Benzo(k)fluoranthene	207-08-9	150	μg/kg	<150	<150	0.0	
	•	Benzo(a)pyrene	50-32-8	150	μg/kg	<150	<150	0.0	
		Indeno(1.2.3.cd)pyrene	193-39-5	150	μg/kg	<150	<150	0.0	
		Dibenz(a.h)anthracene	53-70-3	150	μg/kg	<150	<150	0.0	

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: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order HK1327374



Matrix: SOIL					La	boratory Duplicate (DUP) i	Report	*** * ********************************
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-076A: Polycyc	clic Aromatic Hydro	carbons (PAHs) (QC Lot: 3094435) - Co	entinued					
HK1327374-001	REFERENCE	Benzo(g.h.i)perylene	191-24-2	150	μg/kg	<150	<150	0.0
		High M.W. PAHs		1700	μg/kg	<1700	<1700	0.0
		Naphthalene	91-20-3	50	μg/kg	<50	<50	0.0
		Acenaphthylene	208-96-8	50	μg/kg	<50	<50	0.0
		Acenaphthene	83-32-9	50	μg/kg	<50	<50	0.0
		Fluorene	86-73-7	50	μg/kg	<50	<50	0.0
		Phenanthrene	85-01-8	50	μg/kg	<50	<50	0.0
		Anthracene	120-12-7	50	μg/kg	<50	<50	0.0
		Low M.W. PAHs		550	µg/kg	<550	<550	0.0
latrix: WATER					La	boratory Duplicate (DUP) F	Report	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-390: Triorgan	otins (QC Lot: 3102	282)		***		*	······································	
HK1327374-001	REFERENCE	Tributyltin	56573-85-4	6	ngSn/L	<6	<6	

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: SOIL	1		Method Blank (MB)) Report		Laboratory Contro	i Spike (LCS) and La	boratory Control	Spike Duplicate (DCS) Report	
					Spike	Spike Re	covery (%)	Recovery	Limits (%)	R	PD (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations	(QC Lot: 3097554)	***************************************									
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	90.4]	77	109		
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	99.4	1	86	110	*****	
EG020: Chromium	7440-47-3	1	mg/kg	<1	5 mg/kg	93.6	·	88	120	****	
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	91.2	· · · · · · · · · · · · · · · · · · ·	85	109		·
EG020: Lead	7439-92-1	1 .	mg/kg	<1	5 mg/kg	88.3		84	106		
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	85.5		80	112	~~~	
EG020: Nickel	7440-02-0	1 1	mg/kg	<1	5 mg/kg	88.0	·	87	111		
EG020: Silver	7440-22-4	0.1	mg/kg	<0.1	5 mg/kg	86.6		83	105	*****	******
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	97.8		82	126		
EP-065: PCB Single Congeners	(QC Lot: 3094434)				e e en ar d'amende en en arres es arres en en el en			21.000.000.000.000			
PCB 8	34883-43-7	3	μg/kg	<3	5 μg/kg	102		40	142		
PCB 18	37680-65-2	3	μg/kg	<3	5 μg/kg	118	****	39	131		
PCB 28	7012-37-5	3	μg/kg	<3	5 μg/kg	80.7		26	134		
PCB 44	41464-39-5	3	μg/kg	<3	5 μg/kg	100		32	130		
PCB 52	35693-99-3	3	μg/kg	<3	5 μg/kg	93.6		42	126		
PCB 66	32598-10-0	3	μg/kg	<3	5 µg/kg	102		33	123		****
PCB 77	32598-13-3	3	μg/kg	<3	5 μg/kg	104		59	125		
PCB 101	37680-73-2	3	μg/kg	<3	5 µg/kg	86.9		60	119		
PCB 105	32598-14-4	3	μg/kg	<3	5 μg/kg	94.8	******	56	121		
PCB 118	31508-00-6	3	μg/kg	<3	5 µxg/kg	106		60	119		
PCB 126	57465-28-8	3	μg/kg	<3	5 μg/kg	99.7	·	60	117		
PCB 128	38380-07-3	3	μg/kg	· <3	5 μg/kg	84.4		58	117		
PCB 138	35065-28-2	3	μg/kg	<3	5 μg/kg	98.1		59	128		
PCB 153	35065-27-1	3	μg/kg	<3	5 μg/kg	102	· · · · · · · · · · · · · · · · · · ·	61	120	W-11-11-	

