

JOB No.: TCS00881/18

CEDD No. Contract CV/2016/10 - Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery

Contamination Assessment Report (CAR) -
Potentially Contaminated Site SRC-1 (Southeast corner of the site next to Man Kam To Road)

PREPARED FOR
Hsin Chong Tsun Yip Joint Venture

Quality Index

Date	Reference No.	Prepared By	Certified By
28 April 2020	TCS00881/18/600/R0318	 Martin Li (Environmental Consultant)	 Tam Tak Wing (Environmental Team Leader)

Rev.	Date	Description
0	6 September 2019	First submission
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Our Ref: TCS00881/18/300/L0412

Hsin Chong Tsun Yip Joint Venture

Hsin Chong Center,
107-109 Wai Yip Street,
Kwun Tong,
Kowloon, Hong Kong

Attn: Mr. HO Man To

12 May 2020

By e-mail and by Hand

**Re: Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and related Facilities at Sandy Ridge Cemetery
Certification of Land Contamination Assessment Report (Rev. 4)**

With reference to the Land Contamination Assessment Report (Rev. 4) prepared to fulfil Condition 2.13 of EP-534/2017/A and Condition 2.12 of FEP-01/534/2017/A, we hereby certify the captioned submission pursuant to General Condition 1.9 of the EP-534/2017/A and FEP-01/534/2017/A.

Should you have any queries, please feel free to contact the undersigned at Tel: 2959-6059 or Fax: 2959-6079 or Email: twtam@fordbusiness.com.

Yours Sincerely,

For and on Behalf of

Action-United Environmental Services & Consulting (AUES)



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Hsin Chong Tsun Yip Joint Venture (CV/2016/10)
Hsin Chong Centre
107-109 Wai Yip Street
Kwun Tong, Kowloon
Hong Kong

Attention: Mr. HO Man-to

12 May 2020

Dear Sir,

Contract No. CV/2016/10

Site formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery
Contamination Assessment Report (CAR) - Potentially Contaminated Site at SRC-1

I refer to the email of the ET concerning the captioned Contamination Assessment Report (Rev.4) with Ref. No. TCS00881/18/600/R0318. We have no adverse comment on it and verify this report according to section 1.9 of the Environmental Permit No. FEP-01/534/2017A.

Yours faithfully,

CH Leung

Ir Leung CH Jacky
Independent Environmental Checker

cc. CEDD – Mr. SHUM Steven
ARUP – Mr. LEE Davis
ET Leader – Mr. TAM

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1 INTRODUCTION

1.1 PROJECT BACKGROUND

- 1.1.1 Civil Engineering and Development Department is the Project Proponent for the Project “*Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery*” (hereafter referred as “the Project”). The Project is a Designated Project to be implemented under Environmental Permit No. EP-534/2017/A and Further Environmental Permit FEP-01/534/2017/A. Layout plan of the Project is shown in **Annex A**. To facilitate the Project management, the Project works were separated into three different Contracts as:
- i) *Contract No. CV/2016/10 - Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery* (hereafter referred as “Contract 1”)
 - ii) *Contract No. CV/2017/02 - Infrastructural Works at Man Kam To Road and Lin Ma Hang Road for Development of Columbarium at Sandy Ridge Cemetery* (hereafter referred as “Contract 2”)
 - iii) *CEDD Contract No. (to be advised)* (hereafter referred as “Contract 3”)
- 1.1.2 In December 2017, Hsin Chong Tsun Yip Joint Venture (hereafter referred as “HCTYJV”) has been awarded **Contract 1** of the Project. According to the Contract requirement, HCTYJV shall take over the responsibility for part of the Environmental Permit No. EP-534/2017/A for ease of management, therefore application for Further Environmental Permit was submitted by HCTYJV to EPD on 26 January 2018 and Further Environmental Permit No. FEP-01/534/2017/A was granted to HCTYJV by EPD.
- 1.1.3 Pursuant to Environmental Permit EP-534/2017/A Condition 2.13 and Further Environmental Permit FEP-01/534/2017/A Condition 2.12 that Land contamination assessment to the potentially contaminated site SRC-1 as shown in Figure 2 of the Permits shall be carried out when access to this site is available and before the commencement of construction of the relevant part of the Project at this site. Since the western portion of the potentially contaminated site SRC-1 was situated within site boundary of Contract 1 of the Project, HCTYJV (Contractor of Contract 1 of the Project) was responsible to conduct the relevant land contamination assessment. Location of the potentially contaminated land site SRC-1 which covers two areas i.e. southeast portion of SRC-1 and Western Portion of SRC-1, was showed in **Annex B**.
- 1.1.4 In order to carry out the land contamination assessment works, HCTYJV employed Action-United Environmental Services & Consulting (AUES) as a Land Contamination Specialist to assist land contamination assessment works including site sampling supervision and appointment of HOKLAS accredited laboratory to carry out chemical analysis, and preparation of relevant reports and submissions. On **7 June 2018**, HCTYJV and AUES conducted site visit at the potentially contaminated site SRC-1.
- 1.1.5 In accordance with Environmental Permit EP-534/2017/A Condition 2.13 and Further Environmental Permit FEP-01/534/2017/A Condition 2.12 stipulation, the first draft of Contamination Assessment Plan (CAP) for the potentially contaminated site SRC-1 was submitted to EPD on **18 September 2018** and the CAP was approved by EPD on **27 May 2019**. Upon received the approved letter from EPD, sampling of site investigation work was commenced by HCTYJV on **14 August 2019** and completed the sampling work in accordance with the approved CAP.
- 1.1.6 A total of twenty-six (26) representative soil samples (included 2 duplicate samples) were collected from the eight proposed locations at western portion of **SRC-1** which were indicated in the location plan in Annex D. Since groundwater water was not encountered at all sampling pits, no water sample was collected for assessment. Furthermore, all the soil samples collected from the assessment site were delivered to HOKLAS accredited laboratory ALS Technichem (HK) Pty Ltd to carry out the relevant chemical analysis in accordance with the approved CAP.

- 1.1.7 This Contamination Assessment Report (CAR) is prepared in accordance with the approved CAP and present the findings of site investigation for western portion of potentially contaminated site SRC-1 and evaluate the level and extent of potential contamination after the completion of environmental site investigation and laboratory testing work as required in EM&A Manual S.9.3.1.2.

1.2 REPORT STRUCTURE

- 1.2.1 The Contamination Assessment Report is structured into the following sections:-

Section 1 Introduction

Section 2 Information of the Designated Assessment Site SRC-1

Section 3 Sampling Locations and Assessment Methodology

Section 4 Assessment Results

Section 5 Conclusions

2 INFORMATION OF POTENTIALLY CONTAMINATED SITE SRC-1

2.1 ASSESSMENT SITE INFORMATION

- 2.1.1 Based on the desktop review findings in EIA study of the Project, there is one site (described as “SRC-1”) identified to be potentially contaminated in accordance with the criteria in EPD’s *Practice Guide for Investigation and Remediation of Contaminated Land* for land use type of concrete and asphalt production and open storage area. The land area of potentially contaminated site SRC-1 is approximate 8,320m². Approximately 92% of the site area (~7,700m²) is located within a private land and the remaining about 8 % of land area (~620m²) located at southeast of SRC-1 as situated within government lot.

2.2 SOUTHEAST PORTION OF POTENTIALLY CONTAMINATED SITE SRC-1

- 2.2.1 Referring to site survey at the southeast portion of potentially contaminated site **SRC-1** carried out during the EIA study stage of the captioned project, only paved ground was observed at southeast portion of SRC-1 and neither concrete & asphalt production nor open storage activities were observed. It is concluded in the EIA report that site investigation is considered not required for this strip of land. However, re-appraisal for this strip of land was recommended in EIA report once the works area of the Project is confirmed and site access is available in order to identify any hot spot for site investigation and to determine any change in land use after the approval of EIA report but before commencement of construction work.
- 2.2.2 Site appraisal for southeast portion of SRC-1 was conducted on 7 June 2018, no sign of land contamination was observed as the ground surface was paved with concrete layer and no material storage nor activities was observed at the area (*Photo 12, 13 & 14 in Annex E of the Approved CAP*). In addition, historical aerial photos also revealed that the southeast portion of SRC-1 was also a paved ground which no historical potential contamination source was identified. Based on observations and findings from the site appraisal, it is confirmed that there is no land use change for southeast portion of the potentially contamination site SRC-1 and no hotspot was identified. Site investigation was therefore considered not required.

2.3 WESTERN PORTION OF POTENTIALLY CONTAMINATED SITE SRC-1

- 2.3.1 According to the EIA report, only western portion of SRC-1 with an area of approximate 1,120m² inside the private lot would require land resumption for the road widening work at Sha Ling Road and utilities construction works nearby, and it is recommended the necessity of site investigation should focus on this area once the land is resumed and free for access.
- 2.3.2 Given the issue on privacy and rights of the land ownership, site visit cannot be taken at western portion of SRC-1 during EIA stage. Hence the EIA Report recommended that once the work areas for the Project confirmed and site access available, re-appraisal of the area shall be carried out in order to determine any change in land use and to identify any hot spots within the area.
- 2.3.3 During the site appraisal conducted on 7 June 2018, earth material storage area (*Photo 6 & 7 in Annex E of the Approved CAP*), concrete admixture chemical storage (*Photo 2 & 5 in Annex E of the Approved CAP*), a concrete mixing plant (*Photo 4 in Annex E of the Approved CAP*) and an empty substation (*Photo 8, 9, 10 & 11 in Annex E of the Approved CAP*) were observed. No chemical waste storage or diesel storage tank was found at the site area. Furthermore, the existing ground surface was paved with concrete layer and no crack and oil stain was observed.
- 2.3.4 The potential land contamination source identified at western portion of SRC-1 are the concrete admixture storage, the transformer footprint at the empty substation, the storage and transfer of residues from physical conversion of earthen materials by sorting, mixing, and grinding, and the concrete mixing activities at western portion of SRC-1. Based on site visit observations at western portion of the potentially contamination site **SRC-1**, land contamination assessment is considered required and locations for site investigation were proposed in the approved CAP.

2.4 SITE GEOLOGY AND HYDROGEOLOGY

Site Geology

- 2.4.1 The potentially contaminated area SRC-1 is located at the junction between Man Kam To Road and Sha Ling Road. For Man Kam To Road, there is the Mai Po Member of the Lok Ma Chau Formation as the bedrock type comprises of metamorphosed siltstones, sandstones with thin conglomeratic beds and graphite schist within the study area. The study area is mainly overlain by debris flow deposits with locally alluvium identified near the Police Post and terraced alluvium near the junction with Sha Ling Road. Fill is expected to be found along the Man Kam To Road. Where encountered, the thickness ranges from 1.2-3.5m. A northwest-southeast and northeast-southwest trending photo lineament are noted along the road.

Site Hydrogeology

- 2.4.2 According to Hong Kong Observatory Ta Kwu Ling Weather Station information (http://www.hko.gov.hk/cis/region_climat/TKL/TKL_mean_e.htm), the average year rainfall recorded between 1986 and 2013 at Sheung Shui/Fanling is about 1,841.7mm. Surface runoff collected by major network of drainage lines is discharged to Sham Chun River. Since no groundwater was encountered during soil sampling up to three meters below existing ground level, the groundwater level of the assessment area should be deeper than three meters below the existing ground at the subject site.

3 SITE INVESTIGATION OF LAND CONTAMINATION ASSESSMENT

3.1 SAMPLING LOCATIONS

3.1.1 Site investigation was commenced by HCTYJV on **14 August 2019**. In accordance with the Approved CAP, soil sampling work was performed at the eight (8) proposed locations at western portion of SRC-1. The details of the sampling locations are listed in **Table 3-1** and the sampling location are illustrated in **Annex D**.

3.1.2 Pit excavation was performed for soil sampling. For each sampling location, one representative soil sample was collected at each sampling depth (i.e. 0.5m, 1.5m and 3.0m bgl) in accordance with the approved CAP and delivered to the laboratory to carry out chemicals test. All the soil sampling pit during site investigation were located at the proposed location in approved CAP except slight adjustment to the South for SP-01 was made due to the presence of containers (Refer to the photo record of sampling location SP-01 in Annex D).

3.2 CHEMICALS ANALYSIS

3.2.1 All the soil samples were tested with the Chemicals of Concern (CoCs) proposed in the approved CAP. The CoCs tested for soil sample is shown in **Table 3-2**.

Table 3-2 Chemicals of Concern for Soil Sample

Sampling Point ID	Proposed Chemical Analysis
SP-01, SP-03, SP-04, SP-05, SP-06, SP-07, SP-08	• Petroleum Carbon Ranges – Fractions C6-C8, Fractions C9-C16 and Fractions C17-C35 • Volatile Organic Compounds (VOCs) – BTEX i.e. Benzene, Toluene, Ethylbenzene and Xylenes (Total) • Semi-volatile Organic Compounds (SVOCs) – Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Bis(2-Ethylhexyl)phthalate, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Hexachlorobenzene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Phenol and Pyrene
SP-02	• Metals – Antimony, Arsenic, Barium, Cadmium, Chromium III & VI, Cobalt, Copper, Lead, Manganese, Mercury, Molybdenum, Nickel, Tin and Zinc • Petroleum Carbon Ranges – Fractions C6-C8, Fractions C9-C16 and Fractions C17-C35 • Volatile Organic Compounds (VOCs) – BTEX i.e. Benzene, Toluene, Ethylbenzene and Xylenes (Total) • Semi-volatile Organic Compounds (SVOCs) – Naphthalene and Phenol • Polychlorinated Biphenyls (PCBs)

Table 3-1 Sampling Locations at Western Portion of Site SRC-1

Sampling Point ID	Proposed Sampling Co-ordinates		As-built Sampling Co-ordinates		Location of Sampling Point	Sampling Depth	Termination Depth	Sampling location adjusted with justification	Observation during sampling
	Easting	Northing	Easting	Northing					
SP-01	830 934	843 269	830 934.51	843 267.91	Open space of earthen material stockpiles (north side of the western portion of SRC-1)	Below ground level 0.5m, 1.5m and 3.0m	Below ground level 3.0m	Slight adjustment (about 1 meter) to the South was made due to the presence of containers (Refer to the photo record of sampling location SP-01 in Annex D)	No visual and olfactory signs of contamination observed
SP-02	830 926	843 262	830 926.84	843 261.78	At the empty substation (north side of the western portion of SRC-1)	Below ground level 0.5m, 1.5m and 3.0m	Below ground level 3.0m	No	No visual and olfactory signs of contamination observed
SP-03	830 929	843 252	830 928.27	843 252.28	Materials stockpiling area of the concrete factory (mid-section of the western portion of SRC-1)	Below ground level 0.5m, 1.5m and 3.0m	Below ground level 3.0m	No	No visual and olfactory signs of contamination observed
SP-04	830 932	843 233	830 931.70	843 233.68	Earthen material loading point (mid-section of the western portion of SRC-1)	Below ground level 0.5m, 1.5m and 3.0m	Below ground level 3.0m	No	No visual and olfactory signs of contamination observed
SP-05	830 929	843 223	830 929.16	843 223.25	Chemical storage area of the concrete factory (mid-section of the western portion of SRC-1)	Below ground level 0.5m, 1.5m and 3.0m	Below ground level 3.0m	No	No visual and olfactory signs of contamination observed
SP-06	830935	843215	830 934.32	843 214.19	Concrete mixing plant (mid-section of the western portion of SRC-1)	Below ground level 0.5m, 1.5m and 3.0m	Below ground level 3.0m	No	No visual and olfactory signs of contamination observed
SP-07	830 932	843 208	830 932.74	843 207.80	Chemical storage area of the concrete factory (mid-section of the western portion of SRC-1)	Below ground level 0.5m, 1.5m and 3.0m	Below ground level 3.0m	No	No visual and olfactory signs of contamination observed
SP-08	830 934	843 194	830 934.05	843 193.76	Open space of the concrete factory (south side of the western portion of SRC-1)	Below ground level 0.5m, 1.5m and 3.0m	Below ground level 3.0m	No	No visual and olfactory signs of contamination observed

3.3 SOIL SAMPLING METHODOLOGY

- 3.3.1 During soil sampling process, land contamination specialist (i.e. AUES) and representative of the Resident Engineer was full time on site to supervise all sampling process ensure no cross contamination or any other forms of interferences is resulted.

Soil Sampling by Pit Excavation

- 3.3.2 Soil sampling was carried out by pit excavation to the depth of 3m below ground level. Pit excavation was carried out by using an excavator and all the soil samples are collected using a stainless steel hand-held trowel. One representative soil sample was collected at each sampling depth (i.e. 0.5m, 1.5m and 3.0m bgl) of each sampling location. Furthermore, no additional sampling point or extra soil sample is added for the assessment.
- 3.3.3 During soil sampling, no groundwater was encountered in all designated sampling locations and no groundwater sampling was performed. No stained, unnaturally colored, or wet soil was observed during site investigation while no petroleum or solvent odours was found in soil samples. In addition, no oily residual on soil samples or split spoon sampler was observed.
- 3.3.4 Owing to the potential contamination source at the assessment site was considered as a shallow source based on assessment during site appraisal and no sign of potential occurrence of non-aqueous phase liquid (NAPL) was observed during site investigation, potential contamination of groundwater is not anticipated.
- 3.3.5 Trial pit record of each sampling location logged by a geologist of HCTYJV were attached in ***Annex E***.

In-Situ Measurements

- 3.3.6 During sampling, all soil samples were inspected for any visual and olfactory sings of contamination. Moreover, photo-ionization detection (PID) was also used for initial screening as check the soil sample vapor concentrations at the site. Before PID used for initial screening which was pre-calibrated using isobutylene standard reference gas to ensure the accuracy of the equipment.
- 3.3.7 Summary of sampling activities and procedures is presented as follows:
- Identify the sampling locations;
 - For safety reason, underground utilities checking at 1.2m below existing ground level was performed before pit excavated;
 - Samples were collected and stored in an appropriately prepared and labeled sampling container or plastic bags provided by the laboratory for field screening and laboratory analysis;
 - All samples was undertaken field-screened to determine the maximum contaminant concentrations and where required to extension, by:
 - Photo-ionizing detector (PID) reading; and
 - Supported by subjective assessment of headspace vapor concentrations.
 - One representative soil sample was collected at each sampling depth (i.e. 0.5m, 1.5m and 3.0m bgl) of each sampling location for laboratory analysis;
 - Each sub-sample collected was put into a sample container provided by the testing laboratory. All samples were stored in a cool box maintained at a temperature of 4°C without being frozen.
- 3.3.8 During soil sampling, PID measurement for soil samples were carried out and the readings detected were between 0.1ppm and 1.3ppm. Since there are no visual and olfactory signs of contamination observed from the soil samples, additional sampling point or extra soil sample was considered not necessary. The PID detected vapor concentration readings are shown in ***Table 3-3***.

Table 3-3 Visual / Olfactory and PID of In-situ Measurement Findings

Sampling Location ID	Soil Sample ID	PID Reading (ppm)		
		Initial	Measured	Actual
SP-01	SP-01/0.50m	0.0	1.0	1.0
	SP-01/1.50m	0.0	1.2	1.2
	SP-01/3.00m	0.0	0.7	0.7
SP-02	SP-02/0.50m	0.0	0.8	0.8
	SP-02/1.50m	0.0	1.0	1.0
	SP-02/3.00m	0.0	0.3	0.3
SP-03	SP-03/0.50m	0.0	0.1	0.1
	SP-03/1.50m	0.0	0.4	0.4
	SP-03/3.00m	0.0	0.3	0.3
SP-04	SP-04/0.50m	0.0	0.2	0.2
	SP-04/1.50m	0.0	0.8	0.8
	SP-04/3.00m	0.0	1.3	1.3
SP-05	SP-05/0.50m	0.0	0.4	0.4
	SP-05/1.50m	0.0	0.4	0.4
	SP-05/3.00m	0.0	0.6	0.6
SP-06	SP-06/0.50m	0.0	0.1	0.1
	SP-06/1.50m	0.0	0.8	0.8
	SP-06/3.00m	0.0	0.1	0.1
SP-07	SP-07/0.50m	0.0	0.2	0.2
	SP-07/1.50m	0.0	0.3	0.3
	SP-07/3.00m	0.0	0.1	0.1
SP-08	SP-08/0.50m	0.0	0.6	0.6
	SP-08/1.50m	0.0	0.8	0.8
	SP-08/3.00m	0.0	0.5	0.5

3.4 QA/QC SAMPLES COLLECTION

3.4.1 In accordance with the approved CAP, quality control samples including duplicate samples and equipment blank samples were collected during the course of soil sampling. Since no groundwater was encountered in all designated sampling locations, no groundwater sampling was performed and field blank/trip blank was not collected.

Duplicate soil sample

3.4.2 As proposed in the approved CAP, one duplicate sample should be collected for every twenty soil samples. A total twenty-four (24) representative soil samples were taken during land contamination investigation, therefore two duplicate soil samples Duplicate-1 and Duplicate-2 were collected from sample SP-07/3.0m and SP-02/1.5m respectively. Chemicals analyses of duplicate samples were same as the original soil samples as showed above **Table 3-2**.

Equipment Blank

3.4.3 As proposed in the approved CAP, one equipment blank sample should be collected per every twenty soil samples. Two equipment blank samples were collected during the course of site investigation and chemical test were carried out to verify the decontamination procedures. The chemical analysis for equipment blanks stated in the approved CAP is as below:

- Metals - Mercury
- Petroleum Carbon Ranges – Fractions C6-C8, Fractions C9-C16 and Fractions C17-C35
- Volatile Organic Compounds (VOCs) – BTEX i.e. Benzene, Toluene, Ethylbenzene and Xylenes (Total)
- Semi-volatile Organic Compounds (SVOCs) –Acenaphthene, Acenaphthylene, Anthracene, Benzo(b)fluoranthene, Chrysene, Fluoranthene, Fluorene, Hexachlorobenzene, Naphthalene, Phenanthrene and Pyrene
- Polychlorinated Biphenyls (PCBs)

3.5 SAMPLING EQUIPMENT DECONTAMINATION

3.5.1 Prior to each soil sampling event, all sampling equipment was decontaminated by using phosphate-free detergent (Decon® 90) with tap water and rinse with distilled water to prevent cross-contamination of samples.

3.6 SOIL SAMPLE DELIVERY

3.6.1 All the collected soil samples were put into glass jar provided by the HOKLAS laboratory and stored in a cool box maintained at a temperature of 4°C without being frozen. After completed sampling work, all the collected soil samples and quality control samples were delivered to the testing laboratory within 24 hours for chemical analysis. Chain-Of-Custody (COC) of sample delivery is attached in **Annex G**.

3.7 ASSESSMENT GUIDELINES

3.7.1 Since the western portion of SRC-1 is part of the Project of the upgraded Sha Ling Road. Therefore, lower limit of “Industrial or Public Park” of Risk-based Remediation Goals (RBRGs) which based on the “Guidance Note for Contaminated Land Assessment and Remediation of Appendix II”, was used to be carried out the related soils assessment. RBRGs for soil are listed in **Table 3-4**.

3.7.2

Table 3-4 Proposed Risk-based Remediation Goals for Soil Assessment

Chemicals of Concern		Soil Remediation Goals			
		Industrial of RBRGs (mg/kg)	Public Parks of RBRGs (mg/kg)	Lower Limit of “Industrial or Public Park” of RBRGs (mg/kg)	Soil Saturation Limit, Csat (mg/kg)
Metals	Antimony (Sb)	2.61E+00	9.79E+01	2.61E+00	NA
	Arsenic (As)	1.96E+02	7.35E+01	7.35E+01	NA
	Barium (Ba)	1.00E+04*	1.00E+04*	1.00E+04*	NA
	Cadmium (Cd)	6.53E+02	2.45E+02	2.45E+02	NA
	Chromium III	1.00E+04*	1.00E+04*	1.00E+04*	NA
	Chromium VI	1.96E+03	7.35E+02	7.35E+02	NA
	Cobalt (Co)	1.00E+04*	4.90E+03	4.90E+03	NA
	Copper (Cu)	1.00E+04*	9.79E+03	9.79E+03	NA
	Lead (Pb)	2.29E+03	8.57E+02	8.57E+02	NA
	Manganese (Mn)	1.00E+04*	1.00E+04*	1.00E+04*	NA
	Mercury (Hg)	3.84E+01	4.56E+01	3.84E+01	NA
	Molybdenum (Mo)	3.26E+03	1.22E+03	1.22E+03	NA
	Nickel (Ni)	1.00E+04*	4.90E+03	4.90E+03	NA
	Tin (Sn)	1.00E+04*	1.00E+04*	1.00E+04*	NA
	Zinc (Zn)	1.00E+04*	1.00E+04*	1.00E+04*	NA
Petroleum Carbon Ranges	Fractions C6 – C8	1.00E+04*	1.00E+04*	1.00E+04*	1.00E+03
	Fractions C9 – C16	1.00E+04*	1.00E+04*	1.00E+04*	3.00E+03
	Fractions C17 – C35	1.00E+04*	1.00E+04*	1.00E+04*	5.00E+03
Volatile Organic Compound (VOCs)	Benzene	9.21E+00	4.22E+01	9.21E+00	3.36E+02
	Toluene	1.00E+04*	1.00E+04*	1.00E+04*	2.35E+02
	Ethylbenzene	8.24E+03	1.00E+04*	8.24E+03	1.38E+02
	Xylenes (total)	1.23E+03	1.00E+04*	1.23E+03	1.50E+02
Semi-Volatile Organic Compound (SVOCs)	Acenaphthene	1.00E+04*	1.00E+04*	1.00E+04*	6.02E+01
	Acenaphthylene	1.00E+04*	1.00E+04*	1.00E+04*	1.98E+01
	Anthracene	1.00E+04*	1.00E+04*	1.00E+04*	2.56E+00
	Benzo(a)anthracene	9.18E+01	3.83E+01	3.83E+01	NA
	Benzo(a)pyrene	9.18E+00	3.83E+00	3.83E+00	NA
	Benzo(b)fluoranthene	1.78E+01	2.04E+01	1.78E+01	NA

Chemicals of Concern	Soil Remediation Goals			
	Industrial of RBRGs (mg/kg)	Public Parks of RBRGs (mg/kg)	Lower Limit of "Industrial or Public Park" of RBRGs (mg/kg)	Soil Saturation Limit, Csat (mg/kg)
Benzo(g,h,i)perylene	1.00E+04*	5.74E+03	5.74E+03	NA
Benzo(k)fluoranthene	9.18E+02	3.83E+02	3.83E+02	NA
Bis(2-Ethylhexyl)phthalate	9.18E+01	9.42E+01	9.18E+01	NA
Chrysene	1.14E+03	1.54E+03	1.14E+03	NA
Dibenzo(a,h)anthracene	9.18E+00	3.83E+00	3.83E+00	NA
Fluoranthene	1.00E+04*	7.62E+03	7.62E+03	NA
Fluorene	1.00E+04*	7.45E+03	7.45E+03	5.47E+01
Hexachlorobenzene	5.82E-01	7.13E-01	5.82E-01	NA
Indeno(1,2,3-cd)pyrene	9.18E+01	3.83E+01	3.83E+01	NA
Naphthalene	4.53E+02	9.14E+02	4.53E+02	1.25E+02
Phenanthrene	1.00E+04*	1.00E+04*	1.00E+04*	2.80E+01
Phenol	1.00E+04*	1.00E+04*	1.00E+04*	7.26E+03
Pyrene	1.00E+04*	5.72E+03	5.72E+03	NA
Polychlorinated Biphenyls (PCBs)	7.48E-01	7.56E-01	7.48E-01	NA

Remark:

(*) indicates a 'ceiling limit' concentration.

NA Not Applicable

4 ASSESSMENT RESULTS

4.1 GENERAL

4.1.1 A total of twenty-six (26) soil samples (two duplicate soil samples included), and two equipment blank samples were delivered to the HOKLAS accredited laboratory *ALS Technichem (HK) Pty Ltd.* for the required chemical analysis listed in above **Table 3-2**. The assessment results were evaluated against Risk-based Remediation Goals limits as presented in **Table 3-4** of the report.

4.1.2 No groundwater was encountered during soil sampling, therefore no groundwater sample was collected during site investigation work of the subject site.

4.2 LABORATORY RESULTS OF SOIL SAMPLES

4.2.1 The details of compare maximum detected concentrations to the proposed RBRGs and C_{sat} trigger Criteria are presented in **Table 4-1**. Full laboratory data reports are shown in **Annex H**.

Table 4-1 Soil Data Summary and Comparison to RBRGs and C_{sat}

Chemicals of Concern	Reporting Limit (mg/kg)	Frequency of Detection (x/y)			Range of Detected Concentration (mg/kg)		Soil Remediation Goals (mg/kg)		Maximum Detected Concentration Exceeds	
		X	Y	%	Min.	Max.	Proposed RBRGs	C _{sat}	Proposed RBRGs	C _{sat}
Heavy Metals										
Antimony (Sb)	1	2	4	50.0	1	1	2.61E+00	NA	NO	NA
Arsenic (As)	1	4	4	100.0	4	9	7.35E+01	NA	NO	NA
Barium (Ba)	1	4	4	100.0	45	58.1	1.00E+04*	NA	NO	NA
Cadmium (Cd)	0.2	0	4	0.0	BRL		2.45E+02	NA	NO	NA
Trivalent Chromium III	1	4	4	100.0	19.4	54.2	1.00E+04*	NA	NO	NA
Hexavalent Chromium VI	1	0	4	0.0	BRL		7.35E+02	NA	NO	NA
Cobalt (Co)	1	4	4	100.0	1.3	1.6	4.90E+03	NA	NO	NA
Copper (Cu)	1	4	4	100.0	13	30	9.79E+03	NA	NO	NA
Lead (Pb)	1	4	4	100.0	8	14	8.57E+02	NA	NO	NA
Manganese (Mn)	1	4	4	100.0	27.2	46.6	1.00E+04*	NA	NO	NA
Mercury (Hg)	0.05	0	4	0.0	BRL		3.84E+01	NA	NO	NA
Molybdenum (Mo)	1	2	4	50.0	1	1	1.22E+03	NA	NO	NA
Nickel (Ni)	1	4	4	100.0	4	4	4.90E+03	NA	NO	NA
Tin (Sn)	1	4	4	100.0	3	8.6	1.00E+04*	NA	NO	NA
Zinc (Zn)	1	4	4	100.0	11	14	1.00E+04*	NA	NO	NA
Petroleum Carbon Ranges										
C6 - C8 Fraction	5	0	26	0.0	BRL		1.00E+04*	1.00E+03	NO	NO
C9 - C16 Fraction	200	0	26	0.0	BRL		1.00E+04*	3.00E+03	NO	NO
C17 - C35 Fraction	500	0	26	0.0	BRL		1.00E+04*	5.00E+03	NO	NO
Volatile Organic Compounds (VOCs)										
Benzene	0.2	0	26	0.0	BRL		9.21E+00	3.36E+02	NO	NO
Toluene	0.5	0	26	0.0	BRL		1.00E+04*	2.35E+02	NO	NO
Ethylbenzene	0.5	0	26	0.0	BRL		8.24E+03	1.38E+02	NO	NO
Xylenes (total)	2.0	0	26	0.0	BRL		1.23E+03	1.50E+02	NO	NO
Semi-Volatile Organic Compound (SVOCs)										
Acenaphthene	0.5	0	22	0.0	BRL		1.00E+04*	6.02E+01	NO	NO
Acenaphthylene	0.5	0	22	0.0	BRL		1.00E+04*	1.98E+01	NO	NO
Anthracene	0.5	0	22	0.0	BRL		1.00E+04*	2.56E+00	NO	NO
Benzo(a)anthracene	0.5	0	22	0.0	BRL		3.83E+01	NA	NO	NA
Benzo(a)pyrene	0.5	0	22	0.0	BRL		3.83E+00	NA	NO	NA
Benzo(b)fluoranthene	0.5	0	22	0.0	BRL		1.78E+01	NA	NO	NA
Benzo(g,h,i)perylene	0.5	0	22	0.0	BRL		5.74E+03	NA	NO	NA
Benzo(k)fluoranthene	0.5	0	22	0.0	BRL		3.83E+02	NA	NO	NA
Bis(2-Ethylhexyl)phthalate	5.0	0	22	0.0	BRL		9.18E+01	NA	NO	NA
Chrysene	0.5	0	22	0.0	BRL		1.14E+03	NA	NO	NA
Dibenzo(a,h)anthracene	0.5	0	22	0.0	BRL		3.83E+00	NA	NO	NA
Fluoranthene	0.5	0	22	0.0	BRL		7.62E+03	NA	NO	NA
Fluorene	0.5	0	22	0.0	BRL		7.45E+03	5.47E+01	NO	NO

Chemicals of Concern	Reporting Limit (mg/kg)	Frequency of Detection (x/y)			Range of Detected Concentration (mg/kg)		Soil Remediation Goals (mg/kg)		Maximum Detected Concentration Exceeds	
		X	Y	%	Min.	Max.	Proposed RBRGs	C _{sat}	Proposed RBRGs	C _{sat}
Hexachlorobenzene	0.2	0	22	0.0	BRL		5.82E-01	NA	NO	NA
Indeno(1,2,3-cd)pyrene	0.5	0	22	0.0	BRL		3.83E+01	NA	NO	NA
Naphthalene	0.5	0	26	0.0	BRL		4.53E+02	1.25E+02	NO	NO
Phenanthrene	0.5	0	22	0.0	BRL		1.00E+04*	2.80E+01	NO	NO
Phenol	0.5	0	26	0.0	BRL		1.00E+04*	7.26E+03	NO	NO
Pyrene	0.5	0	22	0.0	BRL		5.72E+03	NA	NO	NA
Polychlorinated Biphenyls (PCBs)										
Total Polychlorinated Biphenyls	0.1	0	4	0.0	BRL		7.48E-01	NA	NO	NA

Remark:

(*) indicates a 'ceiling limit' concentration.

x = number of samples (included duplicate samples) were found above the reporting limit

y = number of samples (included duplicate samples) analyzed for chemical

BRL = Below Reporting Limit

NA = Non-Applicable

4.3 DATA QUALITY

4.3.1 In accordance with the approved CAP, QA/QC samples were conducted during soil sampling. Two soil duplicate samples were collected (Duplicate 1 for SP-07/3.0m bgl and Duplicate 2 for SP-02/1.5m bgl) and carried out chemical analysis as same as the original soil samples. Moreover, two equipment blank samples were also taken during the soil sampling process. Chemical tests for equipment blank samples were stated in Section 3.4.3.

