CHINA STATE JOINT VENTURE

香港軒尼詩道一三九號中國海外大廈二十九樓
29/F, China Overseas Building,139 Hennessy Road, Hong Kong
電話 Tel: (852) 2823 7888 傳真 Fax: (852) 2527 6782
網址 Web site: http://www.csci.com.hk

Your ref :
Our ref : CDT/LT/GOV/2021/4277 07 April 2021

The EIA Ordinance Register Office
Environmental Protection Department
27th floor, Southorn Centre,
130 Hennessy Road,
Wan Chai Hong Kong

Attn. : Mr. Nicholas Tsang **By Hand**

Dear Sir,

Contract No. DC/2018/05
Relocation of Sha Tin Sewage Treatment Works to Caverns –
Site Preparation and Access Tunnel Construction
Submission of Remediation Report (RR) for Ex-Sha Tin Vehicle Detention Centre (Revision 2) under Approved Remediation Action Plan (Version 2.3) under EP-533/2017

We refer to the further comments from EPD dated 16 Feb 2021, we would like to submit herewith four hard copies and two electronic copies of the captioned Remediation Report (Revision 2) and the "Response to Comments" for your approval.

Should you have any queries, please feel free to contact the undersigned at 9186 2081.

Thank you for your attention.

Yours faithfully,
For and on behalf of
China State Joint Venture

Elvis Kong
Site Agent

EK/MLL/WYC/yy

Encl.

cc DSD/ST (Attn: Mr. Kenneth POON – 1 Report & 1CD)
AECOM site office (Attn: Mr. Simon LEUNG – 1 Report & 1 CD)
(IEC) Mott Macdonald (Attn: Mr. Brandon WONG – 1 CD)
(ET) Lam Environmental Services Limited (Attn: Mr. Derek Lo – 1 CD)

MOTT MACDONALD

AECOM Asia Co. Ltd.
12/F, Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road
Shatin, Hong Kong

Attn: Mr. Simon Leung

Your Reference

Our Reference
EC/TC/BW/bw/T416871/
Correspondence/
Outgoing/L079

3/F International Trade Tower
348 Kwun Tong Road
Kowloon
Hong Kong

T +852 2828 5757
F +852 2827 1823
mottmac.hk

Contract No. SPW 01/2020
Independent Environmental Checker for Relocation of Sha Tin Sewage Treatment Works to Caverns – Site Preparation and Access Tunnel Construction

Environmental Permit No. EP-533/2017

Remediation Report for Ex-Sha Tin Vehicle Detention Centre (Revision 2)

22 March 2021

By Email

Dear Sir,

I refer to the captioned Remediation Report for Ex-Sha Tin Vehicle Detention Centre (Revision 2) under the captioned Project, which was prepared in accordance with Section 6.7.1.1 of the approved EIA Report and Section 5.1.1.1 of the EM&A Manual, received by e-mail on 19 March 2021 and certified by the Environmental Team Leader (ETL) on 22 March 2021 (ref: LES/J2019-02/CS/L095).

I have no comment on the captioned submission and hereby verify it in accordance with Conditions 1.9 and 2.10(ii) of Environmental Permit (EP) No. EP-533/2017.

Should you have any queries regarding the captioned or require any further information, please contact the undersigned at 2828 5875.

Yours faithfully
for MOTT MACDONALD HONG KONG LIMITED

Brandon Wong
Independent Environmental Checker
T +852 2828 5875
Brandon.Wong@mottmac.com

Encl.

c.c.	DSD	Mr. Kenneth Poon	By Email
	Lam Environmental Services Limited	Mr. Derek Lo	By Email
	China State Joint Venture	Mr. F M Chung	By Email
	Teemway Engineering Limited	Mr. Thomas Yeung	By Email

Our ref.: LES/J2019-02/CS/L095
Date : 22 March 2021

China State Joint Venture

By Email

29/F, China Overseas Building,
139 Hennessy Road,
Hong Kong

Attn: Mr. Elvis KONG

Dear Mr. TANG,

Contract No. SPW 25/2018
Environmental Team for
Relocation of Sha Tin Sewage Treatment Works to Caverns – Site Preparation and Access Tunnel Construction

Submission of Remediation Report (RR) for Ex-Sha Tin Vehicle Detention Centre under Approved Remediation Action Plan (Version 2.3)

Referring to the captioned submission received through email on 19 March 2021 (DOCUMENT NO.: TE20030/RR (REV. 2)), we have reviewed your submitted details and hereby certify the submission in accordance with Conditions 1.9 and 2.4(ii) of Environmental Permit (EP) No. EP-533/2017.

Should you have any queries, please contact the undersigned at 9108 0531.

Yours faithfully,
For and On Behalf Of
Lam Environmental Services Limited

Derek Lo
Environmental Team Leader

Encl.

c.c.	DSD	Mr. Kenneth Poon	Via email
	AECOM (CRE Office)	Mr. Simon Leung	Via email
	Mott MacDonald Hong Kong Limited	Mr. Brandon Wong	Via email

Environmental Impact Assessment Ordinance (EIAO), Cap. 499
Project Title: Sha Tin Cavern Sewage Treatment Works
(Environmental Permit No. EP-533/2017)

EP Condition 2.21: Submission of Remediation Report (RR) (Rev.1)
For the ex-Vehicle Detention Centre

Responses to Comments

Item	Section	Comment	Response
1	R-to-C Table	Previous comment items (2) and (8) are not addressed	
		Item (2) – Please clarify the sampling date for EQ2	For Item (2) of previous comment, the sampling date EQ2 is confirmed to be 28/05/2020 and the sampling date in Table 6 was amended accordingly
		Item (8) – Please include the discussion on solubility limit	For Item (8) of previous comment, all the groundwater sample results (including groundwater collected at S1 and treated groundwater) were found below both the most stringent set of RBRGs and Solubility Limit as per the clean-up target agreed in the approved CAR/RAP. Therefore, the groundwater treatment was completed The above discussion of Solubility Limit was mentioned in Section 4.5.3.1 and 4.5.3.2 for groundwater collected at S1 and treated groundwater respectively. The Solubility Limit for PCRs (C17-C35) (i.e. 2.80 mg/L) was also added in the Table 16 and Table 17 for reference
2	Section 4.5.1.3 & 4.5.3.2	It seems that no oil / floatation and sludge / sedimentation was found during the GW remediation. Please further elaborate the treatment done on the contaminated GW.	Oil / Water Separator and Sedimentation Tank were confirmed to apply for GW remediation. Section 4.5.1.3 and Section 4.5.3.2 were amended by clearly mentioning the groundwater treatment was conducted by oil / water separation and sedimentation process. All the groundwater samples were collected after the completion of oil / water separation and sedimentation treatment process. Site Photo for GW treatment was included in Appendix M

RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS –
SITE PREPARATION & ACCESS TUNNEL CONSTRUCTION
(CONTRACT NO. DC/2018/05)

REMEDIATION REPORT

FOR THE EX-VEHICLE DETENTION CENTRE AT TGLA NO. TST447

DOCUMENT NO.: TE20030/RR (REV. 2)
MARCH 2021

CLIENT
DRAINAGE SERVICES DEPARTMENT
CONSULTANT
AECOM
INDEPENDENT ENVIRONMENTAL CHECKER
MOTT MACDONALD
ENVIRONMENTAL TEAM
LAM ENVIRONMENTAL SERVICES LIMITED
MAIN CONTRACTOR
CHINA STATE JOINT VENTURE
LAND DECONTAMINATION CONTRACTOR
TEEMWAY ENGINEERING LIMITED

PREPARED & ENDORSED BY:

THOMAS YEUNG – LAND DECONTAMINATION SPECIALIST

CONTENT

LIST OF TABLE

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

1.1 Background Information

1.1.1 This Remediation Report (RR) is for the Decontamination Works of Groundwater and Soil for the Relocation of Sha Tin Sewage Treatment Works to Caverns – Site Preparation & Access Tunnel Construction (Contract No. DC/2018/05)

1.1.2 For the project of the Relocation of Sha Tin Sewage Treatment Works to Caverns, Environmental Impact Assessment (EIA) Report was submitted and approved under EIAO in November 2016 (No. AEIAR-202/2016). The corresponding Environmental Permit was issued (EP No.: EP-533/2017) by the Director of Environmental Protection (DEP) in March 2017.

1.1.3 Under the contract of Environmental Team Baseline Surveys for Sha Tin Cavern Sewage Treatment Works (Contract No. SPW 09/2018), Supplementary Contamination Assessment Plan (SCAP) (Version 3.1) and Contamination Assessment Report and Remediation Action Plan (CAR/RAP) (Version 2.3) were submitted and approved by Environmental Protection Department (EPD) on December 2018 and June 2020 respectively.

1.1.4 For the approved CAR/RAP, the details of the site investigation works and results of the laboratory analysis, estimation on the extent of contamination and the proposed approach of subsequent remediation were presented. The contamination hotspots at S1 (For Groundwater) and at BH4 (For Soil) at the Ex-Vehicle Detention Centre area were finally identified. The Land Contamination Assessment Area with Contamination Hotspot Locations is shown in **Figure 1**.

1.1.5 Teemway Engineering Limited was appointed as the Land Decontamination Contractor (The Contractor) for carrying out the decontamination works at the Ex-Vehicle Detention Centre and submit the RR in accordance with the approved CAR/RAP.

1.2 Objectives of the Report

1.2.1 Objectives of this Remediation Report (RR) are to

- Demonstrate the remediation works conducted for contamination Hotspots at S1 and BH4 complied with the CAR/RAP approved by EPD;
- Describe the remediation programme for groundwater treatment at S1;
- Summarize results of confirmatory testing results to confirm the extent of remediation at BH4;
- Describe the remediation programme for biopile treatment for Zone 1 and cement solidification for Zone 3 at BH4.

1.3 Report Structure

1.3.1 The remainder of this RR is structured as follow;

- Section 2 presents the guidelines used for the land contamination assessment;
- Section 3 presents the summary of contamination;
- Section 4 presents the remediation programme;
- Section 5 presents the health, safety and environmental precautions and;
- Section 6 presents the conclusions of this RR.

2.0 GUIDELINES

2.1 This RR has been prepared following the guidance and steps outlined in the EPD published guidelines listed below;

- Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management (hereafter refers as the "Guidance Manual"), dated December 2007;
- Guidance Note for Contaminated Land Assessment and Remediation, dated 15 August 2007; and
- Practice Guide for Investigation and Remediation of Contaminated Land, dated August 2011 (hereafter refers as the "Practice Guide")

2.2 As the Guidance Manual and the Practice Guide were the latest guidelines promulgated for use in August 2007 and August 2011 respectively, the RBRGs criteria and the requirements stated in the Practice Guide will be adopted in the RR.

3.0 SUMMARY OF CONTAMINATION

3.1 Site Investigation Results

3.1.1 As mentioned in the approved CAR/RAP, a total of 10 sampling of boreholes were conducted (i.e. S1 & S2 and BH1 to BH8) for soil and groundwater sampling at Ex-Sha Tin Vehicle Detention Centre (Ex-VDC) Area for site investigation stage.

3.1.2 For soil samples, the analytical results indicate that the concentrations of Lead and Tetrachloroethene for 2 soil samples, are higher than the relevant RBRGs (Most Stringent Standard).

3.1.3 For groundwater samples, one exceedance of the RBRGs and three exceedance of solubility limit for the concentration of C17-C35 were found.

3.1.4 The detected levels of the parameters greater than that in RBRGs and Solubility Limit are displayed in **Table 1 and Table 2**. The Previously Sampling Locations at Ex-VDC with Contamination Hotspot Locations extracted from the approved CAR/RAP are displayed in **Figure 2**.

Table 1 Soil Samples Exceeding RBRGs (Most Stringent Standard)

Sample ID	Parameters	Detected Concentrations	RBRGs Standard
		(mg/kg)	
BH4-3.0-3.45m	Tetrachloroethene	0.09	0.044
BH4-5.8-6.25m	Lead	1420	255

Table 2 Groundwater Samples Exceeding RBRGs (Most Stringent Standard)

Sample ID	Parameters	Detected Concentrations	RBRGs Standard	Solubility Limit
		(mg/L)		
S1-W	PCRs (C17-C35)	63.8	4.93	2.8
BH1-GW	PCRs (C17-C35)	2.9	4.93	2.8
BH4-GW	PCRs (C17-C35)	4.2	4.93	2.8

3.1.5 As mentioned in the Section 4.15 of the Approved CAR/RAP, based on the field observation results, no visual evidence of oil sheen and petroleum odours was observed in the samples or bailer from the groundwater sampling at BH1, BH4 and S1. Hence, no NAPL was identified and no groundwater remediation is required for groundwater samples with exceedance of solubility limits.

3.2 Extent of Contamination

3.2.1 For the contaminated soils identified in accordance with the approved CAR/RAP, the estimated extent of contaminated soil at BH4 for remediation is outlined by a 5m x 5m grid with the concerned sampling location located at the center of the grid. For groundwater treatment at S1, the treatment volume should be approx. $3m^3$ and subject to the further confirmatory and verification sampling.

3.2.2 In accordance with the approved CAR/RAP, the contaminated soil found at BH4 has been classified into two types, based on the contaminants present. Zone 1 soil present the contaminated soil with Tetrachloroethene and Zone 3 soil present the contaminated soil with Lead. The total volume of contaminated soil requiring remediation should be $72.50m^3$. The detail of contaminated soil volume is illustrated in **Table 3**.

Table 3 Volume of Contaminated Soil for Remediation

Location	Contaminant	Depth of Contaminated Soil (m bgl)	Horizontal Dimension (m)	Contaminated Soil Area (m^2)	Contaminated Soil Volume (m^3)
BH4 (Zone 1)	Tetrachloroethene	2.5m-3.95m	5.0m x 5.0m	25	36.25
BH4 (Zone 3)	Lead	5.3m-6.75m	5.0m x 5.0m	25	36.25
				Total Volume (m^3)	**72.50**

3.3 Remediation Methods

3.3.1 Based on the approved CAR/RAP, the proposed remediation methods for different types of contaminated soil and groundwater are summarized in **Table 4**.

Table 4 Proposed Remediation Methods for the Contaminated Soil & Groundwater

Type of Contamination	Proposed Remediation Method
Zone 1 – Soil (Tetrachloroethene)	Biopile Method
Zone 3 – Soil (Lead)	Cement Solidification
S1 – Water (C17-C35)	Oil / Water Separation

4.0 REMEDIATION PROGRAMME

4.1 Confirmatory Sampling at BH4

4.1.1 Sampling Locations & Depths

4.1.1.1 The soil samples were tested only for the contaminants exceeding RBRGs at the concerned locations listed in **Table 1**. In case a confirmatory sample exceeded the RBRGs limits, additional samples were collected in 1.0m increments horizontally and 0.5m vertically, depending on the relative position of the confirmatory sample to the original contaminated sample. If the laboratory result of the confirmatory sample is higher than the RBRGs standards, additional confirmation samples will be collected until the concentrations are below the RBRGs standards.

4.1.1.2 As per mentioned in the approved CAR/RAP, the presence of two existing underground pipes (DSD Rising Mains) with dia. 1400 were located near the south side of BH4. Underground utility detection by competent person was conducted and two trial trenches were excavated to identify and confirm the actual location of the underground pipes.

4.1.1.3 According to the finding of trial trenches excavation and surveyed record of the alignment of underground pipes, the pipes are located at 2.42m below ground level and the nearest edge of pipe is approx. 3.4m apart from the BH4. Due to the safety reason, the DSD Rising Mains should be well protected against potential damage or disturbance. No excavation work is allowed within the protection zones of such underground pipes which are 0.9m from the edge of the pipe in order to maintain the stability of the underground pipes. Therefore, confirmatory sampling works are not feasible to carry out within the protection zone of DSD Rising Mains and the confirmatory sample location at south side of BH4 should be shifted to the nearest and feasible location, i.e. 0.9m from the edge of underground pipes. The Layout Plan of Underground Pipes is shown in **Figure 3**.

4.1.2 Sampling Methodology

4.1.2.1 Soil samples at mentioned depths were collected by rotary dry drilling method (i.e. without the use of flushing medium). All equipment in contact with soil was decontaminated thoroughly between each two sampling events to prevent cross-contamination. The equipment was first cleaning with laboratory-grade

(phosphate-free) detergent, rinsed with thoroughly by distilled water, finally steam cleaned by distilled water. A clean area immediately adjacent to the sampling location was established, using a plastic sheet or tarpaulin, on which all cleaned equipment was placed.

4.1.2.2 All soil samples were scooped with stainless steel ladles or spoons into glass containers provided by the laboratory, ALS Technichem (HK) Pty. Ltd. (ALS), which is accredited under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for all required laboratory test methods and headspace in the containers was minimized. The samples were stored within an ice chest between 0°C and 4°C but not frozen and delivered to the laboratory for analysis on the same day of collection.

4.1.3 Confirmatory Testing Results

4.1.3.1 Total of thirteen (13) samples (excluding duplicate sample) were collected at BH4 during the period from 22 May 2020 to 05 June 2020. Testing of the confirmatory samples was performed by ALS.

4.1.3.2 Confirmatory soil samples were collected and analysed until all collected samples are below RBRGs standards. The testing results of confirmatory samples are summarized in **Table 5** and the complete laboratory reports for confirmatory test are attached in **Appendix A**.