A Campbell Brothers Limited Company

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Client

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order



Method: Compound EP-065: PCB Single Congeners (QC Lo PCB 169 PCB 170	32774-16-6	<i>LOR</i> Continued	Unit	Donald	Spike	Spike Rec	overy (%)	Recovery	Limits (%)	R	PD (%)		
EP-065: PCB Single Congeners (QC Lo PCB 169 PCB 170	t: 3094434) - (32774-16-6			Doguela					and the second second	mits (%) RPD (%)			
PCB 169 PCB 170	32774-16-6	Continued		Result	Concentration	LCS	DCS	Low	High	Value	Control Limit		
PCB 170			ť				· · · · · · · · · · · · · · · · · · ·						
The state of the s	25005.00.0	3	μg/kg	<3	5 μg/kg	78.0		: 50	123				
	35065-30-6	3	μg/kg	<3	5 μg/kg	102	·	50	130				
PCB 180	35065-29-3	3	μg/kg	<3	5 μg/kg	84.3		56	124				
PCB 187	52663-68-0	3	μ g/k g	<3	5 µg/kg	92.2		56	122				
Total Polychlorinated biphenyls		18	μg/kg	<18	~~~				****				
EP-076A: Polycyclic Aromatic Hydrocar	bons (PAHs)	(QC Lot:	3094435)										
Naphthalene	91-20-3	50	µg/kg	<50	1	******		··· [<u></u> ·	1 1 1 1	*****			
•					25 μg/kg	63.0		63	117	****			
Acenaphthylene	208-96-8	25	μg/kg		25 µg/kg	61.1		54	119	· · · <u> · · · · · · · · · · · · · · ·</u>	· · · · · · · · · · · · · · · · · · ·		
				<50									
Acenaphthene	83-32-9	50	μg/kg	<50			****	· · · · · · · · · · · · · · · · · · ·			· ·		
			1		25 μg/kg	62.5		59	122				
Fluorene	86-73-7	25	μg/kg		25 μg/kg	67.4	*****	60	126				
			: 	<50		*****		· · · · · · · · · · · · · · · · · · ·					
Phenanthrene	85-01-8	25	μg/kg		25 μg/kg	64.5	****	60	127	*****	****		
				<50		40-15-06 66·		į . 					
Anthracene	120-12-7	50	μg/kg	<50		*****							
			· 	****	25 μg/kg	60.6		56	124				
Fluoranthene	206-44-0	25	μg/kg		25 μg/kg	67.6	****	61	132	****			
B	420.00.0	25		<50	25 //		****		400				
Pyrene	129-00-0	25	μg/kg	<50	25 μg/kg	66.8		61	133		****		
Benz(a)anthracene	56-55-3	25		\50	25 us/ka	66.7	-	 57	124				
Denz(a)anunacene	30-33-3	25	μg/kg	<50	25 µg/kg	00.7		. 57	124				
Chrysene	218-01-9	50	μg/kg	<50		· · · · · · · · · · · · · · · · · · ·		· /···· <u></u> · ·	} <u>=</u> =================================		1111		
omysene	210-01-0	30	. F9/N9		25 μg/kg	67.7		60	128				
Benzo(b)fluoranthene	205-99-2	25	μg/kg	<u> </u>	25 µg/kg	69.5		48	135				
201120/0/11010110	233 00 2		. Parna	<50			*****			****	****		
Benzo(k)fluoranthene	207-08-9	50	μg/kg	<50		******	******		1				
					25 μg/kg	66.4		58	133				
Benzo(a)pyrene	50-32-8	25	μg/kg	*****	25 µg/kg	60.4		50	124				
	Add Care		, , ,	<50		wirette							
indeno(1.2.3.cd)pyrene	193-39-5	25	μg/kg		25 µg/kg	61.6		48	134				
· · · · · · · · · · · · · · · · · · ·				<50					{				
Dibenz(a.h)anthracene	53-70-3	25	μg/kg	*****	25 μg/kg	65.3		50	137				
			1	<50									
Benzo(g.h.i)perylene	191-24-2	25	μg/kg	* *****	25 μg/kg	62,3		55	140		· · · · · · · · · · · · · · · · · · ·		
			<u> </u>	<50				i . 					
Low M.W. PAHs		550	µg/kg	<550	****		· . 	ŧ "		*****	. 4		
High M.W. PAHs		1700	µg/kg	<1700			Prophilippe, which is the property of the second						
Matrix: WATER	1		Method Blank (M	B) Report		Laboratory Control	Spike (LCS) and La	boratory Control	Spike Duplicate	(DCS) Report			
	ar i de de la composition della composition dell				Spike	Spike Rec	overy (%)	Recovery	Limits (%)	R	PD (%)		
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit		

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HK1327374

: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order



Matrix: WATER			Method Blank	(MB) Report		Laboratory C	ontrol Spike (LCS) a	nd Labor	atory Control	Spike Duplicate	(DCS) Report	
					Spike	Spike	e Recovery (%)		Recovery	Limits (%)	F	RPD (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DC	S	Low	High	Value	Control Limit
EP-390: Triorganotins (QC Lot: 3	102282)											
Tributyltin	56573-85-4	5	ngSn/L	<5	5 ngSn/L	114	1	• •	73	152	*****	