4.3.2 The Relative Percent Difference (RPD) of the field QA/QC for soil sample is listed in **Table 4-2**.

Table 4-2 Acceptance Criteria for Field Quality Control Samples

Quality Control Samples	Acceptable Relative Percent Difference (RPD)/Results
Equipment Blanks	Result = Non Detectable
Blind Duplicates	RPD = 0% to 30% of mean concentration determined by both tests

$$\text{The Relative Percent Difference (RPD)} = \frac{(\text{Result 1} - \text{Result 2}) \times 100}{\text{Mean of Results 1 \& 2}}$$

4.3.3 **Annex F** is shown a comparison of RPD values among soil duplicate.

4.3.4 Most of the chemicals analytical results for the duplicate samples and original samples are below the reporting limits, were within the acceptable percentage of RPD and were consistent with the original soil sample. Furthermore, laboratory results of equipment blanks are below reporting limits. Therefore, chemical analytical results are concluded acceptable and reliable.

4.3.5 According to **Table 4-1** that chemicals results of all soil samples (original and duplicate samples) are well below RBRGs and Soil Saturation Limit of remediation criteria. Hence, remediation action for the subject assessment area is not required.

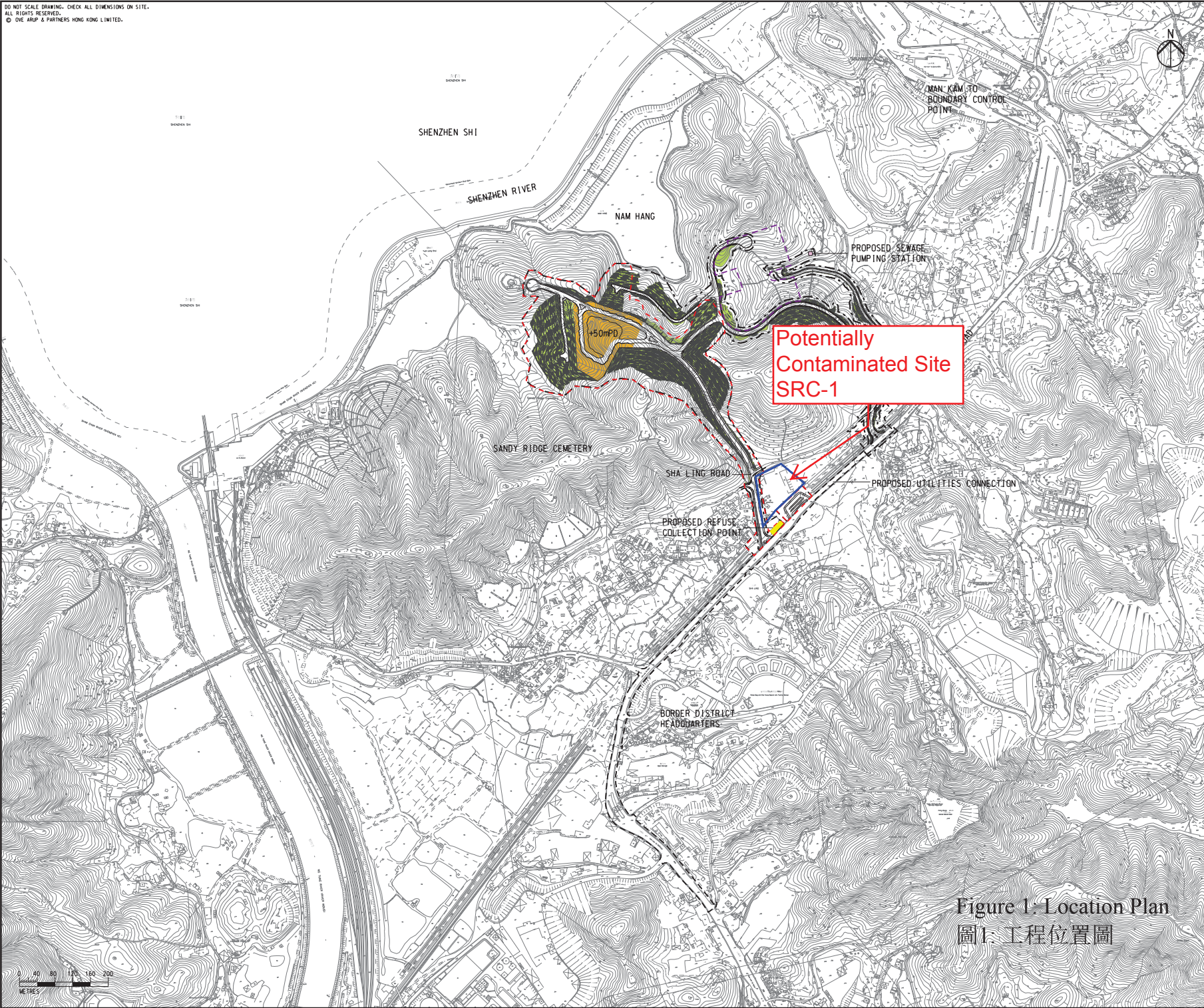
5 CONCLUSIONS

5.1 CONCLUSIONS

- 5.1.1 Pursuant to Environmental Permit EP-534/2017/A Condition 2.13 and Further Environmental Permit FEP-01/534/2017/A Condition 2.12, land contamination assessment was carried out at the western portion of potentially contaminated site SRC-1 when access to this site is available and before the commencement of construction of the relevant part of the Project at this site.
- 5.1.2 Site appraisal at western and southeast portion of potentially contaminated site SRC-1 was conducted on **7 June 2018** to review any changes of land use and to identify any hot spots. A Contamination Assessment Plan (CAP) incorporated with site information and site investigation proposal was prepared accordingly. The first draft of CAP was submitted to EPD on **18 September 2018** and approved on **27 May 2019**.
- 5.1.3 Site investigation work was commenced and completed on **14 August 2019**. The site investigation was carried out in accordance with the approved CAP requirements.
- 5.1.4 A total of twenty-six (26) soil samples (included two soil duplicate samples), were collected and delivered to ALS Technichem (HK) Pty Ltd for chemical analysis in accordance with the approved CAP. In addition, two equipment blank samples were taken and delivered to the testing laboratory to carry out chemical analysis for QA/QC control.
- 5.1.5 Since groundwater was not encountered during soil sampling, no groundwater sample was carried out during the site investigation work.
- 5.1.6 All analytical results of soil duplicate meet the RPD acceptable criteria. Moreover, equipment blank of the QA/QC samples were detected below reporting limits. Based on QA/QC results, the chemical testing results are acceptable and reliable.
- 5.1.7 According to analytical findings, all required chemicals testing results of the 26 soil samples are below RBRGs and Soil Saturation Limit. Furthermore, no Non-Aqueous Phase Liquid (NAPL) was observed from all the collected soil samples. Based on the chemical analysis results, remediation of the subject assessment areas is considered not required.

Annex A

Layout Plan of the Project



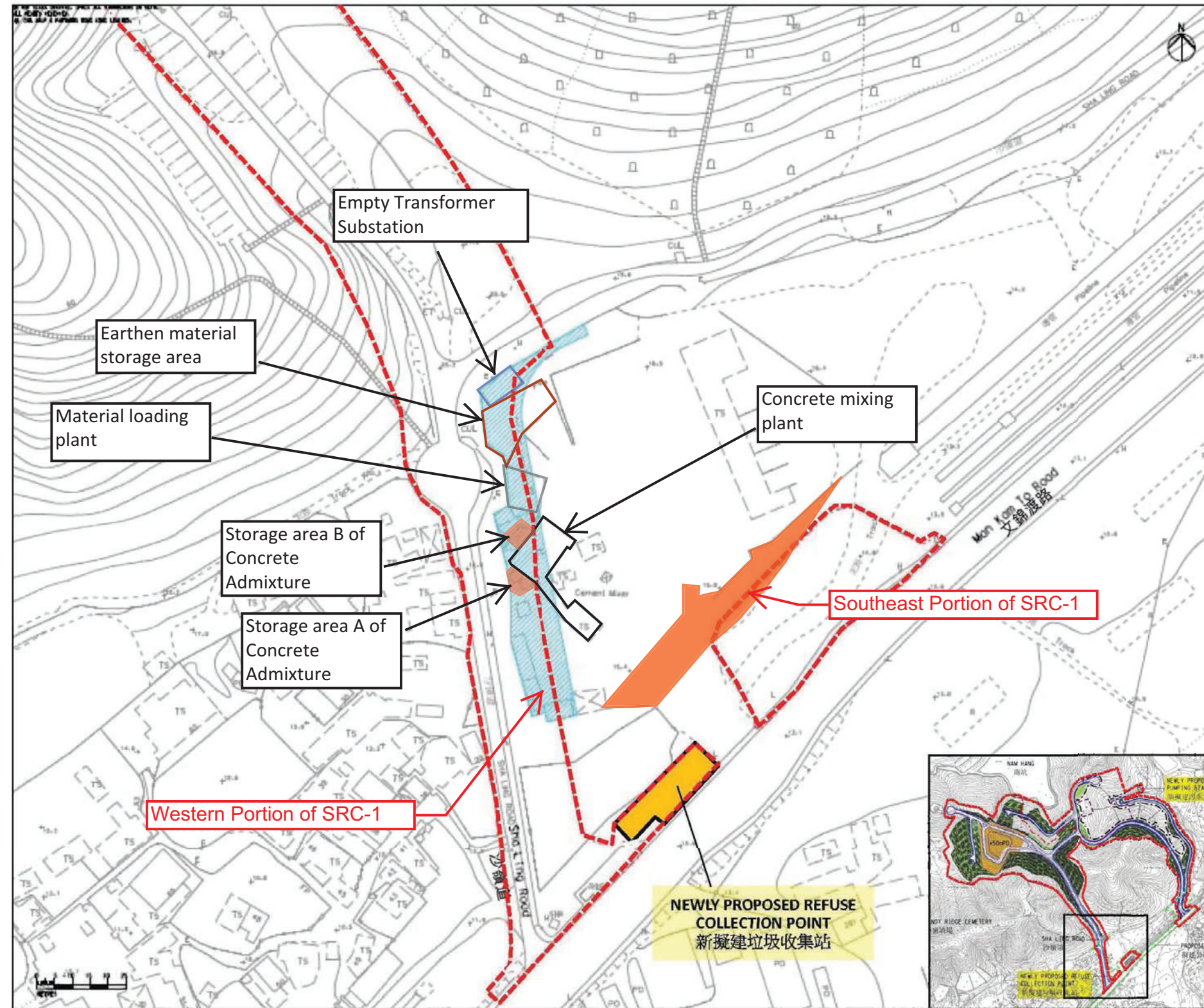
- LEGEND**
- Project Boundary
項目範圍
 - Utilities Construction
興建公用設施
 - Proposed Access Road / EVA
擬建場內通道 / 緊急通道
 - Proposed Platforms for Columbarium
擬建工地平整工程用以興建沙嶺墳場骨灰龕
 - Proposed Cut / Fill Slope
斜坡工程
 - Proposed Sewage Pumping Station
擬建污水泵房
 - Proposed Refuse Collection Point
擬建廢物回收站
 - Project Boundary for Crematorium and Related Facilities (By Other)
火葬場及相關設施之項目範圍 (由其它部門興建)
 - Site Boundary of CV/2016/10
地盤界線 (CV/2016/10)

B		SECOND ISSUE	GL	10/18
A		FIRST ISSUE	GL	08/18
Rev	Description		By	Date
Consultant				
ARUP				
Contract No. and Title:				
Agreement No. CE 1/2013(CE)				
Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery - Design and Construction				
Drawing title				
Drawing no. Figure 1				
Rev. A				
Drawn	Date	Checked	Approved	
GL	08/18	EL	FC	
Scale	AS SHOWN	Status	PRELIMINARY	
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Figure 1: Location Plan
圖1: 工程位置圖

Annex B

Western and Southeast Portion of Potentially Contaminated Site SRC-1



Legend

- Project Boundary
- Potentially Contaminated Site Requires Land Resumption Within Private Lot
- Potentially Contaminated Site Within Government Lot

Rev	Description	By	Date
E			
D			
C			
B			

Consultant
AUES

Contract No. and Title
CEDD No. Contract CV/2016/10 -
Site Formation and Associated
Infrastructural Works for
Development of Columbarium at
Sandy Ridge Cemetery

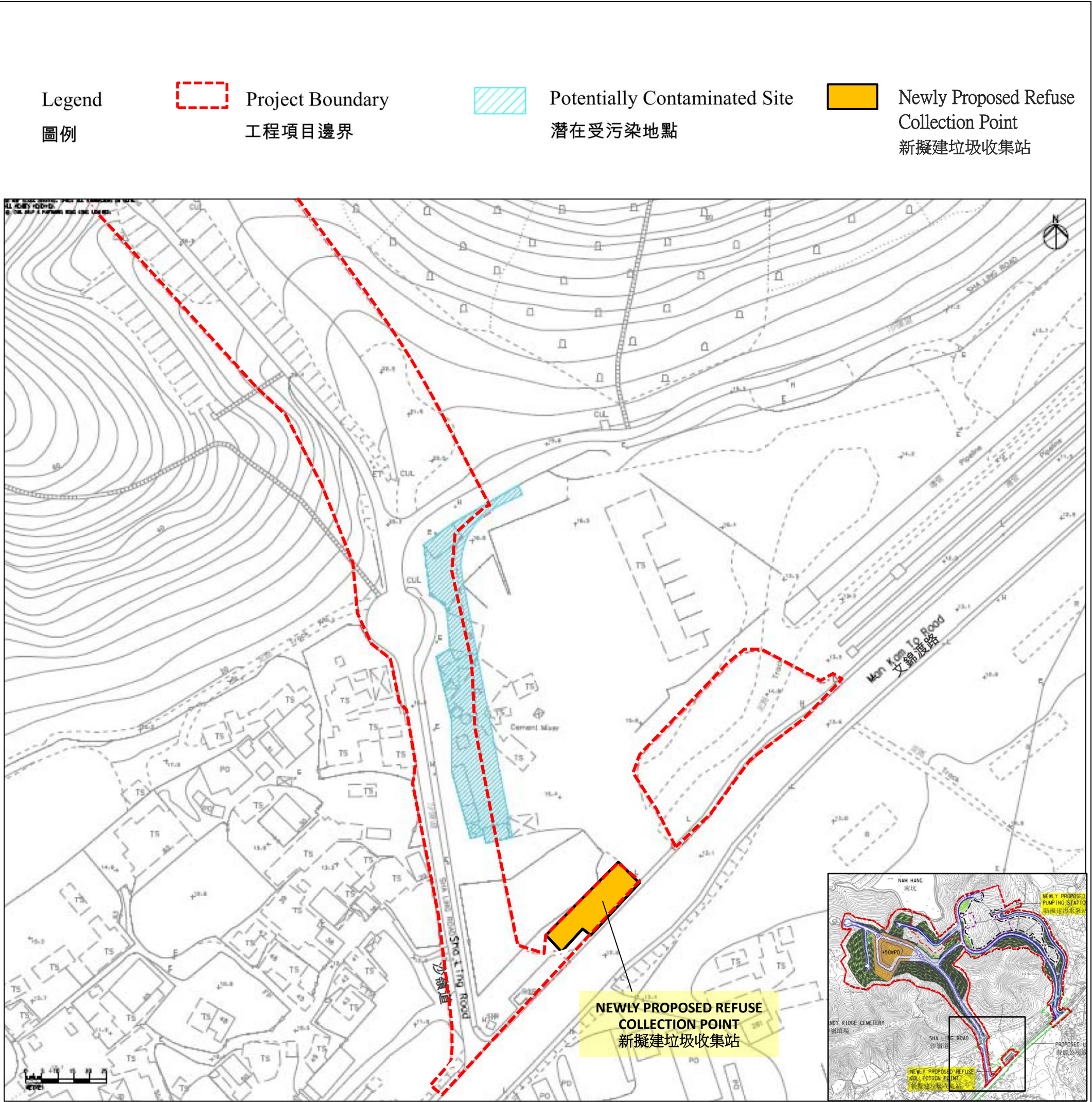
Drawing title
**Layout Plan for
Assessment Site**

Drawing no.	Rev.
Drawn	Date
Checked	Approved
Scale	Sheet

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Annex C

Figure 2 of the Environmental Permits



Project Title: Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery
工程名稱：沙嶺墳場興建骨灰龕的工地平整及相關基建工程

Figure 2: Location of Potentially Contaminated Site
圖 2：潛在受污染地點位置圖

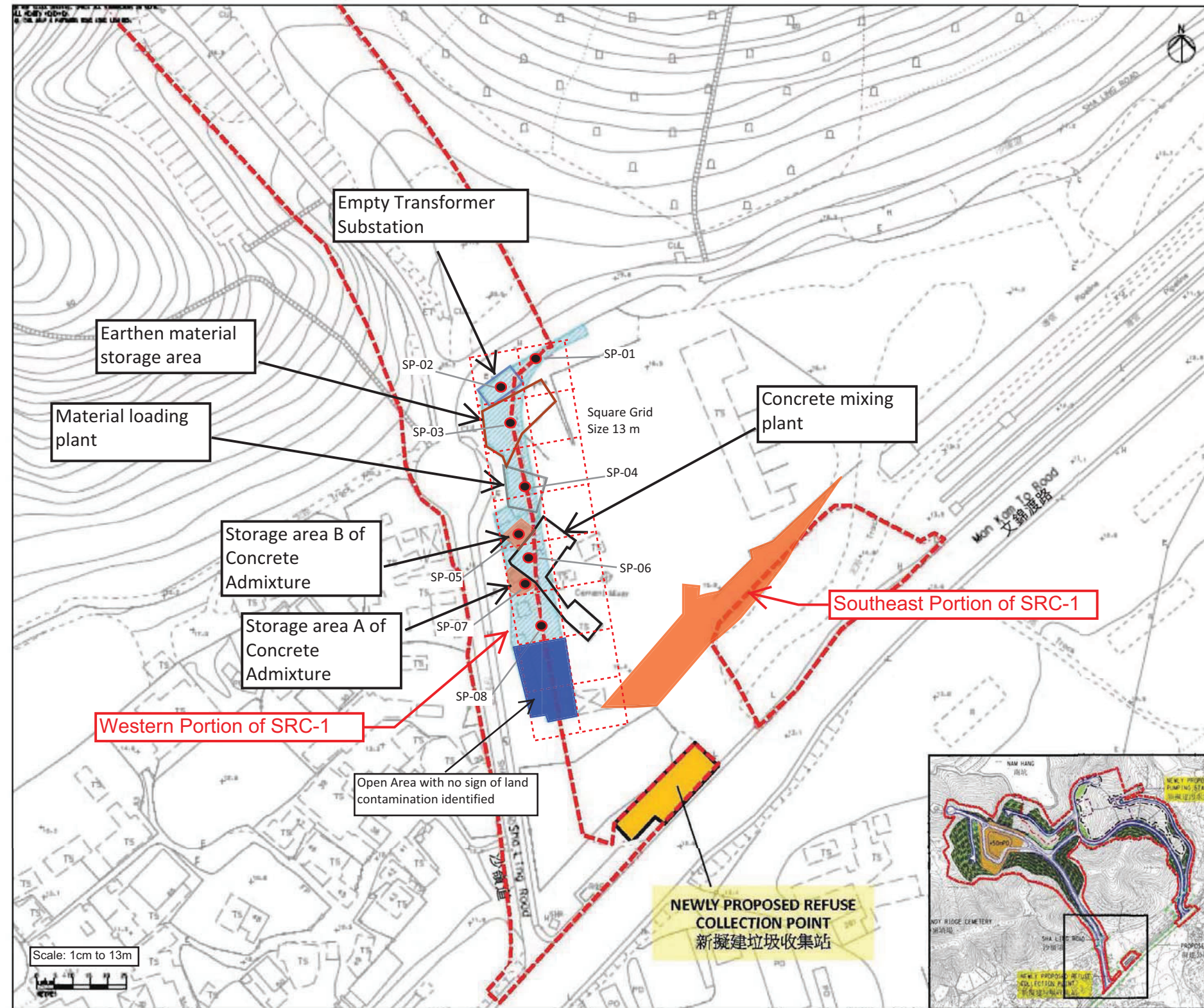
(This figure was prepared based on Figure 2 of Environmental Permit No.: FEP-01/534/2017 and Figure 1 attached to the VEP Application No.: VEP-555/2018)
(本圖是根據環境許可證編號 FEP-01/534/2017 圖 2 及更改環境許可証申請文件編號 VEP-555/2018 所隨附的圖 1 編制)

Environmental Permit No.: FEP-01/534/2017/A
環境許可證編號：FEP-01/534/2017/A



Annex D

Soil Sampling Location and Photograph Record



Legend

- Project Boundary
- Potentially Contaminated Site Requires Land Resumption Within Private Lot
- Potentially Contaminated Site Within Government Lot
- Proposed Sampling Point
- Open area with no sign of land contamination identified at within western portion of SRC-1

E			
D			
C			
B			
Rev	Description	By	Date

Consultant

AUES

Contract No. and Title:
CEDD No. Contract CV/2016/10 - Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery

Drawing title

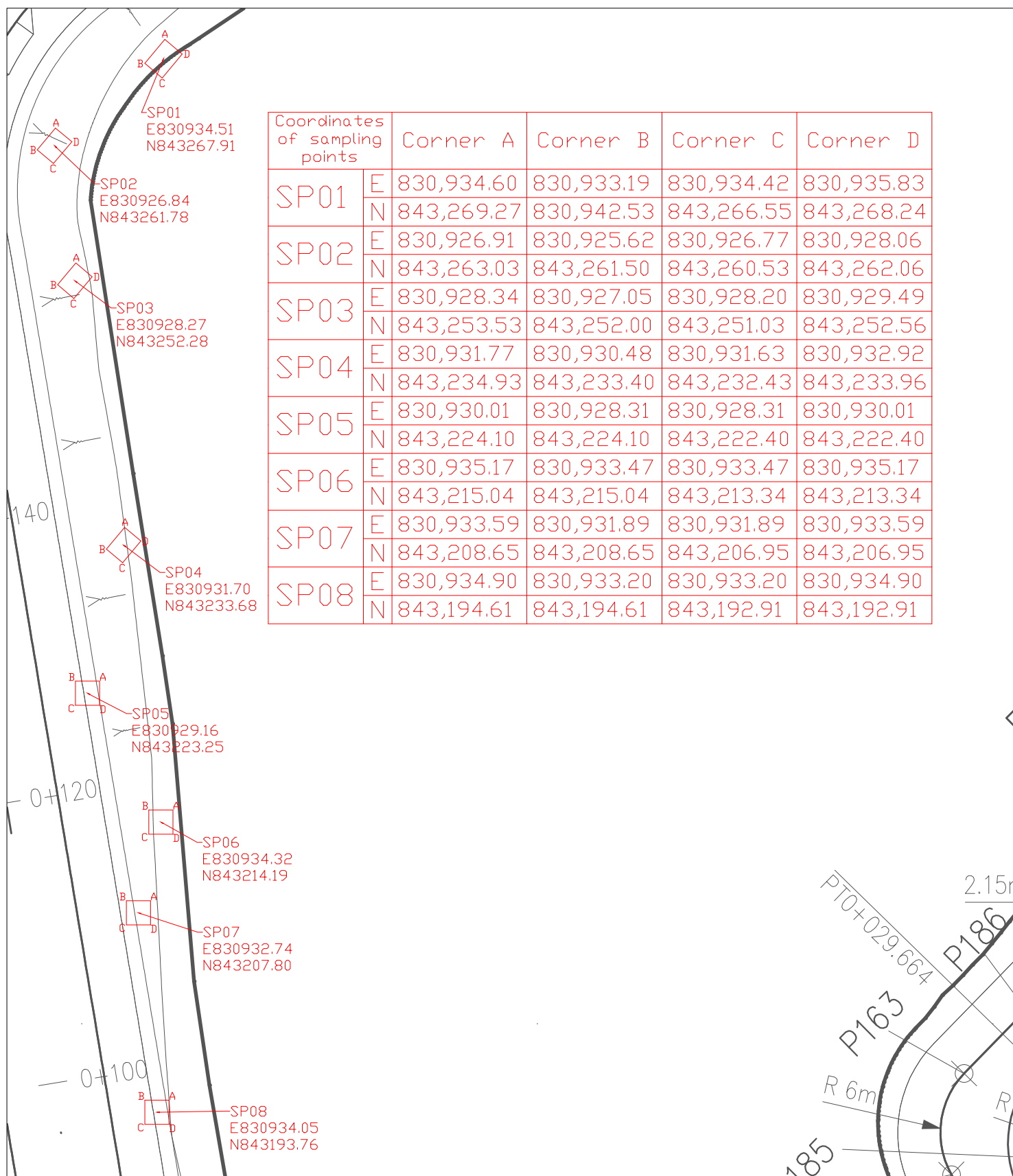
Proposed Sampling Location

Drawing no.	Rev.
Drawn	Date
Checked	Approved
Scale	Signature

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Civil Engineering and Development Department



Location of Sampling Points

 Original Location SP-01 Adjusted Location SP-01			
Soil Sampling Location SP-01	Soil Sampling Location SP-01	Soil Sampling Location SP-02	Soil Sampling Location SP-02
			
Soil Sampling Location SP-03	Soil Sampling Location SP-03	Soil Sampling Location SP-04	Soil Sampling Location SP-04
			
Soil Sampling Location SP-05	Soil Sampling Location SP-05	Soil Sampling Location SP-06	Soil Sampling Location SP-06



Soil Sampling Location SP-07



Soil Sampling Location SP-07



Soil Sampling Location SP-08



Soil Sampling Location SP-08



Pit excavation by Excavator



Soil depth measurement



Cleaning of equipment with phosphate-free detergent (Decon® 90)



Collect soil sample with cleaned stainless steel equipment



Soil Sample SP-01/0.5m bgl



Soil Sample SP-01/1.5m bgl



Soil Sample SP-01/3.0m bgl



Soil Sample SP-02/0.5m bgl



Soil Sample SP-02/1.5m bgl (Duplicate 2)



Soil Sample SP-02/3.0m bgl



Soil Sample SP-03/0.5m bgl



Soil Sample SP-03/1.5m bgl



Soil Sample SP-03/3.0m bgl



Soil Sample SP-04/0.5m bgl



Soil Sample SP-04/1.5m bgl



Soil Sample SP-04/3.0m bgl



Soil Sample SP-05/0.5m bgl



Soil Sample SP-05/1.5m bgl



Soil Sample SP-05/3.0m bgl



Soil Sample SP-06/0.5m bgl



Soil Sample SP-06/1.5m bgl



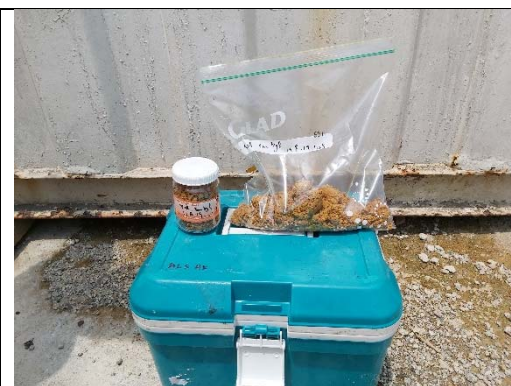
Soil Sample SP-06/3.0m bgl



Soil Sample SP-07/0.5m bgl



Soil Sample SP-07/1.5m bgl

			
Soil Sample SP-07/3.0m bgl (Duplicate 1)	Soil Sample SP-08/0.5m bgl	Soil Sample SP-08/1.5m bgl	Soil Sample SP-08/3.0m bgl
			
Equipment Blank 1	Equipment Blank 2		

Annex E

Trial Pit Record

HSIN CHONG TSUN YIP JV		PROJECT : Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery		PREPARED BY : C.C. Lai DATE : 14/08/2019		CO-ORDINATES : E 830,934.51 N 843,267.91		GROUND LEVEL : +18.42 m.P.D. EXCAVATION DATE : 14/08/2019 to 14/08/2019 BACKFILL DATE : 14/08/2019 to 14/08/2019		TRIAL PIT NO. : SP-01	
		CONTRACT NO. : CV/2016/10		WORKS ORDER NO. :							
Samples & Tests	Depth (m)	Sketch				Depth (m)	Legend (Face D)	Weathering Grade	Description		
		Face A : 1.60 m	Face B : 2.20 m	Face C : 1.60 m	Face D : 2.20 m						
	0					0.20			Light grey, CONCRETE. (GROUND SLAB)		
	1					1			(1) Light grey, CONCRETE. (FOUNDATION) Firm, moist, brown mottled reddish brown, sandy clayey SILT with some angular fine to coarse gravel and cobble sized rock fragments. (FILL)		
	2					2.20			Dense, brown mottled light greyish brown, silty fine to coarse SAND with much angular fine to coarse gravel and cobble sized rock fragments. (FILL)		
	3					3.00					
	4					4					
	5					5					
PLAN		SECTION (NOT TO SCALE)				SYMBOL			REMARKS		
						● Small Disturbed Sample ⬮ Large Disturbed Sample □ Undisturbed Sample Hori. () ▢ Undisturbed Sample Vert. () ⊠ Block Sample ⌈ Insitu Density Test △ Water Sample ▼ Schmidt Hammer Test ⚡ Seepage			1. Groundwater was not encountered. 2. The average depth of trial pit is 3.00m. 3. The trial pit sides were stable during excavation.		

TRIAL PIT RECORD

TRIAL PIT NO.
SP-01

HSIN CHONG TSUN YIP JV		PROJECT : Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery				PREPARED BY : C.C. Lai DATE : 14/08/2019		CO-ORDINATES : E 830,926.84 N 843,261.78		GROUND LEVEL : +18.50 m.P.D. EXCAVATION DATE : 14/08/2019 to 14/08/2019 BACKFILL DATE : 14/08/2019 to 14/08/2019		TRIAL PIT NO. : SP-02			
		CONTRACT NO. : CV/2016/10		WORKS ORDER NO. :											
Samples & Tests	Depth (m)	Sketch				Depth (m)	Legend (Face D)	Weathering Grade	Description						
		Face A : 1.50 m	Face B : 2.00 m	Face C : 1.50 m	Face D : 2.00 m										
	0					0			Light grey, CONCRETE. (FOUNDATION) (1) Firm, moist, brown, sandy clayey SILT with some angular fine to coarse gravel sized rock fragments. (FILL)						
	1					1									
	1.70					1.70									
	2.10					2.10									
	2.10					2.10			Firm, moist, brown mottled orangish brown, sandy clayey SILT with some angular fine to coarse gravel and cobble sized rock fragments. (FILL)						
	3.00					3.00			Dense, moist, light greyish brown, silty fine to coarse SAND with much angular fine to coarse gravel and cobble sized rock fragments. (FILL)						
	3					3									
	4					4									
	5					5									
PLAN		SECTION (NOT TO SCALE)				SYMBOL			REMARKS						
						● Small Disturbed Sample ⬮ Large Disturbed Sample □ Undisturbed Sample Hori. () ▢ Undisturbed Sample Vert. () ⊠ Block Sample ⌈ Insitu Density Test △ Water Sample ▼ Schmidt Hammer Test ⚡ Seepage			1. Groundwater was not encountered. 2. The average depth of trial pit is 3.00m. 3. The trial pit sides were stable during excavation.						

TRIAL PIT RECORD

TRIAL PIT NO.
SP-02

HSIN CHONG TSUN YIP JV		PROJECT : Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery		PREPARED BY : C.C. Lai DATE : 14/08/2019		CO-ORDINATES : E 830,928.27 N 843,252.28		GROUND LEVEL : +18.22 m.P.D. EXCAVATION DATE : 14/08/2019 to 14/08/2019 BACKFILL DATE : 14/08/2019 to 14/08/2019		TRIAL PIT NO. : SP-03	
		CONTRACT NO. : CV/2016/10		WORKS ORDER NO. :							
Samples & Tests	Depth (m)	Sketch				Depth (m)	Legend (Face D)	Weathering Grade	Description		
		Face A : 1.50 m	Face B : 2.00 m	Face C : 1.50 m	Face D : 2.00 m						
	0					0			Loose, dry, greyish brown, silty fine to coarse SAND with some angular fine to coarse gravel and cobble sized rock and concrete fragments. (FILL)		
0.30						Firm, moist, greyish brown dappled reddish brown, sandy clayey SILT with some angular fine to coarse gravel and cobble sized rock and concrete fragments. (FILL)					
0.80						Firm, moist, orangish brown, sandy clayey SILT with occasional angular fine to coarse gravel sized rock fragments. (ALLUVIUM)					
1											
2											
	2.50					2.50			Dense, wet, brown and light brown, subangular coarse GRAVEL and COBBLE sized rock fragments with some silty sandy matrix. (ALLUVIUM)		
	3.00					3.00					
	4					4					
	5					5					
PLAN		SECTION (NOT TO SCALE)				SYMBOL		REMARKS			
						● Small Disturbed Sample ⊕ Large Disturbed Sample ○ Undisturbed Sample Hori. () □ Undisturbed Sample Vert. () ⊞ Block Sample ⌊ Insitu Density Test △ Water Sample ▼ Schmidt Hammer Test ⋈ Seepage		- Groundwater was not encountered. - The average depth of trial pit is 3.00m. - The trial pit sides were stable during excavation.			