Table 5 Confirmatory Testing Results

Concerned Location	Contaminant	Location	Sampling Date	Sample ID	Report ID	Result (mg/kg)	RBRG Limit(1) (mg/kg)	Below RBRGs Limit? (Y/N)
BH4	Tetrachloroethene	Top	01/06/2020	BH4-1T (2.5m-3.0m)	HK2020326	<0.04	0.0444	Y
		Bottom	01/06/2020	BH4-1B (3.45m-3.95m)	HK2020329	<0.04		Y
		Sidewall	22/05/2020	BH4-1S (3.0m-3.5m)	HK2019319	<0.04		Y
		Sidewall	26/05/2020	BH4-1W (3.0m-3.5m)	HK2019641	<0.04		Y
		Sidewall	27/05/2020	BH4-1N (3.0m-3.5m)	HK2019838	<0.04		Y
		Sidewall	29/05/2020	BH4-1E (3.0m-3.5m)	HK2020130	<0.04		Y
	Lead	Top	02/06/2020	BH4-3T (5.3m-5.8m)	HK2020498	45	255	Y
		Bottom	02/06/2020	BH4-3B (6.25m-6.75m)	HK2020500	102		Y
		Sidewall	23/05/2020	BH4-3S (5.8m-6.3m)	HK2019397	**362**		N (Extended to BH4-3Sa)
		Sidewall	05/06/2020	BH4-3Sa (5.8m-6.3m) (2)	HK2021295	45		Y
		Sidewall	26/05/2020	BH4-3W (5.8m-6.3m)	HK2019627	240		Y
		Sidewall	28/05/2020	BH4-3N (5.8m-6.3m)	HK2019939	42		Y
		Sidewall	29/05/2020	BH4-3E (5.8m-6.3m)	HK2020131	42		Y

Remark:

(1) According to the approved CAR/RAP, the most stringent set of RBRGs (i.e. the lowest criteria among "Urban Residential – RBRGs", "Rural Residential – RBRGs", "Industrial – RBRGs" and "Public Parks – RBRGs") for particular Chemicals of Concern (COCs) is adopted for soil clean-up target.

*(2) Since the two existing underground pipes (DSD Rising Mains) with dia. 1400 were located near the south side of BH4, it should be well protected against potential damages or disturbance. According to the surveyed record of the alignment of underground pipes, it was found that the closest point (i.e. BH4-S) has only a clearance of 900mm away from the edge of the pipes. In order to minimize the risk to damage the pipes during decontamination process, no excavation work is allowed within the protection zone for at least 900mm clearance distance from the edge of pipes for the sake of safety and stability to the existing pipes. Therefore, BH4-3Sa (5.8m-6.3m) finally was shifted to the nearest and feasible location (i.e. 900mm from the edge of pipes and 1000mm from BH4-3S along south sidewall) for confirmatory sample collection. According to the laboratory analysis result of BH4-3Sa, the concentration of Lead is found within the most stringent RBRGs Standard. In considering the site constraints and the laboratory results, the actual boundaries of Lead-contaminated zone (Zone 3) is proposed as shown in **Table 7**. The confirmatory sampling locations and contamination extent are illustrated in **Figure 4**.*

4.1.4 QA/QC Sample Results

4.1.4.1 A field quality assurance / quality control (QA/QC) programme was implemented, which comprised of 1 duplicate, 1 equipment blank and 1 field blank for every 20 samples collected and 1 trip blank for every trip with samples that require the analysis of VOCs. The trip blank was pre-prepared in the laboratory, stored in the ice chest with the samples, and delivered back to the laboratory for analysis. The rest of the QA/QC samples are prepared on-site and stored and delivered with the soil samples.

4.1.4.2 According to the QA/QC programme, two (2) duplicate samples, five (5) trip blank samples, two (2) field blank samples and two (2) equipment blank samples were collected. A list of QA/QC samples is presented in **Table 6** and **Table 6A** and the laboratory reports for the relevant QA/QC samples are attached in **Appendix B.**

Table 6 QA/QC Samples for Confirmatory Sampling

QA/QC Sample	Sampling Date	Sample ID	Report ID	Associated Sample(s)	Testing Parameter
Duplicate Sample	26/05/2020	DUP1	HK2019647	BH4-1W (3.0m-3.5m)	Tetrachloroethene
	26/05/2020	DUP2	HK2019629	BH4-3W (5.8m-6.3m)	Lead
Trip Blank	22/05/2020	TB1	HK2019329	BH4-1S (3.0m-3.5m)	Tetrachloroethene
	26/05/2020	TB2	HK2019649	BH4-1W (3.0m-3.5m)	
	27/05/2020	TB3	HK2019841	BH4-1N (3.0m-3.5m)	
	29/05/2020	TB4	HK2020132	BH4-1E (3.0m-3.5m)	
	01/06/2020	TB5	HK2020328	BH4-1T (2.5m-3.0m) BH4-1B (3.45m-3.95m)	
Field Blank	26/05/2020	FB1	HK2019654	BH4-1W (3.0m-3.5m)	Tetrachloroethene
	26/05/2020	FB2	HK2019624	BH4-3W (5.8m-6.3m)	Lead
Equipment Blank	27/05/2020	EQ1	HK2019843	BH4-1N (3.0m-3.5m)	Tetrachloroethene
	28/05/2020	EQ2	HK2019940	BH4-3N (5.8m-6.3m)	Lead

Table 6A Relative Percent Difference (RPD) Values for Confirmatory Sampling

Duplicate Sample			Associated Sample			Testing Parameter	RPD
Sample ID	Report ID	Result (mg/kg)	Sample ID	Report ID	Result (mg/kg)		
DUP1	HK2019647	<0.04	BH4-1W(3.0m-3.5m)	HK2019641	<0.04	Tetrachloroethene	0.0%
DUP2	HK2019629	235	BH4-3W(5.8m-6.3m)	HK2019627	240	Lead	2.1%

4.1.4.3 All parameters tested for trip blank samples, field blank samples and equipment blank samples are below the laboratory reporting limits.

4.1.4.4 The laboratory QA/QC sample results included surrogate recoveries, matrix spike sample, laboratory duplicate samples and method blanks and met their respective requirements.

4.1.4.5 The relative percent difference (RPD) value calculated from the soil duplicate sample was below the 50% acceptable limit. Based on the review of QA/QC sample results, all laboratory results for the confirmatory samples are useable and reliable.

4.1.5 Confirmation of Contaminated Soil Extent

4.1.5.1 The excavation boundaries for contaminated soil were indicated on site in accordance with the results of the confirmatory samples to ensure that all agreed and confirmed contaminated soil should be excavated for treatment.

4.1.5.2 For Zone 1 Contamination Soil, total about 36.25m^3 of the tetrachloroethene contaminated soil was estimated from 2.5m to 3.95m below ground level. For Zone 3 Contamination Soil, total about 36.25m^3 of the lead contaminated soil was estimated from 5.3m to 6.75m below ground level. The excavation area of agreed and confirmed contaminated soil is shown in **Figure 4** and the summary of excavated contaminated soil is shown in **Table 7**.

Table 7 Confirmed Volume of Contaminated Soil for Remediation

Location	Contaminant	Depth of Contaminated Soil (m bgl)	Thickness of Contaminated Soil (m)	Horizontal Dimension (m)	Contaminated Soil Area (m^2)	Contaminated Soil Volume (m^3)
BH4 (Zone 1)	Tetrachloroethene	2.5-3.95	1.45	5.0 x 5.0	25	36.25
BH4 (Zone 3)	Lead	5.3-6.75	1.45	5.0 x 5.0	25	36.25
Total Volume of Contaminated Soil (Zone 1 + Zone 3) (m^3)						**72.50**

4.2 Bioremediation for Zone 1 Contaminated Soil at BH4

4.2.1 Remediation Method

4.2.1.1 In accordance with the approved CAR/RAP, on-site bioremediation followed by on-site backfilling as far as practicable is recommended to treat the Zone 1 Contaminated Soil at BH4 (Contamination Parameter: Tetrachloroethene).

4.2.1.2 Bioremediation by Biopile Method has been proven to be both technologically and cost effective in treating organic-contaminated soil, especially in large amounts. It makes use of natural biological processes to turn contaminants into harmless products, ultimately to carbon dioxide, water and simple inorganic compounds.

4.2.1.3 The excavation boundaries for Zone 1 Contaminated Soil were indicated on site in accordance with the existing site boundary and the final confirmatory sample to ensure that all contaminated soil was excavated for treatment. The location plan for contaminated soil extent for excavation is shown in **Figure 4**.

4.2.1.4 During the excavation of clean soil above Zone 1 Contaminated Soil, the excavation tools reached the soil approx. 0.3m above the contaminated area to avoid any potential contamination to the excavation equipment.

4.2.1.5 In order to prevent cross-contamination between contaminated soil and clean soil, the excavated Zone 1 Contaminated Soil was excavated and delivered to the pre-fabricated biopile treatment area with bund wall at surrounding and impermeable sheeting at bottom. The detail of biopile setup can be referred to Section 4.2.2. The biopile treatment area for Zone 1 Contaminated Soil was set up approx. 20m from BH4 to provide sufficient spatial separations. The stockpiled contaminated soil was enclosed by physical barriers and covered by impermeable sheeting with clear labelling.

4.2.1.6 For the excavation equipment in contact with contaminated soil and clean soil, they should be washed by phosphate-free detergent and decontaminated by steam cleaning. The relevant record photo for cross-contamination prevention should be referred to **Appendix M**.

4.2.2 Construction of Biopile System

4.2.2.1 Prior to the biopile construction, the designated biopile area was levelled and cleared of any obstacles that may puncture the integrity of the liner. The size of Biopile for Zone 1 contaminated soil is 7m (Length) x 6m (Width) x 1m (Height). The inclined slope at the Biopile edges should be about 30°. The location plan of biopile setup was illustrated in **Figure 5**.

4.2.2.2 The biopile base consisted of three layers of protective membranes; including geotextile cushion layer, high-density polyethylene (HDPE) impermeable layer and 'Tenflow' drainage layer. Concrete bund was also built around the perimeter of the biopile, which serves as the physical barrier to prevent the leachate from seepage/leakage. The HDPE liner was made large enough to cover the based and concrete bund. Moreover, the leakage test of the used HDPE liner of the biopile base was conducted to confirm that the biopile base was well developed and no leakage of the biopile base would occur.

4.2.2.3 Leachate collection sump pits were also constructed at the lowest point of biopile system to collect the leachate generated from the operation of the biopiling. During the biopile operation, no leachate generated from the biopile system, hence, no leachate was collected and returned to the biopile systems.

4.2.2.4 In addition, an aeration system was established to ensure sufficient air provided to the biopiles in which hydrocarbon-degrading bacteria will consume oxygen during the bio-degradation process. The aeration system was operated in the extraction mode. A carbon filter system was installed, operated and maintained to remove any Total Organic Compounds (TOC) from the biopile before releasing to the atmosphere.

4.2.2.5 The set-up of biopile system and aeration system for the biopiles are shown in **Figures 6** and **Figure 7** respectively.

4.2.3 Sampling Methodology

4.2.3.1 As presented in the approved CAR/RAP, one soil sample per $10m^3$ of the contaminated soil in the biopile should be collected for progress monitoring. In this connection, based on the volume of the contaminated soil within the biopiles, Biopile for Zone 1 contaminated soil (about $36.25m^3$) was evenly divided into four (4) sampling zones respectively. In each sampling zone, soil sample was collected for

laboratory analysis for monitoring the progress of remediation.

4.2.3.2 During the biopile operation, regularly progress sampling event (including the analysis of pH, moisture content, nutrients (e.g. Nitrogen(N), Phosphorus(P), Potassium(K)), total bacterial count, target contaminants) was carried out for Biopile. The objective of the progress sampling event is to maintain the progress of contaminant cleanup, and to ensure suitable conditions of the soil to support microbial growth. Moreover, soil gas (including Oxygen, Carbon Dioxide, Methane, Volatile Organic Compound (VOC)) was weekly monitored at the inlet point of the carbon filter. Weekly gas monitoring at inlet of the carbon filter and the exhaust point of the aeration system (VOC and Hydrogen Sulfide) was also conducted. Summary of weekly soil gas monitoring results is presented in **Appendix F**.

4.2.3.3 According to Section 7.20 of the approved CAR/RAP, the remediation should be considered completed until three samples with tetrachloroethene levels measured at below the RBRGs is recorded.

4.2.3.4 All equipment in contact with soil was decontaminated thoroughly between each two sampling events to prevent cross-contamination. The equipment was first cleaning with laboratory-grade (phosphate-free) detergent, rinsed with thoroughly by distilled water, finally steam cleaned by distilled water. A clean area immediately adjacent to the sampling location was established, using a plastic sheet or tarpaulin, on which all cleaned equipment was placed.

4.2.3.5 All soil samples were scooped with stainless steel ladles or spoons into glass containers provided by the laboratory, ALS Technichem (HK) Pty. Ltd. (ALS), which is accredited under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for all required laboratory test methods and headspace in the containers was minimized. The collected soil samples were stored within an ice chest between 0°C and 4°C but not frozen and delivered to the laboratory for analysis on the same day of collection.

4.2.4 Laboratory Results of Closure Assessment for Biopile System

4.2.4.1 Biopile for Zone 1 contaminated soil was divided into four sampling zones (namely from A to D) based on the volume of contaminated soil (about 36.25m^3). The layout of the sampling zones A to D were illustrated in **Figure 6**. Thus, a total of three rounds of soil samples for biopile closure assessment were collected to analyze for Tetrachloroethene in starting from 15 August 2020 to 05 October 2020.

4.2.4.2 The laboratory test results of closure assessment sampling at Biopile for Zone 1 contaminated soil are summarized in **Table 8** and the complete laboratory reports and the relevant COC forms are attached in **Appendix C**.

Table 8 Closure Assessment Test Results for Biopile (Zone 1 Contaminated Soil)

Stage	Contaminant	Sampling Date	Sample ID	Report ID	Result (mg/kg)	Clean-up Target (1) (mg/kg)	Below Clean-up Target? (Y/N)	Remark
1st Round	Tetrachloroethene	31/08/2020	BH4-BIOPILE 1A	HK2032768-001	<0.04	0.0444	Y	1st Achievement of Closure Assessment
			BH4-BIOPILE 1B	HK2032768-002	<0.04		Y	
			BH4-BIOPILE 1C	HK2032768-003	<0.04		Y	
			BH4-BIOPILE 1D	HK2032768-004	<0.04		Y	
2nd Round	Tetrachloroethene	14/09/2020	BH4-BIOPILE 2A	HK2035045-001	<0.04	0.0444	Y	2nd Achievement of Closure Assessment
			BH4-BIOPILE 2B	HK2035045-002	<0.04		Y	
			BH4-BIOPILE 2C	HK2035045-003	<0.04		Y	
			BH4-BIOPILE 2D	HK2035045-004	<0.04		Y	
3rd Round	Tetrachloroethene	05/10/2020	BH4-BIOPILE 3A	HK2037496-001	<0.04	0.0444	Y	3rd Achievement of Closure Assessment
			BH4-BIOPILE 3B	HK2037496-002	<0.04		Y	
			BH4-BIOPILE 3C	HK2037496-003	<0.04		Y	
			BH4-BIOPILE 3D	HK2037496-004	<0.04		Y	

Remark:
(1) According to the approved CAR/RAP, the most stringent set of RBRGs (i.e. the lowest criteria among "Urban Residential – RBRGs", "Rural Residential – RBRGs", "Industrial – RBRGs" and "Public Parks – RBRGs") for particular Chemicals of Concern (COCs) is adopted for soil clean-up target.

4.2.5 QA/QC Sample Results

4.2.5.1 A field quality assurance / quality control (QA/QC) programme was implemented, which comprised of 1 duplicate, 1 trip blank and 1 field blank for every 20 samples collected and 1 equipment blank per set of sampling tools. The trip blank was pre-prepared in the laboratory, stored in the ice chest with the samples, and delivered back to the laboratory for analysis. The rest of the QA/QC samples are prepared on-site and stored and delivered with the soil samples.

4.2.5.2 There are total twelve (12) soil samples collected from Biopile. According to the QA/QC programme, one (1) duplicate samples, one (1) trip blank, one (1) field blank samples and one (1) equipment blank samples were collected. A list of QA/QC samples is presented in **Table 9** and **Table 9A** and the laboratory reports and COC forms for the relevant QA/QC samples are attached in **Appendix D**.

Table 9 QA/QC Samples for Biopile (Zone 1 Contaminated Soil)

QA/QC Sample	Sampling Date	Sample ID	Report ID	Associated Sample(s)	Testing Parameter
Duplicate Sample	31/08/2020	BH4-BIOPILE DUP-1	HK2032779	BH4-BIOPILE 1A	Tetrachloroethene
Trip Blank	31/08/2020	BH4-BIOPILE TB-1	HK2032791	BH4-BIOPILE 1A-1D	Tetrachloroethene
	14/09/2020	BH4-BIOPILE TB-2	HK2035053	BH4-BIOPILE 2A-2D	Tetrachloroethene
	05/10/2020	BH4-BIOPILE TB-3	HK2037502	BH4-BIOPILE 3A-3D	Tetrachloroethene
Field Blank	31/08/2020	BH4-BIOPILE FB-1	HK2032782	BH4-BIOPILE 1A	Tetrachloroethene
Equipment Blank	31/08/2020	BH4-BIOPILE EQ-1	HK2032788	BH4-BIOPILE 1A	Tetrachloroethene

Table 9A Relative Percent Difference (RPD) Values for Biopile (Zone 1 Contaminated Soil)

Duplicate Sample			Associated Sample			Testing Parameter	RPD
Sample ID	Report ID	Result (mg/kg)	Sample ID	Report ID	Result (mg/kg)		
BH4-BIOPILE DUP-1	HK2032779	<0.04	BH4-BIOPILE 1A	HK2032768-001	<0.04	Tetrachloroethene	0.0%

4.2.5.3 All parameters tested for trip blank sample, field blank sample and equipment blank samples were below the laboratory reporting limits.

4.2.5.4 The laboratory QA/QC sample results included surrogate recoveries, matrix spike sample, laboratory duplicate samples and method blanks and met their respective requirements.

4.2.5.5 The relative percent difference (RPD) value calculated from the soil duplicate sample was below the 50% acceptable limit. Based on the review of QA/QC sample results, all laboratory results for the confirmatory samples are considered useable and reliable.

4.2.6 Biopile Condition Testing Results

4.2.6.1 To ensure suitable conditions of the soil in the biopiles to support micorobial growth, the analysis of pH, moisture content, nutrients (including Nitrogen, Phosphorus & Potassium), total bacterial number (including Total Bacteria Count and Hydrocarbon Utilising Bacteria) was monthly conducted for soil samples collected in each sampling zone of the biopiles.

4.2.6.2 The laboratory result summary, laboratory reports and COC forms for biopile condition testing are attached in **Appendix E**.