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

Matrix: SOIL			1		Matrix Spi	ke (MS) and M	atrix Sp	ike Dup	licate (MSD) Report	
				Spike	•	Recovery (%)	R	ecovery	Limits (%)	RF	' ው (%)
Laboratory	Client sample ID	Method: Compound	CAS	Concentration	MS	MSD		Low	High	Value	Control
sample ID	· ·	, , , , , , , , , , , , , , , , , , ,	Number]							Limit
EG: Metals	and Major Cations (QC L	ot: 3097554)									
HK1327131-0	03 Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	105		;	75	125		
		EG020: Cadmium	7440-43-9	5 mg/kg	104			75	125	· · ·	
	<u> </u>	EG020: Chromium	7440-47-3	5 mg/kg	# Not			75	125	i	
					Determined	L.f.					1
		EG020: Copper	7440-50-8	5 mg/kg	78.4			75	125		*********
		EG020: Lead	7439-92-1	50 mg/kg	88.2	· · · · · · · · · · · · · · · · · · ·		75	125		
		EG020: Mercury	7439-97-6	0.1 mg/kg	96.5			75	125		;
	÷.	EG020: Nickel	7440-02-0	50 mg/kg	89.2			75	125		
		EG020: Silver	7440-22-4	5 mg/kg	78.7			75	125	·:	·
		EG020: Zinc	7440-66-6	5 mg/kg	# Not			75	125	:	
		4			Determined	l <u>:</u>					

Surrogate Control Limits

Sub-Matrix: SEDIMENT		Recovery Limits (%)				
Compound	CAS Number	Low	High			
EP-076S: Polycyclic Aromatics Hyd	rocarbons (PAHs) Surrogates	•				
2-Fluorobiphenyl	321-60-8	50	130			
4-Terphenyl-d14	1718-51-0	50	130			
EP-065S: PCB Congeners and Orga	anochlorine Pesticides Surrog	jate				
Decachlorobiphenyl	2051-24-3	50	130			

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES



4 .		UER	TIFICATE OF ANALYSIS		
Client	: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 4
Contact	: MR SUN NG	Contact	: Fung Lim Chee, Richard	Work Order	· HK1327406
Address	: GEOTECHNICAL PROJECTS DIVISION, GEOTECHNICAL ENGINEERING OFFICE, 23/F., KWUN TONG VIEW, 410 KWUN TONG ROAD, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		111(1321400
E-mail	: sunng@cedd.gov.hk	E-mail	: Richard.Fung@alsglobal.com		
Telephone	, were	Telephone	: +852 2610 1044		
Facsimile	:	Facsimile	: +852 2610 2021		
Project	: AGREEMENT NO CE 21_2012 (WS) DESALINATION PLANT AT TSEUNG KWAN O - FEASIBILITY STUDY	Quote number	; nuin	Date Samples Received	: 02-OCT-2013
Order number	: GE/2012/24.13			Issue Date	: 21-OCT-2013
C-O-C number	: H018129			No. of samples received	: 4
Site	. •			No. of samples analysed	: 4

CERTIFICATE OF ANALYSIS

General Comments

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. 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. The completion date of analysis is: 21-OCT-2013

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society. Specific comments for Work Order: HK1327406

Reactive Phosphorus, Nitrate and Nitrite determined and reported on a 1:5 soil / water extract.

Sample(s) were received in an ambient condition.

Sediment sample(s) analysed on an as received basis. Result(s) reported on a dry weight basis.

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This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the Electronic Transactions Ordinance of Hong Korrg, Chapter 553, Section 6.

Signatories

Anh Ngọc Huynh Fung Lim Chee, Richard Position

Authorised results for

Senior Chemist General Manager

Organics inorganics

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: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order