TRIAL PIT RECORD

TRIAL PIT NO.
SP-03

HSIN CHONG TSUN YIP JV		PROJECT : Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery		PREPARED BY : C.C. Lai DATE : 14/08/2019		CO-ORDINATES : E 830,931.70 N 843,233.68		GROUND LEVEL : +16.37 m.P.D. EXCAVATION DATE : 14/08/2019 to 14/08/2019 BACKFILL DATE : 14/08/2019 to 14/08/2019		TRIAL PIT NO. : SP-04	
		CONTRACT NO. : CV/2016/10		WORKS ORDER NO. :							
Samples & Tests	Depth (m)	Sketch				Depth (m)	Legend (Face D)	Weathering Grade	Description		
		Face A : 1.50 m	Face B : 2.00 m	Face C : 1.50 m	Face D : 2.00 m						
	0					0			Light grey, CONCRETE. (GROUND SLAB) (1) Firm, dry, greyish brown, sandy clayey SILT with some angular fine to coarse gravel sized rock and concrete fragments. (FILL)		
	1.00					1.00			Dense, moist, brown mottled orangish and reddish brown, silty fine to coarse SAND with much angular fine to coarse gravel and cobble sized rock fragments. (FILL)		
	1.60					1.60			Firm, wet, brown mottled reddish brown and light brown, very sandy clayey SILT. (ALLUVIUM)		
	2					2					
	3.00					3.00					
	3					3					
	4					4					
	5					5					
PLAN		SECTION (NOT TO SCALE)				SYMBOL		REMARKS			
						● Small Disturbed Sample ⬮ Large Disturbed Sample □ Undisturbed Sample Hori. () ▢ Undisturbed Sample Vert. () ⊠ Block Sample ⌈ Insitu Density Test △ Water Sample ▼ Schmidt Hammer Test ⚡ Seepage		1. Groundwater was not encountered. 2. The average depth of trial pit is 3.00m. 3. The trial pit sides were stable during excavation.			

TRIAL PIT RECORD

TRIAL PIT NO.
SP-04

HSIN CHONG TSUN YIP JV		PROJECT : Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery		PREPARED BY : C.C. Lai DATE : 14/08/2019		CO-ORDINATES : E 830,929.16 N 843,223.25		GROUND LEVEL : +16.05 m.P.D. EXCAVATION DATE : 14/08/2019 to 14/08/2019 BACKFILL DATE : 14/08/2019 to 14/08/2019		TRIAL PIT NO. : SP-05	
		CONTRACT NO. : CV/2016/10		WORKS ORDER NO. :							
Samples & Tests	Depth (m)	Sketch				Depth (m)	Legend (Face D)	Weathering Grade	Description		
		Face A : 1.70 m	Face B : 1.70 m	Face C : 1.70 m	Face D : 1.70 m						
	0					0			Light grey, CONCRETE. (GROUND SLAB)		
	0.30					0.30			Firm, moist, greyish brown mottled brown and light grey, very sandy clayey SILT with some angular fine to coarse gravel and cobble sized rock fragments. (FILL)		
	0.90					0.90					
	1					1			Firm, moist, brown mottled reddish brown, sandy clayey SILT with some angular fine to coarse gravel and cobble sized rock fragments. (FILL)		
	2					2					
	3.00					3.00					
	4					4					
	5					5					
5 PLAN		SECTION (NOT TO SCALE)				5 SYMBOL		REMARKS			
						● Small Disturbed Sample ⬮ Large Disturbed Sample □ Undisturbed Sample Hori. () ▤ Undisturbed Sample Vert. () ⊠ Block Sample ⌈ Insitu Density Test △ Water Sample ▼ Schmidt Hammer Test ⚡ Seepage		1. Groundwater was not encountered. 2. The average depth of trial pit is 3.00m. 3. The trial pit sides were stable during excavation.			

TRIAL PIT RECORD

TRIAL PIT NO.
SP-05

HSIN CHONG TSUN YIP JV		PROJECT : Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery				PREPARED BY : C.C. Lai DATE : 14/08/2019		CO-ORDINATES : E 830,934.32 N 843,214.19		GROUND LEVEL : +15.84 m.P.D. EXCAVATION DATE : 14/08/2019 to 14/08/2019 BACKFILL DATE : 14/08/2019 to 14/08/2019		TRIAL PIT NO. : SP-06	
		CONTRACT NO. : CV/2016/10				WORKS ORDER NO. :							
Samples & Tests	Depth (m)	Sketch				Depth (m)	Legend (Face D)	Weathering Grade	Description				
		Face A : 1.70 m	Face B : 1.70 m	Face C : 1.70 m	Face D : 1.70 m								
	0					0			Light grey, CONCRETE. (GROUND SLAB)				
	0.40					0.40			Firm, moist, greyish brown, sandy clayey SILT with some subangular fine to coarse gravel and cobble sized rock fragments. (FILL)				
	1.10					1.10			Firm, moist, reddish brown mottled brown, sandy clayey SILT with some subangular and subrounded fine to coarse gravel and cobble sized rock and concrete fragments. (FILL)				
	2					2							
	2.40					2.40			Firm, moist, brown mottled reddish brown and light grey, very sandy clayey SILT. (ALLUVIUM)				
	3.00					3.00							
	4					4							
	5					5							
PLAN		SECTION (NOT TO SCALE)				SYMBOL		REMARKS					
						● Small Disturbed Sample ⬮ Large Disturbed Sample □ Undisturbed Sample Hori. () ▢ Undisturbed Sample Vert. () ⊠ Block Sample ┌ Insitu Density Test △ Water Sample ▼ Schmidt Hammer Test ⚡ Seepage		- Groundwater was not encountered. - The average depth of trial pit is 3.00m. - The trial pit sides were stable during excavation.					

TRIAL PIT RECORD

TRIAL PIT NO.
SP-06

HSIN CHONG TSUN YIP JV		PROJECT : Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery				PREPARED BY : C.C. Lai DATE : 14/08/2019		CO-ORDINATES : E 830,932.74 N 843,207.80		GROUND LEVEL : +15.74 m.P.D. EXCAVATION DATE : 14/08/2019 to 14/08/2019 BACKFILL DATE : 14/08/2019 to 14/08/2019		TRIAL PIT NO. : SP-07	
		CONTRACT NO. : CV/2016/10		WORKS ORDER NO. :									
Samples & Tests	Depth (m)	Sketch				Depth (m)	Legend (Face D)	Weathering Grade	Description				
		Face A : 1.70 m	Face B : 1.70 m	Face C : 1.70 m	Face D : 1.70 m								
	0					0			Light grey, CONCRETE. (GROUND SLAB)				
	0.50					0.50			Firm, moist, brown mottled reddish brown, sandy clayey SILT with some subangular and subrounded fine to coarse gravel and cobble sized rock fragments. (FILL)				
	1					1							
	2.00					2.00			Firm, wet, brown mottled reddish brown and light brown, very sandy clayey SILT. (ALLUVIUM)				
	3.00					3.00							
	4					4							
	5					5							
5 PLAN		5 SECTION (NOT TO SCALE)				5 SYMBOL		5 REMARKS					
						● Small Disturbed Sample ⬮ Large Disturbed Sample □ Undisturbed Sample Hori. () ▤ Undisturbed Sample Vert. () ⊠ Block Sample ┌ Insitu Density Test △ Water Sample ▼ Schmidt Hammer Test ⚡ Seepage		1. Groundwater was not encountered. 2. The average depth of trial pit is 3.00m. 3. The trial pit sides were stable during excavation.					

TRIAL PIT RECORD

TRIAL PIT NO.
SP-07

HSIN CHONG TSUN YIP JV		PROJECT : Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery				PREPARED BY : C.C. Lai DATE : 14/08/2019		CO-ORDINATES : E 830,934.05 N 843,193.76		GROUND LEVEL : +15.44 m.P.D. EXCAVATION DATE : 14/08/2019 to 14/08/2019 BACKFILL DATE : 14/08/2019 to 14/08/2019		TRIAL PIT NO. : SP-08	
		CONTRACT NO. : CV/2016/10				WORKS ORDER NO. :							
Samples & Tests	Depth (m)	Sketch				Depth (m)	Legend (Face D)	Weathering Grade	Description				
		Face A : 1.70 m	Face B : 1.70 m	Face C : 1.70 m	Face D : 1.70 m								
	0					0			Light grey, CONCRETE. (GROUND SLAB)				
	0.50					0.50			Firm, moist, reddish brown dappled greyish brown and orangish brown, sandy clayey SILT with some angular fine to coarse gravel and cobble sized rock fragments. (FILL)				
	1 1.05					1 1.05			Firm, moist, brown mottled reddish brown, slightly sandy clayey SILT with occasional subangular and subrounded fine to coarse gravel and cobble sized rock and concrete fragments. (FILL)				
	2 2.10					2 2.40			Firm, wet, brown mottled reddish brown and light brown, very sandy clayey SILT. (ALLUVIUM)				
	3 3.00					3 3.00							
	4					4							
	5					5							
PLAN		SECTION (NOT TO SCALE)				SYMBOL		REMARKS					
						● Small Disturbed Sample ⬮ Large Disturbed Sample □ Undisturbed Sample Hori. () ▢ Undisturbed Sample Vert. () ⊠ Block Sample ⌈ Insitu Density Test △ Water Sample ▼ Schmidt Hammer Test ⚡ Seepage		- Groundwater was not encountered. - The average depth of trial pit is 3.00m. - The trial pit sides were stable during excavation.					

TRIAL PIT RECORD

TRIAL PIT NO.
SP-08

Annex F

Representative Soil Samples Results Summary and RPD Values among Original & Duplicate Soil Samples Comparison

Soil Sample Result Summary

Chemicals of Concern	Limit of Reportin g (mg/kg)	Soil Sample																												QA/QC Sample			
		Remediation Criteria		SP-01			SP-02			SP-03			SP-04			SP-05			SP-06			SP-07			SP-08			Limit of Reporting (ug/L)	Equipment Blank 1	Equipment Blank 2			
		Proposed RBRG (mg/kg)	Soil Saturation Limit Csat (mg/kg)	SP-01 0.5m bgl	SP-01 1.5m bgl	SP-01 3.0m bgl	SP-02 0.5m bgl	SP-02 1.5m bgl	Duplicate 2 (SP-02 1.5m bgl)	SP-02 3.0m bgl	SP-03 0.5m bgl	SP-03 1.5m bgl	SP-03 3.0m bgl	SP-04 0.5m bgl	SP-04 1.5m bgl	SP-04 3.0m bgl	SP-05 0.5m bgl	SP-05 1.5m bgl	SP-05 3.0m bgl	SP-06 0.5m bgl	SP-06 1.5m bgl	SP-06 3.0m bgl	SP-07 0.5m bgl	SP-07 1.5m bgl	SP-07 3.0m bgl	Duplicate 1 (SP-07 3.0m bgl)	SP-08 0.5m bgl				SP-08 1.5m bgl	SP-08 3.0m bgl	
Antimony (Sb)	1.0	2.61E+00	NA	NA	NA	NA	<1	1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Arsenic (As)	1.0	7.35E+01	NA	NA	NA	NA	4	9	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Barium (Ba)	1.0	1.00E+04*	NA	NA	NA	NA	45	48.5	58.1	51	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Cadmium (Cd)	0.2	2.45E+02	NA	NA	NA	NA	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Chromium III (Trivalent)	1.0	1.00E+04*	NA	NA	NA	NA	19.5	48.6	54.2	19.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Chromium VI (Hexavalent)	1.0	7.35E+02	NA	NA	NA	NA	<1	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Cobalt (Co)	1.0	4.90E+03	NA	NA	NA	NA	1.5	1.6	1.5	1.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Copper (Cu)	1.0	9.79E+03	NA	NA	NA	NA	13	26	30	16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Lead (Pb)	1.0	8.57E+02	NA	NA	NA	NA	10	14	12	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Manganese (Mn)	1.0	1.00E+04*	NA	NA	NA	NA	46.6	35.8	27.4	27.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Mercury (Hg)	0.05#	3.84E+01	NA	NA	NA	NA	<0.05	<0.05	<0.05	<0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.5	<0.5	<0.5	
Molybdenum (Mo)	1.0	1.22E+03	NA	NA	NA	NA	<1	1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Nickel (Ni)	1.0	4.90E+03	NA	NA	NA	NA	4	4	4	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Tin (Sn)	1.0	1.00E+04*	NA	NA	NA	NA	3	8.6	6.7	3.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Zinc (Zn)	1.0	1.00E+04*	NA	NA	NA	NA	14	11	10	12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Fractions C6 – C8	5	1.00E+04*	1.00E+03	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	20	<20	<20
Fractions C9 – C16	200	1.00E+04*	3.00E+03	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	
Fractions C17 – C35	500	1.00E+04*	5.00E+03	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	
Benzene	0.2	9.21E+00	3.36E+02	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	5	<5	<5	
Toluene	0.5	1.00E+04*	2.35E+02	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	5	<5	<5	
Ethylbenzene	0.5	8.24E+03	1.38E+02	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	5	<5	<5	
Xylenes (total)	2	1.23E+03	1.50E+02	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	20	<20	<20	
Acenaphthene	0.5	1.00E+04*	6.02E+01	<0.5	<0.5	<0.5	NA	NA	<0.5	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2	<2	<2	
Acenaphthylene	0.5	1.00E+04*	1.98E+01	<0.5	<0.5	<0.5	NA	NA	<0.5	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2	<2	<2	
Anthracene	0.5	1.00E+04*	2.56E+00	<0.5	<0.5	<0.5	NA	NA	<0.5	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2	<2	<2	
Benzo(a)anthracene	0.5	3.83E+01	NA	<0.5	<0.5	<0.5	NA	NA	<0.5	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	
Benzo(a)pyrene	0.5	3.83E+00	NA	<0.5	<0.5	<0.5	NA	NA	<0.5	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	
Benzo(b)fluoranthene	0.5	1.78E+01	NA	<0.5	<0.5	<0.5	NA	NA	<0.5	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	
Benzo(k)fluoranthene	0.5	5.74E+03	NA	<0.5	<0.5	<0.5	NA	NA	<0.5	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	
Benzo(k)fluoranthene	0.5	3.83E+02	NA	<0.5	<0.5	<0.5	NA	NA	<0.5	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	NA
Bis(2-Ethylhexyl)phthalate	5.0	9.18E+01	NA	<5.0	<5.0	<5.0	NA	NA	<5.0	NA	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	NA	NA	NA
Chrysene	0.5	1.14E+03	NA	<0.5	<0.5	<0.5	NA	NA	<0.5	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1	<1	<1	
Dibenz(a,h)anthracene	0.5	3.83E+00	NA	<0.5	<0.5	<0.5	NA	NA	<0.5	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	
Fluoranthene	0.5	7.62E+03	NA	<0.5	<0.5	<0.5	NA	NA	<0.5	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2	<2	<2	
Fluorene	0.5	7.45E+03	5.47E+01	<0.5	<0.5	<0.5	NA	NA	<0.5	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2	<2	<2	
Hexachlorobenzene	0.2	5.82E+01	NA	<0.2	<0.2	<0.2	NA	NA	<0.2	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	4	<4	<4	
Indeno(1,2,3-cd)pyrene	0.5	3.83E+01	NA	<0.5	<0.5	<0.5	NA	NA	<0.5	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	
Naphthalene	0.5	4.53E+02	1.25E+02	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2	<2	<2	
Phenanthrene	0.5	1.00E+04*	2.80E+01	<0.5	<0.5	<0.5	NA	NA	<0.5	NA	<0.5	<0.5	<0.																				

Relative Percent Difference Summary of the Original and Duplicate Soil Samples

Chemicals of Concern	Soil Sample					
	SP-02/1.5m bgl		RPD (%)	SP-07/ 3.0m bgl		RPD (%)
	Original Sample (mg/kg)	Duplicate Sample (mg/kg)		Original Sample (mg/kg)	Duplicate Sample (mg/kg)	
Antimony	1	1	0%	--	--	--
Arsenic	9	9	0%	--	--	--
Barium	48.5	58.1	18.0%	--	--	--
Cadmium	<0.2	<0.2	NA	--	--	--
Trivalent Chromium	48.6	54.2	10.9%	--	--	--
Hexavalent Chromium	<1	<1	NA	--	--	--
Cobalt	1.6	1.5	6.5%	--	--	--
Copper	26	30	14.3%	--	--	--
Lead	14.0	12	15.4%	--	--	--
Manganese	35.8	27.4	26.6%	--	--	--
Mercury	<0.05	<0.05	NA	--	--	--
Molybdenum	1	1	0%	--	--	--
Nickel	4	4	0%	--	--	--
Tin	8.6	6.7	24.8%	--	--	--
Zinc	11.0	10	9.5%	--	--	--
C6 – C8 Fraction	<5	<5	NA	<5	<5	NA
C9 – C16 Fraction	<200	<200	NA	<200	<200	NA
C17 – C35 Fraction	<500	<500	NA	<500	<500	NA
Benzene	<0.2	<0.2	NA	<0.2	<0.2	NA
Toluene	<0.5	<0.5	NA	<0.5	<0.5	NA
Ethylbenzene	<0.5	<0.5	NA	<0.5	<0.5	NA
Xylenes (total)	<2	<2	NA	<2	<2	NA
Acenaphthene	--	--	--	<0.5	<0.5	NA
Acenaphthylene	--	--	--	<0.5	<0.5	NA
Anthracene	--	--	--	<0.5	<0.5	NA
Benzo(a)anthracene	--	--	--	<0.5	<0.5	NA
Benzo(a)pyrene	--	--	--	<0.5	<0.5	NA
Benzo(b)fluoranthene	--	--	--	<0.5	<0.5	NA
Benzo(g,h,i)perylene	--	--	--	<0.5	<0.5	NA
Benzo(k)fluoranthene	--	--	--	<0.5	<0.5	NA
Bis(2-Ethylhexyl)phthalate	--	--	--	<5.0	<5.0	NA
Chrysene	--	--	--	<0.5	<0.5	NA
Dibenzo(a,h)anthracene	--	--	--	<0.5	<0.5	NA
Fluoranthene	--	--	--	<0.5	<0.5	NA
Fluorene	--	--	--	<0.5	<0.5	NA
Hexachlorobenzene	--	--	--	<0.2	<0.2	NA
Indeno(1,2,3-cd)pyrene	--	--	--	<0.5	<0.5	NA
Naphthalene	<0.5	<0.5	NA	<0.5	<0.5	NA
Phenanthrene	--	--	--	<0.5	<0.5	NA
Phenol	<0.5	<0.5	NA	<0.5	<0.5	NA
Pyrene	--	--	--	<0.5	<0.5	NA
Polychlorinated Biphenyls (PCBs)	<0.1	<0.1	NA	--	--	--
The Relative Percent Difference (RPD) % = $\frac{(\text{Result 1} - \text{Result 2}) \times 100}{\text{Mean of Results 1 \& 2}}$						

Annex G

Chain-Of-Custody (COC) Form

**SAMPLE SUBMISSION FORM (Environmental test)**

Note : * The following information is required to expedite sample analysis. Please complete all the necessary details and return this form with your samples. Test(s) will not be started until a COMPLETED form is received.

Items will be subject to additional charge and needed further confirmation & arrangement.

Reporting information for Final Report

*Company Name: AUES

*Client Contact: Name: TW TAM Email: twtam@fordbusiness.com
Tel: _____ Fax: _____

*Report address to: _____

*Postal Address (if different): _____

Soft copy report delivery (if different from above)

*Client Contact Name (1st): BEN TAM Email: bentam@fordbusiness.com

*Client Contact Name (2nd): JAN KWOK Email: jankwok@fordbusiness.com

*Client Contact Name (3rd): MARTIN LI Email: martinli@fordbusiness.com

Billing information for Invoice (if different from reporting information for final report)

Note : Client Name on invoice will be the company Name of the Final report.

*Invoice to (c/o company): _____

*Client Contact Name: _____ Tel: _____

Email: _____

*Invoice address to: _____

*Purchase Order/ Client Order No: _____

* ALS Quotation No.: _____

*Project Name/No: TCS00881/18 - Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery

Site Name (if any): _____

Environmental Division
Hong Kong

Work Order Reference

HK1935187



Telephone : + 852 2610 1044

Sampling and delivery

Sampling by: ☒ Client ☐ # ALS ☐ others: _____

*Sample(s) delivery by: ☒ Client ☐ # ALS ☐ others: _____

*Expected TAT (Working days): ☐ Regular (7-10) ☐ #Express (5) ☐ #Double Express (3) ☐ #Other (____)

Other remark: _____

SAMPLE ANALYTICAL REQUIREMENTS (Supplementary sheet attached ☐ Yes, _____ pages ☐ No)

Lab ID Lab use only	*Sample ID.	Matrix	*Sampling Date/Time	*Analysis Required (Tests)
1	SP-01 0.5m bgl	SOIL	14/8	Petroleum Carbon Ranges - Fractions C6-C8, Fractions C9-C16 and Fractions C17-C35 Volatile Organic Compounds (VOCs) - Benzene, Toluene, Ethylbenzene, Xylenes (Total); Semi-volatile Organic Compounds (SVOCs) - Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Bis(2-Ethylhexyl)phthalate, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Hexachlorobenzene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Phenol and Pyrene
2	SP-01 1.5m bgl	SOIL		
3	SP-03 0.5m bgl	SOIL		
4	SP-03 1.5m bgl	SOIL		
5	SP-04 0.5m bgl	SOIL		
6	SP-04 1.5m bgl	SOIL		

SAMPLE RECEIVE INFO: (Lab Use Only)

Received Date/ Time:	15 AUG 2019 11:10	Document Received Date/Time:	15 AUG 2019
Sorting Date/ Time:	15 AUG 2019 12:00	Esky Count:	
Condition:	Ambient / <u>Cooled</u> / Frozen	Ice Bricks / Ice	<u>Yes</u> / No
Bottle Information:	6 x 250 ml soil Jars		
Tray No:	SI 130	Sort by:	Ketun

**SAMPLE SUBMISSION FORM (Environmental test)**

Note : * The following information is required to expedite sample analysis. Please complete all the necessary details and return this form with your samples. Test(s) will not be started until a COMPLETED form is received.

Items will be subject to additional charge and needed further confirmation & arrangement.

Reporting information for Final Report*Company Name: AUES*Client Contact: Name: TW TAMEmail: twtam@fordbusiness.com

Tel: _____

Fax: _____

*Report address to: _____

*Postal Address (if different): _____

Soft copy report delivery (if different from above)*Client Contact Name (1st): BEN TAMEmail: bentam@fordbusiness.com*Client Contact Name (2nd): JAN KWOKEmail: jankwok@fordbusiness.com*Client Contact Name (3rd): MARTIN LIEmail: martinli@fordbusiness.com**Billing information for Invoice (if different from reporting information for final report)**

Note : Client Name on Invoice will be the company Name of the Final report.

*Invoice to (c/o company): _____

*Client Contact Name: _____

Tel: _____

Email: _____

*Invoice address to: _____

*Purchase Order/ Client Order No: _____

* ALS Quotation No.: _____

*Project Name/No: _____

**TCS00881/18 - Site Formation and Associated Infrastructural
Works for Development of Columbarium at Sandy Ridge Cemetery**

Site Name (if any): _____

Environmental Division
Hong Kong

Work Order Reference

HK1935189

Telephone : + 852 2610 1044

Sampling and deliverySampling by: ☒ Client ☐ # ALS ☐ others: _____*Sample(s) delivery by: ☒ Client ☐ # ALS ☐ others: _____*Expected TAT (Working days): ☐ Regular (7-10) ☐ #Express (5) ☐ #Double Express (3) ☐ #Other (____)

Other remark: _____

SAMPLE ANALYTICAL REQUIREMENTS (Supplementary sheet attached ☐ Yes, _____ pages ☐ No)

Lab ID Lab use only	*Sample ID.	Matrix	*Sampling Date/Time	*Analysis Required (Tests)
1	SP-05 0.5m bgl	SOIL	14/8	Petroleum Carbon Ranges – Fractions C6-C8, Fractions C9-C16 and Fractions C17-C35 Volatile Organic Compounds (VOCs) –Benzene, Toluene, Ethylbenzene, Xylenes (Total); Semi-volatile Organic Compounds (SVOCs) –Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Bis(2-Ethylhexyl)phthalate, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Hexachlorobenzene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Phenol and Pyrene
2	SP-05 1.5m bgl	SOIL		
3	SP-06 0.5m bgl	SOIL		
4	SP-06 1.5m bgl	SOIL		
5	SP-07 0.5m bgl	SOIL		
6	SP-07 1.5m bgl	SOIL		

SAMPLE RECEIVE INFO: (Lab Use Only)

Received Date/ Time:	15 AUG 2019 11:10	Document Received Date/Time:	15 AUG 2019
Sorting Date/ Time:	15 AUG 2019 12:00	Esky Count:	1
Condition:	Ambient / Chilled / Frozen	Ice Bricks / Ice	Yes / No
Bottle Information:	6 x 250 ml soil jars		
Tray No:	SJ 130	Sort by:	Katsu

**SAMPLE SUBMISSION FORM (Environmental test)**

Note : * The following information is required to expedite sample analysis. Please complete all the necessary details and return this form with your samples. Test(s) will not be started until a COMPLETED form is received.

Items will be subject to additional charge and needed further confirmation & arrangement.

Reporting information for Final Report

*Company Name: AUES

*Client Contact: Name: TW TAM

Email: twtam@fordbusiness.com

Tel:

Fax:

*Report address to:

*Postal Address (if different):

Soft copy report delivery (if different from above)*Client Contact Name (1st): BEN TAM

Email: bentam@fordbusiness.com

*Client Contact Name (2nd): JAN KWOK

Email: jankwok@fordbusiness.com

*Client Contact Name (3rd): MARTIN LI

martinli@fordbusiness.com

Billing information for Invoice (if different from reporting information for final report)

Note : Client Name on invoice will be the company Name of the Final report.

*Invoice to (c/o company):

*Client Contact Name:

Tel:

Email:

*Invoice address to:

*Purchase Order/ Client Order No:

* ALS Quotation No.:

TCS00881/18 - Site Formation and Associated Infrastructural
Works for Development of Columbarium at Sandy Ridge Cemetery

*Project Name/No:

Site Name (if any):

Environmental Division
Hong Kong

Work Order Reference

HK1935191



Telephone : +852 2610 1044

Sampling and deliverySampling by: ☒ Client ☐ # ALS ☐ others:*Sample(s) delivery by: ☒ Client ☐ # ALS ☐ others:*Expected TAT (Working days): ☐ Regular (7-10) ☐ #Express (5) ☐ #Double Express (3) ☐ #Other (____)

Other remark:

SAMPLE ANALYTICAL REQUIREMENTS (Supplementary sheet attached ☐ Yes, _____ pages ☐ No)

Lab ID Lab use only	*Sample ID.	Matrix	*Sampling Date/Time	*Analysis Required (Tests)
1	SP-01 3m bgl	SOIL	14/8	Petroleum Carbon Ranges - Fractions C6-C8, Fractions C9-C16 and Fractions C17-C35 Volatiles Organic Compounds (VOCs) - Benzene, Toluene, Ethylbenzene, Xylenes (Total); Semi-volatile Organic Compounds (SVOCs) - Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Bis(2-Ethylhexyl)phthalate, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Hexachlorobenzene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Phenol and Pyrene
2	SP-03 3m bgl	SOIL		
3	SP-04 3m bgl	SOIL		
4	SP-05 3m bgl	SOIL		
5	SP-06 3m bgl	SOIL		
		SOIL		

SAMPLE RECEIVE INFO: (Lab Use Only)

Received Date/ Time:	15 AUG 2013 11:10	Document Received Date/Time:	15 AUG 2013
Sorting Date/ Time:	15 AUG 2013 12:00	Esky Count:	1
Condition:	Ambient / Chilled / Frozen	Ice Bricks / Ice	Yes/ No
Bottle information:	5 x 250ml soil Jars		
Tray No:	5J130	Sort by:	Katsu

**SAMPLE SUBMISSION FORM (Environmental test)**

Note : * The following information is required to expedite sample analysis. Please complete all the necessary details and return this form with your samples. Test(s) will not be started until a COMPLETED form is received.

Items will be subject to additional charge and needed further confirmation & arrangement.

Reporting information for Final Report

*Company Name: AUES

*Client Contact: Name: TW TAM

Email: twtam@fordbusiness.com

Tel:

Fax:

*Report address to:

*Postal Address (if different):

Soft copy report delivery (if different from above)*Client Contact Name (1st): BEN TAM

Email: bentam@fordbusiness.com

*Client Contact Name (2nd): JAN KWOK

Email: jankwok@fordbusiness.com

*Client Contact Name (3rd): MARTIN LI

martinli@fordbusiness.com

Billing information for Invoice (if different from reporting information for final report)

Note : Client Name on invoice will be the company Name of the Final report.

*Invoice to (c/o company):

*Client Contact Name:

Tel:

Email:

*Invoice address to:

*Purchase Order/ Client Order No:

* ALS Quotation No.:

*Project Name/No:

TCS00881/18 - Site Formation and Associated Infrastructural
Works for Development of Columbarium at Sandy Ridge Cemetery

Site Name (if any):

Environmental Division
Hong Kong

Work Order Reference

HK1935193



Telephone : +852 2610 1044

Sampling and delivery

Sampling by:

☒ Client☐ # ALS☐ others:

*Sample(s) delivery by:

☒ Client☐ # ALS☐ others:

*Expected TAT (Working days):

☐ Regular (7-10)☐ #Express (5)☐ #Double Express (3)☐ #Other (____)

Other remark:

SAMPLE ANALYTICAL REQUIREMENTS (Supplementary sheet attached ☐ Yes, _____ pages ☐ No)

Lab ID Lab use only	*Sample ID.	Matrix	*Sampling Date/Time	*Analysis Required (Tests)
1	SP-08 0.5m bgl	SOIL	14/8	Petroleum Carbon Ranges - Fractions C6-C8, Fractions C9-C16 and Fractions C17-C35 Volatile Organic Compounds (VOCs) - Benzene, Toluene, Ethylbenzene, Xylenes (Total); Semi-volatile Organic Compounds (SVOCs) - Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Bis(2-Ethylhexyl)phthalate, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Hexachlorobenzene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Phenol and Pyrene
2	SP-08 1.5m bgl	SOIL		
3	SP-08 3m bgl	SOIL		
4	SP-07 3m bgl	SOIL		
		SOIL		
		SOIL		

SAMPLE RECEIVE INFO: (Lab Use Only)

Received Date/ Time:	15 AUG 2019 11:10	Document Received Date/Time:	15 AUG 2019
Sorting Date/ Time:	15 AUG 2019 12:00	Esky Count:	1
Condition:	Ambient / Chilled / Frozen	Ice Bricks / Ice	Yes / No
Bottle information:	4 x 250ml soil Jars		
Tray No:	SJ130	Sort by:	Refers

ALS Technichem (HK) Pty Ltd

11/F, Chung Shun Knitting Centre, 1-3 Wing Yip St, Kwai Chung, N.T., Hong Kong
Tel : (852) 2610 1044 Fax : (852) 2610 2021 Email: hongkong@alsglobal.com



SAMPLE SUBMISSION FORM (Environmental test)

Note : * The following information is required to expedite sample analysis. Please complete all the necessary details and return this form with your samples. Test(s) will not be started until a COMPLETED form is received.
Items will be subject to additional charge and needed further confirmation & arrangement.

Reporting information for Final Report

*Company Name: AUES
*Client Contact: Name: TW TAM Email: twtam@fordbusiness.com
Tel: _____ Fax: _____
*Report address to: _____
*Postal Address (if different): _____

Soft copy report delivery (if different from above)

*Client Contact Name (1st): BEN TAM Email: bentam@fordbusiness.com
*Client Contact Name (2nd): JAN KWOK Email: jankwok@fordbusiness.com
*Client Contact Name (3rd): MARTIN LI Email: martinli@fordbusiness.com

Billing information for Invoice (if different from reporting information for final report)

Note : Client Name on invoice will be the company Name of the Final report.