4.3 Cement Solidification for Zone 3 Contaminated Soil at BH4

4.3.1 Trial Mixing

4.3.1.1 Trial mixing was performed under the supervision of Land Contamination Specialists from the Contractor to determine the optimal mixing ratio prior to full-scale cement solidification. Soil for trial mixing was collected from approx.. 5.8m bgl at BH4. Four cement/soil ratio by weight were tested, i.e. 5%, 10%, 15% and 20% respectively. Water was added at approx. 1:1 ratio to cement for mixing.

4.3.1.2 Samples were also collected for Toxicity Characteristic Leaching Procedure (TCLP) and Unconfined Compressive Strength (UCS) testing to examine whether the treated soil meets the required targets. TCLP testing was performed by ALS Technichem (HK) Pty. Ltd. (ALS) in accordance with the Universal Treatment Standards of U.S. and UCS testing was performed by Castco Testing Centre Ltd. (Castco) in accordance with Construction Standard CS1:1990 Testing Concrete of Civil Engineering and Development Department (CEDD), both are HOKLAS accredited laboratory.

4.3.1.3 All TCLP concentrations were below the TCLP remediation target and all the UCS test results were complied with the UCS requirement (i.e. >1.0 MPa) with 4-day settlement period. The laboratory results are summarized in **Table 10** & **Table 11** respectively and the complete laboratory reports for Trial Mix Tests are attached in **Appendix G**.

Table 10 Trial Mix Test Results for TCLP

Concerned Location	Testing Parameter	Cement / Soil Ratio	Sampling Date	Sample ID	Report ID	TCLP Test Result (mg/L)	TCLP Limit (mg/L)	Below the TCLP Limit? (Y/N)
BH4 (Zone 3)	Lead	5%	22/08/2020	BH4-TM TCLP-5%	HK2031860-001	<0.1	<0.75(	Y
		10%	22/08/2020	BH4-TM TCLP-10%	HK2031860-002	<0.1		Y
		15%	22/08/2020	BH4-TM TCLP-15%	HK2031860-003	<0.1		Y
		20%	22/08/2020	BH4-TM TCLP-20%	HK2031860-004	<0.1		Y

Table 11 Trial Mix Test Results for UCS

Concerned Location	Cement / Soil Ratio	Sampling Date	Sample ID	UCS Test Result (MPa) (1)	UCS Requirement (MPa)	Meet the UCS Requirement? (Y/N)
BH4 (Zone 3)	5%	22/08/2020	BH4-TM UCS-5%	2.5	>1.0	Y
	10%	22/08/2020	BH4-TM UCS-10%	3.0		Y
	15%	22/08/2020	BH4-TM UCS-15%	4.0		Y
	20%	22/08/2020	BH4-TM UCS-20%	6.0		Y

4.3.1.4 According to the above results of trial mixing and more conservative approach, 10% cement / soil ratio was adopted with approximate 4-day curing time was adopted for

full scale remediation.

4.3.2 Implementation of Cement Solidification

4.3.2.1 The excavation boundaries for contaminated soil were indicated on site in accordance with the existing site boundary and the final confirmatory sample to ensure that all contaminated soil was excavated for treatment. The location plan for contaminated soil extent for excavation is shown in **Figure 4**.

4.3.2.2 During the excavation of clean soil above Zone 3 Contaminated Soil, the excavation tools reached the soil approx. 0.3m above the contaminated area to avoid any potential contamination to the excavation equipment.

4.3.2.3 In order to prevent cross-contamination between contaminated soil and clean soil, the excavated Zone 3 Contaminated Soil was excavated and delivered to the container skip for storage and treatment by cement solidification process. The cement solidification treatment area for Zone 3 Contaminated Soil was set up approx. 10m from BH4 to provide sufficient spatial separations. The stockpiled contaminated soil was covered by impermeable sheeting with clear labelling.

4.3.2.4 For the excavation equipment in contact with contaminated soil and clean soil, they should be washed by phosphate-free detergent and decontaminated by steam cleaning. The relevant record photo for cross-contamination prevention should be referred to **Appendix M**.

4.3.2.5 The contaminated soil was screened to remove rock fragments and other debris prior to cement solidification. Oversize materials (i.e. cobble, boulder etc.) within the extent of contaminated soil were sorted out and then steam-cleaned at 60°C for material surface to remove surface contaminants and then handled with other treated soil

4.3.2.6 The contaminated soil was delivered to a container skip with measured dimension in for start cement solidification (i.e. $10m^3$ for each batch). The calculated quantity of cement and water were added for soil mixing. The treated soil then was delivered to the designated backfilling area for stockpiling and waiting for the corresponding test results of TCLP and UCS testing.

4.3.2.7 Finally, $36.25m^3$ of Zone 3 Contaminated Soil was excavated and treated for cement solidification during the period from 22 August 2020 to 02 September 2020.

4.3.3 Verification Test

4.3.3.1 As the treated soil will be backfilled on-site as far as practicable, the Toxicity Characteristic Leaching Procedure (TCLP) requirement of Universal Treatment Standard (UTS) and the unconfined compressive strength (UCS) requirement should be met. The laboratory results are summarized in **Table 12** & **Table 13** respectively and the complete laboratory reports for Verification Tests are attached in **Appendix H**.

4.3.3.2 In considering the cement solidification was conducted in difference batches, one sample was collected for every $10m^3$ of solidified soil or for daily basis for laboratory analysis.

4.3.3.3 The sampling equipment was first cleaning with laboratory-grade (phosphate-free) detergent and then rinsed with thoroughly by distilled water. A clean area immediately adjacent to the sampling location was established, using a plastic sheet or tarpaulin, on which all cleaned equipment was placed.

4.3.3.4 Samples were collected for Toxicity Characteristic Leaching Procedure (TCLP) and Unconfined Compressive Strength (UCS) testing to examine whether the treated soil meets the required targets. TCLP testing was performed by ALS Technichem (HK) Pty. Ltd. (ALS) in accordance with the Universal Treatment Standards of U.S. and UCS testing was performed by Castco Testing Centre Ltd. (Castco) in accordance with Construction Standard CS1:1990 Testing Concrete of Civil Engineering and Development Department (CEDD), both are HOKLAS accredited laboratory.

Table 12 Verification Test Results for TCLP (Zone 3 Contaminated Soil)

Concerned Location	Testing Parameter	Cement Solidification & Sampling Date	Sample ID	Report ID	TCLP Test Result (mg/L)	TCLP Limit (mg/L)	Below the TCLP Limit? (Y/N)
BH4 (Zone 3)	Lead	31/08/2020	BH4-CS TCLP-1	HK2033402	<0.1	<0.75	Y
		01/09/2020	BH4-CS TCLP-2	HK2033409	<0.1		Y
		01/09/2020	BH4-CS TCLP-3	HK2033412	<0.1		Y
		02/09/2020	BH4-CS TCLP-4	HK2033414	<0.1		Y

Table 13 Verification Test Results for UCS (Zone 3 Contaminated Soil)

Concerned Location	Cement Solidification & Sampling Date	Total Daily Volume of Solidified Soil (m^3)	Sample ID	Report ID	UCS Test Result (MPa)	UCS Requirement (MPa)	Meet the UCS Requirement? (Y/N)
BH4 (Zone 3)	31/08/2020	<10.0	BH4-CS UCS-1	516321	3.0	>1.0	Y
	01/09/2020	<20.0	BH4-CS UCS-2	518611	3.5		Y
	01/09/2020		BH4-CS UCS-3	518612	2.0		Y
	02/09/2020	<10.0	BH4-CS UCS-4	519611	3.5		Y

4.3.3.5 All TCLP concentrations were below TCLP limit, and thus the remediation of Zone 3 Contaminated Soil was completed successfully. UCS testing results of all tested samples were higher than the minimum requirement of 1.0 MPa, and hence the treated soil is deemed suitable for on-site backfilling or reuse at other outlets (e.g. public fill reception facilities).

4.3.4 QA/QC Sample Result

4.3.4.1 A field quality assurance / quality control (QA/QC) programme was implemented, which comprised of 1 duplicate, 1 field blank and 1 equipment blank for every 20 samples collected. The QA/QC samples are prepared on-site and stored and delivered with the soil samples.

4.3.4.2 Since four (4) verification test sample were collected. According to the QA/QC programme, one (1) duplicate sample, one (1) field blank sample and one (1) equipment blank sample were collected. A list of the QA/QC samples is presented in **Table 14** and **Table 14A** and the complete laboratory analytical reports for QA/QC samples are attached in **Appendix I**.

Table 14 QA/QC Samples for Cement Solidification (Zone 3 Contaminated Soil)

QA/QC Sample	Sampling Date	Sample ID	Report ID	Associated Sample
Duplicate Sample	01/09/2020	BH4-CS TCLP-DUP-1	HK2033406	BH4-CS TCLP-2
		BH4-CS UCS-DUP-1	518610	BH4-CS UCS-2
Field Blank	31/08/2020	BH4-CS FB-1	HK2032792	BH4-CS TCLP-1
Equipment Blank	31/08/2020	BH4-CS EQ-1	HK2032793	BH4-CS TCLP-1

Table 14A Relative Percent Difference (RPD) Values for Cement Solidification (Zone 3 Contaminated Soil)

Duplicate Sample			Associated Sample			Testing Parameter	RPD
Sample ID	Report ID	Result	Sample ID	Report ID	Result		
BH4-CS TCLP-DUP-1	HK2033406	<0.1 mg/L	BH4-CS TCLP-2	HK2033409	<0.1 mg/L	TCLP - Lead	0.0%
BH4-CS UCS-DUP-1	518610	2.5 MPa	BH4-CS UCS-2	518611	3.5 MPa	UCS	33.3%

4.3.4.3 All parameters tested for field blank sample and equipment blank sample are below the laboratory reporting limits.

4.3.4.4 The laboratory QA/QC sample results included surrogate recoveries, matrix spike sample, laboratory duplicate samples and method blanks and met their respective requirements.

4.3.4.5 The relative percent difference (RPD) value calculated from the soil duplicate sample was below the 50% acceptable limit. Based on the review of QA/QC sample results, all laboratory results for the confirmatory samples are useable and reliable.

4.4 Backfilling of Treated Contaminated Soil

4.4.1 In accordance with the Approved CAR/RAP, the treated contaminated soil should be backfilled at the locations within the site boundary with the following criteria;

- Located under a layer of clean fill of at least 0.5m thick (excluding any underground utilities);
- At a horizontal distance of more than 30m away from any stream or watercourse;
- Broken into materials of a maximum size of 250mm for backfilling;
- Not used for any structural or landscaping purposes.

4.4.2 Upon the completion of Biopile process for Zone 1 contaminated soil and Cement Solidification for Zone 3 contaminated soil respectively, the treated soil then was backfilled to the original position of the excavated pit at BH4. According to the site measurement record, the bulk backfilling volume for Treated Contaminated Soil for Zone 1 and Zone 3 are approx. 39.25m^3 and 50.50m^3 respectively. All the treated contaminated soil was backfilled to the original location without any surplus disposal / reuse outside site boundary. The backfilling layout of treated contaminated soil is illustrated in **Figure 8** and the backfilling summary of treated soil is listed in **Table 15**.

Table 15 Backfilling Summary for Treated Soil

Ref.	Description	Approx. Depth of Backfilling (m bgl)	Horizontal Dimension (m)	Bulk Backfilling Volume (m^3)
1.	Treated Zone 1 Soil by Biopile Process	1.13m-2.70m	5.0m x 5.0m	39.25
2.	Treated Zone 3 Soil by Cement Solidification	4.73m-6.75m	5.0m x 5.0m	50.50

4.5 Groundwater Treatment at S1

4.5.1 Remediation Method for Groundwater

4.5.1.1 In accordance with the approved CAR/RAP, a simplified oil / water separator system was constructed for treating the contaminated groundwater at S1. The operation of groundwater treatment was started from 08 July 2020 to 13 July 2020. The sedimentation setup for groundwater treatment is shown in **Figure 9**.

4.5.1.2 An automatic water pump with water level sensor was applied to extracted the groundwater at S1. The extracted groundwater then was passed through a skimmer device to remove the NAPL (if any) and passed to a sedimentation tank.

4.5.1.3 During the groundwater treatment operation, the groundwater was extracted to oil / water separator system and then sedimentation tank for natural sedimentation as mentioned in Section 4.5.1.1. The oil / water separator system was equipped with sand filter (Inlet) and oil skimmer. In order to enhance the treatment efficiency, activated carbon filter was also applied. After over 8 hours of retention time for natural sedimentation, no abnormal smell, colour and non-aqueous phase liquid (NAPL) in the extracted groundwater and no sludge at the water bottom was observed. Since the groundwater treatment was operated effectively, adding coagulant and the corresponding Jar Test are considered to be not applicable. The treated groundwater then was drained to a storage tank (Volume: $1m^3$) for further verification test to ensure the treatment of groundwater was completed.

4.5.2 Sampling Methodology

4.5.2.1 As referring to Section 5.4 and 5.5 of the approved CAR/RAP, 3 consecutive groundwater samples should be collected from the existing groundwater well at S1 for laboratory testing to determine if the volume of groundwater should be treated. If any exceedance were recorded within the 3 samples, then the treatment procedures should be repeated until 3 consecutive samples complying with RBRG standard could be obtained. If a 3 consecutive groundwater samples complied with the RBRG standard, then it indicates that all contaminated water has already been collected for treatment.

4.5.2.2 In accordance with Section 7.6 of the approved CAR/RAP, a sample for every $1m^3$ of treated groundwater should be obtained to determine if the groundwater is treated to below the relevant RBRG standard. If exceedance was found, the water should be re-treated until at least 3 samples of the treated groundwater are tested with levels below RBRG standard.

4.5.2.3 All equipment in contact with soil was decontaminated thoroughly between each two sampling events to prevent cross-contamination. The equipment was first cleaning with laboratory-grade (phosphate-free) detergent, rinsed with thoroughly by distilled water, finally steam cleaned by distilled water. A clean area immediately adjacent to the sampling location was established, using a plastic sheet or tarpaulin, on which all

cleaned equipment was placed.

4.5.2.4 All groundwater samples were collected by Teflon balier into the glass containers provided by the laboratory, ALS Technichem (HK) Pty. Ltd. (ALS), which is accredited under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for all required laboratory test methods and headspace in the containers was minimized. The collected soil samples were stored within an ice chest between 0°C and 4°C but not frozen and delivered to the laboratory for analysis on the same day of collection.

4.5.3 Groundwater Testing Results

4.5.3.1 After extracting $1m^3$ of groundwater from S1 for treatment, three (3) consecutive groundwater samples for closure assessment were collected from groundwater well at S1 on 13 July 2020. During the groundwater sampling process at S1, the groundwater sample was clear without turbidity and no abnormal smell, colour and non-aqueous phase liquid (NAPL) was observed. According to the laboratory reports, all the three groundwater sample results are found below both the most stringent set of RBRGs and Solubility Limit as per the clean-up target agreed in the approved CAR/RAP. Therefore, $1m^3$ of groundwater collected at S1 was the final volume for remediation process at S1. The testing results of closure assessment test for groundwater are summarized in **Table 16** and the completed laboratory reports for closure assessment test are attached in **Appendix J**.

Table 16 Closure Assessment Test Results for Groundwater (S1)

Concerned Location	Testing Parameter	Sampling Date	Sample ID	Report ID	Result (mg/L)	RBRG Clean-up Target (1) (mg/L)	Solubility Limit (mg/L)	Below RBRG Clean-up Target & Solubility Limit? (Y/N)	Remark
1st Round	PCRs (C17-C35)	13/07/2020	S1-GW-1A	HK2026159-001	<0.5	4.93	2.80	Y	1st Achievement of Closure Assessment
2nd Round	PCRs (C17-C35)	13/07/2020	S1-GW-1B	HK2026159-002	<0.5			Y	2nd Achievement of Closure Assessment
3rd Round	PCRs (C17-C35)	13/07/2020	S1-GW-1C	HK2026159-003	<0.5			Y	3rd Achievement of Closure Assessment

Remark:
(1) According to the approved CAR/RAP, the most stringent set of RBRGs (i.e. the lowest criteria among "Urban Residential – RBRGs", "Rural Residential – RBRGs", "Industrial – RBRGs" and "Public Parks – RBRGs") for particular Chemicals of Concern (COCs) is adopted for soil clean-up target.

4.5.3.2 After the treatment of the 1m^3 of groundwater extracted from S1 for oil / water separation and sedimentation process, one (1) treated groundwater sample was collected at the storage tank on 13 July 2020. During the treated groundwater sampling process, the treated groundwater sample was clear without turbidity and no abnormal smell, colour and non-aqueous phase liquid (NAPL) was observed. According to the laboratory reports, the treated groundwater sample result is found below both the most stringent set of RBRGs and Solubility Limit as per the clean-up target agreed in the approved CAR/RAP. Therefore, the treatment for those 1m^3 of extracted groundwater by oil / water separation and sedimentation process was completed. Since the small volume of groundwater was extracted and treated (Approx. 1m^3), one sample for treated groundwater is enough and no further additional sampling is required. The treated groundwater then was discharged to the ground through the existing borehole. The testing result of verification test for treated groundwater is summarized in **Table 17** and the complete laboratory report for verification test is attached in **Appendix K**.

Table 17 Verification Test Results for Groundwater Treatment (S1)

Concerned Location	Testing Parameter	Sampling Date	Sample ID	Report ID	Result (mg/L)	RBRG Clean-up Target (1) (mg/L)	Solubility Limit (mg/L)	Below RBRG Clean-up Target & Solubility Limit? (Y/N)
S1	PCRs (C17-C35)	13/07/2020	S1-TREATED-1	HK2026160	<0.5	4.93	2.80	Y

Remark:
(1) According to the approved CAR/RAP, the most stringent set of RBRGs (i.e. the lowest criteria among "Urban Residential – RBRGs", "Rural Residential – RBRGs", "Industrial – RBRGs" and "Public Parks – RBRGs") for particular Chemicals of Concern (COCs) is adopted for soil clean-up target.

4.5.4 QA/QC Sample Result

4.5.4.1 A field quality assurance / quality control (QA/QC) programme was implemented, which comprised of 1 duplicate, 1 field blank and 1 equipment blank for every 20 samples collected. The QA/QC samples are prepared on-site and stored and delivered with the water samples.