Analytical Results								
Sub-Matrix: SEDIMENT		(Client sample ID	GS 1	GS 2	GS 3	GS 4	
		Client sam	oling date / time	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	
Compound	CAS Number	LOR	Unit	HK1327406-001	HK1327406-002	HK1327406-003	HK1327406-004	
EA/ED: Physical and Aggregate Properties				***************************************	4	1 .	1	
EA055: Moisture Content (dried @ 103° C)		0.1	%	52.9	38.0	37.6	44.9	
ED/EK: Inorganic Nonmetallic Parameters					J., , , , , , , , , , , , , , , , , , ,	I	ii	
EK055: Ammonia as N	7664-41-7	0.1	rng/kg	11.5	13.4	13.8	15.1	
EK057A: Nitrite as N (Sol.)	[1.0	mg/kg	<1.0	<1.0	<1.0	<1.0	
EK058A: Nitrate as N (Sol.)		1.0	mg/kg	<1.0	<1.0	<1.0	<1.0	
EK061A: Total Kjeldahl Nitrogen as N	ATTACH	50	mg/kg	2600	730	940	870	
EK067A: Total Phosphorus as P		10	mg/kg	1020	864	788	844	er paper on a construction of a construction of the construction o
EK071K: Reactive Phosphorus as P (Sol.)	14265-44-2	0,1	mg/kg	2.0	<0.1	0.6	0.6	
EP-067_SR-A: Organichlorine Pesticides (C)C)				I. w	£	J	
alpha-BHC	319-84-6	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	
beta-BHC	319-85-7	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	
gamma-BHC	58-89-9	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	
delta-BHC	319-86-8	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	
Heptachlor	76-44-8	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	
Aldrin	309-00-2	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	
Heptachlor epoxide	1024-57-3	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	
Endosulfan 1	959-98-8	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	
4.4`-DDE	72-55-9	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	
4.4`-DDD	72-54-8	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	
Endosulfan sulfate	1031-07-8	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	
4.4`-DDT	50-29-3	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	
EP-067_SR-S: Pesticide Surrogate							Surrogate control limits I	isted at end of this report
Tetrachlorometaxylene	877-09-8	0.1	%	110	98.8	105	105	
Dibutylchlorendate	1770-80-5	0.1	%	82.0	83.8	81.2	79.8	

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Client

: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Work Order

HK1327406



Aatrix: SOIL						Laboratory Duplicate (DUP)	Report	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
A/ED: Physical:	and Aggregate Proper	ties (QC Lot: 3110109)				· · · · · · · · · · · · · · · · · · ·		
4K1327374-001	An on ymous	EA055: Moisture Content (dried @ 103°C)	i	0.1	%	53.2	53.3	0.2
IK1327803-009	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	10.6	9.3	13.1
D/EK: Inorganic	Nonmetallic Paramete	ers (QC Lot: 3101011)	,	,		. 10,0	, 0.0	13.1
K1326548-001	Anonymous	EK061A: Total Kjeldahi Nitrogen as N		20	mg/kg	1170	1200	2.6
D/EK: Inorganic	Nonmetallic Paramete		ŀ			, , 5	1250	2,0
lK1326548-001	Anonymous	EK067A: Total Phosphorus as P		20	mg/kg	828	947	13.4
D/EK: Inorganic	Nonmetallic Paramete	ers (QC Lot: 3117444)	,	;	55	52 0	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	10.4
K1327406-001	GS 1	EK055: Ammonia as N	7664-41-7	0.1	mg/kg	11.5	12.8	11.2
P-067_SR-A: Or	ganichlorine Pesticide	s (OC) (QC Lot: 3109403)	•			, 11.0	12.0	11.2
K1327406-001	GS 1	alpha-BHC	319-84-6	0.50	mg/kg	<0.50	<0.50	0.0
		beta-BHC	319-85-7	0.50	mg/kg	<0.50	<0.50	0.0
	*	gamma-BHC	58-89-9	0.50	mg/kg	<0.50	<0.50	0.0
		delta-BHC	319-86-8	0.50	mg/kg	<0.50	<0.50	0.0
		Heptachlor	76-44-8	0.50	mg/kg	<0.50	<0.50	0.0
		Aldrin	309-00-2	0.50	mg/kg	<0.50	<0.50	0.0
		Heptachlor epoxide	1024-57-3	0.50	mg/kg	<0.50	<0.50	0.0
		Endosulfan 1	959-98-8	0.50	mg/kg	<0.50	<0.50	0.0
	:	4.4`-DDE	72-55-9	0.50	mg/kg	<0.50	<0.50	0.0
	1	4.4`-DDD	72-54-8	0.50	mg/kg	<0.50	<0.50	0.0
		Endosulfan sulfate	1031-07-8	0.50	mg/kg	<0.50	<0.50	0.0
		{ <i>A A</i> `-DDT	EA 20 2!	0.50	21	0.50	0.50	