*Invoice to (c/o company): _____
*Client Contact Name: _____ Tel: _____
Email: _____
*Invoice address to: _____

*Purchase Order/ Client Order No: _____

* ALS Quotation No.: _____

*Project Name/No: _____

TCS00881/18 - Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery

Site Name (if any): _____

Environmental Division
Hong Kong

Work Order Reference
HK1935194



Telephone : + 852 2610 1044

Sampling and delivery

Sampling by: ☒ Client ☐ # ALS ☐ others: _____
*Sample(s) delivery by: ☒ Client ☐ # ALS ☐ others: _____

*Expected TAT (Working days): ☐ Regular (7-10) ☐ #Express (5) ☐ #Double Express (3) ☐ #Other (____)

Other remark: _____

SAMPLE ANALYTICAL REQUIREMENTS (Supplementary sheet attached ☐ Yes, _____ pages ☐ No)

Lab ID Lab use only	*Sample ID.	Matrix	*Sampling Date/Time	*Analysis Required (Tests)
1	Duplicate 1	SOIL	14/8	Petroleum Carbon Ranges – Fractions C6-C8, Fractions C9-C16 and Fractions C17-C35 Volatile Organic Compounds (VOCs) – Benzene, Toluene, Ethylbenzene, Xylenes (Total); Semi-volatile Organic Compounds (SVOCs) – Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Bis(2-Ethylhexyl)phthalate, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Hexachlorobenzene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Phenol and Pyrene
		SOIL		
		SOIL		
		SOIL		
		SOIL		
		SOIL		

SAMPLE RECEIVE INFO: (Lab Use Only)

Received Date/ Time:	15 AUG 2019 11:10	Document Received Date/Time:	15 AUG 2019
Sorting Date/ Time:	15 AUG 2019 12:00	Esky Count:	1
Condition:	Ambient / Chilled / Frozen	Ice Bricks / Ice	Yes / No
Bottle information:	1 x 250 ml soil jar		
Tray No:	5J SB130	Sort by:	Ketser

ALS Technichem (HK) Pty Ltd

11/F, Chung Shun Knitting Centre, 1-3 Wing Yip St, Kwai Chung, N.T., Hong Kong
Tel : (852) 2610 1044 Fax : (852) 2610 2021 Email: hongkong@alsglobal.com



SAMPLE SUBMISSION FORM (Environmental test)

Note : * The following information is required to expedite sample analysis. Please complete all the necessary details and return this form with your samples. Test(s) will not be started until a COMPLETED form is received.
Items will be subject to additional charge and needed further confirmation & arrangement.

Reporting information for Final Report

*Company Name: AUES

*Client Contact: Name: TW TAM

Email: twtam@fordbusiness.com

Tel:

Fax:

*Report address to:

*Postal Address (if different):

Soft copy report delivery (if different from above)

*Client Contact Name (1st): BEN TAM

Email: bentam@fordbusiness.com

*Client Contact Name (2nd): JAN KWOK

Email: jankwok@fordbusiness.com

*Client Contact Name (3rd): MARTIN LI

Email: martinli@fordbusiness.com

Billing information for Invoice (if different from reporting information for final report)

Note : Client Name on Invoice will be the company Name of the Final report.

*Invoice to (c/o company):

*Client Contact Name:

Tel:

Email:

*Invoice address to:

*Purchase Order/ Client Order No:

* ALS Quotation No.:

TCS00881/18 - Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery

*Project Name/No:

Site Name (if any):

Sampling and delivery

Sampling by: ☒ Client ☐ # ALS ☐ others:

*Sample(s) delivery by: ☒ Client ☐ # ALS ☐ others:

Environmental Division
Hong Kong

Work Order Reference

HK1935195



Telephone : + 852 2610 1044

*Expected TAT (Working days): ☐ Regular (7-10) ☐ #Express (5) ☐ #Double Express (3) ☐ #Other (____)

Other remark:

SAMPLE ANALYTICAL REQUIREMENTS (Supplementary sheet attached ☐ Yes, _____ pages ☐ No)

Lab ID Lab use only	*Sample ID.	Matrix	*Sampling Date/Time	*Analysis Required (Tests)
1.	Duplicate 2	SOIL	14/8	<u>Metals</u> -Antimony, Arsenic, Barium, Cadmium, Chromium III & VI, Cobalt, Copper, Lead, Manganese, Mercury, Molybdenum, Nickel, Tin and Zinc <u>Petroleum Carbon Ranges</u> - Fractions C6-C8, Fractions C9-C16 and Fractions C17-C35 <u>Volatile Organic Compounds (VOCs)</u> -Benzene, Toluene, Ethylbenzene, Xylenes (Total); <u>Semi-volatile Organic Compounds (SVOCs)</u> -Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Bis(2-Ethylhexyl)phthalate, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Hexachlorobenzene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Phenol and Pyrene <u>Polychlorinated Biphenyls (PCBs)</u>
		SOIL		
		SOIL		
		SOIL		
		SOIL		
		SOIL		

SAMPLE RECEIVE INFO: (Lab Use Only)

Received Date/ Time:	15 AUG 2019	11:10	Document Received Date/Time:	15 AUG 2019
Sorting Date/ Time:	15 AUG 2019	12:00	Esky Count:	1
Condition:	Ambient / Chilled / Frozen		Ice Bricks / Ice	YES/ No
Bottle information:	1 x 250ml soil Jar			
Tray No:	55 88130		Sort by:	Katsu

ALS Technichem (HK) Pty Ltd

11/F, Chung Shun Knitting Centre, 1-3 Wing Yip St, Kwai Chung, N.T., Hong Kong
Tel: (852) 2610 1044 Fax: (852) 2610 2021 Email: hongkong@alsglobal.com



SAMPLE SUBMISSION FORM (Environmental test)

Note: * The following information is required to expedite sample analysis. Please complete all the necessary details and return this form with your samples. Test(s) will not be started until a COMPLETED form is received.

Items will be subject to additional charge and needed further confirmation & arrangement.

Reporting information for Final Report

*Company Name: AUES
*Client Contact: Name: TW TAM Email: twtam@fordbusiness.com
Tel: _____ Fax: _____
*Report address to: _____
*Postal Address (if different): _____

Soft copy report delivery (if different from above)

*Client Contact Name (1st): BEN TAM Email: bentam@fordbusiness.com
*Client Contact Name (2nd): JAN KWOK Email: jankwok@fordbusiness.com
*Client Contact Name (3rd): MARTIN LI Email: martinli@fordbusiness.com

Billing information for Invoice (if different from reporting information for final report)

Note: Client Name on invoice will be the company Name of the Final report.

*Invoice to (c/o company): _____
*Client Contact Name: _____ Tel: _____
Email: _____
*Invoice address to: _____

*Purchase Order/ Client Order No: _____
* ALS Quotation No.: _____
*Project Name/No: TCS00881/18 - Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery
Site Name (if any): _____

Environmental Division
Hong Kong
Work Order Reference
HK1935198



Telephone: +852 2610 1044

Sampling and delivery

Sampling by: ☒ Client ☐ # ALS ☐ others: _____
*Sample(s) delivery by: ☒ Client ☐ # ALS ☐ others: _____

*Expected TAT (Working days): ☐ Regular (7-10) ☐ #Express (5) ☐ #Double Express (3) ☐ #Other (____)

Other remark: _____

SAMPLE ANALYTICAL REQUIREMENTS (Supplementary sheet attached ☐ Yes, _____ pages ☐ No)

Lab ID Lab use only	*Sample ID.	Matrix	*Sampling Date/Time	*Analysis Required (Tests)
1	SP02 0.5m bgl	SOIL	14/8	Metals - Antimony, Arsenic, Barium, Cadmium, Chromium III & VI, Cobalt, Copper, Lead, Manganese, Mercury, Molybdenum, Nickel, Tin and Zinc Petroleum Carbon Ranges - Fractions C6-C8, Fractions C9-C16 and Fractions C17-C35 Volatile Organic Compounds (VOCs) - Benzene, Toluene, Ethylbenzene, Xylenes (Total); Semi-volatile Organic Compounds (SVOCs) - Naphthalene and Phenol Polychlorinated Biphenyls (PCBs)
2	SP02 1.5m bgl	SOIL		
		SOIL		
		SOIL		
		SOIL		

SAMPLE RECEIVE INFO: (Lab Use Only)

Received Date/ Time:	15 AUG 2019 11:10	Document Received Date/Time:	15 AUG 2019
Sorting Date/ Time:	15 AUG 2019 12:00	Esky Count:	1
Condition:	Ambient / Chilled / Frozen	Ice Bricks / Ice	Yes / No
Bottle information:	2 x 250ml soil Jars		
Tray No:	SJ129	Sort by:	Katw

ALS Technichem (HK) Pty Ltd

11/F, Chung Shun Knitting Centre, 1-3 Wing Yip St, Kwai Chung, N.T., Hong Kong
Tel : (852) 2610 1044 Fax : (852) 2610 2021 Email: hongkong@alsglobal.com



SAMPLE SUBMISSION FORM (Environmental test)

Note : * The following information is required to expedite sample analysis. Please complete all the necessary details and return this form with your samples. Test(s) will not be started until a COMPLETED form is received.
Items will be subject to additional charge and needed further confirmation & arrangement.

Reporting information for Final Report

*Company Name: AUES
*Client Contact: Name: TW TAM Email: twtam@fordbusiness.com
Tel: _____ Fax: _____
*Report address to: _____
*Postal Address (if different): _____

Soft copy report delivery (if different from above)

*Client Contact Name (1st): BEN TAM Email: bentam@fordbusiness.com
*Client Contact Name (2nd): JAN KWOK Email: jankwok@fordbusiness.com
*Client Contact Name (3rd): MARTIN LI Email: martinli@fordbusiness.com

Billing information for Invoice (if different from reporting information for final report)

Note : Client Name on invoice will be the company Name of the Final report.

*Invoice to (c/o company): _____
*Client Contact Name: _____ Tel: _____
Email: _____
*Invoice address to: _____

*Purchase Order/ Client Order No: _____

* ALS Quotation No.: _____

*Project Name/No: _____

TCS00881/18 - Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery

Site Name (if any): _____

Environmental Division
Hong Kong

Work Order Reference

HK1935201



Telephone : + 852 2610 1044

Sampling and delivery

Sampling by: ☒ Client ☐ # ALS ☐ others: _____
*Sample(s) delivery by: ☒ Client ☐ # ALS ☐ others: _____

*Expected TAT (Working days): ☐ Regular (7-10) ☐ #Express (5) ☐ #Double Express (3) ☐ #Other (____)

Other remark: _____

SAMPLE ANALYTICAL REQUIREMENTS (Supplementary sheet attached ☐ Yes, _____ pages ☐ No)

Lab ID Lab use only	*Sample ID.	Matrix	*Sampling Date/Time	*Analysis Required (Tests)
1.	SP02 <i>3m bgl</i>	SOIL	14/8	Metals -Antimony, Arsenic, Barium, Cadmium, Chromium III & VI, Cobalt, Copper, Lead, Manganese, Mercury, Molybdenum, Nickel, Tin and Zinc Petroleum Carbon Ranges - Fractions C6-C8, Fractions C9-C16 and Fractions C17-C35 Volatile Organic Compounds (VOCs) - Benzene, Toluene, Ethylbenzene, Xylenes (Total); Semi-volatile Organic Compounds (SVOCs) -Naphthalene and Phenol Polychlorinated Biphenyls (PCBs)
	SP02	SOIL		
	SP02	SOIL		
		SOIL		
		SOIL		
		SOIL		

SAMPLE RECEIVE INFO: (Lab Use Only)

Received Date/ Time:	15 AUG 2019 11:10	Document Received Date/Time:	15 AUG 2019
Sorting Date/ Time:	15 AUG 2019 12:00	Esky Count:	1
Condition:	Ambient / Chilled / Frozen	Ice Bricks / Ice	Yes / No
Bottle Information:	1 x 250 ml soil Jar		
Tray No:	5J129	Sort by:	Ketsu

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Tel: (852) 2610 1044 Fax: (852) 2610 2021 Email: hongkong@alsglobal.com



SAMPLE SUBMISSION FORM (Environmental test)

Note: * The following information is required to expedite sample analysis. Please complete all the necessary details and return this form with your samples. Test(s) will not be started until a COMPLETED form is received.

Items will be subject to additional charge and needed further confirmation & arrangement.

Reporting information for Final Report

*Company Name: AUES

*Client Contact: Name: TW TAM

Email: twtam@fordbusiness.com

Tel:

Fax:

*Report address to:

*Postal Address (if different):

Soft copy report delivery (if different from above)

*Client Contact Name (1st): BEN TAM

Email: bentam@fordbusiness.com

*Client Contact Name (2nd): JAN KWOK

Email: jankwok@fordbusiness.com

*Client Contact Name (3rd): MARTIN LI

Email: martinli@fordbusiness.com

Billing information for Invoice (if different from reporting information for final report)

Note: Client Name on invoice will be the company Name of the Final report.

*Invoice to (c/o company):

*Client Contact Name:

Tel:

Email:

*Invoice address to:

*Purchase Order/ Client Order No:

* ALS Quotation No.:

TCS00881/18 - Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery

*Project Name/No:

Site Name (if any):

Sampling and delivery

Sampling by:

☒ Client

☐ # ALS

☐ others:

*Sample(s) delivery by:

☒ Client

☐ # ALS

☐ others:

Environmental Division
Hong Kong

Work Order Reference

HK1935202



Telephone: + 852 2610 1044

*Expected TAT (Working days): ☐ Regular (7-10) ☐ #Express (5) ☐ #Double Express (3) ☐ #Other (____)

Other remark:

SAMPLE ANALYTICAL REQUIREMENTS (Supplementary sheet attached ☐ Yes, _____ pages ☐ No)

Lab ID Lab use only	*Sample ID.	Matrix	*Sampling Date/Time	*Analysis Required (Tests)
1.	Equipment Blank	water	14/8	<u>Metals - Mercury</u> <u>Petroleum Carbon Ranges - Fractions C6-C8, Fractions C9-C16 and Fractions C17-C35</u> <u>Volatile Organic Compounds (VOCs) - Benzene, Toluene, Ethylbenzene, Xylenes (Total);</u> <u>Semi-volatile Organic Compounds (SVOCs) - Acenaphthene, Acenaphthylene, Anthracene, Benzo(b)fluoranthene, Chrysene, Fluoranthene, Fluorene, Hexachlorobenzene, Naphthalene, Phenanthrene, Pyrene</u> <u>Polychlorinated Biphenyls (PCBs)</u>

SAMPLE RECEIVE INFO: (Lab Use Only)

Received Date/ Time:	15 AUG 2019 11:10	Document Received Date/Time:	15 AUG 2019
Sorting Date/ Time:	15 AUG 2019 12:00	Esky Count:	1
Condition:	Ambient / Chilled / Frozen	Ice Bricks / Ice	Yes / No
Bottle information:	(1 x 180 ml R/G, 1L Orange, 180 ml Blue), 2 x 40ml VOCs vials		
Tray No:	R176, 02.V1, B34	Sort by:	Kefu

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Tel : (852) 2610 1044 Fax : (852) 2610 2021 Email: hongkong@alsglobal.com



SAMPLE SUBMISSION FORM (Environmental test)

Note : * The following information is required to expedite sample analysis. Please complete all the necessary details and return this form with your samples. Test(s) will not be started until a COMPLETED form is received.

Items will be subject to additional charge and needed further confirmation & arrangement.

Reporting information for Final Report

*Company Name: AUES

*Client Contact: Name: TW TAM

Email: twtam@fordbusiness.com

Tel:

Fax:

*Report address to:

*Postal Address (if different):

Soft copy report delivery (if different from above)

*Client Contact Name (1st): BEN TAM

Email: bentam@fordbusiness.com

*Client Contact Name (2nd): JAN KWOK

Email: jankwok@fordbusiness.com

*Client Contact Name (3rd): MARTIN LI

martinli@fordbusiness.com

Billing information for Invoice (if different from reporting information for final report)

Note : Client Name on invoice will be the company Name of the Final report.

*Invoice to (c/o company):

*Client Contact Name:

Tel:

Email:

*Invoice address to:

*Purchase Order/ Client Order No:

* ALS Quotation No.:

TCS00881/18 - Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery

*Project Name/No:

Site Name (if any):

Environmental Division
Hong Kong

Work Order Reference

HK1935203



Telephone : +852 2610 1044

Sampling and delivery

Sampling by: ☒ Client ☐ # ALS ☐ others:

*Sample(s) delivery by: ☒ Client ☐ # ALS ☐ others:

*Expected TAT (Working days): ☐ Regular (7-10) ☐ #Express (5) ☐ #Double Express (3) ☐ #Other (____)

Other remark:

SAMPLE ANALYTICAL REQUIREMENTS (Supplementary sheet attached ☐ Yes, _____ pages ☐ No)

Lab ID Lab use only	*Sample ID.	Matrix	*Sampling Date/Time	*Analysis Required (Tests)
1	Equipment Blank 2	water	14/8	<u>Metals - Mercury</u> <u>Petroleum Carbon Ranges</u> - Fractions C6-C8, Fractions C9-C16 and Fractions C17-C35 <u>Volatile Organic Compounds (VOCs)</u> - Benzene, Toluene, Ethylbenzene, Xylenes (Total); <u>Semi-volatile Organic Compounds (SVOCs)</u> - Acenaphthene, Acenaphthylene, Anthracene, Benzo(b)fluoranthene, Chrysene, Fluoranthene, Fluorene, Hexachlorobenzene, Naphthalene, Phenanthrene, Pyrene <u>Polychlorinated Biphenyls (PCBs)</u>

SAMPLE RECEIVE INFO: (Lab Use Only)

Received Date/ Time:	15 AUG 2019	11:00	Document Received Date/Time:	15 AUG 2019
Sorting Date/ Time:	15 AUG 2019	12:00	Esky Count:	1
Condition:	Ambient / Chilled / Frozen		Ice Bricks / Ice	Yes / No
Bottle information:	1 x (180 ml R/G), 1L Orange 180 ml Blue, 2 x 40 ml VOCs vials			
Tray No:	R176, D2, V1, B34		Sort by:	Ketsu

Annex H

Full Laboratory Data Reports



CERTIFICATE OF ANALYSIS

Client	: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 11
Contact	: MR T W TAM	Contact	: Richard Fung	Work Order	: HK1935187
Address	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: Twtam@fordbusiness.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2959 6059	Telephone	: +852 2610 1044		
Facsimile	: +852 2959 6079	Facsimile	: +852 2610 2021		
Project	: TCS00881/18 - SITE FORMATION AND ASSOCIATED INFRASTRUCTURAL WORKS FOR DEVELOPMENT OF COLUMBARIUM AT SANDY RIDGE CEMETERY			Date Samples Received	: 15-Aug-2019
Order number	:	Quote number	: HKE/3386/2018	Issue Date	: 23-Aug-2019
C-O-C number	: ---			No. of samples received	: 6
Site	: ---			No. of samples analysed	: 6

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Hong Kong Accreditation Service (HKAS) has accredited this laboratory, ALS Technichem (HK) Pty Ltd (Reg. No. HOKLAS 066) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories.

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	Position	Authorised results for
 Chan Ka Yu, Karen	Manager - Organics	Organics_ENV
 Chan Siu Ming, Vico	Manager - Inorganics	Inorganics



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. Testing period is from 15-Aug-2019 to 22-Aug-2019.

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: HK1935187

Sample(s) were received in chilled condition.

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

Sample information (Project name, Sample ID, Sampling date/ time) is provided by client.



Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				SP-01 0.5m bgl	SP-01 1.5m bgl	SP-03 0.5m bgl	SP-03 1.5m bgl	SP-04 0.5m bgl
				14-Aug-2019	14-Aug-2019	14-Aug-2019	14-Aug-2019	14-Aug-2019
Compound	CAS Number	LOR	Unit	HK1935187-001	HK1935187-002	HK1935187-003	HK1935187-004	HK1935187-005
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	13.9	18.4	14.8	20.1	13.7
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)								
EP076HK: Naphthalene	91-20-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Acenaphthylene	208-96-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Acenaphthene	83-32-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Fluorene	86-73-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Phenanthrene	85-01-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Anthracene	120-12-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Fluoranthene	206-44-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Pyrene	129-00-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Chrysene	218-01-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Benzo(a)pyrene	50-32-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Indeno(1,2,3-cd)pyrene	193-39-5	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Dibenz(a,h)anthracene	53-70-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Benzo(g,h,i)perylene	191-24-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate								
EP076HK: Phenol	108-95-2	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
EP076HK: Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200	<0.200	<0.200	<0.200	<0.200
EP076HK: Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00	<5.00	<5.00	<5.00	<5.00
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								
EP070HK_SR: C6 - C8 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
EP071HK_SR: C9 - C16 Fraction	----	200	mg/kg	<200	<200	<200	<200	<200
EP071HK_SR: C17 - C35 Fraction	----	500	mg/kg	<500	<500	<500	<500	<500
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)								
EP074_SR: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP074_SR: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



Sub-Matrix: SOIL				Client sample ID	SP-01 0.5m bgl	SP-01 1.5m bgl	SP-03 0.5m bgl	SP-03 1.5m bgl	SP-04 0.5m bgl
Client sampling date / time					14-Aug-2019	14-Aug-2019	14-Aug-2019	14-Aug-2019	14-Aug-2019
Compound	CAS Number	LOR	Unit		HK1935187-001	HK1935187-002	HK1935187-003	HK1935187-004	HK1935187-005
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) - Continued									
EP074_SR: Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EP074_SR: meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg		<1.0	<1.0	<1.0	<1.0	<1.0
EP074_SR: ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EP074_SR: Xylenes (Total)	----	2.0	mg/kg		<2.0	<2.0	<2.0	<2.0	<2.0
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates									
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%		74.4	71.6	73.0	68.7	75.5
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%		81.9	79.5	78.5	75.4	84.7
EP-080_SRS: TPH(Volatile)/BTEX Surrogate									
EP070HK_SR: Dibromofluoromethane	1868-53-7	0.1	%		97.0	96.4	98.7	94.9	97.2
EP070HK_SR: Toluene-D8	2037-26-5	0.1	%		102	102	102	101	102
EP070HK_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		107	106	106	107	105
EP-074_SR-S: VOC Surrogates									
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%		97.0	96.4	98.7	94.9	97.2
EP074_SR: Toluene-D8	2037-26-5	0.1	%		102	102	102	101	102
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		107	106	106	107	105



Sub-Matrix: SOIL				Client sample ID	SP-04 1.5m bgl	---	---	---	---
				Client sampling date / time	14-Aug-2019	---	---	---	---
Compound	CAS Number	LOR	Unit	HK1935187-006	---	---	---	---	---
EA/ED: Physical and Aggregate Properties									
EA055: Moisture Content (dried @ 103°C)	---	0.1	%	18.6	---	---	---	---	---
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)									
EP076HK: Naphthalene	91-20-3	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Acenaphthylene	208-96-8	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Acenaphthene	83-32-9	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Fluorene	86-73-7	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Phenanthrene	85-01-8	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Anthracene	120-12-7	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Fluoranthene	206-44-0	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Pyrene	129-00-0	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Chrysene	218-01-9	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Benzo(a)pyrene	50-32-8	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Indeno(1,2,3-cd)pyrene	193-39-5	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Dibenz(a,h)anthracene	53-70-3	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Benzo(g,h,i)perylene	191-24-2	0.500	mg/kg	<0.500	---	---	---	---	---
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate									
EP076HK: Phenol	108-95-2	0.50	mg/kg	<0.50	---	---	---	---	---
EP076HK: Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200	---	---	---	---	---
EP076HK: Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00	---	---	---	---	---
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)									
EP070HK_SR: C6 - C8 Fraction	---	5	mg/kg	<5	---	---	---	---	---
EP071HK_SR: C9 - C16 Fraction	---	200	mg/kg	<200	---	---	---	---	---
EP071HK_SR: C17 - C35 Fraction	---	500	mg/kg	<500	---	---	---	---	---
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)									
EP074_SR: Benzene	71-43-2	0.2	mg/kg	<0.2	---	---	---	---	---
EP074_SR: Toluene	108-88-3	0.5	mg/kg	<0.5	---	---	---	---	---
EP074_SR: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	---	---	---	---	---



Sub-Matrix: SOIL				Client sample ID	SP-04 1.5m bgl	---	---	---	---
				Client sampling date / time	14-Aug-2019	---	---	---	---
Compound	CAS Number	LOR	Unit		HK1935187-006	---	---	---	---
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) - Continued									
EP074_SR: meta- & para-Xylene	108-38-3	1.0	mg/kg		<1.0	---	---	---	---
	106-42-3								
EP074_SR: ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	---	---	---	---
EP074_SR: Xylenes (Total)	----	2.0	mg/kg		<2.0	---	---	---	---
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates									
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%		86.9	---	---	---	---
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%		99.3	---	---	---	---
EP-080_SRS: TPH(Volatile)/BTEX Surrogate									
EP070HK_SR: Dibromofluoromethane	1868-53-7	0.1	%		92.9	---	---	---	---
EP070HK_SR: Toluene-D8	2037-26-5	0.1	%		101	---	---	---	---
EP070HK_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		104	---	---	---	---
EP-074_SR-S: VOC Surrogates									
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%		92.9	---	---	---	---
EP074_SR: Toluene-D8	2037-26-5	0.1	%		101	---	---	---	---
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		104	---	---	---	---



Laboratory Duplicate (DUP) Report

Matrix: SOIL

Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2531825)								
HK1935073-001	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	24.0	24.3	1.27
HK1935187-006	SP-04 1.5m bgl	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	18.6	18.8	1.14
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2526603)								
HK1933070-002	Anonymous	Naphthalene	91-20-3	50	µg/kg	<0.500 mg/kg	<500	0.00
		Acenaphthylene	208-96-8	50	µg/kg	<0.500 mg/kg	<500	0.00
		Acenaphthene	83-32-9	50	µg/kg	<0.500 mg/kg	<500	0.00
		Fluorene	86-73-7	50	µg/kg	<0.500 mg/kg	<500	0.00
		Phenanthrene	85-01-8	50	µg/kg	<0.500 mg/kg	<500	0.00
		Anthracene	120-12-7	50	µg/kg	<0.500 mg/kg	<500	0.00
		Fluoranthene	206-44-0	50	µg/kg	<0.500 mg/kg	<500	0.00
		Pyrene	129-00-0	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benz(a)anthracene	56-55-3	50	µg/kg	<0.500 mg/kg	<500	0.00
		Chrysene	218-01-9	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(b)fluoranthene	205-99-2	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(k)fluoranthene	207-08-9	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(a)pyrene	50-32-8	50	µg/kg	<0.500 mg/kg	<500	0.00
		Indeno(1.2.3.cd)pyrene	193-39-5	50	µg/kg	<0.500 mg/kg	<500	0.00
Dibenz(a.h)anthracene	53-70-3	50	µg/kg	<0.500 mg/kg	<500	0.00		
Benzo(g.h.i)perylene	191-24-2	50	µg/kg	<0.500 mg/kg	<500	0.00		
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2526603)								
HK1933070-002	Anonymous	Bis(2-ethylhexyl)phthalate	117-81-7	1000	µg/kg	6.61 mg/kg	6640	0.481
		Hexachlorobenzene (HCB)	118-74-1	50	µg/kg	<0.200 mg/kg	<200	0.00
		Phenol	108-95-2	500	µg/kg	<0.50 mg/kg	<500	0.00
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2526602)								
HK1933070-002	Anonymous	C9 - C16 Fraction	----	200	mg/kg	1670	1630	2.69
		C17 - C35 Fraction	----	500	mg/kg	2660	2590	2.81
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2526608)								
HK1933070-002	Anonymous	C6 - C8 Fraction	----	5	mg/kg	<5	<5	0.00
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2526607)								
HK1933070-002	Anonymous	EP074_SR: Benzene	71-43-2	0.1	mg/kg	<0.2	<0.2	0.00



Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2526607) - Continued								
HK1933070-002	Anonymous	EP074_SR: Toluene	108-88-3	0.2	mg/kg	<0.5	<0.5	0.00
		EP074_SR: Ethylbenzene	100-41-4	0.2	mg/kg	<0.5	<0.5	0.00
		EP074_SR: ortho-Xylene	95-47-6	0.2	mg/kg	0.6	0.6	0.00
		EP074_SR: meta- & para-Xylene	108-38-3	0.4	mg/kg	<1.0	<1.0	0.00
			106-42-3					
		EP074_SR: Xylenes (Total)	----	1	mg/kg	<2.0	<2.0	0.00

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							
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2526603)											
Naphthalene	91-20-3	50	µg/kg	<50	25 µg/kg	96.3	----	52	116	----	----
Acenaphthylene	208-96-8	50	µg/kg	<50	25 µg/kg	98.8	----	48	107	----	----
Acenaphthene	83-32-9	50	µg/kg	<50	25 µg/kg	99.7	----	55	109	----	----
Fluorene	86-73-7	50	µg/kg	<50	25 µg/kg	106	----	53	119	----	----
Phenanthrene	85-01-8	50	µg/kg	<50	25 µg/kg	106	----	70	106	----	----
Anthracene	120-12-7	50	µg/kg	<50	25 µg/kg	99.3	----	35	108	----	----
Fluoranthene	206-44-0	50	µg/kg	<50	25 µg/kg	114	----	60	125	----	----
Pyrene	129-00-0	50	µg/kg	<50	25 µg/kg	110	----	60	124	----	----
Benz(a)anthracene	56-55-3	50	µg/kg	<50	25 µg/kg	113	----	53	120	----	----
Chrysene	218-01-9	50	µg/kg	<50	25 µg/kg	111	----	56	133	----	----
Benzo(b)fluoranthene	205-99-2	50	µg/kg	<50	25 µg/kg	115	----	56	130	----	----
Benzo(k)fluoranthene	207-08-9	50	µg/kg	<50	25 µg/kg	115	----	64	128	----	----
Benzo(a)pyrene	50-32-8	50	µg/kg	<50	25 µg/kg	93.7	----	24	119	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	50	µg/kg	<50	25 µg/kg	115	----	47	128	----	----
Dibenz(a,h)anthracene	53-70-3	50	µg/kg	<50	25 µg/kg	109	----	55	114	----	----
Benzo(g,h,i)perylene	191-24-2	50	µg/kg	<50	25 µg/kg	120	----	44	128	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2526603)											
Phenol	108-95-2	500	µg/kg	<500	25 µg/kg	60.5	----	0	139	----	----



Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number				LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits(%)
		LCS	DCS	Low					High	Value	Control Limit
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2526603) - Continued											
Hexachlorobenzene (HCB)	118-74-1	50	µg/kg	<50	25 µg/kg	102	----	63	109	----	----
Bis(2-ethylhexyl)phthalate	117-81-7	1000	µg/kg	<1000	25 µg/kg	150	----	78	151	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2526602)											
C9 - C16 Fraction	----	200	mg/kg	<200	31.5 mg/kg	100	----	62	128	----	----
C17 - C35 Fraction	----	500	mg/kg	<500	67.5 mg/kg	88.8	----	53	104	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2526608)											
C6 - C8 Fraction	----	5	mg/kg	<5	4.5 mg/kg	95.9	----	78	131	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2526607)											
EP074_SR: Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	88.9	----	86	122	----	----
EP074_SR: Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	86.7	----	86	123	----	----
EP074_SR: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	95.3	----	87	121	----	----
EP074_SR: meta- & para-Xylene	108-38-3	0.4	mg/kg	<0.4	0.5 mg/kg	89.5	----	83	118	----	----
	106-42-3										
EP074_SR: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	95.7	----	85	117	----	----
EP074_SR: Xylenes (Total)	----	1	mg/kg	<1.0	0.75 mg/kg	91.6	----	85	116	----	----



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

Matrix: SOIL

Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2526603)										
HK1933070-002	Anonymous	Naphthalene	91-20-3	250 µg/kg	83.7	----	50	130	----	----
		Acenaphthylene	208-96-8	250 µg/kg	77.4	----	50	130	----	----
		Acenaphthene	83-32-9	250 µg/kg	105	----	50	130	----	----
		Fluorene	86-73-7	250 µg/kg	100	----	50	130	----	----
		Phenanthrene	85-01-8	250 µg/kg	82.1	----	50	130	----	----
		Anthracene	120-12-7	250 µg/kg	98.0	----	50	130	----	----
		Fluoranthene	206-44-0	250 µg/kg	106	----	50	130	----	----
		Pyrene	129-00-0	250 µg/kg	86.5	----	50	130	----	----
		Benz(a)anthracene	56-55-3	250 µg/kg	82.8	----	50	130	----	----
		Chrysene	218-01-9	250 µg/kg	80.1	----	50	130	----	----
		Benzo(b)fluoranthene	205-99-2	250 µg/kg	90.1	----	50	130	----	----
		Benzo(k)fluoranthene	207-08-9	250 µg/kg	84.2	----	50	130	----	----
		Benzo(a)pyrene	50-32-8	250 µg/kg	87.6	----	50	130	----	----
		Indeno(1.2.3.cd)pyrene	193-39-5	250 µg/kg	87.5	----	50	130	----	----
		Dibenz(a,h)anthracene	53-70-3	250 µg/kg	80.8	----	50	130	----	----
Benzo(g,h,i)perylene	191-24-2	250 µg/kg	90.6	----	50	130	----	----		
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2526603)										
HK1933070-002	Anonymous	Phenol	108-95-2	250 µg/kg	88.0	----	50	130	----	----
		Hexachlorobenzene (HCB)	118-74-1	250 µg/kg	111	----	50	130	----	----
		Bis(2-ethylhexyl)phthalate	117-81-7	250 µg/kg	# Not Determined	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2526602)										
HK1933070-002	Anonymous	C9 - C16 Fraction	----	31.5 mg/kg	# Not Determined	----	50	130	----	----
		C17 - C35 Fraction	----	67.5 mg/kg	# Not Determined	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2526608)										
HK1933070-002	Anonymous	C6 - C8 Fraction	----	4.5 mg/kg	77.8	----	50	130	----	----



Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number		MS	MSD	Low	High	Value	Control Limit
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2526607)										
HK1933070-002	Anonymous	EP074_SR: Benzene	71-43-2	0.25 mg/kg	111	----	50	130	----	----
		EP074_SR: Toluene	108-88-3	0.25 mg/kg	122	----	50	130	----	----
		EP074_SR: Ethylbenzene	100-41-4	0.25 mg/kg	116	----	50	130	----	----
		EP074_SR: meta- & para-Xylene	108-38-3	0.5 mg/kg	108	----	50	130	----	----
			106-42-3							
		EP074_SR: ortho-Xylene	95-47-6	0.25 mg/kg	122	----	50	130	----	----
		EP074_SR: Xylenes (Total)	----	0.75 mg/kg	112	----	50	130	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates			
2-Fluorobiphenyl	321-60-8	50	130
4-Terphenyl-d14	1718-51-0	50	130
EP-080_SRS: TPH(Volatile)/BTEX Surrogate			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121



CERTIFICATE OF ANALYSIS

Client	: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 11
Contact	: MR T W TAM	Contact	: Richard Fung	Work Order	: HK1935189
Address	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
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Project	: TCS00881/18 - SITE FORMATION AND ASSOCIATED INFRASTRUCTURAL WORKS FOR DEVELOPMENT OF COLUMBARIUM AT SANDY RIDGE CEMETERY			Date Samples Received	: 15-Aug-2019
Order number	: —	Quote number	: HKE/3386/2018	Issue Date	: 23-Aug-2019
C-O-C number	: —			No. of samples received	: 6
Site	: —			No. of samples analysed	: 6

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Hong Kong Accreditation Service (HKAS) has accredited this laboratory, ALS Technichem (HK) Pty Ltd (Reg. No. HOKLAS 066) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories.