4.5.4.2 Since four (4) test samples for groundwater were collected. According to the QA/QC programme, two (2) duplicate sample, one (1) field blank sample and one (1) equipment blank sample were collected. A list of the QA/QC samples is presented in **Table 18** and **Table 18A** and the complete laboratory analytical reports for QA/QC samples are attached in **Appendix L**.

Table 18 QA/QC Samples for Groundwater Treatment Tests

QA/QC Sample	Sampling Date	Sample ID	Report ID	Associated Sample(s)	Testing Parameter
Duplicate Sample	13/07/2020	S1-GW-DUP1	HK2026165	S1-GW-1B	PCRs (C17-C35)
	13/07/2020	S1-TREATED-DUP1	HK2026168	S1-TREATED-1	PCRs (C17-C35)
Field Blank	13/07/2020	S1-FB1	HK2026161	S1-GW-1B	PCRs (C17-C35)
Equipment Blank	13/07/2020	S1-EQ1	HK2026164	S1-GW-1B	PCRs (C17-C35)

Table 18A Relative Percent Difference (RPD) Values for Groundwater Treatment

Duplicate Sample			Associated Sample			Testing Parameter	RPD
Sample ID	Report ID	Result (mg/L)	Sample ID	Report ID	Result (mg/L)		
S1-GW-DUP1	HK2026165	<0.5	S1-GW-1B	HK2026159-002	<0.5	PCRs (C17-C35)	0.0%
S1-TREATED-DUP1	HK2026168	<0.5	S1-TREATED-1	HK2026160	<0.5		0.0%

4.5.4.3 All parameters tested for field blank sample and equipment blank sample are below the laboratory reporting limits.

4.5.4.4 The laboratory QA/QC sample results included surrogate recoveries, matrix spike sample, laboratory duplicate samples and method blanks and met their respective requirements.

4.5.4.5 The relative percent difference (RPD) value calculated from the water duplicate sample was below the 50% acceptable limit. Based on the review of QA/QC sample results, all laboratory results for the confirmatory samples are useable and reliable.

5.0 FIELDWORK HEALTH, SAFTEY AND ENVIRONMENTAL PRECAUTIONS

5.1.1 Spoil generated during excavation was placed on impermeable sheeting within the soil treatment area with appropriate temporarily covered with impermeable sheeting.

5.1.2 All excavation, transportation, remediation activities were carried out by persons appropriately trained in health and safety. Also, appropriate personal protective equipment was used by the persons engaged in decontamination activities. The following guidelines of health and safety were directly followed by all site personnel working at the contaminated areas at all time:

General

- Minimize the exposure to any contaminated material by wearing appropriate clothing and personal protective equipment (PPE) such as gloves, goggles, protective coveralls and safety boots (when interacting directly with the contaminated material);
- Provide information to all site personnel on the potential hazards in the vicinity of sampling locations and contaminated areas;
- Provide adequate hygiene and washing facilities;
- Prohibit smoking, eating or drinking during activities with exposure to the contaminated materials;
- Provide sufficient training on safety for on-site personnel;
- Provide first aid training and materials to site workers;

Excavation of Contaminated Soil

- Provide temporary fencing or warning ribbons to the boundary of excavation, slope crest and temporarily stockpiled areas. The exposed areas should be temporarily sheltered and covered with impermeable sheeting during heavy rainstorm if necessary;
- Bulk earth moving equipment shall be utilised as much as possible to minimize manual handling and contact of the contaminated soil;
- Relevant occupational health and safety regulations and guidelines during excavation should be observed;

Transportation of Contaminated Soil

- Excavated contaminated soil should be covered with impermeable sheeting during the transportation;
- Equipment used to transport the contaminated soil should be labelled with "For Contaminated Soil Only";

Biopile Operation

- Carry out the biopiling at a designated area separated with a barrier (e.g. temporary fencing with the impermeable sheeting, etc.) to clearly separate the biopiling treatment area from other works area; and.
- Only assigned site personnel with appropriate PPE was allowed to access the designated area for the biopilling works.

5.1.3 Apart from the above-mentioned guidelines of health and safety, the following precautions and mitigation measures were also conducted during the soil excavation, decontamination works, decommissioning works and transportation:

- Proper design and execute excavation profile;
- Fence off the biopile treatment area throughout the period of decontamination works;
- Take precautions when wastewater (if any);
- Implement speed control for vehicles travelling on site to minimize dust emission;
- Proper decontaminate machineries and vehicles before excavating or taking remediated soil and contaminated soil from the biopile;
- Simultaneous operation of mixing facilities and other equipment should be avoided as far as possible to minimize unnecessary generation of noise nuisance;
- Housekeeping was maintained at all times at all decontamination facilities;
- Biopiling was carried out a designated area separated with a barrier and proper protection measures (e.g. temporary fencing with the impermeable sheeting, etc.) to clearly separate the biopiling treatment area from other work areas;
- Employ all necessary measures to prevent cross-contamination of different types of contaminated soil.

6.0 CONCLUSIONS

6.0.1 Site Investigation fieldwork, laboratory analyses and subsequent decontamination works for groundwater and soil for the Project of Relocation of Sha Tin Sewage Treatment Works to Caverns – Site Preparation & Access Tunnel Construction (Contract No. DC/2018/05) was completed in according with the approved CAR/RAP and the agreed remediation method.

6.0.2 In accordance with the approved CAR/RAP, the remediation work for contaminated hotspots at S1 (For Groundwater) and at BH4 (For Soil) at the Ex-Vehicle Detention Centre area were completed. Remediation Report (RR) should be submitted to EPD for approval.

6.0.3 Confirmatory samples at BH4 were collected from 22 May 2020 to 05 June 2020 prior to soil remediation works to determine the boundaries of contaminated soil as per previous findings from approved CAR/RAP. The relevant remediation boundaries were confirmed at confirmatory samples that are below RBRGs (Urban Residential) criteria. The volume of contaminated soil for Zone 1 (Treated By Biopile Method) and Zone 3 (Treated by Cement Solidification) were confirmed to be 36.25m^3 respectively.

6.0.4 Biopile Remediation Method for Zone 1 contaminated soil at BH4 was carried out from 15 August 2020 to 05 October 2020 in accordance with the approved CAR/RAP. One soil sample per 10m^3 of the contaminated soil in the biopile were collected, thus, the biopile was divided into four sampling zones for progress monitoring.

6.0.5 With reference to the laboratory test results of verification soil samples for Biopile, the concentration of Tetrachloroethene was below the clean-up target agreed in the approved CAR/RAP in three (3) consecutive rounds of sampling for the biopile closure assessment. Therefore, the Zone 1 contaminated soil is considered to be completely remediated. Finally, all the treated Zone 1 soil was backfilled to the original excavated trench at BH4 area.

6.0.6 Cement Solidification for Zone 3 contaminated soil at BH4 was carried out from 22 August 2020 to 02 September 2020 in accordance with the approved CAR/RAP. Trial mixing was conducted prior to full-scale remediation works, and 10% of cement / soil ratio was implemented for full-scale remediation work.

6.0.7 One soil sample per 10m^3 of the contaminated soil for cement solidification should be collected. Total 4 nos. verification test samples were collected, and the relevant results met the associated TCLP limit for Lead and UCS requirement. Finally, all the treated Zone 3 soil was backfilled to the original excavated trench at BH4 area.

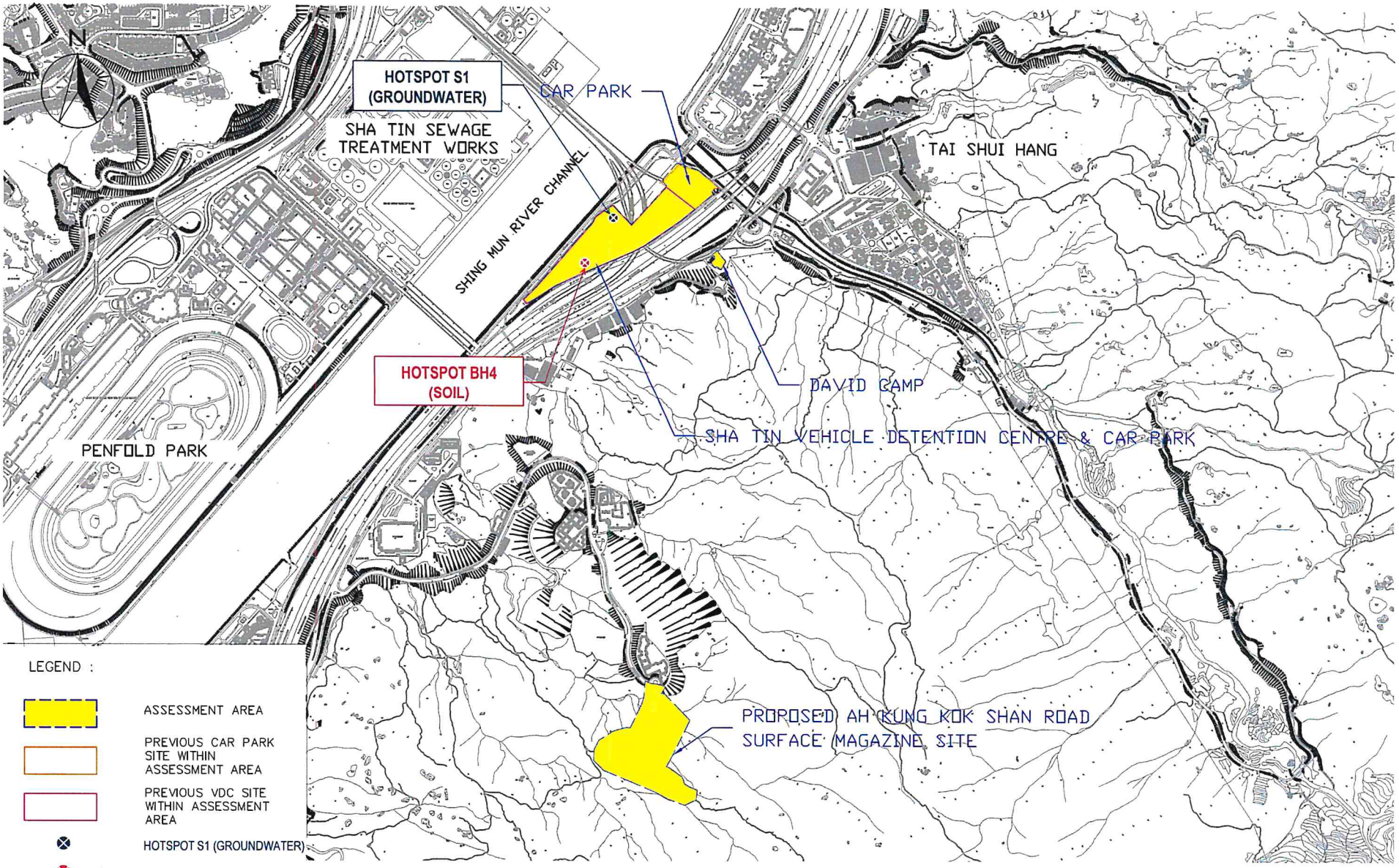
6.0.8 Groundwater at S1 was treated from 08 July 2020 to 13 July 2020. Approx. 1m^3 of groundwater at S1 was extracted and undergone the oil / water separation and sedimentation process and one (1) treated groundwater sample was collected at the storage tank on 13 July 2020. During the treated groundwater sampling process, the treated groundwater sample was clear without turbidity and no abnormal smell, colour and non-aqueous phase liquid (NAPL) was observed. According to the laboratory report, the treated groundwater sample result for PCRs (C17-C35) is found below both the most stringent set of RBRGs and Solubility Limit as per the clean-up target agreed in the approved CAR/RAP. Therefore, the treatment for those 1m^3 of extracted groundwater by oil / water separation and sedimentation process was completed. The treated groundwater then was discharged to the ground through the existing borehole

6.0.9 After extracting 1m^3 of groundwater from S1 for treatment, three (3) consecutive groundwater samples for closure assessment were collected from groundwater well at S1 on 13 July 2020. During the groundwater sampling process at S1, the groundwater sample was clear without turbidity and no abnormal smell, colour and non-aqueous phase liquid (NAPL) was observed. According to the laboratory reports, all the three groundwater sample results for PCRs (C17-C35) are found below both the most stringent set of RBRGs and Solubility Limit as per the clean-up target agreed in the approved CAR/RAP. Therefore, the groundwater at S1 is considered to be completely remediated.

6.0.10 All identified contaminated groundwater and soil within the site were remediated to be below the clean-up target agreed in the approved CAR/RAP. All the treated contaminated soil was backfilled to the original location without any surplus disposal / reuse outside site boundary. Due to the completion of remediation works, the site area is considered to be suitable for carrying out the sequent construction works.

FIGURE 1

SITE LOCATION PLAN



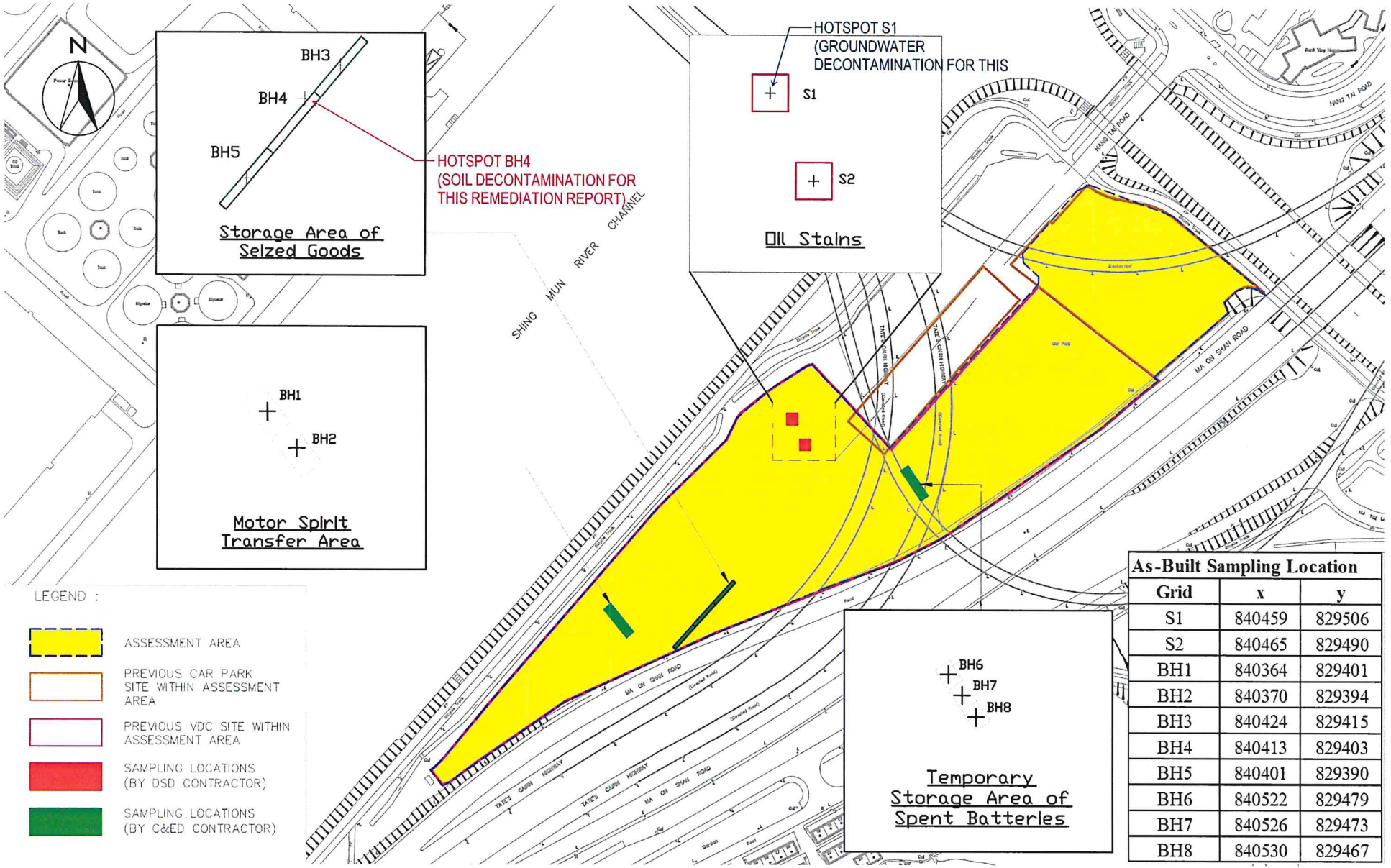
SOURCE: FIGURE NO. 1a - LAND CONTAMINATION ASSESSMENT AREA PLAN OF APPROVED CAR/RAP

Title	**Decontamination Works of Groundwater and Soil for Relocation of Sha Tin Sewage Treatment Works to Caverns - Site Prepration & Access Tunnel Construction**	Scale **N.T.S.**	Project Ref. **TE20030**
	LAND CONTAMINATION ASSESSMENT AREA WITH HOTSPOT LOCATIONS	Date **Oct-20**	Figure No. **FIGURE 1**

TEEMWAY

FIGURE 2

SAMPLING LOCATION PLAN
WITH IDENTIFIED CONTAMINATED AREA



As-Built Sampling Location

Grid	x	y
S1	840459	829506
S2	840465	829490
BH1	840364	829401
BH2	840370	829394
BH3	840424	829415
BH4	840413	829403
BH5	840401	829390
BH6	840522	829479
BH7	840526	829473
BH8	840530	829467

SOURCE: FIGURE 2 - SAMPLING LOCATIONS AT VDC OF APPROVED CAR/RAP

Title **Decontamination Works of Groundwater and Soil for Relocation of Sha Tin Sewage Treatment Works to Caverns - Site Prepration & Access Tunnel Construction**