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

4.4`-DDT

Matrix: SOIL	The state of the s	Method Blank (MB) Report				Laboratory Contro	l Spike (LCS) and La	boratory Control	Spike Duplicate	(DCS) Report	
					Spike	Spike Red	covery (%)	Recovery	Limits (%)	R	PD (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parame	eters (QC Lot: 30	97909)								~	
EK057A: Nitrite as N (Sol.)		0.1	mg/kg	<0.1	2 mg/kg	99.8	· · · · · · · · · · · · · · · · · · ·	85	115		
ED/EK: Inorganic Nonmetallic Parame	eters (QC Lot: 31	01011)				· · · · · · · · · · · · · · · · · · ·		and de la Titalia			
EK061A: Total Kjeldahl Nitrogen as N	******	20	mg/kg	<20	1000 mg/kg	89.6	· · · · · · · · · · · · · · · · · · ·	. 85	115	· · · · · · · · · · · · · · · · · · ·	
ED/EK: Inorganic Nonmetallic Parame	eters (QC Lot: 31	01012)					-å <u>-</u>				
EK067A: Total Phosphorus as P		20	mg/kg	<20	320 mg/kg	89.6		85	115		;
ED/EK: Inorganic Nonmetallic Parame	eters (QC Lot: 31	17444)									
EK055: Ammonia as N	7664-41-7	1	mg/kg	<1	10 mg/kg	100	******	85	115		
EP-067_SR-A: Organichlorine Pesticio	les (OC) (QC Lo	t: 31094	03)				k				\
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.25 mg/kg	88.0		56	126		
beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.25 mg/kg	85.6	· · · · · · · · · · · · · · · · · · ·	43	133	*****	
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	88.2	· · · · · · · · · · · · · · · · · · ·	47	128		
delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.25 mg/kg	95.0	——————————————————————————————————————	61	119	*****	· · · · · · · · · · · · · · · · · · ·
Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.25 mg/kg	90.2		43	119	· · · · · · · · · · · · · · · · · · ·	

50-29-3

0.50

mg/kg

<0.50

<0.50

0.0

: 4 of 4

Client : CIV

Work Order HK1327406

: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT



Matrix: SOIL	-		Method Blank (i	MB) Repo	ort		Laboratory Contr	ol Spike (LCS) and La	boratory Control	Spike Duplicate	(DCS) Report	
		.,			Spike	Spike Spike Red		Recovery Limits (%)		RPD (%)		
Method: Compound	CAS Number	LOR	Unit	1	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
EP-067_SR-A: Organichlorine	Pesticides (OC) (QC Lo	t: 310940	3) - Continu	red					***************************************	····		
Aldrin	309-00-2	0.05	mg/kg	i	<0.05	0.25 mg/kg	86.6		67	113		***************************************
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	0.25 mg/kg	87.6	·	58	116		j
Endosulfan 1	959-98-8	0.05	mg/kg		<0.05	0.25 mg/kg	89.6	wan.	56	117		
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	0.25 mg/kg	86.4		49	129		·
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	0.25 mg/kg	80.8	•	53	119		
Endosulfan sulfate	1031-07-8	0.05	mg/kg	1	<0.05	0.25 mg/kg	86.0		39	132		
4.4`-DDT	50-29-3	0.05	mg/kg		<0.05	0.25 mg/kg	93.8		32	126		· ·

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

• No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.

Surrogate Control Limits

Sub-Matrix: SEDIMENT		Recovery Limits (%)					
Compound	CAS Number	Low	High				
EP-067_SR-S: Pesticide Surrogate							
Tetrachiorometaxylene	877-09-8	50	130				
Dibutylchlorendate	1770-80-5	50	130				

Section 3

Summary of Sample Receipt Condition and Analysis Date

Summary of Sample Receipt Condition and Analysis Date

Date of Issue:

25/11/2013

Client:

Civil Engineering and Development Department

Service Order No.:

GE/2012/24.13

Project:

Desalination Plant at Tseung Kwan O - Feasibility Study

			R	eceipt Detail:	3		Testing Date				
ALS Lab iD	Client Sample ID	Sampling Date	Date	Time	Condition	Storage Condition*	Metals	Inorganic	Organics		
HK1324961001	SD1 0.00-0.30M	10/09/2013	10/09/2013	17:20	chilled	4oC	19/09/2013		19/09/2013		
HK1324961002	SD3 0.00-0.60M	10/09/2013	10/09/2013	17:20	chilled	4oC	19/09/2013		19/09/2013		
HK1327039001	SD4 0.00-0.90M	30/09/2013	30/09/2013	16:50	chilled	4oC	10/10/2013		11/10/2013		
HK1327039002	SD4 0.90-1.90M	30/09/2013	30/09/2013	16:50	chilled	4oC	10/10/2013		11/10/2013		
HK1327131001	SD2 0.00~0.90M	02/10/2013	02/10/2013	16:45	chilled	4oC	10/10/2013		11/10/2013		
HK1327131002	SD2 0.90~1.90M	02/10/2013	02/10/2013	16:45	chilled	4oC	10/10/2013		11/10/2013		
HK1327131003	SD2 1.90-2.90M	02/10/2013	02/10/2013	16:45	chilled	4oC	10/10/2013		11/10/2013		
HK1327131004	SD2 4.90-5.90M	02/10/2013	02/10/2013	16:45	chilled	4oC	10/10/2013		11/10/2013		
HK1327131005	SD2 7.90-8.90M	02/10/2013	02/10/2013	16:45	chilled	4oC	10/10/2013		11/10/2013		
HK1327131006	SD2 10.90-11.90M	02/10/2013	02/10/2013	16:45	chilled	4oC	10/10/2013		11/10/2013		
HK1327299001	GS 1	02/10/2013	02/10/2013	16:45	chilled	4oC	10/10/2013		11/10/2013		
HK1327299002	GS 2	02/10/2013	02/10/2013	16:45	chilled	4oC	10/10/2013		11/10/2013		
HK1327299003	GS 3	02/10/2013	02/10/2013	16:45	chilled	4oC	10/10/2013		11/10/2013		
HK1327299004	GS 4	02/10/2013	02/10/2013	16:45	chilled	4oC	10/10/2013		11/10/2013		
HK1327374001	REFERENCE	05/10/2013	05/10/2013	10:55	chilled	4oC	10/10/2013		11/10/2013		
HK1327406001	GS 1	02/10/2013	02/10/2013	16:45	chilled	4oC		16/10/2013	16/10/2013		
HK1327406002	GS 2	02/10/2013	02/10/2013	16:45	chilled	4oC		16/10/2013	16/10/2013		
HK1327406003	GS 3	02/10/2013	02/10/2013	16:45	chilled	4oC		16/10/2013	16/10/2013		
HK1327406004	GS 4	02/10/2013	02/10/2013	16:45	chilled	4oC		16/10/2013	16/10/2013		

^{*} Container for sample storage: 250ml Glass Jar with Teflon Lined Lid for soil / sediment sample.

Section 4

Chain of Custody (COC) Form

CHA	IN OF CUSTODY	DOC	UME	TAT	ION			·					ľ	7	02	87	82		- /	
CLIENT:	CEDD	(6	E/201	2/03.2	7)		SAMF	LER:	Vibo	。(orl				······································	·				
ADDRES	DDRESS / OFFICE: MOBILE: 9273 YEVS											(ALS)								
PROJECT MANAGER (PM): LO Ling ton (Gimon) PHONE								ALS Laboratory Grov												
PROJEC		<i>\</i> J		· · · · · · · · · · · · · · · · · · ·			EMAII	L REPO	RT TO:											
SITE: D	escitantian Plant at To	vy Kwan	Ù	P.O. NO.;			EMAII	L INVOI	CE TO:	(if differ	ent to re	eport)								
RESULT	S REQUIRED (Date):	**1		QUOTE N	10.:		ANAL	YSIS R	EQUIR	ED incl	uding S	UITES	(note - s	suite co	des mus	it be list	ted to at	tract su	uite pric	es)
COOLEF	SORATORY USE ONLY (SEAL (circle appropriate)	COMM	IENTS / SP	ECIAL HAN	NDLING / STORAGE OF	R DIPOSAL:	_	† 									J			<u>Notes</u> : e.g. Highly contaminated samples e.g. "High PAHs expected"
Intact:	Yes No N/A	₽		· · · · · · · · · · · · · · · · · · ·			1										Ri			Extra volume for QC or trace LORs etc.
(MC NAC)	TEMPERATURE						ر_										1-7			
CHILLEL	Yes No SAMPLE INFORMATION (note: S	C Coil 16/	-\0(ntos)		CONTAINITO INFO	\F\A A \TIC\\(1	10	1	, >	্ৰ	71	_Q	Ø	ا کردا	4	T	Tot.	TIT	,	
ALS ID	SAMPLE ID	MATRIX	DATE	Time	CONTAINER INFO	Total bottles	+		$ \bigcirc $		-<	Pb	T	M	\forall	PAH	F	F		
/	SD1 0.50-0.30m		10/9/13	15.5	V/30			1	/	~	~		_	/	/	/	/	/		
7	mod.0-060n	 	10/3/15	17:12	Vion		1	 	7						7	/		/		
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		DELINO	UISHED B'	V:		<u> </u>	╂	1	<u></u>	<u> </u>		/ 255/	CEIVED	DV.						METHOD OF OUR MENT
Name:	Kwok Wai Lan		4 ha 4.7	<u>, , , , , , , , , , , , , , , , , , , </u>	Date: /0/9/0	7	Nam	е.		N/2	F /	UM) DEIAED	DI	Date:	- 7,	19	1	72	METHOD OF SHIPMENT Con' Note No:
Of:	Gramos	<u> </u>	104100		Time: /4-17	·	Of:	· · · · · · · · · · · · · · · · · · ·	1	<i>300</i>	DO	<u>5/2</u> {			Time:		17	1	,	Our mote vo.
Name:	- A 1	(69	03.500	<u> (0)</u>	Date: /0/8/13	· · · · · · · · · · · · · · · · · · ·	Nam	ie:	• • • • • • • • • • • • • • • • • • • •				,		Date:		(>			Transport Co:
Of:	BV				Time: / 7 = (5		Of:								Time:					
Water	Container Codes: P = Unpreserve	ed Plastic;	N = Nitric	Preserved	Plastic; ORC = Nitric P	reserved ORC	; SH ==	Sodium	Hydrox	ide/Cd	reserve	ed; S=	Sodiur	n Hydro	xide Pre	eserved	Plastic	; AG =	Amber	Glass Unpreserved;
V = VO	A Vial HCI Preserved; VS = VOA Vial	Sulphuric F	Preserved;	SG = Sulfi	uric Preserved Amber 6	Blass; H = HC	I Prese	rved Pla	astic; H	S ≖ HCI	Preserv	ed Spe	ciation	Bottle;	SP = Su	ilfuric P	reserve	d Plasti	ic; F≕i	Formaldehyde Preserved Glass;
Z ≈ Zinc	Acetate Preserved Bottle; E = EDTA	Preserved	Bottle; ST	= Sterile Bo	ottle; ASS ≠ Plastic Ba	g for Acid Sulpi	hate Soi	i; B≖U	Inpreser	ved Ba	g.									