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	Position	Authorised results for
 Chan Ka Yu , Karen	Manager - Organics	Organics_ENV
 Chan Siu Ming , Vico	Manager - Inorganics	Inorganics



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. Testing period is from 15-Aug-2019 to 22-Aug-2019.

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: HK1935189

Sample(s) were received in chilled condition.

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

Sample information (Project name, Sample ID, Sampling date/ time) is provided by client.



Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				SP-05 0.5m bgl	SP-05 1.5m bgl	SP-06 0.5m bgl	SP-06 1.5m bgl	SP-07 0.5m bgl
				14-Aug-2019	14-Aug-2019	14-Aug-2019	14-Aug-2019	14-Aug-2019
Compound	CAS Number	LOR	Unit	HK1935189-001	HK1935189-002	HK1935189-003	HK1935189-004	HK1935189-005
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	12.7	17.9	12.9	20.4	16.3
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)								
EP076HK: Naphthalene	91-20-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Acenaphthylene	208-96-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Acenaphthene	83-32-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Fluorene	86-73-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Phenanthrene	85-01-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Anthracene	120-12-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Fluoranthene	206-44-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Pyrene	129-00-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Chrysene	218-01-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Benzo(a)pyrene	50-32-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Indeno(1,2,3-cd)pyrene	193-39-5	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Dibenz(a,h)anthracene	53-70-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Benzo(g,h,i)perylene	191-24-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate								
EP076HK: Phenol	108-95-2	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
EP076HK: Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200	<0.200	<0.200	<0.200	<0.200
EP076HK: Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00	<5.00	<5.00	<5.00	<5.00
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								
EP070HK_SR: C6 - C8 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
EP071HK_SR: C9 - C16 Fraction	----	200	mg/kg	<200	<200	<200	<200	<200
EP071HK_SR: C17 - C35 Fraction	----	500	mg/kg	<500	<500	<500	<500	<500
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)								
EP074_SR: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP074_SR: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



Sub-Matrix: SOIL				Client sample ID	SP-05 0.5m bgl	SP-05 1.5m bgl	SP-06 0.5m bgl	SP-06 1.5m bgl	SP-07 0.5m bgl
Client sampling date / time					14-Aug-2019	14-Aug-2019	14-Aug-2019	14-Aug-2019	14-Aug-2019
Compound	CAS Number	LOR	Unit		HK1935189-001	HK1935189-002	HK1935189-003	HK1935189-004	HK1935189-005
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) - Continued									
EP074_SR: Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EP074_SR: meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg		<1.0	<1.0	<1.0	<1.0	<1.0
EP074_SR: ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EP074_SR: Xylenes (Total)	----	2.0	mg/kg		<2.0	<2.0	<2.0	<2.0	<2.0
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates									
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%		75.4	69.2	75.0	72.4	74.4
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%		84.4	82.0	82.8	79.6	77.8
EP-080_SRS: TPH(Volatile)/BTEX Surrogate									
EP070HK_SR: Dibromofluoromethane	1868-53-7	0.1	%		95.0	93.7	93.7	95.0	95.6
EP070HK_SR: Toluene-D8	2037-26-5	0.1	%		102	101	101	102	102
EP070HK_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		107	103	102	106	104
EP-074_SR-S: VOC Surrogates									
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%		95.0	93.7	93.7	95.0	95.6
EP074_SR: Toluene-D8	2037-26-5	0.1	%		102	101	101	102	102
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		107	103	102	106	104



Sub-Matrix: SOIL				Client sample ID	SP-07 1.5m bgl	---	---	---	---
				Client sampling date / time	14-Aug-2019	---	---	---	---
Compound	CAS Number	LOR	Unit	HK1935189-006	---	---	---	---	---
EA/ED: Physical and Aggregate Properties									
EA055: Moisture Content (dried @ 103°C)	---	0.1	%	16.3	---	---	---	---	---
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)									
EP076HK: Naphthalene	91-20-3	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Acenaphthylene	208-96-8	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Acenaphthene	83-32-9	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Fluorene	86-73-7	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Phenanthrene	85-01-8	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Anthracene	120-12-7	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Fluoranthene	206-44-0	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Pyrene	129-00-0	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Chrysene	218-01-9	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Benzo(a)pyrene	50-32-8	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Indeno(1,2,3-cd)pyrene	193-39-5	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Dibenzo(a,h)anthracene	53-70-3	0.500	mg/kg	<0.500	---	---	---	---	---
EP076HK: Benzo(g,h,i)perylene	191-24-2	0.500	mg/kg	<0.500	---	---	---	---	---
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate									
EP076HK: Phenol	108-95-2	0.50	mg/kg	<0.50	---	---	---	---	---
EP076HK: Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200	---	---	---	---	---
EP076HK: Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00	---	---	---	---	---
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)									
EP070HK_SR: C6 - C8 Fraction	---	5	mg/kg	<5	---	---	---	---	---
EP071HK_SR: C9 - C16 Fraction	---	200	mg/kg	<200	---	---	---	---	---
EP071HK_SR: C17 - C35 Fraction	---	500	mg/kg	<500	---	---	---	---	---
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)									
EP074_SR: Benzene	71-43-2	0.2	mg/kg	<0.2	---	---	---	---	---
EP074_SR: Toluene	108-88-3	0.5	mg/kg	<0.5	---	---	---	---	---
EP074_SR: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	---	---	---	---	---



Sub-Matrix: SOIL				Client sample ID	SP-07 1.5m bgl	---	---	---	---
				Client sampling date / time	14-Aug-2019	---	---	---	---
Compound	CAS Number	LOR	Unit	HK1935189-006	---	---	---	---	---
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) - Continued									
EP074_SR: meta- & para-Xylene	108-38-3	1.0	mg/kg	<1.0	---	---	---	---	---
	106-42-3								
EP074_SR: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	---	---	---	---	---
EP074_SR: Xylenes (Total)	----	2.0	mg/kg	<2.0	---	---	---	---	---
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates									
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%	75.3	---	---	---	---	---
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%	79.8	---	---	---	---	---
EP-080_SRS: TPH(Volatile)/BTEX Surrogate									
EP070HK_SR: Dibromofluoromethane	1868-53-7	0.1	%	95.7	---	---	---	---	---
EP070HK_SR: Toluene-D8	2037-26-5	0.1	%	101	---	---	---	---	---
EP070HK_SR: 4-Bromofluorobenzene	460-00-4	0.1	%	102	---	---	---	---	---
EP-074_SR-S: VOC Surrogates									
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%	95.7	---	---	---	---	---
EP074_SR: Toluene-D8	2037-26-5	0.1	%	101	---	---	---	---	---
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%	102	---	---	---	---	---



Laboratory Duplicate (DUP) Report

Matrix: SOIL

Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2531825)								
HK1935073-001	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	24.0	24.3	1.27
HK1935187-006	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	18.6	18.8	1.14
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2526603)								
HK1933070-002	Anonymous	Naphthalene	91-20-3	50	µg/kg	<0.500 mg/kg	<500	0.00
		Acenaphthylene	208-96-8	50	µg/kg	<0.500 mg/kg	<500	0.00
		Acenaphthene	83-32-9	50	µg/kg	<0.500 mg/kg	<500	0.00
		Fluorene	86-73-7	50	µg/kg	<0.500 mg/kg	<500	0.00
		Phenanthrene	85-01-8	50	µg/kg	<0.500 mg/kg	<500	0.00
		Anthracene	120-12-7	50	µg/kg	<0.500 mg/kg	<500	0.00
		Fluoranthene	206-44-0	50	µg/kg	<0.500 mg/kg	<500	0.00
		Pyrene	129-00-0	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benz(a)anthracene	56-55-3	50	µg/kg	<0.500 mg/kg	<500	0.00
		Chrysene	218-01-9	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(b)fluoranthene	205-99-2	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(k)fluoranthene	207-08-9	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(a)pyrene	50-32-8	50	µg/kg	<0.500 mg/kg	<500	0.00
		Indeno(1.2.3.cd)pyrene	193-39-5	50	µg/kg	<0.500 mg/kg	<500	0.00
		Dibenz(a,h)anthracene	53-70-3	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(g,h,i)perylene	191-24-2	50	µg/kg	<0.500 mg/kg	<500	0.00
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2526603)								
HK1933070-002	Anonymous	Bis(2-ethylhexyl)phthalate	117-81-7	1000	µg/kg	6.61 mg/kg	6640	0.481
		Hexachlorobenzene (HCB)	118-74-1	50	µg/kg	<0.200 mg/kg	<200	0.00
		Phenol	108-95-2	500	µg/kg	<0.50 mg/kg	<500	0.00
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2526602)								
HK1933070-002	Anonymous	C9 - C16 Fraction	----	200	mg/kg	1670	1630	2.69
		C17 - C35 Fraction	----	500	mg/kg	2660	2590	2.81
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2526608)								
HK1933070-002	Anonymous	C6 - C8 Fraction	----	5	mg/kg	<5	<5	0.00
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2526607)								
HK1933070-002	Anonymous	EP074_SR: Benzene	71-43-2	0.1	mg/kg	<0.2	<0.2	0.00



Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2526607) - Continued								
HK1933070-002	Anonymous	EP074_SR: Toluene	108-88-3	0.2	mg/kg	<0.5	<0.5	0.00
		EP074_SR: Ethylbenzene	100-41-4	0.2	mg/kg	<0.5	<0.5	0.00
		EP074_SR: ortho-Xylene	95-47-6	0.2	mg/kg	0.6	0.6	0.00
		EP074_SR: meta- & para-Xylene	108-38-3	0.4	mg/kg	<1.0	<1.0	0.00
			106-42-3					
		EP074_SR: Xylenes (Total)	----	1	mg/kg	<2.0	<2.0	0.00

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 Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	DCS	Low	High	Value
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2526603)											
Naphthalene	91-20-3	50	µg/kg	<50	25 µg/kg	96.3	----	52	116	----	----
Acenaphthylene	208-96-8	50	µg/kg	<50	25 µg/kg	98.8	----	48	107	----	----
Acenaphthene	83-32-9	50	µg/kg	<50	25 µg/kg	99.7	----	55	109	----	----
Fluorene	86-73-7	50	µg/kg	<50	25 µg/kg	106	----	53	119	----	----
Phenanthrene	85-01-8	50	µg/kg	<50	25 µg/kg	106	----	70	106	----	----
Anthracene	120-12-7	50	µg/kg	<50	25 µg/kg	99.3	----	35	108	----	----
Fluoranthene	206-44-0	50	µg/kg	<50	25 µg/kg	114	----	60	125	----	----
Pyrene	129-00-0	50	µg/kg	<50	25 µg/kg	110	----	60	124	----	----
Benz(a)anthracene	56-55-3	50	µg/kg	<50	25 µg/kg	113	----	53	120	----	----
Chrysene	218-01-9	50	µg/kg	<50	25 µg/kg	111	----	56	133	----	----
Benzo(b)fluoranthene	205-99-2	50	µg/kg	<50	25 µg/kg	115	----	56	130	----	----
Benzo(k)fluoranthene	207-08-9	50	µg/kg	<50	25 µg/kg	115	----	64	128	----	----
Benzo(a)pyrene	50-32-8	50	µg/kg	<50	25 µg/kg	93.7	----	24	119	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	50	µg/kg	<50	25 µg/kg	115	----	47	128	----	----
Dibenz(a,h)anthracene	53-70-3	50	µg/kg	<50	25 µg/kg	109	----	55	114	----	----
Benzo(g,h,i)perylene	191-24-2	50	µg/kg	<50	25 µg/kg	120	----	44	128	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2526603)											
Phenol	108-95-2	500	µg/kg	<500	25 µg/kg	60.5	----	0	139	----	----



Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number				LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits(%)
		LCS	DCS	Low					High	Value	Control Limit
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2526603) - Continued											
Hexachlorobenzene (HCB)	118-74-1	50	µg/kg	<50	25 µg/kg	102	----	63	109	----	----
Bis(2-ethylhexyl)phthalate	117-81-7	1000	µg/kg	<1000	25 µg/kg	150	----	78	151	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2526602)											
C9 - C16 Fraction	----	200	mg/kg	<200	31.5 mg/kg	100	----	62	128	----	----
C17 - C35 Fraction	----	500	mg/kg	<500	67.5 mg/kg	88.8	----	53	104	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2526608)											
C6 - C8 Fraction	----	5	mg/kg	<5	4.5 mg/kg	95.9	----	78	131	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2526607)											
EP074_SR: Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	88.9	----	86	122	----	----
EP074_SR: Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	86.7	----	86	123	----	----
EP074_SR: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	95.3	----	87	121	----	----
EP074_SR: meta- & para-Xylene	108-38-3	0.4	mg/kg	<0.4	0.5 mg/kg	89.5	----	83	118	----	----
	106-42-3										
EP074_SR: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	95.7	----	85	117	----	----
EP074_SR: Xylenes (Total)	----	1	mg/kg	<1.0	0.75 mg/kg	91.6	----	85	116	----	----



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

Matrix: SOIL

Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2526603)										
HK1933070-002	Anonymous	Naphthalene	91-20-3	250 µg/kg	83.7	----	50	130	----	----
		Acenaphthylene	208-96-8	250 µg/kg	77.4	----	50	130	----	----
		Acenaphthene	83-32-9	250 µg/kg	105	----	50	130	----	----
		Fluorene	86-73-7	250 µg/kg	100	----	50	130	----	----
		Phenanthrene	85-01-8	250 µg/kg	82.1	----	50	130	----	----
		Anthracene	120-12-7	250 µg/kg	98.0	----	50	130	----	----
		Fluoranthene	206-44-0	250 µg/kg	106	----	50	130	----	----
		Pyrene	129-00-0	250 µg/kg	86.5	----	50	130	----	----
		Benz(a)anthracene	56-55-3	250 µg/kg	82.8	----	50	130	----	----
		Chrysene	218-01-9	250 µg/kg	80.1	----	50	130	----	----
		Benzo(b)fluoranthene	205-99-2	250 µg/kg	90.1	----	50	130	----	----
		Benzo(k)fluoranthene	207-08-9	250 µg/kg	84.2	----	50	130	----	----
		Benzo(a)pyrene	50-32-8	250 µg/kg	87.6	----	50	130	----	----
		Indeno(1.2.3.cd)pyrene	193-39-5	250 µg/kg	87.5	----	50	130	----	----
		Dibenz(a,h)anthracene	53-70-3	250 µg/kg	80.8	----	50	130	----	----
Benzo(g,h,i)perylene	191-24-2	250 µg/kg	90.6	----	50	130	----	----		
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2526603)										
HK1933070-002	Anonymous	Phenol	108-95-2	250 µg/kg	88.0	----	50	130	----	----
		Hexachlorobenzene (HCB)	118-74-1	250 µg/kg	111	----	50	130	----	----
		Bis(2-ethylhexyl)phthalate	117-81-7	250 µg/kg	# Not Determined	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2526602)										
HK1933070-002	Anonymous	C9 - C16 Fraction	----	31.5 mg/kg	# Not Determined	----	50	130	----	----
		C17 - C35 Fraction	----	67.5 mg/kg	# Not Determined	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2526608)										
HK1933070-002	Anonymous	C6 - C8 Fraction	----	4.5 mg/kg	77.8	----	50	130	----	----



Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number		MS	MSD	Low	High	Value	Control Limit
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2526607)										
HK1933070-002	Anonymous	EP074_SR: Benzene	71-43-2	0.25 mg/kg	111	----	50	130	----	----
		EP074_SR: Toluene	108-88-3	0.25 mg/kg	122	----	50	130	----	----
		EP074_SR: Ethylbenzene	100-41-4	0.25 mg/kg	116	----	50	130	----	----
		EP074_SR: meta- & para-Xylene	108-38-3	0.5 mg/kg	108	----	50	130	----	----
			106-42-3							
		EP074_SR: ortho-Xylene	95-47-6	0.25 mg/kg	122	----	50	130	----	----
		EP074_SR: Xylenes (Total)	----	0.75 mg/kg	112	----	50	130	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates			
2-Fluorobiphenyl	321-60-8	50	130
4-Terphenyl-d14	1718-51-0	50	130
EP-080_SRS: TPH(Volatile)/BTEX Surrogate			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121



CERTIFICATE OF ANALYSIS

Client	: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 11
Contact	: MR T W TAM	Contact	: Richard Fung	Work Order	: HK1935191
Address	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
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Telephone	: +852 2959 6059	Telephone	: +852 2610 1044		
Facsimile	: +852 2959 6079	Facsimile	: +852 2610 2021		
Project	: TCS00881/18 - SITE FORMATION AND ASSOCIATED INFRASTRUCTURAL WORKS FOR DEVELOPMENT OF COLUMBARIUM AT SANDY RIDGE CEMETERY			Date Samples Received	: 15-Aug-2019
Order number	: —	Quote number	: HKE/3386/2018	Issue Date	: 23-Aug-2019
C-O-C number	: —			No. of samples received	: 5
Site	: —			No. of samples analysed	: 5

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Hong Kong Accreditation Service (HKAS) has accredited this laboratory, ALS Technichem (HK) Pty Ltd (Reg. No. HOKLAS 066) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories.

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	Position	Authorised results for
 Chan Ka Yu, Karen	Manager - Organics	Organics_ENV
 Chan Siu Ming, Vico	Manager - Inorganics	Inorganics



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. Testing period is from 15-Aug-2019 to 22-Aug-2019.

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: HK1935191

Sample(s) were received in chilled condition.

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

Sample information (Project name, Sample ID, Sampling date/ time) is provided by client.



Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				SP-01 3m bgl	SP-03 3m bgl	SP-04 3m bgl	SP-05 3m bgl	SP-06 3m bgl
				14-Aug-2019	14-Aug-2019	14-Aug-2019	14-Aug-2019	14-Aug-2019
Compound	CAS Number	LOR	Unit	HK1935191-001	HK1935191-002	HK1935191-003	HK1935191-004	HK1935191-005
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	15.0	19.2	19.1	16.9	18.8
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)								
EP076HK: Naphthalene	91-20-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Acenaphthylene	208-96-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Acenaphthene	83-32-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Fluorene	86-73-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Phenanthrene	85-01-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Anthracene	120-12-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Fluoranthene	206-44-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Pyrene	129-00-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Chrysene	218-01-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Benzo(a)pyrene	50-32-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Indeno(1,2,3-cd)pyrene	193-39-5	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Dibenz(a,h)anthracene	53-70-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP076HK: Benzo(g,h,i)perylene	191-24-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate								
EP076HK: Phenol	108-95-2	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
EP076HK: Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200	<0.200	<0.200	<0.200	<0.200
EP076HK: Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00	<5.00	<5.00	<5.00	<5.00
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								
EP070HK_SR: C6 - C8 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
EP071HK_SR: C9 - C16 Fraction	----	200	mg/kg	<200	<200	<200	<200	<200
EP071HK_SR: C17 - C35 Fraction	----	500	mg/kg	<500	<500	<500	<500	<500
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)								
EP074_SR: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP074_SR: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



Sub-Matrix: SOIL				Client sample ID	SP-01 3m bgl	SP-03 3m bgl	SP-04 3m bgl	SP-05 3m bgl	SP-06 3m bgl
Client sampling date / time					14-Aug-2019	14-Aug-2019	14-Aug-2019	14-Aug-2019	14-Aug-2019
Compound	CAS Number	LOR	Unit		HK1935191-001	HK1935191-002	HK1935191-003	HK1935191-004	HK1935191-005
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) - Continued									
EP074_SR: Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EP074_SR: meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg		<1.0	<1.0	<1.0	<1.0	<1.0
EP074_SR: ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EP074_SR: Xylenes (Total)	----	2.0	mg/kg		<2.0	<2.0	<2.0	<2.0	<2.0
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates									
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%		71.5	76.4	71.9	73.2	73.3
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%		82.2	85.2	78.0	79.8	80.3
EP-080_SRS: TPH(Volatile)/BTEX Surrogate									
EP070HK_SR: Dibromofluoromethane	1868-53-7	0.1	%		96.3	96.4	97.7	98.6	95.1
EP070HK_SR: Toluene-D8	2037-26-5	0.1	%		102	100	102	101	100
EP070HK_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		103	107	106	105	104
EP-074_SR-S: VOC Surrogates									
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%		96.3	96.4	97.7	98.6	95.1
EP074_SR: Toluene-D8	2037-26-5	0.1	%		102	100	102	101	100
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		103	107	106	105	104



Laboratory Duplicate (DUP) Report

Matrix: SOIL

Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2531825)								
HK1935073-001	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	24.0	24.3	1.27
HK1935187-006	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	18.6	18.8	1.14
EA/ED: Physical and Aggregate Properties (QC Lot: 2531826)								
HK1935191-004	SP-05 3m bgl	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	16.9	16.9	0.00
HK1935201-001	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	18.8	18.8	0.00
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2526603)								
HK1933070-002	Anonymous	Naphthalene	91-20-3	50	µg/kg	<0.500 mg/kg	<500	0.00
		Acenaphthylene	208-96-8	50	µg/kg	<0.500 mg/kg	<500	0.00
		Acenaphthene	83-32-9	50	µg/kg	<0.500 mg/kg	<500	0.00
		Fluorene	86-73-7	50	µg/kg	<0.500 mg/kg	<500	0.00
		Phenanthrene	85-01-8	50	µg/kg	<0.500 mg/kg	<500	0.00
		Anthracene	120-12-7	50	µg/kg	<0.500 mg/kg	<500	0.00
		Fluoranthene	206-44-0	50	µg/kg	<0.500 mg/kg	<500	0.00
		Pyrene	129-00-0	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benz(a)anthracene	56-55-3	50	µg/kg	<0.500 mg/kg	<500	0.00
		Chrysene	218-01-9	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(b)fluoranthene	205-99-2	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(k)fluoranthene	207-08-9	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(a)pyrene	50-32-8	50	µg/kg	<0.500 mg/kg	<500	0.00
		Indeno(1.2.3.cd)pyrene	193-39-5	50	µg/kg	<0.500 mg/kg	<500	0.00
		Dibenz(a,h)anthracene	53-70-3	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(g,h,i)perylene	191-24-2	50	µg/kg	<0.500 mg/kg	<500	0.00
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813)								
HK1935198-001	Anonymous	Naphthalene	91-20-3	50	µg/kg	<0.500 mg/kg	<500	0.00
		Acenaphthylene	208-96-8	50	µg/kg	<0.500 mg/kg	<500	0.00
		Acenaphthene	83-32-9	50	µg/kg	<0.500 mg/kg	<500	0.00
		Fluorene	86-73-7	50	µg/kg	<0.500 mg/kg	<500	0.00
		Phenanthrene	85-01-8	50	µg/kg	<0.500 mg/kg	<500	0.00
		Anthracene	120-12-7	50	µg/kg	<0.500 mg/kg	<500	0.00
		Fluoranthene	206-44-0	50	µg/kg	<0.500 mg/kg	<500	0.00



Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813) - Continued								
HK1935198-001	Anonymous	Pyrene	129-00-0	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benz(a)anthracene	56-55-3	50	µg/kg	<0.500 mg/kg	<500	0.00
		Chrysene	218-01-9	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(b)fluoranthene	205-99-2	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(k)fluoranthene	207-08-9	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(a)pyrene	50-32-8	50	µg/kg	<0.500 mg/kg	<500	0.00
		Indeno(1.2.3.cd)pyrene	193-39-5	50	µg/kg	<0.500 mg/kg	<500	0.00
		Dibenz(a,h)anthracene	53-70-3	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(g,h,i)perylene	191-24-2	50	µg/kg	<0.500 mg/kg	<500	0.00
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2526603)								
HK1933070-002	Anonymous	Bis(2-ethylhexyl)phthalate	117-81-7	1000	µg/kg	6.61 mg/kg	6640	0.481
		Hexachlorobenzene (HCB)	118-74-1	50	µg/kg	<0.200 mg/kg	<200	0.00
		Phenol	108-95-2	500	µg/kg	<0.50 mg/kg	<500	0.00
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2528813)								
HK1935198-001	Anonymous	Bis(2-ethylhexyl)phthalate	117-81-7	1000	µg/kg	<5.00 mg/kg	<5000	0.00
		Hexachlorobenzene (HCB)	118-74-1	50	µg/kg	<0.200 mg/kg	<200	0.00
		Phenol	108-95-2	500	µg/kg	<0.50 mg/kg	<500	0.00
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2526602)								
HK1933070-002	Anonymous	C9 - C16 Fraction	----	200	mg/kg	1670	1630	2.69
		C17 - C35 Fraction	----	500	mg/kg	2660	2590	2.81
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2526608)								
HK1933070-002	Anonymous	C6 - C8 Fraction	----	5	mg/kg	<5	<5	0.00
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2526607)								
HK1933070-002	Anonymous	EP074_SR: Benzene	71-43-2	0.1	mg/kg	<0.2	<0.2	0.00
		EP074_SR: Toluene	108-88-3	0.2	mg/kg	<0.5	<0.5	0.00
		EP074_SR: Ethylbenzene	100-41-4	0.2	mg/kg	<0.5	<0.5	0.00
		EP074_SR: ortho-Xylene	95-47-6	0.2	mg/kg	0.6	0.6	0.00
		EP074_SR: meta- & para-Xylene	108-38-3	0.4	mg/kg	<1.0	<1.0	0.00
			106-42-3					
		EP074_SR: Xylenes (Total)	----	1	mg/kg	<2.0	<2.0	0.00

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						
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2526603)											
Naphthalene	91-20-3	50	µg/kg	<50	25 µg/kg	96.3	----	52	116	----	----
Acenaphthylene	208-96-8	50	µg/kg	<50	25 µg/kg	98.8	----	48	107	----	----
Acenaphthene	83-32-9	50	µg/kg	<50	25 µg/kg	99.7	----	55	109	----	----
Fluorene	86-73-7	50	µg/kg	<50	25 µg/kg	106	----	53	119	----	----
Phenanthrene	85-01-8	50	µg/kg	<50	25 µg/kg	106	----	70	106	----	----
Anthracene	120-12-7	50	µg/kg	<50	25 µg/kg	99.3	----	35	108	----	----
Fluoranthene	206-44-0	50	µg/kg	<50	25 µg/kg	114	----	60	125	----	----
Pyrene	129-00-0	50	µg/kg	<50	25 µg/kg	110	----	60	124	----	----
Benz(a)anthracene	56-55-3	50	µg/kg	<50	25 µg/kg	113	----	53	120	----	----
Chrysene	218-01-9	50	µg/kg	<50	25 µg/kg	111	----	56	133	----	----
Benzo(b)fluoranthene	205-99-2	50	µg/kg	<50	25 µg/kg	115	----	56	130	----	----
Benzo(k)fluoranthene	207-08-9	50	µg/kg	<50	25 µg/kg	115	----	64	128	----	----
Benzo(a)pyrene	50-32-8	50	µg/kg	<50	25 µg/kg	93.7	----	24	119	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	50	µg/kg	<50	25 µg/kg	115	----	47	128	----	----
Dibenz(a,h)anthracene	53-70-3	50	µg/kg	<50	25 µg/kg	109	----	55	114	----	----
Benzo(g,h,i)perylene	191-24-2	50	µg/kg	<50	25 µg/kg	120	----	44	128	----	----
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813)											
Naphthalene	91-20-3	50	µg/kg	<50	25 µg/kg	95.3	----	52	116	----	----
Acenaphthylene	208-96-8	50	µg/kg	<50	25 µg/kg	101	----	48	107	----	----
Acenaphthene	83-32-9	50	µg/kg	<50	25 µg/kg	100	----	55	109	----	----
Fluorene	86-73-7	50	µg/kg	<50	25 µg/kg	102	----	53	119	----	----
Phenanthrene	85-01-8	50	µg/kg	<50	25 µg/kg	105	----	70	106	----	----
Anthracene	120-12-7	50	µg/kg	<50	25 µg/kg	94.9	----	35	108	----	----
Fluoranthene	206-44-0	50	µg/kg	<50	25 µg/kg	107	----	60	125	----	----
Pyrene	129-00-0	50	µg/kg	<50	25 µg/kg	107	----	60	124	----	----
Benz(a)anthracene	56-55-3	50	µg/kg	<50	25 µg/kg	108	----	53	120	----	----
Chrysene	218-01-9	50	µg/kg	<50	25 µg/kg	105	----	56	133	----	----
Benzo(b)fluoranthene	205-99-2	50	µg/kg	<50	25 µg/kg	114	----	56	130	----	----
Benzo(k)fluoranthene	207-08-9	50	µg/kg	<50	25 µg/kg	105	----	64	128	----	----
Benzo(a)pyrene	50-32-8	50	µg/kg	<50	25 µg/kg	94.3	----	24	119	----	----



Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number				LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits(%)
		LCS	DCS	Low					High	Value	Control Limit
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813) - Continued											
Indeno(1.2.3.cd)pyrene	193-39-5	50	µg/kg	<50	25 µg/kg	105	----	47	128	----	----
Dibenz(a.h)anthracene	53-70-3	50	µg/kg	<50	25 µg/kg	107	----	55	114	----	----
Benzo(g.h.i)perylene	191-24-2	50	µg/kg	<50	25 µg/kg	107	----	44	128	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2526603)											
Phenol	108-95-2	500	µg/kg	<500	25 µg/kg	60.5	----	0	139	----	----
Hexachlorobenzene (HCB)	118-74-1	50	µg/kg	<50	25 µg/kg	102	----	63	109	----	----
Bis(2-ethylhexyl)phthalate	117-81-7	1000	µg/kg	<1000	25 µg/kg	150	----	78	151	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2528813)											
Phenol	108-95-2	500	µg/kg	<500	25 µg/kg	54.5	----	0	139	----	----
Hexachlorobenzene (HCB)	118-74-1	50	µg/kg	<50	25 µg/kg	106	----	63	109	----	----
Bis(2-ethylhexyl)phthalate	117-81-7	1000	µg/kg	<1000	25 µg/kg	143	----	78	151	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2526602)											
C9 - C16 Fraction	----	200	mg/kg	<200	31.5 mg/kg	100	----	62	128	----	----
C17 - C35 Fraction	----	500	mg/kg	<500	67.5 mg/kg	88.8	----	53	104	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2526608)											
C6 - C8 Fraction	----	5	mg/kg	<5	4.5 mg/kg	95.9	----	78	131	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2526607)											
EP074_SR: Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	88.9	----	86	122	----	----
EP074_SR: Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	86.7	----	86	123	----	----
EP074_SR: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	95.3	----	87	121	----	----
EP074_SR: meta- & para-Xylene	108-38-3	0.4	mg/kg	<0.4	0.5 mg/kg	89.5	----	83	118	----	----
	106-42-3										
EP074_SR: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	95.7	----	85	117	----	----
EP074_SR: Xylenes (Total)	----	1	mg/kg	<1.0	0.75 mg/kg	91.6	----	85	116	----	----



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

Matrix: SOIL

Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2526603)										
HK1933070-002	Anonymous	Naphthalene	91-20-3	250 µg/kg	83.7	----	50	130	----	----
		Acenaphthylene	208-96-8	250 µg/kg	77.4	----	50	130	----	----
		Acenaphthene	83-32-9	250 µg/kg	105	----	50	130	----	----
		Fluorene	86-73-7	250 µg/kg	100	----	50	130	----	----
		Phenanthrene	85-01-8	250 µg/kg	82.1	----	50	130	----	----
		Anthracene	120-12-7	250 µg/kg	98.0	----	50	130	----	----
		Fluoranthene	206-44-0	250 µg/kg	106	----	50	130	----	----
		Pyrene	129-00-0	250 µg/kg	86.5	----	50	130	----	----
		Benz(a)anthracene	56-55-3	250 µg/kg	82.8	----	50	130	----	----
		Chrysene	218-01-9	250 µg/kg	80.1	----	50	130	----	----
		Benzo(b)fluoranthene	205-99-2	250 µg/kg	90.1	----	50	130	----	----
		Benzo(k)fluoranthene	207-08-9	250 µg/kg	84.2	----	50	130	----	----
		Benzo(a)pyrene	50-32-8	250 µg/kg	87.6	----	50	130	----	----
		Indeno(1.2.3.cd)pyrene	193-39-5	250 µg/kg	87.5	----	50	130	----	----
		Dibenz(a,h)anthracene	53-70-3	250 µg/kg	80.8	----	50	130	----	----
Benzo(g,h,i)perylene	191-24-2	250 µg/kg	90.6	----	50	130	----	----		
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813)										
HK1935191-002	SP-03 3m bgl	Naphthalene	91-20-3	250 µg/kg	80.6	----	50	130	----	----
		Acenaphthylene	208-96-8	250 µg/kg	83.2	----	50	130	----	----
		Acenaphthene	83-32-9	250 µg/kg	83.8	----	50	130	----	----
		Fluorene	86-73-7	250 µg/kg	87.0	----	50	130	----	----
		Phenanthrene	85-01-8	250 µg/kg	80.3	----	50	130	----	----
		Anthracene	120-12-7	250 µg/kg	81.3	----	50	130	----	----
		Fluoranthene	206-44-0	250 µg/kg	85.2	----	50	130	----	----
		Pyrene	129-00-0	250 µg/kg	83.0	----	50	130	----	----
		Benz(a)anthracene	56-55-3	250 µg/kg	82.8	----	50	130	----	----
		Chrysene	218-01-9	250 µg/kg	86.8	----	50	130	----	----
		Benzo(b)fluoranthene	205-99-2	250 µg/kg	84.8	----	50	130	----	----



Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813) - Continued										
HK1935191-002	SP-03 3m bgl	Benzo(k)fluoranthene	207-08-9	250 µg/kg	81.4	----	50	130	----	----
		Benzo(a)pyrene	50-32-8	250 µg/kg	77.9	----	50	130	----	----
		Indeno(1.2.3.cd)pyrene	193-39-5	250 µg/kg	81.0	----	50	130	----	----
		Dibenz(a,h)anthracene	53-70-3	250 µg/kg	80.7	----	50	130	----	----
		Benzo(g,h,i)perylene	191-24-2	250 µg/kg	79.8	----	50	130	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2526603)										
HK1933070-002	Anonymous	Phenol	108-95-2	250 µg/kg	88.0	----	50	130	----	----
		Hexachlorobenzene (HCB)	118-74-1	250 µg/kg	111	----	50	130	----	----
		Bis(2-ethylhexyl)phthalate	117-81-7	250 µg/kg	# Not Determined	----	50	130	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2528813)										
HK1935191-002	SP-03 3m bgl	Phenol	108-95-2	250 µg/kg	90.2	----	50	130	----	----
		Hexachlorobenzene (HCB)	118-74-1	250 µg/kg	86.8	----	50	130	----	----
		Bis(2-ethylhexyl)phthalate	117-81-7	250 µg/kg	85.5	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2526602)										
HK1933070-002	Anonymous	C9 - C16 Fraction	----	31.5 mg/kg	# Not Determined	----	50	130	----	----
		C17 - C35 Fraction	----	67.5 mg/kg	# Not Determined	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2526608)										
HK1933070-002	Anonymous	C6 - C8 Fraction	----	4.5 mg/kg	77.8	----	50	130	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2526607)										
HK1933070-002	Anonymous	EP074_SR: Benzene	71-43-2	0.25 mg/kg	111	----	50	130	----	----
		EP074_SR: Toluene	108-88-3	0.25 mg/kg	122	----	50	130	----	----
		EP074_SR: Ethylbenzene	100-41-4	0.25 mg/kg	116	----	50	130	----	----
		EP074_SR: meta- & para-Xylene	108-38-3	0.5 mg/kg	108	----	50	130	----	----
			106-42-3							
		EP074_SR: ortho-Xylene	95-47-6	0.25 mg/kg	122	----	50	130	----	----
	EP074_SR: Xylenes (Total)	----	0.75 mg/kg	112	----	50	130	----	----	



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates			
2-Fluorobiphenyl	321-60-8	50	130
4-Terphenyl-d14	1718-51-0	50	130
EP-080_SRS: TPH(Volatile)/BTEX Surrogate			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121



CERTIFICATE OF ANALYSIS

Client	: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 10
Contact	: MR T W TAM	Contact	: Richard Fung	Work Order	: HK1935193
Address	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: Twtam@fordbusiness.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2959 6059	Telephone	: +852 2610 1044		
Facsimile	: +852 2959 6079	Facsimile	: +852 2610 2021		
Project	: TCS00881/18 - SITE FORMATION AND ASSOCIATED INFRASTRUCTURAL WORKS FOR DEVELOPMENT OF COLUMBARIUM AT SANDY RIDGE CEMETERY			Date Samples Received	: 15-Aug-2019
Order number	: —	Quote number	: HKE/3386/2018	Issue Date	: 23-Aug-2019
C-O-C number	: —			No. of samples received	: 4
Site	: —			No. of samples analysed	: 4

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Hong Kong Accreditation Service (HKAS) has accredited this laboratory, ALS Technichem (HK) Pty Ltd (Reg. No. HOKLAS 066) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories.