PREVIOUSLY SAMPLING LOCATIONS AT EX-VDC WITH HOTSPOT LOCATIONS

Scale	N.T.S.	Project Ref.	TE20030
Date	Oct-20	Figure No.	FIGURE 2

TEEMWAY

FIGURE 3

LAYOUT PLAN OF UNDERGROUND PIPES

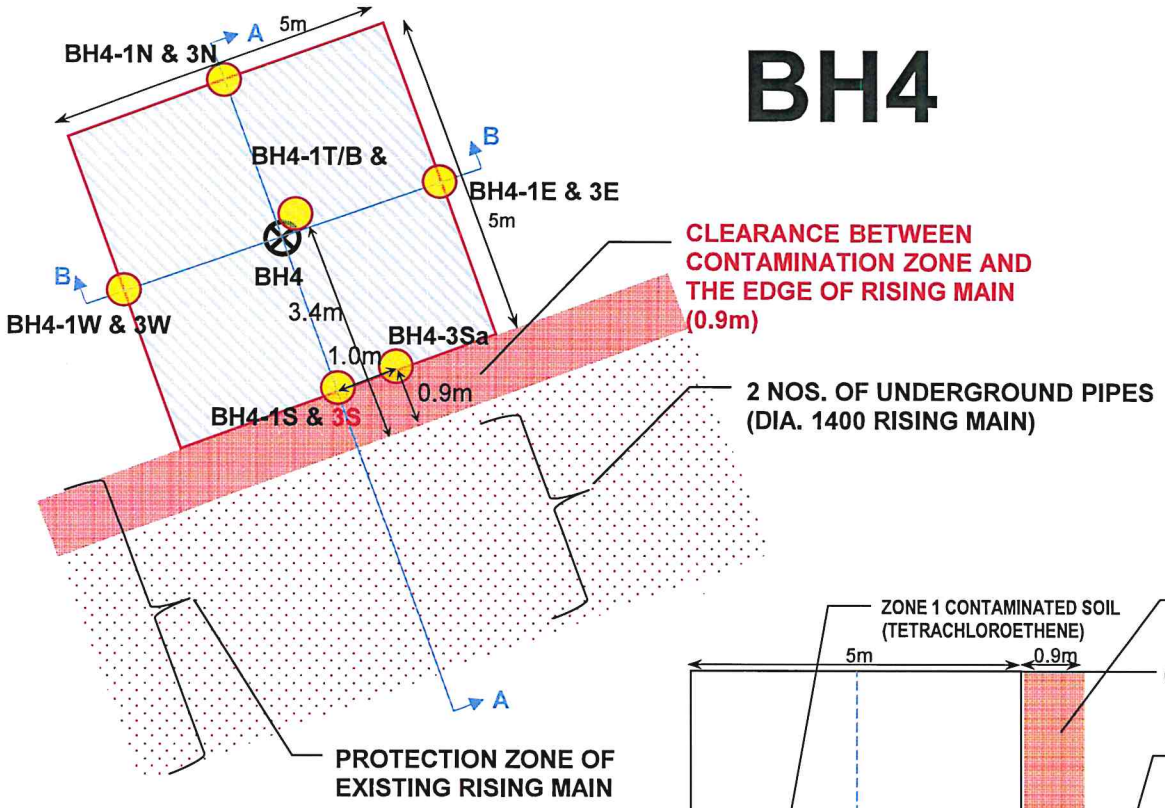
Title	Decontamination Works of Groundwater and Soil for Relocation of Sha Tin Sewage Treatment Works to Caverns - Site Prepration & Access Tunnel Construction	Scale	N.T.S.	Project Ref. TE20030
	SITE LAYOUT PLAN OF UNDERGROUND PIPES	Date	Oct-20	Figure No. FIGURE 3

TEEMWAY

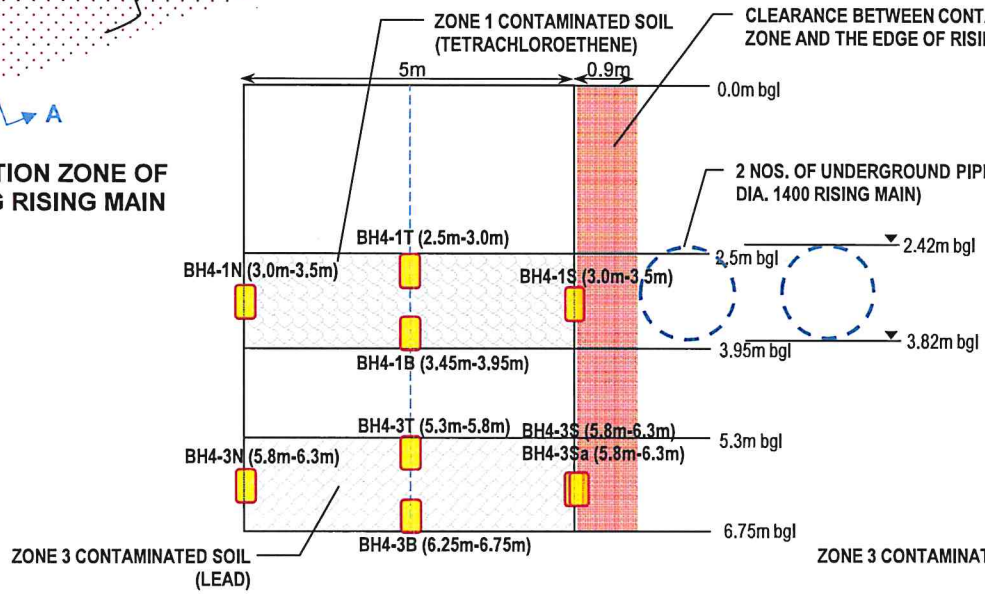
FIGURE 4

CONFIRMATORY SAMPLING LOCATIONS AND CONTAMINATION EXTENT

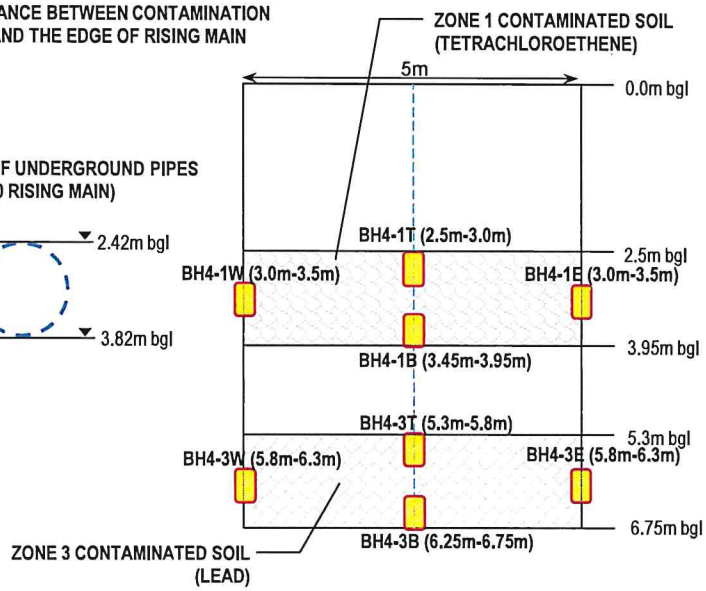
BH4



PLAN VIEW



SECTION A-A

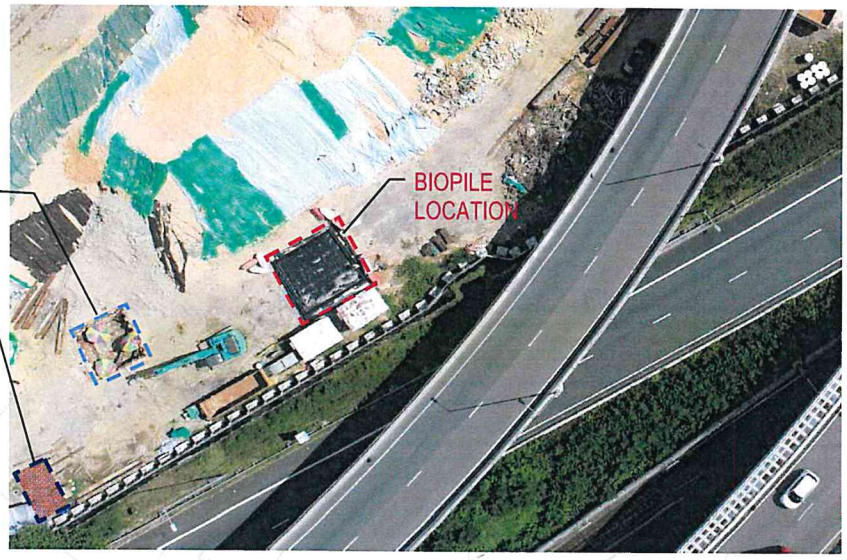


SECTION B-B

Title: Decontamination Works of Groundwater and Soil for Relocation of Sha Tin Sewage Treatment Works to Caverns - Site Prepration & Access Tunnel Construction CONFIRMATORY SAMPLING LOCATIONS & CONTAMINATION EXTENT	Scale: N.T.S.	Project Ref.: TE20030	TEEMWAY
	Date: Oct-20	Figure No.: FIGURE 4	

FIGURE 5

LOCATION PLAN OF BIOPILE SETUP



N 829 399.000
E 840 410.000

N 829 397.555
E 840 413.227

N 829 402.227
E 840 411.445

N 829 400.445
E 840 406.773

N 829 395.774
E 840 408.555

BIOPILE LOCATION

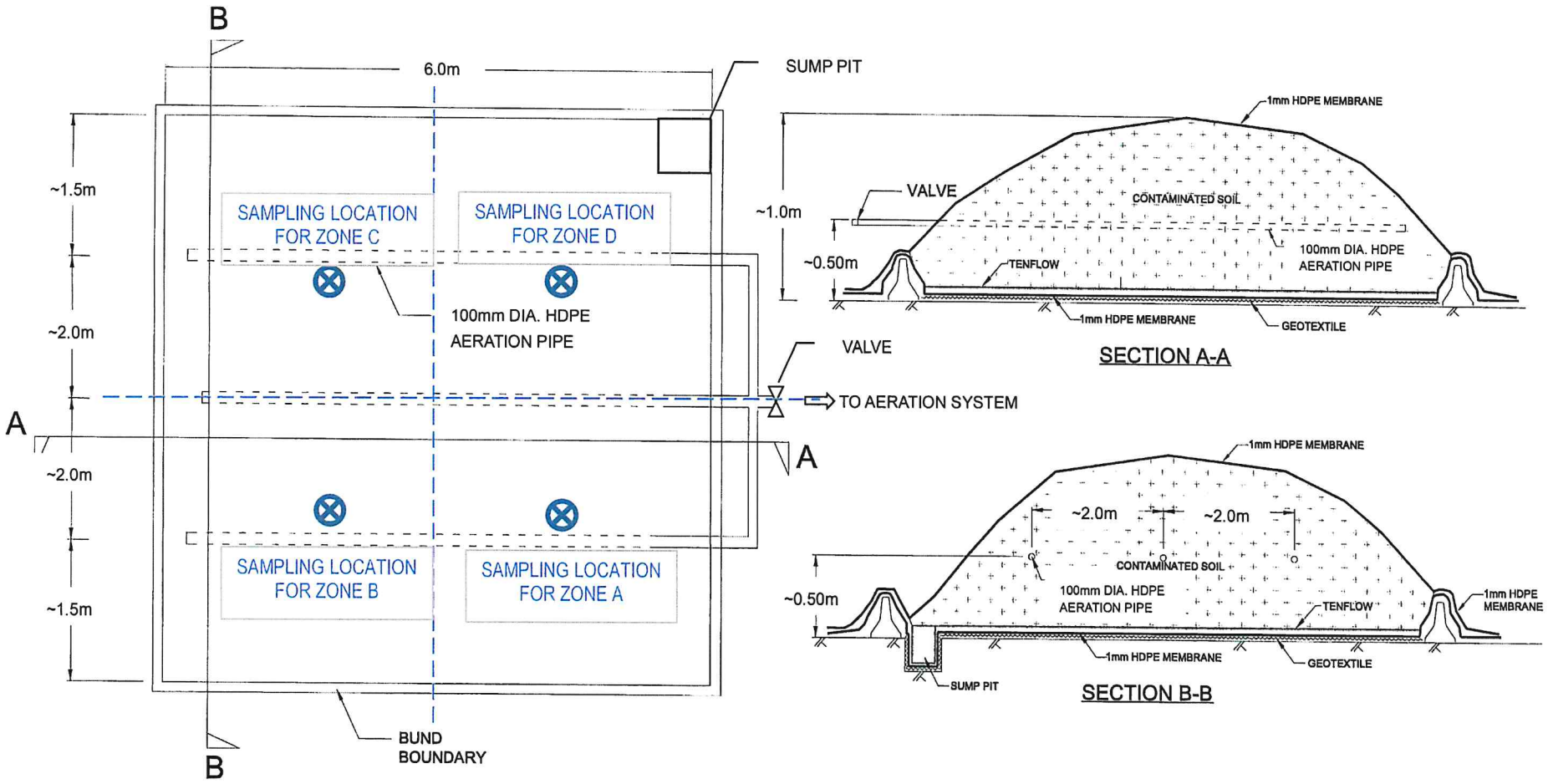
CONTAMINATION SOIL AT BH4
5M (L) X 5M (W) X 6.75M (D)

CEMENT SOLIDIFICATION
LOCATION

Title	Decontamination Works of Groundwater and Soil for Relocation of Sha Tin Sewage Treatment Works to Caverns - Site Prepration & Access Tunnel Construction	Scale	N.T.S.	Project Ref. TE20030
	LOCATION PLAN OF BIOPILE SETUP	Date	Mar-21	Figure No. FIGURE 5

FIGURE 6

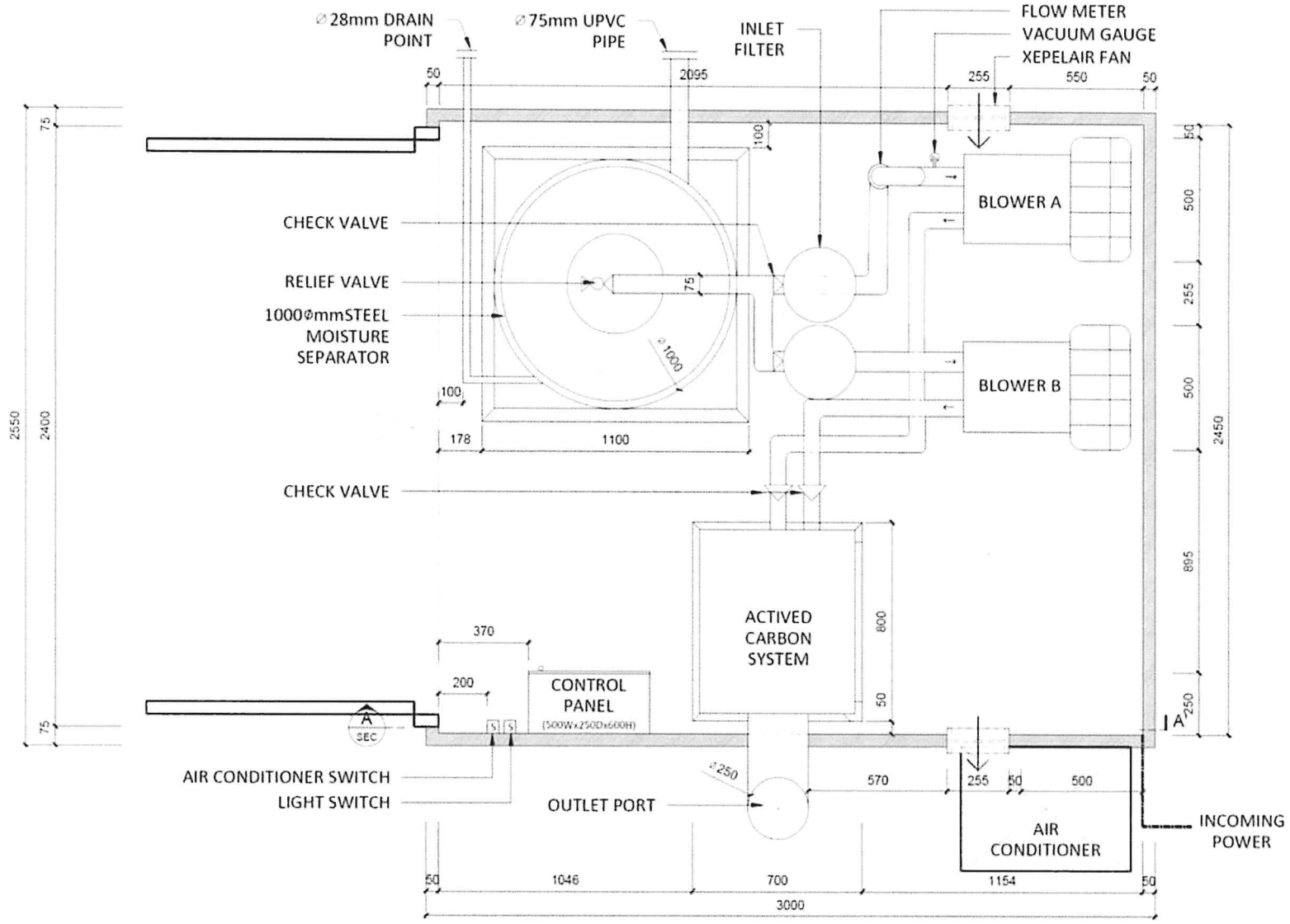
BIOPILE SETUP FOR ZONE 1 CONTAMINATED SOIL



Title: Decontamination Works of Groundwater and Soil for Relocation of Sha Tin Sewage Treatment Works to Caverns - Site Prepration & Access Tunnel Construction **BIOPILE SETUP FOR ZONE 1 CONTAMINATED SOIL**	Scale: N.T.S.	Project Ref.: TE20030	TEEMWAY
	Date: Jan-21	Figure No.: FIGURE 6	