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COC Page ___of

CHAIN OF CUSTODY DOCUMENTATION		H U18128	」									
CLIENT: (20p (BE/2012/03.27)	SAMPLER: VIOO											
ADDRESS / OFFICE:	MOBILE: 9273 9890		(AUS)									
PROJECT MANAGER (PM): LO WIA4 Fan	PHONE 2191527	ALS Laboratory Group										
PROJECT ID:	EMAIL REPORT TO:											
SITE: Dosalination Plant at TED RO.NO.:	EMAIL INVOICE TO: (if different to report)											
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES(no	te - suite codes must be listed to attract suite pric										
COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL: COOLER SEAL (circle appropriate) Intact: Yes No WIA		Pubs	Notes: e.g. Highly contaminated samples e.g. "High PAHs expected" Extra volume for QC or trace LORs etc.									
SHILLED: No.	BIZELE	B the										
SAMPLE INFORMATION note: S = Soil, W=Water) CONTAINER INFORMATION		BA ST TO THE BANKS										
ALS ID SAMPLE ID MATRIX DATE Time Type / Code Total bottles												
(504 0.00-0.90 30/9/13 13 40 VIOU	1994999	44444										
1 1 0.90-1.90 Rokus 13:40 1100.												
DELINORIUS DV	RECE	IVED BY	METHOD OF SHIPMENT									
Name: 1 aund War 1824 (92759206) Date: 30/3/2013	Name: Ketsu	Date: 30 - 9 - 20 (3	Con' Note No:									
Name: Launt Was (42/1/206) Date: 30/3/2013 Of: Grammon Time:	of: ALS HK	Time: /6 \ 0										
Name: My Law 6903 TOTO Date:	Name:	Date:	Transport Co:									
Of: 2V Time:	Of:	Time:										
Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved OR	C; SH = Sodium Hydroxide/Cd Preserved; S = S	odium Hydroxide Preserved Plastic; AG = Amber	· Glass Unpreserved;									
V = VOA:Vial HCI Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = H	Cf Preserved Plastic; HS = HCl Preserved Specia	ation Bottle; SP = Sulfuric Preserved Plastic; F =	Formaldehyde Preserved Glass;									
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sul												
ALS Laborat	ory Group	WHITE - LAB COPY YELLOW - CUSTOMER CO PINK - BOOK COPY	OPY COC Page of									