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	Position	Authorised results for
 Chan Ka Yu , Karen	Manager - Organics	Organics_ENV
 Chan Siu Ming , Vico	Manager - Inorganics	Inorganics



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. Testing period is from 15-Aug-2019 to 22-Aug-2019.

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: HK1935193

Sample(s) were received in chilled condition.

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

Sample information (Project name, Sample ID, Sampling date/ time) is provided by client.



Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				SP-08 0.5m bgl	SP-08 1.5m bgl	SP-08 3m bgl	SP-07 3m bgl	---
				14-Aug-2019	14-Aug-2019	14-Aug-2019	14-Aug-2019	---
Compound	CAS Number	LOR	Unit	HK1935193-001	HK1935193-002	HK1935193-003	HK1935193-004	-----
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	18.0	16.7	20.0	19.0	---
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)								
EP076HK: Naphthalene	91-20-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	---
EP076HK: Acenaphthylene	208-96-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	---
EP076HK: Acenaphthene	83-32-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	---
EP076HK: Fluorene	86-73-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	---
EP076HK: Phenanthrene	85-01-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	---
EP076HK: Anthracene	120-12-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	---
EP076HK: Fluoranthene	206-44-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	---
EP076HK: Pyrene	129-00-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	---
EP076HK: Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	---
EP076HK: Chrysene	218-01-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	---
EP076HK: Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	---
EP076HK: Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	---
EP076HK: Benzo(a)pyrene	50-32-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	---
EP076HK: Indeno(1,2,3-cd)pyrene	193-39-5	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	---
EP076HK: Dibenz(a,h)anthracene	53-70-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	---
EP076HK: Benzo(g,h,i)perylene	191-24-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	---
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate								
EP076HK: Phenol	108-95-2	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	---
EP076HK: Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200	<0.200	<0.200	<0.200	---
EP076HK: Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00	<5.00	<5.00	<5.00	---
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								
EP070HK_SR: C6 - C8 Fraction	----	5	mg/kg	<5	<5	<5	<5	---
EP071HK_SR: C9 - C16 Fraction	----	200	mg/kg	<200	<200	<200	<200	---
EP071HK_SR: C17 - C35 Fraction	----	500	mg/kg	<500	<500	<500	<500	---
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)								
EP074_SR: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	---
EP074_SR: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	---



Sub-Matrix: SOIL				Client sample ID	SP-08 0.5m bgl	SP-08 1.5m bgl	SP-08 3m bgl	SP-07 3m bgl	---
Client sampling date / time					14-Aug-2019	14-Aug-2019	14-Aug-2019	14-Aug-2019	----
Compound	CAS Number	LOR	Unit		HK1935193-001	HK1935193-002	HK1935193-003	HK1935193-004	-----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) - Continued									
EP074_SR: Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	---
EP074_SR: meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg		<1.0	<1.0	<1.0	<1.0	---
EP074_SR: ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	---
EP074_SR: Xylenes (Total)	----	2.0	mg/kg		<2.0	<2.0	<2.0	<2.0	---
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates									
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%		77.0	69.7	73.6	69.6	---
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%		79.5	78.2	81.3	79.4	---
EP-080_SRS: TPH(Volatile)/BTEX Surrogate									
EP070HK_SR: Dibromofluoromethane	1868-53-7	0.1	%		99.0	99.6	96.4	96.9	---
EP070HK_SR: Toluene-D8	2037-26-5	0.1	%		102	102	102	103	---
EP070HK_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		106	109	103	108	---
EP-074_SR-S: VOC Surrogates									
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%		99.0	99.6	96.4	96.9	---
EP074_SR: Toluene-D8	2037-26-5	0.1	%		102	102	102	103	---
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		106	109	103	108	---



Laboratory Duplicate (DUP) Report

Matrix: SOIL

Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2531826)								
HK1935191-004	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	16.9	16.9	0.00
HK1935201-001	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	18.8	18.8	0.00
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813)								
HK1935198-001	Anonymous	Naphthalene	91-20-3	50	µg/kg	<0.500 mg/kg	<500	0.00
		Acenaphthylene	208-96-8	50	µg/kg	<0.500 mg/kg	<500	0.00
		Acenaphthene	83-32-9	50	µg/kg	<0.500 mg/kg	<500	0.00
		Fluorene	86-73-7	50	µg/kg	<0.500 mg/kg	<500	0.00
		Phenanthrene	85-01-8	50	µg/kg	<0.500 mg/kg	<500	0.00
		Anthracene	120-12-7	50	µg/kg	<0.500 mg/kg	<500	0.00
		Fluoranthene	206-44-0	50	µg/kg	<0.500 mg/kg	<500	0.00
		Pyrene	129-00-0	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benz(a)anthracene	56-55-3	50	µg/kg	<0.500 mg/kg	<500	0.00
		Chrysene	218-01-9	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(b)fluoranthene	205-99-2	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(k)fluoranthene	207-08-9	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(a)pyrene	50-32-8	50	µg/kg	<0.500 mg/kg	<500	0.00
		Indeno(1.2.3.cd)pyrene	193-39-5	50	µg/kg	<0.500 mg/kg	<500	0.00
Dibenz(a.h)anthracene	53-70-3	50	µg/kg	<0.500 mg/kg	<500	0.00		
Benzo(g.h.i)perylene	191-24-2	50	µg/kg	<0.500 mg/kg	<500	0.00		
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2528813)								
HK1935198-001	Anonymous	Bis(2-ethylhexyl)phthalate	117-81-7	1000	µg/kg	<5.00 mg/kg	<5000	0.00
		Hexachlorobenzene (HCB)	118-74-1	50	µg/kg	<0.200 mg/kg	<200	0.00
		Phenol	108-95-2	500	µg/kg	<0.50 mg/kg	<500	0.00
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528814)								
HK1935198-001	Anonymous	C9 - C16 Fraction	----	200	mg/kg	<200	<200	0.00
		C17 - C35 Fraction	----	500	mg/kg	<500	<500	0.00
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528816)								
HK1935198-001	Anonymous	C6 - C8 Fraction	----	5	mg/kg	<5	<5	0.00
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2526607)								
HK1933070-002	Anonymous	EP074_SR: Benzene	71-43-2	0.1	mg/kg	<0.2	<0.2	0.00



Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2526607) - Continued								
HK1933070-002	Anonymous	EP074_SR: Toluene	108-88-3	0.2	mg/kg	<0.5	<0.5	0.00
		EP074_SR: Ethylbenzene	100-41-4	0.2	mg/kg	<0.5	<0.5	0.00
		EP074_SR: ortho-Xylene	95-47-6	0.2	mg/kg	0.6	0.6	0.00
		EP074_SR: meta- & para-Xylene	108-38-3	0.4	mg/kg	<1.0	<1.0	0.00
		EP074_SR: Xylenes (Total)	106-42-3					
			----	1	mg/kg	<2.0	<2.0	0.00
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2528817)								
HK1935198-001	Anonymous	EP074_SR: Benzene	71-43-2	0.1	mg/kg	<0.2	<0.2	0.00
		EP074_SR: Toluene	108-88-3	0.2	mg/kg	<0.5	<0.5	0.00
		EP074_SR: Ethylbenzene	100-41-4	0.2	mg/kg	<0.5	<0.5	0.00
		EP074_SR: ortho-Xylene	95-47-6	0.2	mg/kg	<0.5	<0.5	0.00
		EP074_SR: meta- & para-Xylene	108-38-3	0.4	mg/kg	<1.0	<1.0	0.00
			106-42-3					
		EP074_SR: Xylenes (Total)	----	1	mg/kg	<2.0	<2.0	0.00

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						
Method: Compound	CAS Number				LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits(%)
		LCS	DCS	Low					High	Value	Control Limit
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813)											
Naphthalene	91-20-3	50	µg/kg	<50	25 µg/kg	95.3	----	52	116	----	----
Acenaphthylene	208-96-8	50	µg/kg	<50	25 µg/kg	101	----	48	107	----	----
Acenaphthene	83-32-9	50	µg/kg	<50	25 µg/kg	100	----	55	109	----	----
Fluorene	86-73-7	50	µg/kg	<50	25 µg/kg	102	----	53	119	----	----
Phenanthrene	85-01-8	50	µg/kg	<50	25 µg/kg	105	----	70	106	----	----
Anthracene	120-12-7	50	µg/kg	<50	25 µg/kg	94.9	----	35	108	----	----
Fluoranthene	206-44-0	50	µg/kg	<50	25 µg/kg	107	----	60	125	----	----
Pyrene	129-00-0	50	µg/kg	<50	25 µg/kg	107	----	60	124	----	----
Benz(a)anthracene	56-55-3	50	µg/kg	<50	25 µg/kg	108	----	53	120	----	----
Chrysene	218-01-9	50	µg/kg	<50	25 µg/kg	105	----	56	133	----	----
Benzo(b)fluoranthene	205-99-2	50	µg/kg	<50	25 µg/kg	114	----	56	130	----	----



Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813) - Continued											
Benzo(k)fluoranthene	207-08-9	50	µg/kg	<50	25 µg/kg	105	----	64	128	----	----
Benzo(a)pyrene	50-32-8	50	µg/kg	<50	25 µg/kg	94.3	----	24	119	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	50	µg/kg	<50	25 µg/kg	105	----	47	128	----	----
Dibenz(a.h)anthracene	53-70-3	50	µg/kg	<50	25 µg/kg	107	----	55	114	----	----
Benzo(g.h.i)perylene	191-24-2	50	µg/kg	<50	25 µg/kg	107	----	44	128	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2528813)											
Phenol	108-95-2	500	µg/kg	<500	25 µg/kg	54.5	----	0	139	----	----
Hexachlorobenzene (HCB)	118-74-1	50	µg/kg	<50	25 µg/kg	106	----	63	109	----	----
Bis(2-ethylhexyl)phthalate	117-81-7	1000	µg/kg	<1000	25 µg/kg	143	----	78	151	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528814)											
C9 - C16 Fraction	----	200	mg/kg	<200	31.5 mg/kg	96.4	----	62	128	----	----
C17 - C35 Fraction	----	500	mg/kg	<500	67.5 mg/kg	81.3	----	53	104	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528816)											
C6 - C8 Fraction	----	5	mg/kg	<5	4.5 mg/kg	99.5	----	78	131	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2526607)											
EP074_SR: Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	88.9	----	86	122	----	----
EP074_SR: Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	86.7	----	86	123	----	----
EP074_SR: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	95.3	----	87	121	----	----
EP074_SR: meta- & para-Xylene	108-38-3	0.4	mg/kg	<0.4	0.5 mg/kg	89.5	----	83	118	----	----
	106-42-3										
EP074_SR: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	95.7	----	85	117	----	----
EP074_SR: Xylenes (Total)	----	1	mg/kg	<1.0	0.75 mg/kg	91.6	----	85	116	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2528817)											
EP074_SR: Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	104	----	86	122	----	----
EP074_SR: Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	99.2	----	86	123	----	----
EP074_SR: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	96.8	----	87	121	----	----
EP074_SR: meta- & para-Xylene	108-38-3	0.4	mg/kg	<0.4	0.5 mg/kg	98.0	----	83	118	----	----
	106-42-3										
EP074_SR: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	97.6	----	85	117	----	----
EP074_SR: Xylenes (Total)	----	1	mg/kg	<1.0	0.75 mg/kg	97.8	----	85	116	----	----





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

Matrix: SOIL

Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813)										
HK1935191-002	Anonymous	Naphthalene	91-20-3	250 µg/kg	80.6	----	50	130	----	----
		Acenaphthylene	208-96-8	250 µg/kg	83.2	----	50	130	----	----
		Acenaphthene	83-32-9	250 µg/kg	83.8	----	50	130	----	----
		Fluorene	86-73-7	250 µg/kg	87.0	----	50	130	----	----
		Phenanthrene	85-01-8	250 µg/kg	80.3	----	50	130	----	----
		Anthracene	120-12-7	250 µg/kg	81.3	----	50	130	----	----
		Fluoranthene	206-44-0	250 µg/kg	85.2	----	50	130	----	----
		Pyrene	129-00-0	250 µg/kg	83.0	----	50	130	----	----
		Benz(a)anthracene	56-55-3	250 µg/kg	82.8	----	50	130	----	----
		Chrysene	218-01-9	250 µg/kg	86.8	----	50	130	----	----
		Benzo(b)fluoranthene	205-99-2	250 µg/kg	84.8	----	50	130	----	----
		Benzo(k)fluoranthene	207-08-9	250 µg/kg	81.4	----	50	130	----	----
		Benzo(a)pyrene	50-32-8	250 µg/kg	77.9	----	50	130	----	----
		Indeno(1.2.3.cd)pyrene	193-39-5	250 µg/kg	81.0	----	50	130	----	----
		Dibenz(a,h)anthracene	53-70-3	250 µg/kg	80.7	----	50	130	----	----
		Benzo(g,h,i)perylene	191-24-2	250 µg/kg	79.8	----	50	130	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2528813)										
HK1935191-002	Anonymous	Phenol	108-95-2	250 µg/kg	90.2	----	50	130	----	----
		Hexachlorobenzene (HCB)	118-74-1	250 µg/kg	86.8	----	50	130	----	----
		Bis(2-ethylhexyl)phthalate	117-81-7	250 µg/kg	85.5	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528814)										
HK1935193-001	SP-08 0.5m bgl	C9 - C16 Fraction	----	31.5 mg/kg	76.0	----	50	130	----	----
		C17 - C35 Fraction	----	67.5 mg/kg	56.2	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528816)										
HK1935193-001	SP-08 0.5m bgl	C6 - C8 Fraction	----	4.5 mg/kg	106	----	50	130	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2526607)										
HK1933070-002	Anonymous	EP074_SR: Benzene	71-43-2	0.25 mg/kg	111	----	50	130	----	----
		EP074_SR: Toluene	108-88-3	0.25 mg/kg	122	----	50	130	----	----



Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number		MS	MSD	Low	High	Value	Control Limit
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2526607) - Continued										
HK1933070-002	Anonymous	EP074_SR: Ethylbenzene	100-41-4	0.25 mg/kg	116	----	50	130	----	----
		EP074_SR: meta- & para-Xylene	108-38-3	0.5 mg/kg	108	----	50	130	----	----
			106-42-3							
		EP074_SR: ortho-Xylene	95-47-6	0.25 mg/kg	122	----	50	130	----	----
		EP074_SR: Xylenes (Total)	----	0.75 mg/kg	112	----	50	130	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2528817)										
HK1935193-003	SP-08 3m bgl	EP074_SR: Benzene	71-43-2	0.25 mg/kg	101	----	50	130	----	----
		EP074_SR: Toluene	108-88-3	0.25 mg/kg	102	----	50	130	----	----
		EP074_SR: Ethylbenzene	100-41-4	0.25 mg/kg	99.6	----	50	130	----	----
		EP074_SR: meta- & para-Xylene	108-38-3	0.5 mg/kg	103	----	50	130	----	----
			106-42-3							
		EP074_SR: ortho-Xylene	95-47-6	0.25 mg/kg	104	----	50	130	----	----
		EP074_SR: Xylenes (Total)	----	0.75 mg/kg	103	----	50	130	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates			
2-Fluorobiphenyl	321-60-8	50	130
4-Terphenyl-d14	1718-51-0	50	130
EP-080_SRS: TPH(Volatile)/BTEX Surrogate			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121



CERTIFICATE OF ANALYSIS

Client	: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 9
Contact	: MR T W TAM	Contact	: Richard Fung	Work Order	: HK1935194
Address	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: Twtam@fordbusiness.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2959 6059	Telephone	: +852 2610 1044		
Facsimile	: +852 2959 6079	Facsimile	: +852 2610 2021		
Project	: TCS00881/18 - SITE FORMATION AND ASSOCIATED INFRASTRUCTURAL WORKS FOR DEVELOPMENT OF COLUMBARIUM AT SANDY RIDGE CEMETERY			Date Samples Received	: 15-Aug-2019
Order number	: —	Quote number	: HKE/3386/2018	Issue Date	: 23-Aug-2019
C-O-C number	: —			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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Hong Kong Accreditation Service (HKAS) has accredited this laboratory, ALS Technichem (HK) Pty Ltd (Reg. No. HOKLAS 066) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories.

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	Position	Authorised results for
 Chan Ka Yu , Karen	Manager - Organics	Organics_ENV
 Chan Siu Ming , Vico	Manager - Inorganics	Inorganics



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. Testing period is from 15-Aug-2019 to 22-Aug-2019.

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: HK1935194

Sample(s) were received in chilled condition.

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

Sample information (Project name, Sample ID, Sampling date/ time) is provided by client.



Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				Duplicate 1	---	---	---	---
				14-Aug-2019	---	---	---	---
Compound	CAS Number	LOR	Unit	HK1935194-001	---	---	---	---
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	---	0.1	%	18.7	---	---	---	---
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)								
EP076HK: Naphthalene	91-20-3	0.500	mg/kg	<0.500	---	---	---	---
EP076HK: Acenaphthylene	208-96-8	0.500	mg/kg	<0.500	---	---	---	---
EP076HK: Acenaphthene	83-32-9	0.500	mg/kg	<0.500	---	---	---	---
EP076HK: Fluorene	86-73-7	0.500	mg/kg	<0.500	---	---	---	---
EP076HK: Phenanthrene	85-01-8	0.500	mg/kg	<0.500	---	---	---	---
EP076HK: Anthracene	120-12-7	0.500	mg/kg	<0.500	---	---	---	---
EP076HK: Fluoranthene	206-44-0	0.500	mg/kg	<0.500	---	---	---	---
EP076HK: Pyrene	129-00-0	0.500	mg/kg	<0.500	---	---	---	---
EP076HK: Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500	---	---	---	---
EP076HK: Chrysene	218-01-9	0.500	mg/kg	<0.500	---	---	---	---
EP076HK: Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500	---	---	---	---
EP076HK: Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500	---	---	---	---
EP076HK: Benzo(a)pyrene	50-32-8	0.500	mg/kg	<0.500	---	---	---	---
EP076HK: Indeno(1,2,3-cd)pyrene	193-39-5	0.500	mg/kg	<0.500	---	---	---	---
EP076HK: Dibenz(a,h)anthracene	53-70-3	0.500	mg/kg	<0.500	---	---	---	---
EP076HK: Benzo(g,h,i)perylene	191-24-2	0.500	mg/kg	<0.500	---	---	---	---
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate								
EP076HK: Phenol	108-95-2	0.50	mg/kg	<0.50	---	---	---	---
EP076HK: Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200	---	---	---	---
EP076HK: Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00	---	---	---	---
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								
EP070HK_SR: C6 - C8 Fraction	---	5	mg/kg	<5	---	---	---	---
EP071HK_SR: C9 - C16 Fraction	---	200	mg/kg	<200	---	---	---	---
EP071HK_SR: C17 - C35 Fraction	---	500	mg/kg	<500	---	---	---	---
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)								
EP074_SR: Benzene	71-43-2	0.2	mg/kg	<0.2	---	---	---	---
EP074_SR: Toluene	108-88-3	0.5	mg/kg	<0.5	---	---	---	---



Sub-Matrix: SOIL				Client sample ID	Duplicate 1	---	---	---	---
				Client sampling date / time	14-Aug-2019	---	---	---	---
Compound	CAS Number	LOR	Unit	HK1935194-001	---	---	---	---	---
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) - Continued									
EP074_SR: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	---	---	---	---	---
EP074_SR: meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0	---	---	---	---	---
EP074_SR: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	---	---	---	---	---
EP074_SR: Xylenes (Total)	----	2.0	mg/kg	<2.0	---	---	---	---	---
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates									
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%	69.3	---	---	---	---	---
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%	81.6	---	---	---	---	---
EP-080_SRS: TPH(Volatile)/BTEX Surrogate									
EP070HK_SR: Dibromofluoromethane	1868-53-7	0.1	%	98.6	---	---	---	---	---
EP070HK_SR: Toluene-D8	2037-26-5	0.1	%	102	---	---	---	---	---
EP070HK_SR: 4-Bromofluorobenzene	460-00-4	0.1	%	107	---	---	---	---	---
EP-074_SR-S: VOC Surrogates									
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%	98.6	---	---	---	---	---
EP074_SR: Toluene-D8	2037-26-5	0.1	%	102	---	---	---	---	---
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%	107	---	---	---	---	---



Laboratory Duplicate (DUP) Report

Matrix: SOIL

Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2531826)								
HK1935191-004	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	16.9	16.9	0.00
HK1935201-001	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	18.8	18.8	0.00
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813)								
HK1935198-001	Anonymous	Naphthalene	91-20-3	50	µg/kg	<0.500 mg/kg	<500	0.00
		Acenaphthylene	208-96-8	50	µg/kg	<0.500 mg/kg	<500	0.00
		Acenaphthene	83-32-9	50	µg/kg	<0.500 mg/kg	<500	0.00
		Fluorene	86-73-7	50	µg/kg	<0.500 mg/kg	<500	0.00
		Phenanthrene	85-01-8	50	µg/kg	<0.500 mg/kg	<500	0.00
		Anthracene	120-12-7	50	µg/kg	<0.500 mg/kg	<500	0.00
		Fluoranthene	206-44-0	50	µg/kg	<0.500 mg/kg	<500	0.00
		Pyrene	129-00-0	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benz(a)anthracene	56-55-3	50	µg/kg	<0.500 mg/kg	<500	0.00
		Chrysene	218-01-9	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(b)fluoranthene	205-99-2	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(k)fluoranthene	207-08-9	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(a)pyrene	50-32-8	50	µg/kg	<0.500 mg/kg	<500	0.00
		Indeno(1.2.3.cd)pyrene	193-39-5	50	µg/kg	<0.500 mg/kg	<500	0.00
		Dibenz(a,h)anthracene	53-70-3	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(g,h,i)perylene	191-24-2	50	µg/kg	<0.500 mg/kg	<500	0.00
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2528813)								
HK1935198-001	Anonymous	Bis(2-ethylhexyl)phthalate	117-81-7	1000	µg/kg	<5.00 mg/kg	<5000	0.00
		Hexachlorobenzene (HCB)	118-74-1	50	µg/kg	<0.200 mg/kg	<200	0.00
		Phenol	108-95-2	500	µg/kg	<0.50 mg/kg	<500	0.00
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528814)								
HK1935198-001	Anonymous	C9 - C16 Fraction	----	200	mg/kg	<200	<200	0.00
		C17 - C35 Fraction	----	500	mg/kg	<500	<500	0.00
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528816)								
HK1935198-001	Anonymous	C6 - C8 Fraction	----	5	mg/kg	<5	<5	0.00
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2528817)								
HK1935198-001	Anonymous	EP074_SR: Benzene	71-43-2	0.1	mg/kg	<0.2	<0.2	0.00



Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2528817) - Continued								
HK1935198-001	Anonymous	EP074_SR: Toluene	108-88-3	0.2	mg/kg	<0.5	<0.5	0.00
		EP074_SR: Ethylbenzene	100-41-4	0.2	mg/kg	<0.5	<0.5	0.00
		EP074_SR: ortho-Xylene	95-47-6	0.2	mg/kg	<0.5	<0.5	0.00
		EP074_SR: meta- & para-Xylene	108-38-3	0.4	mg/kg	<1.0	<1.0	0.00
			106-42-3					
		EP074_SR: Xylenes (Total)	----	1	mg/kg	<2.0	<2.0	0.00

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							
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813)											
Naphthalene	91-20-3	50	µg/kg	<50	25 µg/kg	95.3	----	52	116	----	----
Acenaphthylene	208-96-8	50	µg/kg	<50	25 µg/kg	101	----	48	107	----	----
Acenaphthene	83-32-9	50	µg/kg	<50	25 µg/kg	100	----	55	109	----	----
Fluorene	86-73-7	50	µg/kg	<50	25 µg/kg	102	----	53	119	----	----
Phenanthrene	85-01-8	50	µg/kg	<50	25 µg/kg	105	----	70	106	----	----
Anthracene	120-12-7	50	µg/kg	<50	25 µg/kg	94.9	----	35	108	----	----
Fluoranthene	206-44-0	50	µg/kg	<50	25 µg/kg	107	----	60	125	----	----
Pyrene	129-00-0	50	µg/kg	<50	25 µg/kg	107	----	60	124	----	----
Benz(a)anthracene	56-55-3	50	µg/kg	<50	25 µg/kg	108	----	53	120	----	----
Chrysene	218-01-9	50	µg/kg	<50	25 µg/kg	105	----	56	133	----	----
Benzo(b)fluoranthene	205-99-2	50	µg/kg	<50	25 µg/kg	114	----	56	130	----	----
Benzo(k)fluoranthene	207-08-9	50	µg/kg	<50	25 µg/kg	105	----	64	128	----	----
Benzo(a)pyrene	50-32-8	50	µg/kg	<50	25 µg/kg	94.3	----	24	119	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	50	µg/kg	<50	25 µg/kg	105	----	47	128	----	----
Dibenz(a,h)anthracene	53-70-3	50	µg/kg	<50	25 µg/kg	107	----	55	114	----	----
Benzo(g,h,i)perylene	191-24-2	50	µg/kg	<50	25 µg/kg	107	----	44	128	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2528813)											
Phenol	108-95-2	500	µg/kg	<500	25 µg/kg	54.5	----	0	139	----	----



Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number				LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits(%)
		LCS	DCS	Low					High	Value	Control Limit
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2528813) - Continued											
Hexachlorobenzene (HCB)	118-74-1	50	µg/kg	<50	25 µg/kg	106	----	63	109	----	----
Bis(2-ethylhexyl)phthalate	117-81-7	1000	µg/kg	<1000	25 µg/kg	143	----	78	151	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528814)											
C9 - C16 Fraction	----	200	mg/kg	<200	31.5 mg/kg	96.4	----	62	128	----	----
C17 - C35 Fraction	----	500	mg/kg	<500	67.5 mg/kg	81.3	----	53	104	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528816)											
C6 - C8 Fraction	----	5	mg/kg	<5	4.5 mg/kg	99.5	----	78	131	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2528817)											
EP074_SR: Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	104	----	86	122	----	----
EP074_SR: Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	99.2	----	86	123	----	----
EP074_SR: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	96.8	----	87	121	----	----
EP074_SR: meta- & para-Xylene	108-38-3	0.4	mg/kg	<0.4	0.5 mg/kg	98.0	----	83	118	----	----
	106-42-3										
EP074_SR: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	97.6	----	85	117	----	----
EP074_SR: Xylenes (Total)	----	1	mg/kg	<1.0	0.75 mg/kg	97.8	----	85	116	----	----



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

Matrix: SOIL

Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813)										
HK1935191-002	Anonymous	Naphthalene	91-20-3	250 µg/kg	80.6	----	50	130	----	----
		Acenaphthylene	208-96-8	250 µg/kg	83.2	----	50	130	----	----
		Acenaphthene	83-32-9	250 µg/kg	83.8	----	50	130	----	----
		Fluorene	86-73-7	250 µg/kg	87.0	----	50	130	----	----
		Phenanthrene	85-01-8	250 µg/kg	80.3	----	50	130	----	----
		Anthracene	120-12-7	250 µg/kg	81.3	----	50	130	----	----
		Fluoranthene	206-44-0	250 µg/kg	85.2	----	50	130	----	----
		Pyrene	129-00-0	250 µg/kg	83.0	----	50	130	----	----
		Benz(a)anthracene	56-55-3	250 µg/kg	82.8	----	50	130	----	----
		Chrysene	218-01-9	250 µg/kg	86.8	----	50	130	----	----
		Benzo(b)fluoranthene	205-99-2	250 µg/kg	84.8	----	50	130	----	----
		Benzo(k)fluoranthene	207-08-9	250 µg/kg	81.4	----	50	130	----	----
		Benzo(a)pyrene	50-32-8	250 µg/kg	77.9	----	50	130	----	----
		Indeno(1.2.3.cd)pyrene	193-39-5	250 µg/kg	81.0	----	50	130	----	----
		Dibenz(a,h)anthracene	53-70-3	250 µg/kg	80.7	----	50	130	----	----
Benzo(g,h,i)perylene	191-24-2	250 µg/kg	79.8	----	50	130	----	----		
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2528813)										
HK1935191-002	Anonymous	Phenol	108-95-2	250 µg/kg	90.2	----	50	130	----	----
		Hexachlorobenzene (HCB)	118-74-1	250 µg/kg	86.8	----	50	130	----	----
		Bis(2-ethylhexyl)phthalate	117-81-7	250 µg/kg	85.5	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528814)										
HK1935193-001	Anonymous	C9 - C16 Fraction	----	31.5 mg/kg	76.0	----	50	130	----	----
		C17 - C35 Fraction	----	67.5 mg/kg	56.2	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528816)										
HK1935193-001	Anonymous	C6 - C8 Fraction	----	4.5 mg/kg	106	----	50	130	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2528817)										
HK1935193-003	Anonymous	EP074_SR: Benzene	71-43-2	0.25 mg/kg	101	----	50	130	----	----
		EP074_SR: Toluene	108-88-3	0.25 mg/kg	102	----	50	130	----	----



Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number		MS	MSD	Low	High	Value	Control Limit
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2528817) - Continued										
HK1935193-003	Anonymous	EP074_SR: Ethylbenzene	100-41-4	0.25 mg/kg	99.6	----	50	130	----	----
		EP074_SR: meta- & para-Xylene	108-38-3	0.5 mg/kg	103	----	50	130	----	----
			106-42-3							
		EP074_SR: ortho-Xylene	95-47-6	0.25 mg/kg	104	----	50	130	----	----
		EP074_SR: Xylenes (Total)	----	0.75 mg/kg	103	----	50	130	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates			
2-Fluorobiphenyl	321-60-8	50	130
4-Terphenyl-d14	1718-51-0	50	130
EP-080_SRS: TPH(Volatile)/BTEX Surrogate			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121



CERTIFICATE OF ANALYSIS

Client	: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 13
Contact	: MR T W TAM	Contact	: Richard Fung	Work Order	: HK1935195
Address	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong	Amendment	: 1
E-mail	: Twtam@fordbusiness.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2959 6059	Telephone	: +852 2610 1044		
Facsimile	: +852 2959 6079	Facsimile	: +852 2610 2021		
Project	: TCS00881/18 - SITE FORMATION AND ASSOCIATED INFRASTRUCTURAL WORKS FOR DEVELOPMENT OF COLUMBARIUM AT SANDY RIDGE CEMETERY			Date Samples Received	: 15-Aug-2019
Order number	: ---	Quote number	: HKE/3386/2018	Issue Date	: 06-Sep-2019
C-O-C number	: ---			No. of samples received	: 1
Site	: ---			No. of samples analysed	: 1



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Hong Kong Accreditation Service (HKAS) has accredited this laboratory, ALS Technichem (HK) Pty Ltd (Reg. No. HOKLAS 066) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories.