FIGURE 7

AERATION SYSTEM OF BIOPILE FOR ZONE 1 CONTAMINATED SOIL



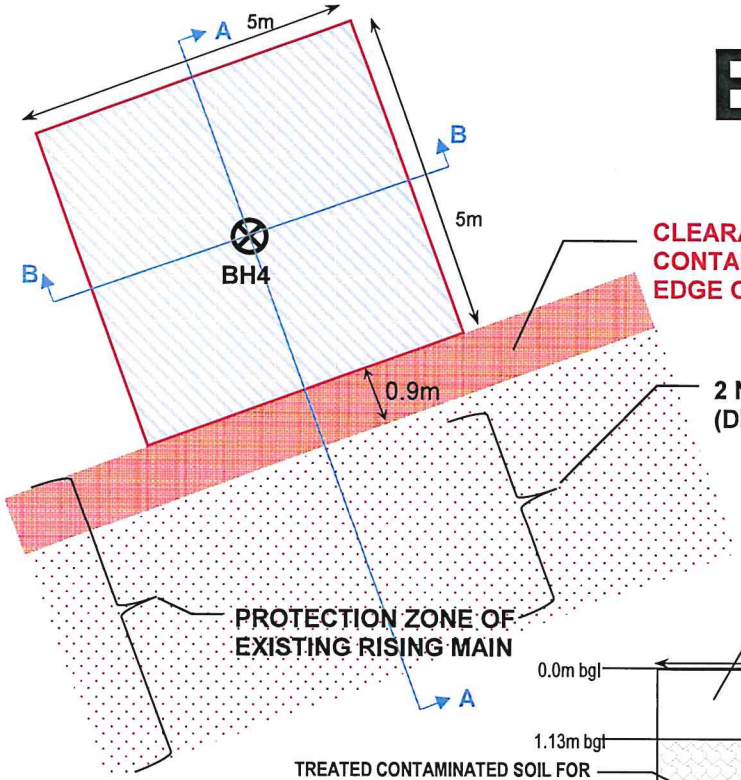
Title	**Decontamination Works of Groundwater and Soil for Relocation of Sha Tin Sewage Treatment Works to Caverns - Site Prepration & Access Tunnel Construction**	Scale	**N.T.S.**	Project Ref. **TE20030**
	AERATION SYSTEM OF BIOPILE FOR ZONE 1 CONTAMINATED SOIL	Date	**Oct-20**	Figure No. **FIGURE 7**

TEEMWAY

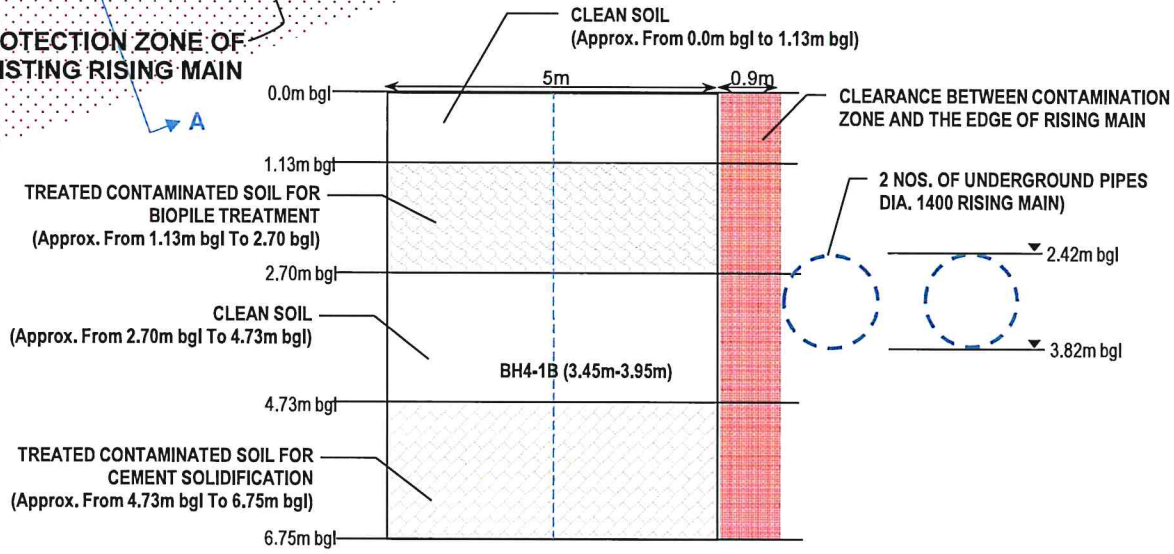
FIGURE 8

BACKFILLING LAYOUT OF TREATED CONTAMINATED SOIL

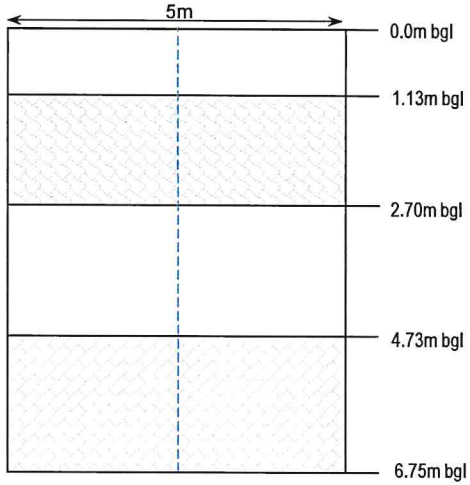
BH4



PLAN VIEW



SECTION A-A

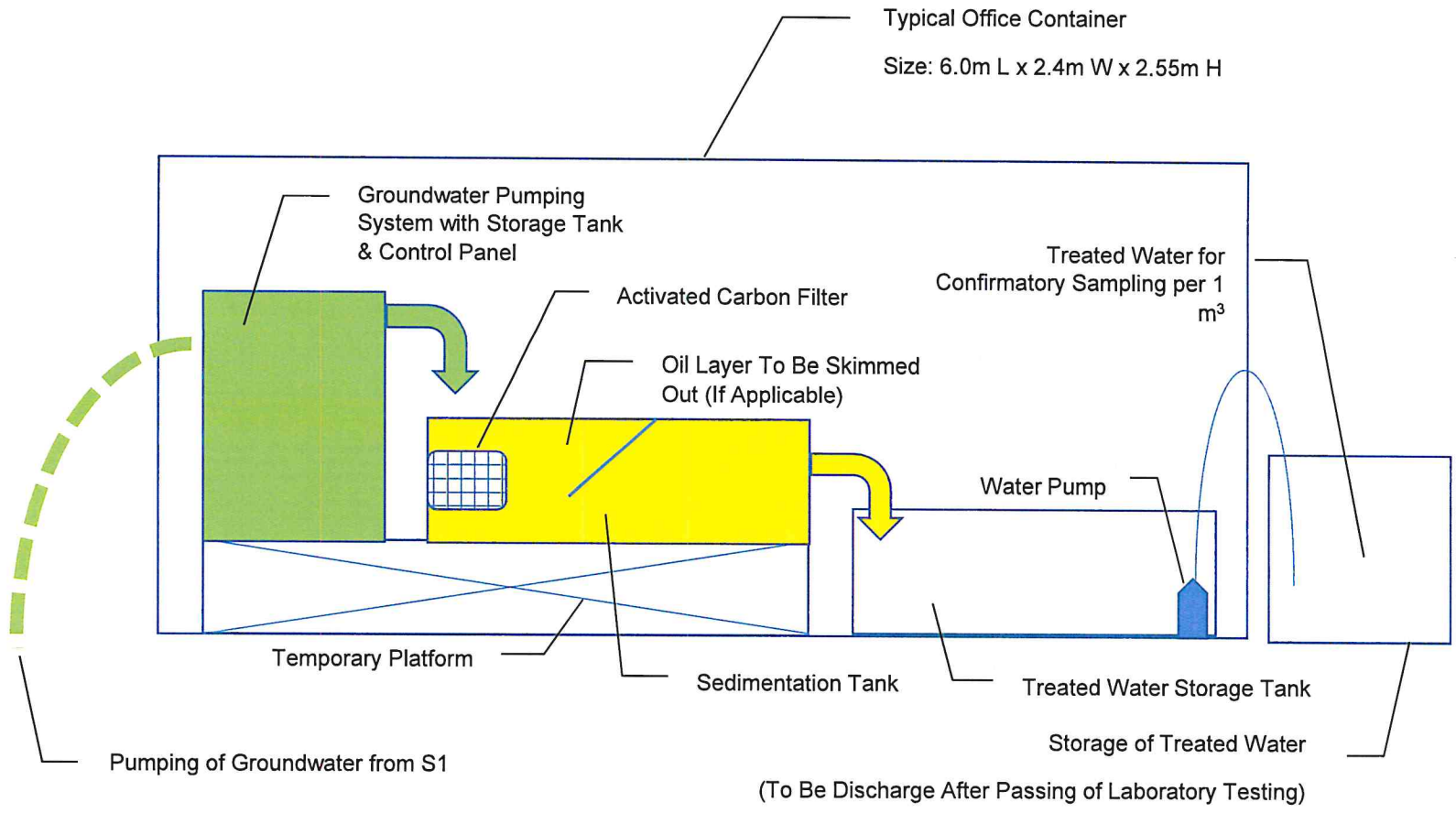


SECTION B-B

Title	Decontamination Works of Groundwater and Soil for Relocation of Sha Tin Sewage Treatment Works to Caverns - Site Prepration & Access Tunnel Construction	Scale	N.T.S.	Project Ref. TE20030
	BACKFILLING LAYOUT OF TREATED CONTAMINATED SOIL	Date	Oct-20	Figure No. FIGURE 8

FIGURE 9

SEDIMENTATION SETUP FOR GROUNDWATER TREATMENT



ELEVATION VIEW

Title	Decontamination Works of Groundwater and Soil for Relocation of Sha Tin Sewage Treatment Works to Caverns - Site Prepration & Access Tunnel Construction SEDIMENTATION SETUP FOR GROUNDWATER TREATMENT	Scale: N.T.S.	Project Ref.: TE20030	TEMWAY
		Date: Oct-20	Figure No.: FIGURE 9	

APPENDIX A

LABORATORY REPORTS & COC FORMS FOR CONFIRMATORY TESTING (ZONE 1)

(Please refer to attached CD-ROM)

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2020326
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 01-Jun-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 04-Jun-2020
C-O-C number	: H040771			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV
Chan Siu Ming , Vico	Manager - Inorganics	Inorganics

General Comments

This report supersedes any previous report(s) with this reference. 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 01-Jun-2020 to 04-Jun-2020.

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: HK2020326

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Result(s) of soil/sediment sample(s) was / were reported on dry weight basis.

Analytical Results

Sub-Matrix: SOIL

Compound	CAS Number	LOR	Unit	Client sample ID: BH4-1T (2.5m-3.0m)	—	—	—	—
				Client sampling date / time: 01-Jun-2020 11:30	—	—	—	—
				HK2020326-001	——	——	——	——
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	---	0.1	%	18.0	—	—	—	—
EP-074_SR-E: Halogenated Aliphatics								
EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	—	—	—	—
EP-074_SR-S: VOC Surrogates								
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%	96.4	—	—	—	—
EP074_SR: Toluene-D8	2037-26-5	0.1	%	102	—	—	—	—
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%	105	—	—	—	—

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3056116)								
HK2020270-009	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	18.0	17.8	1.06
HK2020270-026	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	21.8	21.4	1.70
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3044422)								
HK2019641-001	Anonymous	EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	0.00

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
		LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3044422)											
EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	106	----	79.0	123	----	----

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3044422)										
HK2019647-001	Anonymous	EP074_SR: Tetrachloroethene	127-18-4	0.25 mg/kg	114	----	50.0	130	----	----

Surrogate Control Limits

Sub-Matrix: SOIL

Compound	CAS Number	Recovery Limits (%)	
		Low	High
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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2020329
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 01-Jun-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 04-Jun-2020
C-O-C number	: H040773			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV
Chan Siu Ming , Vico	Manager - Inorganics	Inorganics

General Comments

This report supersedes any previous report(s) with this reference. 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 01-Jun-2020 to 04-Jun-2020.

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: HK2020329

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Result(s) of soil/sediment sample(s) was / were reported on dry weight basis.

Analytical Results

Sub-Matrix: SOIL

Compound	CAS Number	LOR	Unit	Client sample ID: BH4-1B (3.45m-3.95m)	—	—	—	—
				Client sampling date / time: 01-Jun-2020 15:30	—	—	—	—
				HK2020329-001	——	——	——	——
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	---	0.1	%	20.6	—	—	—	—
EP-074_SR-E: Halogenated Aliphatics								
EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	—	—	—	—
EP-074_SR-S: VOC Surrogates								
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%	92.0	—	—	—	—
EP074_SR: Toluene-D8	2037-26-5	0.1	%	102	—	—	—	—
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%	103	—	—	—	—

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3056116)								
HK2020270-009	Anonymous	EA055: Moisture Content (dried @ 103°C)	---	0.1	%	18.0	17.8	1.06
HK2020270-026	Anonymous	EA055: Moisture Content (dried @ 103°C)	---	0.1	%	21.8	21.4	1.70
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3044422)								
HK2019641-001	Anonymous	EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	0.00

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
		LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3044422)											
EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	106	---	79.0	123	---	---

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3044422)										
HK2019647-001	Anonymous	EP074_SR: Tetrachloroethene	127-18-4	0.25 mg/kg	114	---	50.0	130	---	---

Surrogate Control Limits

Sub-Matrix: SOIL

Compound	CAS Number	Recovery Limits (%)	
		Low	High
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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2019319
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 22-May-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 27-May-2020
C-O-C number	: H040752			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 22-May-2020 to 26-May-2020.

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: HK2019319

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Result(s) of soil/sediment sample(s) was / were reported on dry weight basis.

Analytical Results

Sub-Matrix: SOIL				Client sample ID	BH4-1S (3.0m – 3.5m)	—	—	—	—
				Client sampling date / time	22-May-2020 14:10	—	—	—	—
Compound	CAS Number	LOR	Unit		HK2019319-001	——	——	——	——
EP-074_SR-E: Halogenated Aliphatics									
EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg		<0.04	—	—	—	—
EP-074_SR-S: VOC Surrogates									
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%		90.7	—	—	—	—
EP074_SR: Toluene-D8	2037-26-5	0.1	%		101	—	—	—	—
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		105	—	—	—	—

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3030611)								
HK2018552-001	Anonymous	Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	0.00

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3030611)											
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	101	---	79.0	123	---	---

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3030611)										
HK2018552-002	Anonymous	Tetrachloroethene	127-18-4	0.25 mg/kg	113	---	50.0	130	---	---

Surrogate Control Limits

Sub-Matrix: SOIL

Compound	CAS Number	Recovery Limits (%)	
		Low	High
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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2019641
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 26-May-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 02-Jun-2020
C-O-C number	: H040755			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV
Chan Siu Ming , Vico	Manager - Inorganics	Inorganics

General Comments

This report supersedes any previous report(s) with this reference. 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 26-May-2020 to 01-Jun-2020.

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: HK2019641

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Result(s) of soil/sediment sample(s) was / were reported on dry weight basis.

Analytical Results

Sub-Matrix: SOIL

Compound	CAS Number	LOR	Unit	Client sample ID: BH4-1W (3.0m-3.5m)	—	—	—	—
				Client sampling date / time: 26-May-2020 10:30	—	—	—	—
				HK2019641-001	——	——	——	——
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	---	0.1	%	18.3	—	—	—	—
EP-074_SR-E: Halogenated Aliphatics								
EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	—	—	—	—
EP-074_SR-S: VOC Surrogates								
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%	91.4	—	—	—	—
EP074_SR: Toluene-D8	2037-26-5	0.1	%	101	—	—	—	—
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%	103	—	—	—	—

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3046123)								
HK2019365-017	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	19.3	19.4	0.00
HK2019791-003	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	19.6	19.6	0.00
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3044422)								
HK2019641-001	BH4-1W (3.0m-3.5m)	Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	0.00

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
		LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3044422)											
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	106	----	79.0	123	----	----

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3044422)										
HK2019647-001	Anonymous	Tetrachloroethene	127-18-4	0.25 mg/kg	114	----	50.0	130	----	----

Surrogate Control Limits

Sub-Matrix: SOIL

Compound	CAS Number	Recovery Limits (%)	
		Low	High
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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2019838
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 27-May-2020
Order number	: ---	Quote number	: HKE/1680/2020	Issue Date	: 02-Jun-2020
C-O-C number	: H040762			No. of samples received	: 1
Site	: ---			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV
Chan Siu Ming , Vico	Manager - Inorganics	Inorganics

General Comments

This report supersedes any previous report(s) with this reference. 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 27-May-2020 to 01-Jun-2020.

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: HK2019838

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Result(s) of soil/sediment sample(s) was / were reported on dry weight basis.

Analytical Results

Sub-Matrix: SOIL

			Client sample ID	BH4-1N (3.0m-3.5m)	—	—	—	—
			Client sampling date / time	27-May-2020 14:30	—	—	—	—
Compound	CAS Number	LOR	Unit	HK2019838-001	——	——	——	——
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	19.8	—	—	—	—
EP-074_SR-E: Halogenated Aliphatics								
EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	—	—	—	—
EP-074_SR-S: VOC Surrogates								
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%	92.2	—	—	—	—
EP074_SR: Toluene-D8	2037-26-5	0.1	%	102	—	—	—	—
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%	103	—	—	—	—

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3046123)								
HK2019365-017	Anonymous	EA055: Moisture Content (dried @ 103°C)	---	0.1	%	19.3	19.4	0.00
HK2019791-003	Anonymous	EA055: Moisture Content (dried @ 103°C)	---	0.1	%	19.6	19.6	0.00
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3044422)								
HK2019641-001	Anonymous	Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	0.00

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3044422)											
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	106	---	79.0	123	---	---

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3044422)										
HK2019647-001	Anonymous	Tetrachloroethene	127-18-4	0.25 mg/kg	114	---	50.0	130	---	---

Surrogate Control Limits

Sub-Matrix: SOIL

Compound	CAS Number	Recovery Limits (%)	
		Low	High
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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2020130
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 29-May-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 04-Jun-2020
C-O-C number	: H040767			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV
Chan Siu Ming , Vico	Manager - Inorganics	Inorganics

General Comments

This report supersedes any previous report(s) with this reference. 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 29-May-2020 to 04-Jun-2020.

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: HK2020130

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Result(s) of soil/sediment sample(s) was / were reported on dry weight basis.