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CHAIN OF CUSTODY DOCUMENTATION											
CLIENT: 1700 (678/2012/03.27)	SAMPLER: VC100 & GWAD Sample										
ADDRESS / OFFICE:	MOBILE: 9273 9890	(ALS)									
PROJECT MANAGER (PM): LO Wina Fay	PHONE 3191 5227	ALS Laboratory Group									
	EMAIL REPORT TO:										
SITE: NOSalia ation Plant at P.O. NO.:	EMAIL INVOICE TO: (if different to report)										
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES(note - suite codes must be listed to attract suite prices)										
FOR LABORATORY USE ONLY. COOLER SEAL (circle appropriate) COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:	\$285	Notes: e.g. Highly contaminated samples e.g. "High PAHs expected" Extra volume for QC or trace LORs etc.									
Intact Yes No N/A SAMPLE-TEMPERATURE 23		Exala volume for QO or page EOI(3 etc.									
CHILLED. Yes No. SAMPLE INFORMATION (note: S = Soil, W=Water) CONTAINER INFORMATION ALS ID SAMPLE ID MATRIX DATE Time Type / Code Total bottles	BEE ROBETCOL										
1 030 -1 30											
190 - 290 /		<u> </u>									
490 - 590	///////////										
7 - 9 - 9 90 / /	1/1////////////////////////////////////										
10.00 - 11.00 1 1 ·											
# 60 5 1 Propose Grab											
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6 5 2											
654											
RELINQUISHED BY:	RECEIVED BY	//METHOD OF SHIPMENT									
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Name: WA WOY Date Trailing										
Of: Gampon (92/19206) Date: 02/10/2013 Time:		ATY LTO									
Name: Mr Law 6905 Soto Date:	Name: Date:	Transport Co:									
Of: DV Time:	Of: Time: + 2 (2) 731										
Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; H = Formald hyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.											

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CHAIN OF CUSTODY DOCUMENTATION	H 018130
CLIENT: CEDD G7=[2012103,27	SAMPLER: V((D)
ADDRESS / OFFICE:	MOBILE: 9273 9890 (ALS)
PROJECT MANAGER (PM): LF WING FOIL	PHONE 3 9 522 ALS Laboratory Group
PROJECT ID:	EMAIL REPORT TO:
site: Desalization Plant at 1609.0. No.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES(note - suite codes must be listed to attract suite prices)
FOR LABORATORY USE ONLY COMMENTS / SPECIAL HANDLING / STORAGE OR DIS	AL: Notes: e.g. Highly contaminated samples
COOLER SEAL (circle appropriate)	e.g. "High PAHs expected"
intact. Yes No. / N/A	Extra volume for QC or trace LORs etc.
SAMPLETEMPERATURE	
CHILLED: Yes No	
SAMPLE INFORMATION (note: S = Soil, W=Water) CONTAINER INFORM	
ALG ID OAM EL ID INVITED	ottles
502 298-398 04020B UCIOU	
3.981 -4.881	
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Name: Lang Was Koung (927, 9206) Date: 10/20</td <td>Name: With work Date: D(O() Con' Note No:</td>	Name: With work Date: D(O() Con' Note No:
Of: fastilings Time:	Of: Time: (645)
Name: Mr Law 69-3 toto Date:	Name: Date: Transport Co:
Of: BV Time:	Of: Time:
Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved	ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved;
V = VOA Vial HCI Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glas	H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for	
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CHAIN OF CUSTODY DOCUMENTATI	ON						-	<u>j1</u> {	<u> 113</u>	1			
LIENT: (207 (618/201403.2	77	SAMPLER			₹an_	ulva	1,00						
DDRESS / OFFICE:		MOBILE:	4		9890							(ALS)	
ROJECT MANAGER (PM): LO Wing Fan		PHONE		3191	522	7						ALS Laboratory Group	
ROJECT ID:		EMAIL RE	PORT TO:		···								
ITE: DOS almation Plant at TKO P.O. NO.:		EMAIL INVOICE TO: (if different to report)											
ESULTS REQUIRED (Date): QUOTE NO	O.:	ANALYSIS REQUIRED including SUITES(note - suite codes must be listed to attract suite prices)											
OR LABORATORY USE ONLY OQUER SEAL (circle appropriate) itact: Yes No NA AMPLE TEMPERATURE	DLING / STORAGE OR DIPOSAL:			, and the second se		The second s			~ ·	PCBS	***************************************	Notes: e.g. Highly contaminated samples e.g. "High PAHs expected" Extra volume for QC or trace LORs etc.	
HILLED: Ses No		7,	5/2	华	2 2 2	1 &	29	X	PAH	18	+		
SAMPLE INFORMATION (note: S = Soil, W=Water)	CONTAINER INFORMATION	-	7 ~						9	loto 1	7		
ALS ID SAMPLE ID MATRIX DATE Time	Type / Code Total bottles					+-					+		
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RELINQUISHED BY:				L	L	RECEIVE) BY	1				METHOD OF SHIPMENT	
Name: Lenga IM Klond 72739286	Date: 0[/8/2013	Name:		Yaz				Date:	5	- lo -	ن	Con' Note No:	
Of: (1 A C 1)-	Time:	Of:		ALS				Time:		v : 55			
Name: My LAW 69035030	Date:	Name:						Date:				Transport Co:	
Of:	Time:	Of:						Time:					
Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved F V = VOA Vial HCI Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfu Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bo	ric Preserved Amber Glass; H = HC	I Preserved	d Plastic; H	S = HCI I	reserved S								

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