This document has been signed by those names that appear on this report and are the authorised signatories.

<i>Signatories</i>	<i>Position</i>	<i>Authorised results for</i>
 Anh Ngoc Huynh .	Senior Chemist	Organics_ENV
 Chan Ka Yu , Karen	Manager - Organics	Organics_ENV
 Chan Siu Ming , Vico	Manager - Inorganics	Inorganics
 Wong Wing , Kenneth	Manager - Metals	Metals_ENV



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. Testing period is from 15-Aug-2019 to 06-Sep-2019.

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: HK1935195

Sample(s) were received in chilled condition.

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

Sample information (Project name, Sample ID, Sampling date/ time) is provided by client.

This is an amendment of the Certificate of Analysis.

The testing(s) for sample HK1935195-001 has been added.

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

Sample(s) as received, digested by In-house method E-3060 prior to the determination of Hexavalent Chromium (Cr6+). The In-house method is developed based on USEPA method 3060A.



Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				Duplicate 2	---	---	---	---
				14-Aug-2019	---	---	---	---
Compound	CAS Number	LOR	Unit	HK1935195-001	---	---	---	---

EA/ED: Physical and Aggregate Properties

EA055: Moisture Content (dried @ 103°C)	---	0.1	%	15.5	---	---	---	---
---	-----	-----	---	------	-----	-----	-----	-----

EG: Metals and Major Cations

EG020: Antimony	7440-36-0	1	mg/kg	1	---	---	---	---
EG020: Arsenic	7440-38-2	1	mg/kg	9	---	---	---	---
EG020: Barium	7440-39-3	1.0	mg/kg	58.1	---	---	---	---
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	---	---	---	---
EG020: Cobalt	7440-48-4	1.0	mg/kg	1.5	---	---	---	---
EG020: Copper	7440-50-8	1	mg/kg	30	---	---	---	---
EG020: Lead	7439-92-1	1	mg/kg	12	---	---	---	---
EG020: Manganese	7439-96-5	1.0	mg/kg	27.4	---	---	---	---
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	---	---	---	---
EG020: Molybdenum	7439-98-7	1	mg/kg	1	---	---	---	---
EG020: Nickel	7440-02-0	1	mg/kg	4	---	---	---	---
EG020: Tin	7440-31-5	1.0	mg/kg	6.7	---	---	---	---
EG020: Zinc	7440-66-6	1	mg/kg	10	---	---	---	---
EG049: Trivalent Chromium	16065-83-1	1.0	mg/kg	54.2	---	---	---	---
EG3060: Hexavalent Chromium	18540-29-9	1.0	mg/kg	<1.0	---	---	---	---

EP-066: Polychlorinated Biphenyls

EP066: Total Polychlorinated biphenyls	---	0.1	mg/kg	<0.1	---	---	---	---
--	-----	-----	-------	------	-----	-----	-----	-----

EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)

EP076HK: Naphthalene	91-20-3	0.500	mg/kg	<0.500	---	---	---	---
EP076HK: Acenaphthylene	208-96-8	0.500	mg/kg	<0.500	---	---	---	---
EP076HK: Acenaphthene	83-32-9	0.500	mg/kg	<0.500	---	---	---	---
EP076HK: Fluorene	86-73-7	0.500	mg/kg	<0.500	---	---	---	---
EP076HK: Phenanthrene	85-01-8	0.500	mg/kg	<0.500	---	---	---	---
EP076HK: Anthracene	120-12-7	0.500	mg/kg	<0.500	---	---	---	---
EP076HK: Fluoranthene	206-44-0	0.500	mg/kg	<0.500	---	---	---	---
EP076HK: Pyrene	129-00-0	0.500	mg/kg	<0.500	---	---	---	---
EP076HK: Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500	---	---	---	---

Sub-Matrix: SOIL				Client sample ID	Duplicate 2	---	---	---	---
				Client sampling date / time	14-Aug-2019	----	----	----	----
Compound	CAS Number	LOR	Unit	HK1935195-001	-----	-----	-----	-----	
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) - Continued									
EP076HK: Chrysene	218-01-9	0.500	mg/kg	<0.500	---	---	---	---	
EP076HK: Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500	---	---	---	---	
EP076HK: Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500	---	---	---	---	
EP076HK: Benzo(a)pyrene	50-32-8	0.500	mg/kg	<0.500	---	---	---	---	
EP076HK: Indeno(1.2.3.cd)pyrene	193-39-5	0.500	mg/kg	<0.500	---	---	---	---	
EP076HK: Dibenz(a,h)anthracene	53-70-3	0.500	mg/kg	<0.500	---	---	---	---	
EP076HK: Benzo(g,h,i)perylene	191-24-2	0.500	mg/kg	<0.500	---	---	---	---	
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate									
EP076HK: Phenol	108-95-2	0.50	mg/kg	<0.50	---	---	---	---	
EP076HK: Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200	---	---	---	---	
EP076HK: Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00	---	---	---	---	
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)									
EP070HK_SR: C6 - C8 Fraction	----	5	mg/kg	<5	---	---	---	---	
EP071HK_SR: C9 - C16 Fraction	----	200	mg/kg	<200	---	---	---	---	
EP071HK_SR: C17 - C35 Fraction	----	500	mg/kg	<500	---	---	---	---	
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)									
EP074_SR: Benzene	71-43-2	0.2	mg/kg	<0.2	---	---	---	---	
EP074_SR: Toluene	108-88-3	0.5	mg/kg	<0.5	---	---	---	---	
EP074_SR: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	---	---	---	---	
EP074_SR: meta- & para-Xylene	108-38-3	1.0	mg/kg	<1.0	---	---	---	---	
	106-42-3								
EP074_SR: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	---	---	---	---	
EP074_SR: Xylenes (Total)	----	2.0	mg/kg	<2.0	---	---	---	---	
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates									
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%	80.9	---	---	---	---	
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%	96.4	---	---	---	---	
EP-066S: PCB Surrogate									
EP066: Tetrachlorometaxylene	877-09-8	0.1	%	58.8	---	---	---	---	
EP066: Dibutylchlorodate	1770-80-5	0.1	%	55.8	---	---	---	---	
EP-080_SRS: TPH(Volatile)/BTEx Surrogate									



Sub-Matrix: SOIL				Client sample ID	Duplicate 2	---	---	---	---
				Client sampling date / time	14-Aug-2019	---	---	---	---
Compound	CAS Number	LOR	Unit		HK1935195-001	---	---	---	---
EP-080_SRS: TPH(Volatile)/BTEX Surrogate - Continued									
EP070HK_SR: Dibromofluoromethane	1868-53-7	0.1	%		98.3	---	---	---	---
EP070HK_SR: Toluene-D8	2037-26-5	0.1	%		102	---	---	---	---
EP070HK_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		109	---	---	---	---
EP-074_SR-S: VOC Surrogates									
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%		98.3	---	---	---	---
EP074_SR: Toluene-D8	2037-26-5	0.1	%		102	---	---	---	---
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		109	---	---	---	---



Laboratory Duplicate (DUP) Report

Matrix: SOIL

Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2531826)								
HK1935191-004	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	16.9	16.9	0.00
HK1935201-001	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	18.8	18.8	0.00
EG: Metals and Major Cations (QC Lot: 2547861)								
HK1936200-006	Anonymous	EG020: Mercury	7439-97-6	0.05	mg/kg	0.06	0.06	0.00
		EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.00
		EG020: Barium	7440-39-3	0.5	mg/kg	33.9	39.0	14.0
		EG020: Cobalt	7440-48-4	0.5	mg/kg	4.8	4.3	11.0
		EG020: Manganese	7439-96-5	0.5	mg/kg	223	263	16.7
		EG020: Tin	7440-31-5	0.5	mg/kg	1.4	1.5	0.00
		EG020: Antimony	7440-36-0	1	mg/kg	2	1	0.00
		EG020: Arsenic	7440-38-2	1	mg/kg	18	17	0.00
		EG020: Copper	7440-50-8	1	mg/kg	50	43	14.3
		EG020: Lead	7439-92-1	1	mg/kg	51	58	13.7
		EG020: Molybdenum	7439-98-7	1	mg/kg	2	2	0.00
		EG020: Nickel	7440-02-0	1	mg/kg	7	7	0.00
EG020: Zinc	7440-66-6	1	mg/kg	30	27	13.3		
EP-066: Polychlorinated Biphenyls (QC Lot: 2545274)								
HK1936190-001	Anonymous	Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813)								
HK1935198-001	Anonymous	Naphthalene	91-20-3	50	µg/kg	<0.500 mg/kg	<500	0.00
		Acenaphthylene	208-96-8	50	µg/kg	<0.500 mg/kg	<500	0.00
		Acenaphthene	83-32-9	50	µg/kg	<0.500 mg/kg	<500	0.00
		Fluorene	86-73-7	50	µg/kg	<0.500 mg/kg	<500	0.00
		Phenanthrene	85-01-8	50	µg/kg	<0.500 mg/kg	<500	0.00
		Anthracene	120-12-7	50	µg/kg	<0.500 mg/kg	<500	0.00
		Fluoranthene	206-44-0	50	µg/kg	<0.500 mg/kg	<500	0.00
		Pyrene	129-00-0	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benz(a)anthracene	56-55-3	50	µg/kg	<0.500 mg/kg	<500	0.00
		Chrysene	218-01-9	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(b)fluoranthene	205-99-2	50	µg/kg	<0.500 mg/kg	<500	0.00



Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813) - Continued								
HK1935198-001	Anonymous	Benzo(k)fluoranthene	207-08-9	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(a)pyrene	50-32-8	50	µg/kg	<0.500 mg/kg	<500	0.00
		Indeno(1.2.3.cd)pyrene	193-39-5	50	µg/kg	<0.500 mg/kg	<500	0.00
		Dibenz(a,h)anthracene	53-70-3	50	µg/kg	<0.500 mg/kg	<500	0.00
		Benzo(g,h,i)perylene	191-24-2	50	µg/kg	<0.500 mg/kg	<500	0.00
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2528813)								
HK1935198-001	Anonymous	Bis(2-ethylhexyl)phthalate	117-81-7	1000	µg/kg	<5.00 mg/kg	<5000	0.00
		Hexachlorobenzene (HCB)	118-74-1	50	µg/kg	<0.200 mg/kg	<200	0.00
		Phenol	108-95-2	500	µg/kg	<0.50 mg/kg	<500	0.00
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528814)								
HK1935198-001	Anonymous	C9 - C16 Fraction	----	200	mg/kg	<200	<200	0.00
		C17 - C35 Fraction	----	500	mg/kg	<500	<500	0.00
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528816)								
HK1935198-001	Anonymous	C6 - C8 Fraction	----	5	mg/kg	<5	<5	0.00
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2528817)								
HK1935198-001	Anonymous	EP074_SR: Benzene	71-43-2	0.1	mg/kg	<0.2	<0.2	0.00
		EP074_SR: Toluene	108-88-3	0.2	mg/kg	<0.5	<0.5	0.00
		EP074_SR: Ethylbenzene	100-41-4	0.2	mg/kg	<0.5	<0.5	0.00
		EP074_SR: ortho-Xylene	95-47-6	0.2	mg/kg	<0.5	<0.5	0.00
		EP074_SR: meta- & para-Xylene	108-38-3	0.4	mg/kg	<1.0	<1.0	0.00
			106-42-3					
		EP074_SR: Xylenes (Total)	----	1	mg/kg	<2.0	<2.0	0.00

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 Recovery (%)		Recovery Limits(%)	
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 2547861)											
EG020: Antimony	7440-36-0	1	mg/kg	<1	5 mg/kg	92.9	----	85	115	----	----
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	96.1	----	85	106	----	----
EG020: Barium	7440-39-3	0.5	mg/kg	<0.5	5 mg/kg	97.1	----	85	115	----	----



Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number				LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits(%)
		LCS	DCS	Low					High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 2547861) - Continued											
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	96.3	----	87	110	----	----
EG020: Cobalt	7440-48-4	0.5	mg/kg	<0.5	5 mg/kg	96.9	----	85	115	----	----
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	99.5	----	89	114	----	----
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	98.2	----	92	115	----	----
EG020: Manganese	7439-96-5	0.5	mg/kg	<0.5	5 mg/kg	98.3	----	85	114	----	----
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	114	----	87	115	----	----
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	5 mg/kg	92.4	----	88	113	----	----
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	98.1	----	85	112	----	----
EG020: Tin	7440-31-5	0.5	mg/kg	<0.5	5 mg/kg	97.6	----	86	115	----	----
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	99.8	----	85	115	----	----
EG: Metals and Major Cations (QC Lot: 2550539)											
EG3060: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	2.5 mg/kg	105	----	85	115	----	----
EP-066: Polychlorinated Biphenyls (QC Lot: 2545274)											
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	0.5 mg/kg	98.5	----	43	152	----	----
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813)											
Naphthalene	91-20-3	50	µg/kg	<50	25 µg/kg	95.3	----	52	116	----	----
Acenaphthylene	208-96-8	50	µg/kg	<50	25 µg/kg	101	----	48	107	----	----
Acenaphthene	83-32-9	50	µg/kg	<50	25 µg/kg	100	----	55	109	----	----
Fluorene	86-73-7	50	µg/kg	<50	25 µg/kg	102	----	53	119	----	----
Phenanthrene	85-01-8	50	µg/kg	<50	25 µg/kg	105	----	70	106	----	----
Anthracene	120-12-7	50	µg/kg	<50	25 µg/kg	94.9	----	35	108	----	----
Fluoranthene	206-44-0	50	µg/kg	<50	25 µg/kg	107	----	60	125	----	----
Pyrene	129-00-0	50	µg/kg	<50	25 µg/kg	107	----	60	124	----	----
Benz(a)anthracene	56-55-3	50	µg/kg	<50	25 µg/kg	108	----	53	120	----	----
Chrysene	218-01-9	50	µg/kg	<50	25 µg/kg	105	----	56	133	----	----
Benzo(b)fluoranthene	205-99-2	50	µg/kg	<50	25 µg/kg	114	----	56	130	----	----
Benzo(k)fluoranthene	207-08-9	50	µg/kg	<50	25 µg/kg	105	----	64	128	----	----
Benzo(a)pyrene	50-32-8	50	µg/kg	<50	25 µg/kg	94.3	----	24	119	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	50	µg/kg	<50	25 µg/kg	105	----	47	128	----	----
Dibenz(a,h)anthracene	53-70-3	50	µg/kg	<50	25 µg/kg	107	----	55	114	----	----



Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	DCS	Low	High	Value
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813) - Continued											
Benzo(g,h,i)perylene	191-24-2	50	µg/kg	<50	25 µg/kg	107	----	44	128	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2528813)											
Phenol	108-95-2	500	µg/kg	<500	25 µg/kg	54.5	----	0	139	----	----
Hexachlorobenzene (HCB)	118-74-1	50	µg/kg	<50	25 µg/kg	106	----	63	109	----	----
Bis(2-ethylhexyl)phthalate	117-81-7	1000	µg/kg	<1000	25 µg/kg	143	----	78	151	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528814)											
C9 - C16 Fraction	----	200	mg/kg	<200	31.5 mg/kg	96.4	----	62	128	----	----
C17 - C35 Fraction	----	500	mg/kg	<500	67.5 mg/kg	81.3	----	53	104	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528816)											
C6 - C8 Fraction	----	5	mg/kg	<5	4.5 mg/kg	99.5	----	78	131	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2528817)											
EP074_SR: Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	104	----	86	122	----	----
EP074_SR: Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	99.2	----	86	123	----	----
EP074_SR: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	96.8	----	87	121	----	----
EP074_SR: meta- & para-Xylene	108-38-3	0.4	mg/kg	<0.4	0.5 mg/kg	98.0	----	83	118	----	----
	106-42-3										
EP074_SR: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	97.6	----	85	117	----	----
EP074_SR: Xylenes (Total)	----	1	mg/kg	<1.0	0.75 mg/kg	97.8	----	85	116	----	----



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

Matrix: SOIL

Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 2547861)										
HK1935195-001	Duplicate 2	EG020: Antimony	7440-36-0	5 mg/kg	89.2	----	75	125	----	----
		EG020: Arsenic	7440-38-2	5 mg/kg	124	----	75	125	----	----
		EG020: Barium	7440-39-3	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Cadmium	7440-43-9	5 mg/kg	97.1	----	75	125	----	----
		EG020: Cobalt	7440-48-4	5 mg/kg	119	----	75	125	----	----
		EG020: Copper	7440-50-8	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Lead	7439-92-1	5 mg/kg	88.7	----	75	125	----	----
		EG020: Manganese	7439-96-5	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Mercury	7439-97-6	0.1 mg/kg	111	----	75	125	----	----
		EG020: Molybdenum	7439-98-7	5 mg/kg	98.8	----	75	125	----	----
		EG020: Nickel	7440-02-0	5 mg/kg	108	----	75	125	----	----
		EG020: Tin	7440-31-5	5 mg/kg	79.8	----	75	125	----	----
EG020: Zinc	7440-66-6	5 mg/kg	112	----	75	125	----	----		
EG: Metals and Major Cations (QC Lot: 2550539)										
HK1935195-001	Duplicate 2	EG3060: Hexavalent Chromium	18540-29-9	2.5 mg/kg	82.5	----	75	125	----	----
EP-066: Polychlorinated Biphenyls (QC Lot: 2545274)										
HK1936190-001	Anonymous	Total Polychlorinated biphenyls	----	0.5 mg/kg	90.3	----	50	130	----	----
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813)										
HK1935191-002	Anonymous	Naphthalene	91-20-3	250 µg/kg	80.6	----	50	130	----	----
		Acenaphthylene	208-96-8	250 µg/kg	83.2	----	50	130	----	----
		Acenaphthene	83-32-9	250 µg/kg	83.8	----	50	130	----	----
		Fluorene	86-73-7	250 µg/kg	87.0	----	50	130	----	----
		Phenanthrene	85-01-8	250 µg/kg	80.3	----	50	130	----	----
		Anthracene	120-12-7	250 µg/kg	81.3	----	50	130	----	----



Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813) - Continued										
HK1935191-002	Anonymous	Fluoranthene	206-44-0	250 µg/kg	85.2	----	50	130	----	----
		Pyrene	129-00-0	250 µg/kg	83.0	----	50	130	----	----
		Benz(a)anthracene	56-55-3	250 µg/kg	82.8	----	50	130	----	----
		Chrysene	218-01-9	250 µg/kg	86.8	----	50	130	----	----
		Benzo(b)fluoranthene	205-99-2	250 µg/kg	84.8	----	50	130	----	----
		Benzo(k)fluoranthene	207-08-9	250 µg/kg	81.4	----	50	130	----	----
		Benzo(a)pyrene	50-32-8	250 µg/kg	77.9	----	50	130	----	----
		Indeno(1.2.3.cd)pyrene	193-39-5	250 µg/kg	81.0	----	50	130	----	----
		Dibenz(a,h)anthracene	53-70-3	250 µg/kg	80.7	----	50	130	----	----
		Benzo(g,h,i)perylene	191-24-2	250 µg/kg	79.8	----	50	130	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2528813)										
HK1935191-002	Anonymous	Phenol	108-95-2	250 µg/kg	90.2	----	50	130	----	----
		Hexachlorobenzene (HCB)	118-74-1	250 µg/kg	86.8	----	50	130	----	----
		Bis(2-ethylhexyl)phthalate	117-81-7	250 µg/kg	85.5	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528814)										
HK1935193-001	Anonymous	C9 - C16 Fraction	----	31.5 mg/kg	76.0	----	50	130	----	----
		C17 - C35 Fraction	----	67.5 mg/kg	56.2	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528816)										
HK1935193-001	Anonymous	C6 - C8 Fraction	----	4.5 mg/kg	106	----	50	130	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2528817)										
HK1935193-003	Anonymous	EP074_SR: Benzene	71-43-2	0.25 mg/kg	101	----	50	130	----	----
		EP074_SR: Toluene	108-88-3	0.25 mg/kg	102	----	50	130	----	----
		EP074_SR: Ethylbenzene	100-41-4	0.25 mg/kg	99.6	----	50	130	----	----
		EP074_SR: meta- & para-Xylene	108-38-3	0.5 mg/kg	103	----	50	130	----	----
			106-42-3							
		EP074_SR: ortho-Xylene	95-47-6	0.25 mg/kg	104	----	50	130	----	----
	EP074_SR: Xylenes (Total)	----	0.75 mg/kg	103	----	50	130	----	----	

Surrogate Control Limits



Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates			
2-Fluorobiphenyl	321-60-8	50	130
4-Terphenyl-d14	1718-51-0	50	130
EP-066S: PCB Surrogate			
Tetrachlorometaxylene	877-09-8	50	130
Dibutylchlorendate	1770-80-5	50	130
EP-080_SRS: TPH(Volatile)/BTEX Surrogate			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121



CERTIFICATE OF ANALYSIS

Client	: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 9
Contact	: MR T W TAM	Contact	: Richard Fung	Work Order	: HK1935198
Address	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: Twtam@fordbusiness.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2959 6059	Telephone	: +852 2610 1044		
Facsimile	: +852 2959 6079	Facsimile	: +852 2610 2021		
Project	: TCS00881/18 - SITE FORMATION AND ASSOCIATED INFRASTRUCTURAL WORKS FOR DEVELOPMENT OF COLUMBARIUM AT SANDY RIDGE CEMETERY			Date Samples Received	: 15-Aug-2019
Order number	: —	Quote number	: HKE/3386/2018	Issue Date	: 23-Aug-2019
C-O-C number	: —			No. of samples received	: 2
Site	: —			No. of samples analysed	: 2

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Hong Kong Accreditation Service (HKAS) has accredited this laboratory, ALS Technichem (HK) Pty Ltd (Reg. No. HOKLAS 066) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories.

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	Position	Authorised results for
Chan Ka Yu, Karen	Manager - Organics	Organics_ENV
Chan Siu Ming, Vico	Manager - Inorganics	Inorganics
Leung Chak Cheong, Mike	Senior Chemist	Metals_ENV



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. Testing period is from 15-Aug-2019 to 23-Aug-2019.

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: HK1935198

Sample(s) were received in chilled condition.

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

Sample information (Project name, Sample ID, Sampling date/ time) is provided by client.

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

Sample(s) as received, digested by In-house method E-3060 prior to the determination of Hexavalent Chromium (Cr6+). The In-house method is developed based on USEPA method 3060A.

Sub-Matrix: **SOIL**

Client sample ID

Client sampling date / time

Sub-Matrix: SOIL			Client sample ID		SP02 0.5m bgl	SP02 1.5m bgl	---	---	---
			Client sampling date / time		14-Aug-2019	14-Aug-2019	----	----	----
Compound	CAS Number	LOR	Unit	HK1935198-001	HK1935198-002	-----	-----	-----	
EA/ED: Physical and Aggregate Properties									
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	14.1	15.7	---	---	---	
EG: Metals and Major Cations									
EG020: Antimony	7440-36-0	1	mg/kg	<1	1	---	---	---	
EG020: Arsenic	7440-38-2	1	mg/kg	4	9	---	---	---	
EG020: Barium	7440-39-3	1.0	mg/kg	45.0	48.5	---	---	---	
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	---	---	---	
EG020: Cobalt	7440-48-4	1.0	mg/kg	1.5	1.6	---	---	---	
EG020: Copper	7440-50-8	1	mg/kg	13	26	---	---	---	
EG020: Lead	7439-92-1	1	mg/kg	10	14	---	---	---	
EG020: Manganese	7439-96-5	1.0	mg/kg	46.6	35.8	---	---	---	
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	<0.05	---	---	---	
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	1	---	---	---	
EG020: Nickel	7440-02-0	1	mg/kg	4	4	---	---	---	
EG020: Tin	7440-31-5	1.0	mg/kg	3.0	8.6	---	---	---	
EG020: Zinc	7440-66-6	1	mg/kg	14	11	---	---	---	
EG049: Trivalent Chromium	16065-83-1	1.0	mg/kg	19.5	48.6	---	---	---	
EG3060: Hexavalent Chromium	18540-29-9	1.0	mg/kg	<1.0	<1.0	---	---	---	
EP-066: Polychlorinated Biphenyls									
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	---	---	---	
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)									
EP076HK: Naphthalene	91-20-3	0.500	mg/kg	<0.500	<0.500	---	---	---	
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate									
EP076HK: Phenol	108-95-2	0.50	mg/kg	<0.50	<0.50	---	---	---	
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)									
EP070HK_SR: C6 - C8 Fraction	----	5	mg/kg	<5	<5	---	---	---	
EP071HK_SR: C9 - C16 Fraction	----	200	mg/kg	<200	<200	---	---	---	
EP071HK_SR: C17 - C35 Fraction	----	500	mg/kg	<500	<500	---	---	---	
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)									



Sub-Matrix: SOIL				Client sample ID	SP02 0.5m bgl	SP02 1.5m bgl	---	---	---
				Client sampling date / time	14-Aug-2019	14-Aug-2019	----	----	----
Compound	CAS Number	LOR	Unit		HK1935198-001	HK1935198-002	-----	-----	-----
EP-074 SR-A: Monocyclic Aromatic Hydrocarbons (MAH) - Continued									
EP074_SR: Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	---	---	---
EP074_SR: Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	---	---	---
EP074_SR: Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	---	---	---
EP074_SR: meta- & para-Xylene	108-38-3	1.0	mg/kg		<1.0	<1.0	---	---	---
	106-42-3								
EP074_SR: ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	---	---	---
EP074_SR: Xylenes (Total)	----	2.0	mg/kg		<2.0	<2.0	---	---	---
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates									
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%		80.2	71.8	---	---	---
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%		88.1	80.2	---	---	---
EP-066S: PCB Surrogate									
EP066: Tetrachlorometaxylene	877-09-8	0.1	%		95.4	117	---	---	---
EP066: Dibutylchlorodate	1770-80-5	0.1	%		81.8	110	---	---	---
EP-080_SRS: TPH(Volatile)/BTEX Surrogate									
EP070HK_SR: Dibromofluoromethane	1868-53-7	0.1	%		98.5	98.3	---	---	---
EP070HK_SR: Toluene-D8	2037-26-5	0.1	%		101	102	---	---	---
EP070HK_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		106	107	---	---	---
EP-074_SR-S: VOC Surrogates									
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%		98.5	98.3	---	---	---
EP074_SR: Toluene-D8	2037-26-5	0.1	%		101	102	---	---	---
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		106	107	---	---	---

Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2531826)								
HK1935191-004	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	16.9	16.9	0.00
HK1935201-001	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	18.8	18.8	0.00
EG: Metals and Major Cations (QC Lot: 2528235)								
HK1935198-002	SP02 1.5m bgl	EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	<0.05	0.00
		EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.00
		EG020: Barium	7440-39-3	0.5	mg/kg	48.5	49.1	1.28
		EG020: Cobalt	7440-48-4	0.5	mg/kg	1.6	1.5	0.00
		EG020: Manganese	7439-96-5	0.5	mg/kg	35.8	41.2	14.0
		EG020: Tin	7440-31-5	0.5	mg/kg	8.6	8.9	3.33
		EG020: Antimony	7440-36-0	1	mg/kg	1	2	0.00
		EG020: Arsenic	7440-38-2	1	mg/kg	9	9	0.00
		EG020: Copper	7440-50-8	1	mg/kg	26	28	6.10
		EG020: Lead	7439-92-1	1	mg/kg	14	13	9.10
		EG020: Molybdenum	7439-98-7	1	mg/kg	1	1	0.00
		EG020: Nickel	7440-02-0	1	mg/kg	4	4	0.00
EG020: Zinc	7440-66-6	1	mg/kg	11	13	17.5		
EG: Metals and Major Cations (QC Lot: 2536752)								
HK1935198-002	SP02 1.5m bgl	EG3060: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<1.0	<1.0	0.00
EP-066: Polychlorinated Biphenyls (QC Lot: 2528815)								
HK1935198-001	SP02 0.5m bgl	Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813)								
HK1935198-001	SP02 0.5m bgl	Naphthalene	91-20-3	50	µg/kg	<0.500 mg/kg	<500	0.00
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2528813)								
HK1935198-001	SP02 0.5m bgl	Phenol	108-95-2	500	µg/kg	<0.50 mg/kg	<500	0.00
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528814)								
HK1935198-001	SP02 0.5m bgl	C9 - C16 Fraction	----	200	mg/kg	<200	<200	0.00
		C17 - C35 Fraction	----	500	mg/kg	<500	<500	0.00
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528816)								
HK1935198-001	SP02 0.5m bgl	C6 - C8 Fraction	----	5	mg/kg	<5	<5	0.00
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2528817)								



Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2528817) - Continued								
HK1935198-001	SP02 0.5m bgl	EP074_SR: Benzene	71-43-2	0.1	mg/kg	<0.2	<0.2	0.00
		EP074_SR: Toluene	108-88-3	0.2	mg/kg	<0.5	<0.5	0.00
		EP074_SR: Ethylbenzene	100-41-4	0.2	mg/kg	<0.5	<0.5	0.00
		EP074_SR: ortho-Xylene	95-47-6	0.2	mg/kg	<0.5	<0.5	0.00
		EP074_SR: meta- & para-Xylene	108-38-3	0.4	mg/kg	<1.0	<1.0	0.00
			106-42-3					
		EP074_SR: Xylenes (Total)	----	1	mg/kg	<2.0	<2.0	0.00

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						
Method: Compound	CAS Number				LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits(%)
		LCS	DCS	Low					High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 2528235)											
EG020: Antimony	7440-36-0	1	mg/kg	<1	5 mg/kg	99.4	----	85	115	----	----
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	103	----	85	106	----	----
EG020: Barium	7440-39-3	0.5	mg/kg	<0.5	5 mg/kg	98.8	----	85	115	----	----
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	102	----	87	110	----	----
EG020: Cobalt	7440-48-4	0.5	mg/kg	<0.5	5 mg/kg	102	----	85	115	----	----
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	107	----	89	114	----	----
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	103	----	92	115	----	----
EG020: Manganese	7439-96-5	0.5	mg/kg	<0.5	5 mg/kg	97.2	----	85	114	----	----
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	105	----	87	115	----	----
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	5 mg/kg	97.6	----	88	113	----	----
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	102	----	85	112	----	----
EG020: Tin	7440-31-5	0.5	mg/kg	<0.5	5 mg/kg	101	----	86	115	----	----
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	103	----	85	115	----	----
EG: Metals and Major Cations (QC Lot: 2536752)											
EG3060: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	2.5 mg/kg	92.0	----	85	115	----	----
EP-066: Polychlorinated Biphenyls (QC Lot: 2528815)											
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	0.5 mg/kg	93.7	----	43	152	----	----



Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number				LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits(%)
		LCS	DCS	Low					High	Value	Control Limit
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813)											
Naphthalene	91-20-3	50	µg/kg	<50	25 µg/kg	95.3	----	52	116	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2528813)											
Phenol	108-95-2	500	µg/kg	<500	25 µg/kg	54.5	----	0	139	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528814)											
C9 - C16 Fraction	----	200	mg/kg	<200	31.5 mg/kg	96.4	----	62	128	----	----
C17 - C35 Fraction	----	500	mg/kg	<500	67.5 mg/kg	81.3	----	53	104	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528816)											
C6 - C8 Fraction	----	5	mg/kg	<5	4.5 mg/kg	99.5	----	78	131	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2528817)											
EP074_SR: Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	104	----	86	122	----	----
EP074_SR: Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	99.2	----	86	123	----	----
EP074_SR: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	96.8	----	87	121	----	----
EP074_SR: meta- & para-Xylene	108-38-3	0.4	mg/kg	<0.4	0.5 mg/kg	98.0	----	83	118	----	----
	106-42-3										
EP074_SR: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	97.6	----	85	117	----	----
EP074_SR: Xylenes (Total)	----	1	mg/kg	<1.0	0.75 mg/kg	97.8	----	85	116	----	----

Matrix: **SOIL**

Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 2528235)										
HK1935198-001	SP02 0.5m bgl	EG020: Antimony	7440-36-0	5 mg/kg	104	----	75	125	----	----
		EG020: Arsenic	7440-38-2	5 mg/kg	92.0	----	75	125	----	----
		EG020: Barium	7440-39-3	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Cadmium	7440-43-9	5 mg/kg	102	----	75	125	----	----
		EG020: Cobalt	7440-48-4	5 mg/kg	87.0	----	75	125	----	----
		EG020: Copper	7440-50-8	5 mg/kg	80.7	----	75	125	----	----
		EG020: Lead	7439-92-1	5 mg/kg	94.8	----	75	125	----	----
		EG020: Manganese	7439-96-5	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Mercury	7439-97-6	0.1 mg/kg	104	----	75	125	----	----
		EG020: Molybdenum	7439-98-7	5 mg/kg	100	----	75	125	----	----
		EG020: Nickel	7440-02-0	5 mg/kg	83.9	----	75	125	----	----
		EG020: Tin	7440-31-5	5 mg/kg	102	----	75	125	----	----
EG020: Zinc	7440-66-6	5 mg/kg	90.3	----	75	125	----	----		
EG: Metals and Major Cations (QC Lot: 2536752)										
HK1935198-001	SP02 0.5m bgl	EG3060: Hexavalent Chromium	18540-29-9	2.5 mg/kg	82.3	----	75	125	----	----
EP-066: Polychlorinated Biphenyls (QC Lot: 2528815)										
HK1935198-002	SP02 1.5m bgl	Total Polychlorinated biphenyls	----	0.5 mg/kg	88.8	----	50	130	----	----
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813)										
HK1935191-002	Anonymous	Naphthalene	91-20-3	250 µg/kg	80.6	----	50	130	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2528813)										
HK1935191-002	Anonymous	Phenol	108-95-2	250 µg/kg	90.2	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528814)										
HK1935193-001	Anonymous	C9 - C16 Fraction	----	31.5 mg/kg	76.0	----	50	130	----	----
		C17 - C35 Fraction	----	67.5 mg/kg	56.2	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528816)										



Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number		MS	MSD	Low	High	Value	Control Limit
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528816) - Continued										
HK1935193-001	Anonymous	C6 - C8 Fraction	----	4.5 mg/kg	106	----	50	130	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2528817)										
HK1935193-003	Anonymous	EP074_SR: Benzene	71-43-2	0.25 mg/kg	101	----	50	130	----	----
		EP074_SR: Toluene	108-88-3	0.25 mg/kg	102	----	50	130	----	----
		EP074_SR: Ethylbenzene	100-41-4	0.25 mg/kg	99.6	----	50	130	----	----
		EP074_SR: meta- & para-Xylene	108-38-3	0.5 mg/kg	103	----	50	130	----	----
			106-42-3							
		EP074_SR: ortho-Xylene	95-47-6	0.25 mg/kg	104	----	50	130	----	----
		EP074_SR: Xylenes (Total)	----	0.75 mg/kg	103	----	50	130	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates			
2-Fluorobiphenyl	321-60-8	50	130
4-Terphenyl-d14	1718-51-0	50	130
EP-066S: PCB Surrogate			
Tetrachlorometaxylene	877-09-8	50	130
Dibutylchloredate	1770-80-5	50	130
EP-080_SRS: TPH(Volatile)/BTEX Surrogate			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121



CERTIFICATE OF ANALYSIS

Client	: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 9
Contact	: MR T W TAM	Contact	: Richard Fung	Work Order	: HK1935201
Address	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: Twtam@fordbusiness.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2959 6059	Telephone	: +852 2610 1044		
Facsimile	: +852 2959 6079	Facsimile	: +852 2610 2021		
Project	: TCS00881/18 - SITE FORMATION AND ASSOCIATED INFRASTRUCTURAL WORKS FOR DEVELOPMENT OF COLUMBARIUM AT SANDY RIDGE CEMETERY			Date Samples Received	: 15-Aug-2019
Order number	: —	Quote number	: HKE/3386/2018	Issue Date	: 23-Aug-2019
C-O-C number	: —			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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Hong Kong Accreditation Service (HKAS) has accredited this laboratory, ALS Technichem (HK) Pty Ltd (Reg. No. HOKLAS 066) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories.