Analytical Results

Sub-Matrix: SOIL

Compound	CAS Number	LOR	Unit	Client sample ID: BH4-1E (3.0m-3.5m)	—	—	—	—
				Client sampling date / time: 29-May-2020 09:45	---	—	—	---
				HK2020130-001	———	———	———	———
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	---	0.1	%	21.7	—	—	—	—
EP-074_SR-E: Halogenated Aliphatics								
EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	—	—	—	—
EP-074_SR-S: VOC Surrogates								
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%	96.5	—	—	—	—
EP074_SR: Toluene-D8	2037-26-5	0.1	%	103	—	—	—	—
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%	106	—	—	—	—

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3054378)								
HK2020061-003	Anonymous	EA055: Moisture Content (dried @ 103°C)	---	0.1	%	18.3	18.6	1.77
HK2020061-009	Anonymous	EA055: Moisture Content (dried @ 103°C)	---	0.1	%	18.6	18.6	0.00
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3044422)								
HK2019641-001	Anonymous	EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	0.00

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
		LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3044422)											
EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	106	---	79.0	123	---	---

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3044422)										
HK2019647-001	Anonymous	EP074_SR: Tetrachloroethene	127-18-4	0.25 mg/kg	114	---	50.0	130	---	---

Surrogate Control Limits

Sub-Matrix: SOIL

Compound	CAS Number	Recovery Limits (%)	
		Low	High
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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2020498
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 02-Jun-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 05-Jun-2020
C-O-C number	: H040776			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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 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. 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 02-Jun-2020 to 05-Jun-2020.

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: HK2020498

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Result(s) of soil/sediment sample(s) was / were reported on dry weight basis.

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.

Analytical Results

Sub-Matrix: SOIL			Client sample ID	BH4-3T (5.3m-5.8m)	---	---	---	---
			Client sampling date / time	02-Jun-2020 10:50	---	---	---	---
Compound	CAS Number	LOR	Unit	HK2020498-001	----	----	----	----
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	---	0.1	%	20.7	---	---	---	---
EG: Metals and Major Cations								
EG020: Lead	7439-92-1	1	mg/kg	45	---	---	---	---

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3056117)								
HK2020333-004	Anonymous	EA055: Moisture Content (dried @ 103°C)	---	0.1	%	15.9	15.9	0.00
HK2020496-001	Anonymous	EA055: Moisture Content (dried @ 103°C)	---	0.1	%	22.2	21.9	1.32
EG: Metals and Major Cations (QC Lot: 3057298)								
HK2020496-001	Anonymous	EG020: Lead	7439-92-1	1	mg/kg	71	59	19.2

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3057298)											
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	95.1	---	90.0	110	---	---

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3057298)										
HK2020333-013	Anonymous	EG020: Lead	7439-92-1	5 mg/kg	# Not Determined	---	75.0	125	---	---

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2020500
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 02-Jun-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 05-Jun-2020
C-O-C number	: H040777			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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 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. 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 02-Jun-2020 to 05-Jun-2020.

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: HK2020500

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Result(s) of soil/sediment sample(s) was / were reported on dry weight basis.

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.

Analytical Results

Sub-Matrix: SOIL			Client sample ID	BH4-3B (6.25m-6.75m)	—	—	—	—
			Client sampling date / time	02-Jun-2020 14:50	---	—	---	---
Compound	CAS Number	LOR	Unit	HK2020500-001	———	———	———	———
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	---	0.1	%	22.6	—	—	—	—
EG: Metals and Major Cations								
EG020: Lead	7439-92-1	1	mg/kg	102	—	—	—	—

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3056117)								
HK2020333-004	Anonymous	EA055: Moisture Content (dried @ 103°C)	---	0.1	%	15.9	15.9	0.00
HK2020496-001	Anonymous	EA055: Moisture Content (dried @ 103°C)	---	0.1	%	22.2	21.9	1.32
EG: Metals and Major Cations (QC Lot: 3057298)								
HK2020496-001	Anonymous	EG020: Lead	7439-92-1	1	mg/kg	71	59	19.2

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3057298)											
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	95.1	---	90.0	110	---	---

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3057298)										
HK2020333-013	Anonymous	EG020: Lead	7439-92-1	5 mg/kg	# Not Determined	---	75.0	125	---	---

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2019397
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 23-May-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 27-May-2020
C-O-C number	: —			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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 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. 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 23-May-2020 to 27-May-2020.

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: HK2019397

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Result(s) of soil/sediment sample(s) was / were reported on dry weight basis.

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.

Analytical Results

Sub-Matrix: SOIL				Client sample ID	BH4-3S- (5.8m-6.3m)	—	—	—	—
				Client sampling date / time	23-May-2020 11:40	—	—	—	—
Compound	CAS Number	LOR	Unit		HK2019397-001	——	——	——	——
EA/ED: Physical and Aggregate Properties									
EA055: Moisture Content (dried @ 103°C)	----	0.1	%		31.5	—	—	—	—
EG: Metals and Major Cations									
EG020: Lead	7439-92-1	1	mg/kg		362	—	—	—	—

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3040869)								
HK2019397-001	BH4-3S-(5.8m-6.3m)	EA055: Moisture Content (dried @ 103°C)	---	0.1	%	31.5	32.5	2.93

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3040962)											
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	104	---	90.0	110	---	---

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3040962)										
HK2019397-001	BH4-3S-(5.8m-6.3m)	EG020: Lead	7439-92-1	5 mg/kg	# Not Determined	---	75.0	125	---	---

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2021295
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 05-Jun-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 10-Jun-2020
C-O-C number	: H040779			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Leung Chak Cheong , Mike	Senior Chemist	Metals_ENV
Lin Wai Yu , Iris	Assistant Manager - Inorganics	Inorganics

General Comments

This report supersedes any previous report(s) with this reference. 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 05-Jun-2020 to 10-Jun-2020.

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: HK2021295

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Result(s) of soil/sediment sample(s) was / were reported on dry weight basis.

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.

Analytical Results

Sub-Matrix: SOIL			Client sample ID	BH4-3Sa (5.8m-6.3m)	—	—	—	—
			Client sampling date / time	05-Jun-2020 16:10	---	---	---	---
Compound	CAS Number	LOR	Unit	HK2021295-001	———	———	———	———
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	21.4	—	—	—	—
EG: Metals and Major Cations								
EG020: Lead	7439-92-1	1	mg/kg	45	—	—	—	—

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3065346)								
HK2021239-002	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	23.8	23.9	0.00
EG: Metals and Major Cations (QC Lot: 3065409)								
HK2021029-002	Anonymous	EG020: Lead	7439-92-1	1	mg/kg	15	14	0.00

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3065409)											
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	97.7	----	90.0	110	----	----

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3065409)										
HK2021029-001	Anonymous	EG020: Lead	7439-92-1	5 mg/kg	88.5	----	75.0	125	----	----

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2019627
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 26-May-2020
Order number	: ---	Quote number	: HKE/1680/2020	Issue Date	: 02-Jun-2020
C-O-C number	: H040758			No. of samples received	: 1
Site	: ---			No. of samples analysed	: 1

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 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. 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 26-May-2020 to 02-Jun-2020.

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: HK2019627

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Result(s) of soil/sediment sample(s) was / were reported on dry weight basis.

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.

Analytical Results

Sub-Matrix: SOIL				Client sample ID	BH4-3W (5.8m-6.3m)	—	—	—	—
				Client sampling date / time	26-May-2020 14:10	---	---	---	---
Compound	CAS Number	LOR	Unit		HK2019627-001	———	———	———	———
EA/ED: Physical and Aggregate Properties									
EA055: Moisture Content (dried @ 103°C)	---	0.1	%		21.8	—	—	—	—
EG: Metals and Major Cations									
EG020: Lead	7439-92-1	1	mg/kg		240	—	—	—	—

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3046123)								
HK2019365-017	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	19.3	19.4	0.00
HK2019791-003	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	19.6	19.6	0.00
EG: Metals and Major Cations (QC Lot: 3043382)								
HK2019629-001	Anonymous	EG020: Lead	7439-92-1	1	mg/kg	235	252	7.22

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3043382)											
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	95.5	----	90.0	110	----	----

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3043382)										
HK2019627-001	BH4-3W (5.8m-6.3m)	EG020: Lead	7439-92-1	5 mg/kg	# Not Determined	----	75.0	125	----	----

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2019939
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 28-May-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 03-Jun-2020
C-O-C number	: H040765			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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 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. 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 28-May-2020 to 03-Jun-2020.

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: HK2019939

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Result(s) of soil/sediment sample(s) was / were reported on dry weight basis.

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.

Analytical Results

Sub-Matrix: SOIL			Client sample ID	BH4-3N (5.8m-6.3m)	—	—	—	—
			Client sampling date / time	28-May-2020 10:20	—	—	—	—
Compound	CAS Number	LOR	Unit	HK2019939-001	——	——	——	——
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	21.5	—	—	—	—
EG: Metals and Major Cations								
EG020: Lead	7439-92-1	1	mg/kg	42	—	—	—	—

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3052031)								
HK2019925-023	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	27.8	28.1	0.990
HK2020028-003	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	18.8	18.8	0.00
EG: Metals and Major Cations (QC Lot: 3048858)								
HK2019925-020	Anonymous	EG020: Lead	7439-92-1	1	mg/kg	38	37	0.00

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3048858)											
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	98.4	----	90.0	110	----	----

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3048858)										
HK2019925-019	Anonymous	EG020: Lead	7439-92-1	5 mg/kg	# Not Determined	----	75.0	125	----	----

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2020131
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 29-May-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 04-Jun-2020
C-O-C number	: H040769			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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 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. 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 29-May-2020 to 04-Jun-2020.

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: HK2020131

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Result(s) of soil/sediment sample(s) was / were reported on dry weight basis.

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.

Analytical Results

Sub-Matrix: SOIL			Client sample ID	BH4-3E (5.8m-6.3m)	—	—	—	—
			Client sampling date / time	29-May-2020 15:45	---	---	---	---
Compound	CAS Number	LOR	Unit	HK2020131-001	———	———	———	———
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	---	0.1	%	20.4	—	—	—	—
EG: Metals and Major Cations								
EG020: Lead	7439-92-1	1	mg/kg	42	—	—	—	—

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3054378)								
HK2020061-003	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	18.3	18.6	1.77
HK2020061-009	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	18.6	18.6	0.00
EG: Metals and Major Cations (QC Lot: 3052099)								
HK2020162-001	Anonymous	EG020: Lead	7439-92-1	1	mg/kg	8	8	0.00

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3052099)											
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	96.0	----	90.0	110	----	----

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3052099)										
HK2020131-001	BH4-3E (5.8m-6.3m)	EG020: Lead	7439-92-1	5 mg/kg	# Not Determined	----	75.0	125	----	----

CHAIN OF CUSTODY DOCUMENTATION

H 040771

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

ALS Laboratory Group

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No N/A

SAMPLE TEMPERATURE

CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TETRACHLOROETHENE												Notes: e.g. Highly contaminated samples e.g. "High PAHs expected" Extra volume for QC or trace LORs etc.
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles													
1	BH4-1T (2.5m-3.0m)	S	01/06/20	1130	JAR	1	✓												3 DAYS EXPRESS

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 01/06/2020	Name:	Date: 1/6/20	Con' Note No:
Of: TEEMWAY	Time: 16:40	Of: ALS (HK)	Time: 17:10	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

H 040773

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05)	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED Including SUITES(note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TETRACHLOROETHENE	Notes: e.g. Highly contaminated samples e.g. "High PAHs expected" Extra volume for QC or trace LORs etc.
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles		
1	BH4-1B (3.45m-3.95m)	S	01/06/20	15:30	JAR	1	✓	3 DAYS EXPRESS

RELINQUISHED BY:

Name:	Thomas YEUNG	Date:	01/06/2020
Of:	TEEMWAY	Time:	16:40
Name:		Date:	
Of:		Time:	

RECEIVED BY

Name:		Date:	1/6/20
Of:	ALS (HK)	Time:	17:10
Name:		Date:	
Of:		Time:	

METHOD OF SHIPMENT

Con' Note No:

Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

ALS Laboratory Group

WHITE - LAB COPY
YELLOW - CUSTOMER COPY
PINK - BOOK COPY

CHAIN OF CUSTODY DOCUMENTATION

H 040752

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site Preparation and Access Tunnel Construction (DC/2018/05)	EMAIL REPORT TO:
SITE:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

ALS Laboratory Group

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No (N/A)
SAMPLE TEMPERATURE
CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION		TETRACHLOROETHENE	Notes: e.g. Highly contaminated samples e.g. "High PAHs expected" Extra volume for QC or trace LORs etc.
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
1	BH4-1S (3.0m-3.5m)	S	20/5/20	1610	JAR	1	✓
							3 DAY EXPRESS

RELINQUISHED BY:

Name: Thomas YEUNG	Date: 22/05/2020	Name: Sasha	Date: 22-5-2020
Of: TEEMWAY	Time: 15:00	Of: ALS (HK)	Time: 17:30
Name:	Date:	Name:	Date:
Of:	Time:	Of:	Time:

METHOD OF SHIPMENT
Con' Note No:
Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

ALS Laboratory Group

WHITE - LAB COPY
YELLOW - CUSTOMER COPY
PINK - BOOK COPY

CHAIN OF CUSTODY DOCUMENTATION

H 040755

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) T.C. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE INFORMATION (note: S = Soil, W=Water) | CONTAINER INFORMATION

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	TETRACHLOROETHENE
1	BH4-1W (3.0m-3.5m)	S	26/05/20	10:20	JAR	1	✓

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

5 DAYS EXPRESS

RELINQUISHED BY:			RECEIVED BY			METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 26/05/2020		Name:	Date: 26/5/20		
Of: TEEMWAY	Time: 1430		Of: ALS (HK)	Time: 15:15		Con' Note No:
Name:	Date:		Name: Abby	Date: 26/05/20		
Of:	Time:		Of: ALS	Time: 1830		Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

H 040762

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05)	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TETRACHLOROETHENE	Notes: e.g. Highly contaminated samples e.g. "High PAHs expected" Extra volume for QC or trace LORs etc.
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles		
1	BH4-1N (3.0m-3.5m)	S	27/05/20	1430	JAR	1	✓	5 DAYS EXPRESS

RELINQUISHED BY:			RECEIVED BY			METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 27/5/2020		Name: Kevin	Date: 27/5/20		Con' Note No:
Of: TEEMWAY	Time: 1445		Of: ALS (HK)	Time: 15:55		
Name:	Date:		Name:	Date:		Transport Co:
Of:	Time:		Of:	Time:		

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

ALS Laboratory Group

WHITE - LAB COPY
YELLOW - CUSTOMER COPY
PINK - BOOK COPY

CHAIN OF CUSTODY DOCUMENTATION

H 040767

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

ALS Laboratory Group

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TETRACHLOROETHENE												
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles													
1	BH4-1E (3.0m-3.5m)	S	28/05/20	0945	JAR	1	✓												5 DAYS EXPRESS

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 28/05/2020	Name: (CHK)	Date: 28/5/20	Con' Note No:
Of: TEEMWAY	Time: 1615	Of:	Time: 16:55	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

ALS Laboratory Group

WHITE - LAB COPY
YELLOW - CUSTOMER COPY
PINK - BOOK COPY

CHAIN OF CUSTODY DOCUMENTATION

H 040776

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No (N/A)
SAMPLE TEMPERATURE
CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		ANALYSIS REQUIRED
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	LEAD
1.	BH4-3T (5.3m-5.8m)	S	02/06/20	10:50	JAR	1	V

3 DAYS EXPRESS

RELINQUISHED BY:			
Name:	Thomas YEUNG	Date:	02/06/2020
Of:	TEEMWAY	Time:	16:10
Name:		Date:	
Of:		Time:	

RECEIVED BY			
Name:		Date:	2/6/20
Of:	ALS (HK)	Time:	16:35
Name:		Date:	
Of:		Time:	

METHOD OF SHIPMENT
Con' Note No:
Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

H 040777

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site Preparation and Access Tunnel Construction (DC/2018/05)	EMAIL REPORT TO:
SITE:	EMAIL INVOICE TO: (If different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

ALS Laboratory Group

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No (N/A)
SAMPLE TEMPERATURE
CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		LEAD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
1.	BH4-3B (6.25m-6.75m)	S	02/06/20	1450	JAR	1	✓

3 DAYS EXPRESS

RELINQUISHED BY:			RECEIVED BY			METHOD OF SHIPMENT
Name:	Thomas YEUNG	Date: 02/06/2020	Name:		Date: 2/6/20	Con' Note No:
Of:	TEEMWAY	Time: 16:10	Of:	ALS (HK)	Time: 16:20	
Name:		Date:	Name:		Date:	Transport Co:
Of:		Time:	Of:		Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

ALS Laboratory Group

WHITE - LAB COPY
YELLOW - CUSTOMER COPY
PINK - BOOK COPY

CHAIN OF CUSTODY DOCUMENTATION

H 040754

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site Preparation and Access Tunnel Construction (DC/2018/05)	EMAIL REPORT TO:
SITE:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES(note - suite codes must be listed to attract suite prices)

ALS Laboratory Group

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE INFORMATION (note: S = Soil, W=Water)

CONTAINER INFORMATION

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	LEAD
1.	BH4-3S (5.8m-6.3m)	S	23/5/20	1140	JAR	1	✓

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

3 DAY EXPRESS

RELINQUISHED BY:

Name:	Thomas YEUNG	Date:	23/05/2020
Of:	TEEMWAY	Time:	11:40
Name:		Date:	
Of:		Time:	

RECEIVED BY

Name:		Date:	23/5/20
Of:	ALS (HK)	Time:	13:40
Name:		Date:	
Of:		Time:	

METHOD OF SHIPMENT

Con' Note No:

Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

ALS Laboratory Group

WHITE - LAB COPY
YELLOW - CUSTOMER COPY
PINK - BOOK COPY

CHAIN OF CUSTODY DOCUMENTATION

H 040779

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site Preparation and Access Tunnel Construction (DC/2018/05)	EMAIL REPORT TO:
SITE: P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		LEAD	
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles		
1.	BH4-35A (5.8m-6.3m)	S	05/06/20	1610	JAR	1	✓	3 DAYS EXPRESS

RELINQUISHED BY:			RECEIVED BY			METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 05/06/2020		Name:	Date: 5/6/20		Con' Note No:
Of: TEEMWAY	Time: 17:00		Of: ALS	Time: 17:45		
Name:	Date:		Name:	Date:		Transport Co:
Of:	Time:		Of:	Time:		

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

ALS Laboratory Group

WHITE - LAB COPY
YELLOW - CUSTOMER COPY
PINK - BOOK COPY

CHAIN OF CUSTODY DOCUMENTATION

H 040758

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (D6/2018/05)	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No N/A

SAMPLE TEMPERATURE

CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		LEAD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
1	BH4-3U (5.8m-6.3m)	S	26/05/20	1410	JAR	1	✓

5 DAYS EXPRESS

RELINQUISHED BY:

Name:	Thomas YEUNG	Date:	26/05/2020
Of:	TEEMWAY	Time:	16:30
Name:		Date:	
Of:		Time:	

RECEIVED BY

Name:		Date:	26/5/20
Of:	ALS (CHK)	Time:	19:15
Name:		Date:	26/05/20
Of:	ALS	Time:	17:30

METHOD OF SHIPMENT

Con' Note No:

Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

H 040765

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (P.O. NO.: ~~PC/2018/05~~)	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		LEAD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
1	BH4-3N (5.9m - 6.3m)	S	28/05/20	1020	JAR	1	✓

5 DAYS ~~EXPRESS~~

RELINQUISHED BY:			RECEIVED BY			METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 28/05/2020		Name:	Date: 28/5/20		Con' Note No:
Of: TEEMWAY	Time: 10:05		Of: ALS (HK)	Time: 11:45		
Name:	Date:		Name:	Date:		Transport Co:
Of:	Time:		Of:	Time:		

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

ALS Laboratory Group

WHITE - LAB COPY
YELLOW - CUSTOMER COPY
PINK - BOOK COPY

COC Page ____ of ____

CHAIN OF CUSTODY DOCUMENTATION

H 040769

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

ALS Laboratory Group

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		LEAD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
1.	BH4-3E (5.9m - 6.3m)	S	29/05/20	1545	JAR	1	✓

5 DAYS TURNAROUND

RELINQUISHED BY:			
Name:	Thomas YEUNG	Date:	29/05/2020
Of:	TEEMWAY	Time:	16:15
Name:		Date:	
Of:		Time:	

RECEIVED BY			
Name:		Date:	29/5/20
Of:	ALS (HK)	Time:	16:35
Name:		Date:	
Of:		Time:	

METHOD OF SHIPMENT

Con' Note No:

Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

APPENDIX B

LABORATORY REPORTS & COC FORMS FOR QA/QC CONFIRMATORY TESTING (ZONE 1)

(Please refer to attached CD-ROM)

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2019647
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 26-May-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 02-Jun-2020
C-O-C number	: H040759			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV
Chan Siu Ming , Vico	Manager - Inorganics	Inorganics

General Comments

This report supersedes any previous report(s) with this reference. 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 26-May-2020 to 01-Jun-2020.