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	Position	Authorised results for
 Chan Ka Yu, Karen	Manager - Organics	Organics_ENV
 Chan Siu Ming, Vico	Manager - Inorganics	Inorganics
 Leung Chak Cheong, Mike	Senior Chemist	Metals_ENV



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. Testing period is from 15-Aug-2019 to 23-Aug-2019.

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: HK1935201

Sample(s) were received in chilled condition.

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

Sample information (Project name, Sample ID, Sampling date/ time) is provided by client.

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

Sample(s) as received, digested by In-house method E-3060 prior to the determination of Hexavalent Chromium (Cr6+). The In-house method is developed based on USEPA method 3060A.



Analytical Results

Sub-Matrix: SOIL

Client sample ID

SP02 3m bgl

Client sampling date / time

14-Aug-2019

Compound	CAS Number	LOR	Unit	HK1935201-001	---	---	---	---
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EA/ED: Physical and Aggregate Properties

EA055: Moisture Content (dried @ 103°C)	----	0.1	%	18.8	---	---	---	---
---	------	-----	---	------	-----	-----	-----	-----

EG: Metals and Major Cations

EG020: Antimony	7440-36-0	1	mg/kg	<1	---	---	---	---
EG020: Arsenic	7440-38-2	1	mg/kg	5	---	---	---	---
EG020: Barium	7440-39-3	1.0	mg/kg	51.0	---	---	---	---
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	---	---	---	---
EG020: Cobalt	7440-48-4	1.0	mg/kg	1.3	---	---	---	---
EG020: Copper	7440-50-8	1	mg/kg	16	---	---	---	---
EG020: Lead	7439-92-1	1	mg/kg	8	---	---	---	---
EG020: Manganese	7439-96-5	1.0	mg/kg	27.2	---	---	---	---
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	---	---	---	---
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	---	---	---	---
EG020: Nickel	7440-02-0	1	mg/kg	4	---	---	---	---
EG020: Tin	7440-31-5	1.0	mg/kg	3.8	---	---	---	---
EG020: Zinc	7440-66-6	1	mg/kg	12	---	---	---	---
EG049: Trivalent Chromium	16065-83-1	1.0	mg/kg	19.4	---	---	---	---
EG3060: Hexavalent Chromium	18540-29-9	1.0	mg/kg	<1.0	---	---	---	---

EP-066: Polychlorinated Biphenyls

EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	---	---	---	---
--	------	-----	-------	------	-----	-----	-----	-----

EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)

EP076HK: Naphthalene	91-20-3	0.500	mg/kg	<0.500	---	---	---	---
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EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate

EP076HK: Phenol	108-95-2	0.50	mg/kg	<0.50	---	---	---	---
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EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)

EP070HK_SR: C6 - C8 Fraction	----	5	mg/kg	<5	---	---	---	---
EP071HK_SR: C9 - C16 Fraction	----	200	mg/kg	<200	---	---	---	---
EP071HK_SR: C17 - C35 Fraction	----	500	mg/kg	<500	---	---	---	---

EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)



Sub-Matrix: SOIL				Client sample ID	SP02 3m bgl	---	---	---	---
				Client sampling date / time	14-Aug-2019	---	---	---	---
Compound	CAS Number	LOR	Unit		HK1935201-001	---	---	---	---
EP-074 SR-A: Monocyclic Aromatic Hydrocarbons (MAH) - Continued									
EP074_SR: Benzene	71-43-2	0.2	mg/kg		<0.2	---	---	---	---
EP074_SR: Toluene	108-88-3	0.5	mg/kg		<0.5	---	---	---	---
EP074_SR: Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	---	---	---	---
EP074_SR: meta- & para-Xylene	108-38-3	1.0	mg/kg		<1.0	---	---	---	---
	106-42-3								
EP074_SR: ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	---	---	---	---
EP074_SR: Xylenes (Total)	----	2.0	mg/kg		<2.0	---	---	---	---
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates									
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%		64.1	---	---	---	---
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%		73.8	---	---	---	---
EP-066S: PCB Surrogate									
EP066: Tetrachlorometaxylene	877-09-8	0.1	%		70.8	---	---	---	---
EP066: Dibutylchlorodate	1770-80-5	0.1	%		64.4	---	---	---	---
EP-080_SRS: TPH(Volatile)/BTEX Surrogate									
EP070HK_SR: Dibromofluoromethane	1868-53-7	0.1	%		104	---	---	---	---
EP070HK_SR: Toluene-D8	2037-26-5	0.1	%		102	---	---	---	---
EP070HK_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		108	---	---	---	---
EP-074_SR-S: VOC Surrogates									
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%		104	---	---	---	---
EP074_SR: Toluene-D8	2037-26-5	0.1	%		102	---	---	---	---
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		108	---	---	---	---

Matrix: **SOIL**

Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2531826)								
HK1935191-004	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	16.9	16.9	0.00
HK1935201-001	SP02 3m bgl	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	18.8	18.8	0.00
EG: Metals and Major Cations (QC Lot: 2528235)								
HK1935198-002	Anonymous	EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	<0.05	0.00
		EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.00
		EG020: Barium	7440-39-3	0.5	mg/kg	48.5	49.1	1.28
		EG020: Cobalt	7440-48-4	0.5	mg/kg	1.6	1.5	0.00
		EG020: Manganese	7439-96-5	0.5	mg/kg	35.8	41.2	14.0
		EG020: Tin	7440-31-5	0.5	mg/kg	8.6	8.9	3.33
		EG020: Antimony	7440-36-0	1	mg/kg	1	2	0.00
		EG020: Arsenic	7440-38-2	1	mg/kg	9	9	0.00
		EG020: Copper	7440-50-8	1	mg/kg	26	28	6.10
		EG020: Lead	7439-92-1	1	mg/kg	14	13	9.10
		EG020: Molybdenum	7439-98-7	1	mg/kg	1	1	0.00
		EG020: Nickel	7440-02-0	1	mg/kg	4	4	0.00
		EG020: Zinc	7440-66-6	1	mg/kg	11	13	17.5
EG: Metals and Major Cations (QC Lot: 2536752)								
HK1935198-002	Anonymous	EG3060: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<1.0	<1.0	0.00
EP-066: Polychlorinated Biphenyls (QC Lot: 2528815)								
HK1935198-001	Anonymous	Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813)								
HK1935198-001	Anonymous	Naphthalene	91-20-3	50	µg/kg	<0.500 mg/kg	<500	0.00
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2528813)								
HK1935198-001	Anonymous	Phenol	108-95-2	500	µg/kg	<0.50 mg/kg	<500	0.00
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528814)								
HK1935198-001	Anonymous	C9 - C16 Fraction	----	200	mg/kg	<200	<200	0.00
		C17 - C35 Fraction	----	500	mg/kg	<500	<500	0.00
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528816)								
HK1935198-001	Anonymous	C6 - C8 Fraction	----	5	mg/kg	<5	<5	0.00
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2528817)								



Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2528817) - Continued								
HK1935198-001	Anonymous	EP074_SR: Benzene	71-43-2	0.1	mg/kg	<0.2	<0.2	0.00
		EP074_SR: Toluene	108-88-3	0.2	mg/kg	<0.5	<0.5	0.00
		EP074_SR: Ethylbenzene	100-41-4	0.2	mg/kg	<0.5	<0.5	0.00
		EP074_SR: ortho-Xylene	95-47-6	0.2	mg/kg	<0.5	<0.5	0.00
		EP074_SR: meta- & para-Xylene	108-38-3	0.4	mg/kg	<1.0	<1.0	0.00
			106-42-3					
		EP074_SR: Xylenes (Total)	----	1	mg/kg	<2.0	<2.0	0.00

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						
Method: Compound	CAS Number				LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits(%)
		LCS	DCS	Low					High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 2528235)											
EG020: Antimony	7440-36-0	1	mg/kg	<1	5 mg/kg	99.4	----	85	115	----	----
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	103	----	85	106	----	----
EG020: Barium	7440-39-3	0.5	mg/kg	<0.5	5 mg/kg	98.8	----	85	115	----	----
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	102	----	87	110	----	----
EG020: Cobalt	7440-48-4	0.5	mg/kg	<0.5	5 mg/kg	102	----	85	115	----	----
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	107	----	89	114	----	----
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	103	----	92	115	----	----
EG020: Manganese	7439-96-5	0.5	mg/kg	<0.5	5 mg/kg	97.2	----	85	114	----	----
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	105	----	87	115	----	----
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	5 mg/kg	97.6	----	88	113	----	----
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	102	----	85	112	----	----
EG020: Tin	7440-31-5	0.5	mg/kg	<0.5	5 mg/kg	101	----	86	115	----	----
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	103	----	85	115	----	----
EG: Metals and Major Cations (QC Lot: 2536752)											
EG3060: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	2.5 mg/kg	92.0	----	85	115	----	----
EP-066: Polychlorinated Biphenyls (QC Lot: 2528815)											
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	0.5 mg/kg	93.7	----	43	152	----	----



Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number				LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits(%)
		LCS	DCS	Low					High	Value	Control Limit
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813)											
Naphthalene	91-20-3	50	µg/kg	<50	25 µg/kg	95.3	----	52	116	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2528813)											
Phenol	108-95-2	500	µg/kg	<500	25 µg/kg	54.5	----	0	139	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528814)											
C9 - C16 Fraction	----	200	mg/kg	<200	31.5 mg/kg	96.4	----	62	128	----	----
C17 - C35 Fraction	----	500	mg/kg	<500	67.5 mg/kg	81.3	----	53	104	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528816)											
C6 - C8 Fraction	----	5	mg/kg	<5	4.5 mg/kg	99.5	----	78	131	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2528817)											
EP074_SR: Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	104	----	86	122	----	----
EP074_SR: Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	99.2	----	86	123	----	----
EP074_SR: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	96.8	----	87	121	----	----
EP074_SR: meta- & para-Xylene	108-38-3	0.4	mg/kg	<0.4	0.5 mg/kg	98.0	----	83	118	----	----
	106-42-3										
EP074_SR: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	97.6	----	85	117	----	----
EP074_SR: Xylenes (Total)	----	1	mg/kg	<1.0	0.75 mg/kg	97.8	----	85	116	----	----

Matrix: **SOIL**

Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number		MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 2528235)										
HK1935198-001	Anonymous	EG020: Antimony	7440-36-0	5 mg/kg	104	----	75	125	----	----
		EG020: Arsenic	7440-38-2	5 mg/kg	92.0	----	75	125	----	----
		EG020: Barium	7440-39-3	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Cadmium	7440-43-9	5 mg/kg	102	----	75	125	----	----
		EG020: Cobalt	7440-48-4	5 mg/kg	87.0	----	75	125	----	----
		EG020: Copper	7440-50-8	5 mg/kg	80.7	----	75	125	----	----
		EG020: Lead	7439-92-1	5 mg/kg	94.8	----	75	125	----	----
		EG020: Manganese	7439-96-5	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Mercury	7439-97-6	0.1 mg/kg	104	----	75	125	----	----
		EG020: Molybdenum	7439-98-7	5 mg/kg	100	----	75	125	----	----
		EG020: Nickel	7440-02-0	5 mg/kg	83.9	----	75	125	----	----
		EG020: Tin	7440-31-5	5 mg/kg	102	----	75	125	----	----
EG020: Zinc	7440-66-6	5 mg/kg	90.3	----	75	125	----	----		
EG: Metals and Major Cations (QC Lot: 2536752)										
HK1935198-001	Anonymous	EG3060: Hexavalent Chromium	18540-29-9	2.5 mg/kg	82.3	----	75	125	----	----
EP-066: Polychlorinated Biphenyls (QC Lot: 2528815)										
HK1935198-002	Anonymous	Total Polychlorinated biphenyls	----	0.5 mg/kg	88.8	----	50	130	----	----
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2528813)										
HK1935191-002	Anonymous	Naphthalene	91-20-3	250 µg/kg	80.6	----	50	130	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2528813)										
HK1935191-002	Anonymous	Phenol	108-95-2	250 µg/kg	90.2	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528814)										
HK1935193-001	Anonymous	C9 - C16 Fraction	----	31.5 mg/kg	76.0	----	50	130	----	----
		C17 - C35 Fraction	----	67.5 mg/kg	56.2	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528816)										



Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number		MS	MSD	Low	High	Value	Control Limit
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2528816) - Continued										
HK1935193-001	Anonymous	C6 - C8 Fraction	----	4.5 mg/kg	106	----	50	130	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2528817)										
HK1935193-003	Anonymous	EP074_SR: Benzene	71-43-2	0.25 mg/kg	101	----	50	130	----	----
		EP074_SR: Toluene	108-88-3	0.25 mg/kg	102	----	50	130	----	----
		EP074_SR: Ethylbenzene	100-41-4	0.25 mg/kg	99.6	----	50	130	----	----
		EP074_SR: meta- & para-Xylene	108-38-3	0.5 mg/kg	103	----	50	130	----	----
			106-42-3							
		EP074_SR: ortho-Xylene	95-47-6	0.25 mg/kg	104	----	50	130	----	----
		EP074_SR: Xylenes (Total)	----	0.75 mg/kg	103	----	50	130	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates			
2-Fluorobiphenyl	321-60-8	50	130
4-Terphenyl-d14	1718-51-0	50	130
EP-066S: PCB Surrogate			
Tetrachlorometaxylene	877-09-8	50	130
Dibutylchloredate	1770-80-5	50	130
EP-080_SRS: TPH(Volatile)/BTEX Surrogate			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121



CERTIFICATE OF ANALYSIS

Client	: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 7
Contact	: MR T W TAM	Contact	: Richard Fung	Work Order	: HK1935202
Address	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: Twtam@fordbusiness.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2959 6059	Telephone	: +852 2610 1044		
Facsimile	: +852 2959 6079	Facsimile	: +852 2610 2021		
Project	: TCS00881/18 - SITE FORMATION AND ASSOCIATED INFRASTRUCTURAL WORKS FOR DEVELOPMENT OF COLUMBARIUM AT SANDY RIDGE CEMETERY			Date Samples Received	: 15-Aug-2019
Order number	: —	Quote number	: HKE/3386/2018	Issue Date	: 23-Aug-2019
C-O-C number	: —			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	Position	Authorised results for
 Chan Ka Yu , Karen	Manager - Organics	Organics_ENV
 Leung Chak Cheong , Mike	Senior Chemist	Metals_ENV



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. Testing period is from 15-Aug-2019 to 23-Aug-2019.

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: HK1935202

Sample(s) were received in chilled condition.

Water sample(s) analysed and reported on as received basis.

Sample information (Project name, Sample ID, Sampling date/ time) is provided by client.

Water sample(s) were filtered prior to dissolved metal analysis.

Sub-Matrix: **WATER**

Client sample ID

Client sampling date / time

Sub-Matrix: WATER			Client sample ID	Equipment Blank 1	---	---	---	---
			Client sampling date / time	14-Aug-2019	----	----	----	----
Compound	CAS Number	LOR	Unit	HK1935202-001	-----	-----	-----	-----
EG: Metals and Major Cations - Filtered								
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	---	---	---	---
EP-066: Polychlorinated Biphenyls								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	---	---	---	---
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)								
EP076HK: Naphthalene	91-20-3	2.0	µg/L	<2.0	---	---	---	---
EP076HK: Acenaphthylene	208-96-8	2.0	µg/L	<2.0	---	---	---	---
EP076HK: Acenaphthene	83-32-9	2.0	µg/L	<2.0	---	---	---	---
EP076HK: Fluorene	86-73-7	2.0	µg/L	<2.0	---	---	---	---
EP076HK: Phenanthrene	85-01-8	2.0	µg/L	<2.0	---	---	---	---
EP076HK: Anthracene	120-12-7	2.0	µg/L	<2.0	---	---	---	---
EP076HK: Fluoranthene	206-44-0	2.0	µg/L	<2.0	---	---	---	---
EP076HK: Pyrene	129-00-0	2.0	µg/L	<2.0	---	---	---	---
EP076HK: Chrysene	218-01-9	1.0	µg/L	<1.0	---	---	---	---
EP076HK: Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	---	---	---	---
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate								
EP076HK: Hexachlorobenzene (HCB)	118-74-1	4.0	µg/L	<4.0	---	---	---	---
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								
EP070HK_SR: C6 - C8 Fraction	----	20	µg/L	<20	---	---	---	---
EP071HK_SR: C9 - C16 Fraction	----	500	µg/L	<500	---	---	---	---
EP071HK_SR: C17 - C35 Fraction	----	500	µg/L	<500	---	---	---	---
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)								
EP074_SR: Benzene	71-43-2	5.0	µg/L	<5.0	---	---	---	---
EP074_SR: Toluene	108-88-3	5.0	µg/L	<5.0	---	---	---	---
EP074_SR: Ethylbenzene	100-41-4	5.0	µg/L	<5.0	---	---	---	---
EP074_SR: meta- & para-Xylene	108-38-3 106-42-3	10	µg/L	<10	---	---	---	---
EP074_SR: ortho-Xylene	95-47-6	5.0	µg/L	<5.0	---	---	---	---
EP074_SR: Xylenes (Total)	----	20	µg/L	<20	---	---	---	---
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates								



Sub-Matrix: WATER				Client sample ID	Equipment Blank 1	---	---	---	---
				Client sampling date / time	14-Aug-2019	---	---	---	---
Compound	CAS Number	LOR	Unit		HK1935202-001	---	---	---	---
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates - Continued									
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%		51.4	---	---	---	---
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%		86.4	---	---	---	---
EP-066S: PCB Surrogate									
EP066: Tetrachlorometaxylene	877-09-8	0.1	%		82.8	---	---	---	---
EP066: Dibutylchloroendate	1770-80-5	0.1	%		116	---	---	---	---
EP-080_SRS: TPH(Volatile)/BTEX Surrogate									
EP070HK_SR: Dibromofluoromethane	1868-53-7	0.1	%		106	---	---	---	---
EP070HK_SR: Toluene-D8	2037-26-5	0.1	%		103	---	---	---	---
EP070HK_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		102	---	---	---	---
EP-074_SR-S: VOC Surrogates									
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%		106	---	---	---	---
EP074_SR: Toluene-D8	2037-26-5	0.1	%		103	---	---	---	---
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		102	---	---	---	---



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations - Filtered (QC Lot: 2528202)								
HK1935163-002	Anonymous	EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	<0.5	0.00

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

Matrix: WATER				Method Blank (MB) Report							
				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
						Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QC Lot: 2528202)											
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	2 µg/L	102	----	85	115	----	----
EP-066: Polychlorinated Biphenyls (QC Lot: 2533819)											
Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	95.2	----	64	150	----	----
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2533817)											
Naphthalene	91-20-3	0.2	µg/L	<0.2	0.5 µg/L	89.0	----	19	144	----	----
Acenaphthylene	208-96-8	0.2	µg/L	<0.2	0.5 µg/L	81.9	----	32	140	----	----
Acenaphthene	83-32-9	0.2	µg/L	<0.2	0.5 µg/L	98.1	----	13	153	----	----
Fluorene	86-73-7	0.2	µg/L	<0.2	0.5 µg/L	101	----	35	151	----	----
Phenanthrene	85-01-8	0.2	µg/L	<0.2	0.5 µg/L	88.5	----	49	128	----	----
Anthracene	120-12-7	0.2	µg/L	<0.2	0.5 µg/L	88.6	----	60	103	----	----
Fluoranthene	206-44-0	0.2	µg/L	<0.2	0.5 µg/L	94.4	----	65	131	----	----
Pyrene	129-00-0	0.2	µg/L	<0.2	0.5 µg/L	91.8	----	64	131	----	----
Chrysene	218-01-9	0.2	µg/L	<0.2	0.5 µg/L	96.4	----	78	144	----	----
Benzo(b)fluoranthene	205-99-2	0.2	µg/L	<0.2	0.5 µg/L	97.9	----	67	144	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2533817)											
Hexachlorobenzene (HCB)	118-74-1	4	µg/L	<4.0	0.5 µg/L	102	----	49	165	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2523535)											
C6 - C8 Fraction	----	0.02	mg/L	<0.02	0.03 mg/L	84.9	----	74	120	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2533818)											
C9 - C16 Fraction	----	0.5	mg/L	<0.5	0.21 mg/L	97.8	----	59	124	----	----
C17 - C35 Fraction	----	0.5	mg/L	<0.5	0.45 mg/L	87.2	----	58	116	----	----



Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2534886)											
EP074_SR: Benzene	71-43-2	0.5	µg/L	<0.5	2 µg/L	99.7	----	80	127	----	----
EP074_SR: Toluene	108-88-3	0.5	µg/L	<0.5	2 µg/L	91.9	----	76	128	----	----
EP074_SR: Ethylbenzene	100-41-4	0.5	µg/L	<0.5	2 µg/L	91.2	----	74	121	----	----
EP074_SR: meta- & para-Xylene	108-38-3	1	µg/L	<1	4 µg/L	93.7	----	77	107	----	----
	106-42-3										
EP074_SR: ortho-Xylene	95-47-6	0.5	µg/L	<0.5	2 µg/L	93.2	----	82	124	----	----
EP074_SR: Xylenes (Total)	----	2	µg/L	<2	6 µg/L	93.5	----	82	113	----	----

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

Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number		MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QC Lot: 2528202)										
HK1935163-001	Anonymous	EG020: Mercury	7439-97-6	2 µg/L	103	----	75	125	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates			
2-Fluorobiphenyl	321-60-8	50	130
4-Terphenyl-d14	1718-51-0	50	130
EP-066S: PCB Surrogate			
Tetrachlorometaxylene	877-09-8	50	130
Dibutylchlorendate	1770-80-5	50	130
EP-080_SRS: TPH(Volatile)/BTEX Surrogate			
Dibromofluoromethane	1868-53-7	86	118
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	86	118
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115



CERTIFICATE OF ANALYSIS

Client	: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 7
Contact	: MR T W TAM	Contact	: Richard Fung	Work Order	: HK1935203
Address	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: Twtam@fordbusiness.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2959 6059	Telephone	: +852 2610 1044		
Facsimile	: +852 2959 6079	Facsimile	: +852 2610 2021		
Project	: TCS00881/18 - SITE FORMATION AND ASSOCIATED INFRASTRUCTURAL WORKS FOR DEVELOPMENT OF COLUMBARIUM AT SANDY RIDGE CEMETERY			Date Samples Received	: 15-Aug-2019
Order number	: —	Quote number	: HKE/3386/2018	Issue Date	: 23-Aug-2019
C-O-C number	: —			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	Position	Authorised results for
 Chan Ka Yu, Karen	Manager - Organics	Organics_ENV
 Leung Chak Cheong, Mike	Senior Chemist	Metals_ENV



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. Testing period is from 15-Aug-2019 to 23-Aug-2019.

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: HK1935203

Sample(s) were received in chilled condition.

Water sample(s) analysed and reported on as received basis.

Sample information (Project name, Sample ID, Sampling date/ time) is provided by client.

Water sample(s) were filtered prior to dissolved metal analysis.

Sub-Matrix: **WATER**

Client sample ID

Client sampling date / time

Sub-Matrix: WATER				Client sample ID	Equipment Blank 2	---	---	---	---
				Client sampling date / time	14-Aug-2019	----	----	----	----
Compound	CAS Number	LOR	Unit	HK1935203-001	-----	-----	-----	-----	-----
EG: Metals and Major Cations - Filtered									
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	---	---	---	---	---
EP-066: Polychlorinated Biphenyls									
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	---	---	---	---	---
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)									
EP076HK: Naphthalene	91-20-3	2.0	µg/L	<2.0	---	---	---	---	---
EP076HK: Acenaphthylene	208-96-8	2.0	µg/L	<2.0	---	---	---	---	---
EP076HK: Acenaphthene	83-32-9	2.0	µg/L	<2.0	---	---	---	---	---
EP076HK: Fluorene	86-73-7	2.0	µg/L	<2.0	---	---	---	---	---
EP076HK: Phenanthrene	85-01-8	2.0	µg/L	<2.0	---	---	---	---	---
EP076HK: Anthracene	120-12-7	2.0	µg/L	<2.0	---	---	---	---	---
EP076HK: Fluoranthene	206-44-0	2.0	µg/L	<2.0	---	---	---	---	---
EP076HK: Pyrene	129-00-0	2.0	µg/L	<2.0	---	---	---	---	---
EP076HK: Chrysene	218-01-9	1.0	µg/L	<1.0	---	---	---	---	---
EP076HK: Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	---	---	---	---	---
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate									
EP076HK: Hexachlorobenzene (HCB)	118-74-1	4.0	µg/L	<4.0	---	---	---	---	---
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)									
EP070HK_SR: C6 - C8 Fraction	----	20	µg/L	<20	---	---	---	---	---
EP071HK_SR: C9 - C16 Fraction	----	500	µg/L	<500	---	---	---	---	---
EP071HK_SR: C17 - C35 Fraction	----	500	µg/L	<500	---	---	---	---	---
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)									
EP074_SR: Benzene	71-43-2	5.0	µg/L	<5.0	---	---	---	---	---
EP074_SR: Toluene	108-88-3	5.0	µg/L	<5.0	---	---	---	---	---
EP074_SR: Ethylbenzene	100-41-4	5.0	µg/L	<5.0	---	---	---	---	---
EP074_SR: meta- & para-Xylene	108-38-3	10	µg/L	<10	---	---	---	---	---
	106-42-3								
EP074_SR: ortho-Xylene	95-47-6	5.0	µg/L	<5.0	---	---	---	---	---
EP074_SR: Xylenes (Total)	----	20	µg/L	<20	---	---	---	---	---
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates									



Sub-Matrix: WATER				Client sample ID	Equipment Blank 2	---	---	---	---
				Client sampling date / time	14-Aug-2019	---	---	---	---
Compound	CAS Number	LOR	Unit		HK1935203-001	---	---	---	---
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates - Continued									
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%		50.1	---	---	---	---
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%		78.3	---	---	---	---
EP-066S: PCB Surrogate									
EP066: Tetrachlorometaxylene	877-09-8	0.1	%		59.8	---	---	---	---
EP066: Dibutylchloroendate	1770-80-5	0.1	%		105	---	---	---	---
EP-080_SRS: TPH(Volatile)/BTEX Surrogate									
EP070HK_SR: Dibromofluoromethane	1868-53-7	0.1	%		110	---	---	---	---
EP070HK_SR: Toluene-D8	2037-26-5	0.1	%		103	---	---	---	---
EP070HK_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		103	---	---	---	---
EP-074_SR-S: VOC Surrogates									
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%		110	---	---	---	---
EP074_SR: Toluene-D8	2037-26-5	0.1	%		103	---	---	---	---
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		103	---	---	---	---



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations - Filtered (QC Lot: 2528202)								
HK1935163-002	Anonymous	EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	<0.5	0.00

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

Matrix: WATER				Method Blank (MB) Report							
				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
						Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QC Lot: 2528202)											
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	2 µg/L	102	----	85	115	----	----
EP-066: Polychlorinated Biphenyls (QC Lot: 2533819)											
Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	95.2	----	64	150	----	----
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 2533817)											
Naphthalene	91-20-3	0.2	µg/L	<0.2	0.5 µg/L	89.0	----	19	144	----	----
Acenaphthylene	208-96-8	0.2	µg/L	<0.2	0.5 µg/L	81.9	----	32	140	----	----
Acenaphthene	83-32-9	0.2	µg/L	<0.2	0.5 µg/L	98.1	----	13	153	----	----
Fluorene	86-73-7	0.2	µg/L	<0.2	0.5 µg/L	101	----	35	151	----	----
Phenanthrene	85-01-8	0.2	µg/L	<0.2	0.5 µg/L	88.5	----	49	128	----	----
Anthracene	120-12-7	0.2	µg/L	<0.2	0.5 µg/L	88.6	----	60	103	----	----
Fluoranthene	206-44-0	0.2	µg/L	<0.2	0.5 µg/L	94.4	----	65	131	----	----
Pyrene	129-00-0	0.2	µg/L	<0.2	0.5 µg/L	91.8	----	64	131	----	----
Chrysene	218-01-9	0.2	µg/L	<0.2	0.5 µg/L	96.4	----	78	144	----	----
Benzo(b)fluoranthene	205-99-2	0.2	µg/L	<0.2	0.5 µg/L	97.9	----	67	144	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 2533817)											
Hexachlorobenzene (HCB)	118-74-1	4	µg/L	<4.0	0.5 µg/L	102	----	49	165	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2523535)											
C6 - C8 Fraction	----	0.02	mg/L	<0.02	0.03 mg/L	84.9	----	74	120	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 2533818)											
C9 - C16 Fraction	----	0.5	mg/L	<0.5	0.21 mg/L	97.8	----	59	124	----	----
C17 - C35 Fraction	----	0.5	mg/L	<0.5	0.45 mg/L	87.2	----	58	116	----	----



Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 2534886)											
EP074_SR: Benzene	71-43-2	0.5	µg/L	<0.5	2 µg/L	99.7	----	80	127	----	----
EP074_SR: Toluene	108-88-3	0.5	µg/L	<0.5	2 µg/L	91.9	----	76	128	----	----
EP074_SR: Ethylbenzene	100-41-4	0.5	µg/L	<0.5	2 µg/L	91.2	----	74	121	----	----
EP074_SR: meta- & para-Xylene	108-38-3	1	µg/L	<1	4 µg/L	93.7	----	77	107	----	----
	106-42-3										
EP074_SR: ortho-Xylene	95-47-6	0.5	µg/L	<0.5	2 µg/L	93.2	----	82	124	----	----
EP074_SR: Xylenes (Total)	----	2	µg/L	<2	6 µg/L	93.5	----	82	113	----	----

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

Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number		MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QC Lot: 2528202)										
HK1935163-001	Anonymous	EG020: Mercury	7439-97-6	2 µg/L	103	----	75	125	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates			
2-Fluorobiphenyl	321-60-8	50	130
4-Terphenyl-d14	1718-51-0	50	130
EP-066S: PCB Surrogate			
Tetrachlorometaxylene	877-09-8	50	130
Dibutylchloredate	1770-80-5	50	130
EP-080_SRS: TPH(Volatile)/BTEX Surrogate			
Dibromofluoromethane	1868-53-7	86	118
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	86	118
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115