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: HK2019647

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Result(s) of soil/sediment sample(s) was / were reported on dry weight basis.

Analytical Results

Sub-Matrix: SOIL

Compound	CAS Number	LOR	Unit	Client sample ID: DUP-1	—	—	—	—
				Client sampling date / time: 26-May-2020 10:30	---	---	---	---
				HK2019647-001	———	———	———	———
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	---	0.1	%	18.0	—	—	—	—
EP-074_SR-E: Halogenated Aliphatics								
EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	—	—	—	—
EP-074_SR-S: VOC Surrogates								
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%	91.1	—	—	—	—
EP074_SR: Toluene-D8	2037-26-5	0.1	%	102	—	—	—	—
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%	103	—	—	—	—

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3046123)								
HK2019365-017	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	19.3	19.4	0.00
HK2019791-003	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	19.6	19.6	0.00
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3044422)								
HK2019641-001	Anonymous	Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	0.00

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3044422)											
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	106	----	79.0	123	----	----

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3044422)										
HK2019647-001	DUP-1	Tetrachloroethene	127-18-4	0.25 mg/kg	114	----	50.0	130	----	----

Surrogate Control Limits

Sub-Matrix: SOIL

Compound	CAS Number	Recovery Limits (%)	
		Low	High
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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2019629
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 26-May-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 02-Jun-2020
C-O-C number	: H040761			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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 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. 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 26-May-2020 to 02-Jun-2020.

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: HK2019629

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Result(s) of soil/sediment sample(s) was / were reported on dry weight basis.

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.

Analytical Results

Sub-Matrix: SOIL				Client sample ID	DUP-2	---	---	---	---
				Client sampling date / time	26-May-2020 14:10	---	---	---	---
Compound	CAS Number	LOR	Unit		HK2019629-001	-----	-----	-----	-----
EA/ED: Physical and Aggregate Properties									
EA055: Moisture Content (dried @ 103°C)	----	0.1	%		20.7	---	---	---	---
EG: Metals and Major Cations									
EG020: Lead	7439-92-1	1	mg/kg		235	---	---	---	---

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3046123)								
HK2019365-017	Anonymous	EA055: Moisture Content (dried @ 103°C)	---	0.1	%	19.3	19.4	0.00
HK2019791-003	Anonymous	EA055: Moisture Content (dried @ 103°C)	---	0.1	%	19.6	19.6	0.00
EG: Metals and Major Cations (QC Lot: 3043382)								
HK2019629-001	DUP-2	EG020: Lead	7439-92-1	1	mg/kg	235	252	7.22

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3043382)											
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	95.5	---	90.0	110	---	---

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3043382)										
HK2019627-001	Anonymous	EG020: Lead	7439-92-1	5 mg/kg	# Not Determined	---	75.0	125	---	---

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2019329
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 22-May-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 27-May-2020
C-O-C number	: H040753			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 22-May-2020 to 25-May-2020.

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: HK2019329

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Analytical Results

Sub-Matrix: WATER

Compound	CAS Number	LOR	Unit	Client sample ID: TB-1	—	—	—	—
				Client sampling date / time: 22-May-2020	—	—	—	—
				HK2019329-001	——	——	——	——
EP-074_SR-E: Halogenated Aliphatics								
EP074_SR: Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	—	—	—	—
EP-074_SR-S: VOC Surrogates								
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%	93.6	—	—	—	—
EP074_SR: Toluene-D8	2037-26-5	0.1	%	101	—	—	—	—
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%	104	—	—	—	—

Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

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

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3039516)											
Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	2 µg/L	97.1	---	81.0	128	---	---

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

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

Surrogate Control Limits

Sub-Matrix: WATER

Compound	CAS Number	Recovery Limits (%)	
		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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2019649
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 26-May-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 02-Jun-2020
C-O-C number	: H040756			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 26-May-2020 to 01-Jun-2020.

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: HK2019649

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Analytical Results

Sub-Matrix: WATER

				Client sample ID	TB-2	—	—	—	—
				Client sampling date / time	26-May-2020	—	—	—	—
Compound	CAS Number	LOR	Unit		HK2019649-001	——	——	——	——
EP-074_SR-E: Halogenated Aliphatics									
EP074_SR: Tetrachloroethene	127-18-4	0.5	µg/L		<0.5	—	—	—	—
EP-074_SR-S: VOC Surrogates									
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%		94.9	—	—	—	—
EP074_SR: Toluene-D8	2037-26-5	0.1	%		101	—	—	—	—
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		101	—	—	—	—

Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

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

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3039516)											
Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	2 µg/L	97.1	---	81.0	128	---	---

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

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

Surrogate Control Limits

Sub-Matrix: WATER

Compound	CAS Number	Recovery Limits (%)	
		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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2019841
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 27-May-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 02-Jun-2020
C-O-C number	: H040763			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 27-May-2020 to 01-Jun-2020.

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: HK2019841

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Analytical Results

Sub-Matrix: WATER

Compound	CAS Number	LOR	Unit	Client sample ID: TB-3	—	—	—	—
				Client sampling date / time: 27-May-2020	—	—	—	—
				HK2019841-001	——	——	——	——
EP-074_SR-E: Halogenated Aliphatics								
EP074_SR: Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	—	—	—	—
EP-074_SR-S: VOC Surrogates								
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%	97.0	—	—	—	—
EP074_SR: Toluene-D8	2037-26-5	0.1	%	102	—	—	—	—
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%	101	—	—	—	—

Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

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

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3039516)											
Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	2 µg/L	97.1	---	81.0	128	---	---

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

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

Surrogate Control Limits

Sub-Matrix: WATER

Compound	CAS Number	Recovery Limits (%)	
		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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2020132
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 29-May-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 03-Jun-2020
C-O-C number	: H040768			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 29-May-2020 to 03-Jun-2020.

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: HK2020132

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Analytical Results

Sub-Matrix: WATER

Compound	CAS Number	LOR	Unit	Client sample ID: TB-4	—	—	—	—
				Client sampling date / time: 29-May-2020	---	---	---	---
				HK2020132-001	———	———	———	———
EP-074_SR-E: Halogenated Aliphatics								
EP074_SR: Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	—	—	—	—
EP-074_SR-S: VOC Surrogates								
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%	97.6	—	—	—	—
EP074_SR: Toluene-D8	2037-26-5	0.1	%	103	—	—	—	—
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%	101	—	—	—	—

Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

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

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3048979)											
EP074_SR: Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	2 µg/L	99.4	---	81.0	128	---	---

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

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

Surrogate Control Limits

Sub-Matrix: WATER

Compound	CAS Number	Recovery Limits (%)	
		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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2020328
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 01-Jun-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 03-Jun-2020
C-O-C number	: H040772			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 01-Jun-2020 to 03-Jun-2020.

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: HK2020328

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Analytical Results

Sub-Matrix: WATER

Compound	CAS Number	LOR	Unit	Client sample ID				
				TB-5	—	—	—	—
				Client sampling date / time				
				01-Jun-2020	—	—	—	—
				HK2020328-001	——	——	——	——
EP-074_SR-E: Halogenated Aliphatics								
EP074_SR: Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	—	—	—	—
EP-074_SR-S: VOC Surrogates								
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%	97.5	—	—	—	—
EP074_SR: Toluene-D8	2037-26-5	0.1	%	104	—	—	—	—
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%	102	—	—	—	—

Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

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

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3048979)											
EP074_SR: Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	2 µg/L	99.4	----	81.0	128	----	----

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

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

Surrogate Control Limits

Sub-Matrix: WATER

Compound	CAS Number	Recovery Limits (%)	
		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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2019654
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 26-May-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 02-Jun-2020
C-O-C number	: H040757			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 26-May-2020 to 01-Jun-2020.

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: HK2019654

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Analytical Results

Sub-Matrix: WATER

Compound	CAS Number	LOR	Unit	Client sample ID: FB-1	—	—	—	—
				Client sampling date / time: 26-May-2020	---	---	—	---
				HK2019654-001	———	———	———	———
EP-074_SR-E: Halogenated Aliphatics								
EP074_SR: Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	—	—	—	—
EP-074_SR-S: VOC Surrogates								
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%	96.1	—	—	—	—
EP074_SR: Toluene-D8	2037-26-5	0.1	%	102	—	—	—	—
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%	101	—	—	—	—

Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

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

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3039516)											
Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	2 µg/L	97.1	---	81.0	128	---	---

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

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

Surrogate Control Limits

Sub-Matrix: WATER

Compound	CAS Number	Recovery Limits (%)	
		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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2019624
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 26-May-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 04-Jun-2020
C-O-C number	: H040760			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Wong Wing , Kenneth	Manager - Metals	Metals_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 26-May-2020 to 04-Jun-2020.

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: HK2019624

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

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

Analytical Results

Sub-Matrix: WATER				Client sample ID	FB-2	---	---	---	---
				Client sampling date / time	26-May-2020	---	---	---	---
Compound	CAS Number	LOR	Unit	HK2019624-001	----	----	----	----
EG: Metals and Major Cations - Filtered									
EG020: Lead	7439-92-1	1	µg/L	<1	---	---	---	---

Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

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 Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QC Lot: 3046166)											
EG020: Lead	7439-92-1	1	µg/L	<1	50 µg/L	92.6	----	85.0	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: 3046166)										
HK2019624-001	FB-2	EG020: Lead	7439-92-1	50 µg/L	93.1	----	75.0	125	----	----

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2019843
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 27-May-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 02-Jun-2020
C-O-C number	: H040764			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 27-May-2020 to 01-Jun-2020.

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: HK2019843

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Analytical Results

Sub-Matrix: WATER

				Client sample ID	EQ-1	—	—	—	—
				Client sampling date / time	27-May-2020	—	—	—	—
Compound	CAS Number	LOR	Unit		HK2019843-001	——	——	——	——
EP-074_SR-E: Halogenated Aliphatics									
EP074_SR: Tetrachloroethene	127-18-4	0.5	µg/L		<0.5	—	—	—	—
EP-074_SR-S: VOC Surrogates									
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%		94.4	—	—	—	—
EP074_SR: Toluene-D8	2037-26-5	0.1	%		101	—	—	—	—
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		100	—	—	—	—

Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

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 Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3039516)											
Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	2 µg/L	97.1	---	81.0	128	---	---

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

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

Surrogate Control Limits

Sub-Matrix: 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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2019940
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 28-May-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 04-Jun-2020
C-O-C number	: H040766			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Wong Wing , Kenneth	Manager - Metals	Metals_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 28-May-2020 to 04-Jun-2020.

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: HK2019940

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

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

Analytical Results

Sub-Matrix: WATER				Client sample ID	EQ-2	---	---	---	---
				Client sampling date / time	28-May-2020	---	---	---	---
Compound	CAS Number	LOR	Unit	HK2019940-001	----	----	----	----	
EG: Metals and Major Cations - Filtered									
EG020: Lead	7439-92-1	1	µg/L	<1	---	---	---	---	

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations - Filtered (QC Lot: 3048865)								
HK2020010-001	Anonymous	EG020: Lead	7439-92-1	1	µg/L	<10	<10	0.00

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

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QC Lot: 3048865)											
EG020: Lead	7439-92-1	1	µg/L	<1	50 µg/L	93.0	---	85.0	113	---	---

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

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QC Lot: 3048865)										
HK2019940-001	EQ-2	EG020: Lead	7439-92-1	50 µg/L	92.8	---	75.0	125	---	---

CHAIN OF CUSTODY DOCUMENTATION

H 040759

ALS Laboratory Group

CLIENT: TEEMWAY

ADDRESS / OFFICE:

PROJECT MANAGER (PM): Thomas YEUNG

PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site

SITE: Preparation and Access Tunnel Construction (DC/2018/05)

RESULTS REQUIRED (Date):

QUOTE NO.:

SAMPLER:

MOBILE:

PHONE

EMAIL REPORT TO:

EMAIL INVOICE TO: (if different to report)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No N/A (circled)

SAMPLE TEMPERATURE

CHILLED: Yes (circled) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

ANALYSIS REQUIRED including SUITES(note - suite codes must be listed to attract suite prices)

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		ANALYSIS REQUIRED													Notes
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	TETRACHLOROETHENE													
1	DUP-1	S	26/05/20	1030	JAR	1	✓													

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 26/05/2020	Name: [signature]	Date: 26/5/20	Con' Note No:
Of: TEEMWAY	Time: 14:30	Of: ALS (HK)	Time: 15:15	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

ALS Laboratory Group

WHITE - LAB COPY
YELLOW - CUSTOMER COPY
PINK - BOOK COPY

COC Page ____ of ____

CHAIN OF CUSTODY DOCUMENTATION

H 040761

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05)	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED Including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		LS45
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
1	DUP-2	S	26/05/20	1410	JAR	1	✓

RELINQUISHED BY:			RECEIVED BY			METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 26/05/2020		Name:	Date:	26/5/20	Con' Note No:
Of: TEEMWAY	Time: 1630		Of: ALS (HK)	Time:	1715	
Name:	Date:		Name: Alex	Date:	26/05/28	Transport Co:
Of:	Time:		Of: ALS	Time:	1830	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

ALS Laboratory Group

WHITE - LAB COPY
YELLOW - CUSTOMER COPY
PINK - BOOK COPY

CHAIN OF CUSTODY DOCUMENTATION

H 040753

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site Preparation and Access Tunnel Construction (DC/2018/05)	EMAIL REPORT TO:
SITE:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

ALS Laboratory Group

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TETRACHLOROETHENE
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
1	TB-1	W	22/05/20		BOTTLE	2	✓

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 22/05/2020	Name: Samman	Date: 22-5-2020	Con' Note No:
Of: TEEMWAY	Time: 16:30	Of: ALS (HK)	Time: 17:30	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

ALS Laboratory Group

WHITE - LAB COPY
YELLOW - CUSTOMER COPY
PINK - BOOK COPY

CHAIN OF CUSTODY DOCUMENTATION

H 040756

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05)	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No (N/A)
SAMPLE TEMPERATURE
CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TETRACHLOROETHENE											Notes: e.g. Highly contaminated samples e.g. "High PAHs expected" Extra volume for QC or trace LORs etc.
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles												
1	TB-2	W	26/05/20		BOTTLE	2	✓											

RELINQUISHED BY:			RECEIVED BY			METHOD OF SHIPMENT
Name:	Thomas YEUNG	Date: 26/05/2020	Name:		Date: 26/5/20	Con' Note No:
Of:	TEEMWAY	Time: 1430	Of:	ALS (HK)	Time: 1515	
Name:		Date:	Name:	Alex	Date: 26/05/20	Transport Co:
Of:		Time:	Of:	ALS	Time: 1830	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

ALS Laboratory Group

WHITE - LAB COPY
YELLOW - CUSTOMER COPY
PINK - BOOK COPY

CHAIN OF CUSTODY DOCUMENTATION

H 040763

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (~~DC/2018/05~~)	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED Including SUITES (note - suite codes must be listed to attract suite prices)

ALS Laboratory Group

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TETRACHLOROETHENE
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
1	TP-3	W	27/05/20		BOTTLE	2	✓

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 27/05/2020	Name:	Date: 27/5/20	
Of: TEEMWAY	Time: 16:45	Of: ALS (HK)	Time: 15:50	Con' Note No:
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

ALS Laboratory Group

WHITE - LAB COPY
YELLOW - CUSTOMER COPY
PINK - BOOK COPY

CHAIN OF CUSTODY DOCUMENTATION

H 040768

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) P.O. No.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TETRACHLOROETHENE
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
	TB-4	W	29/05/20		BOTTLE	2	✓

RELINQUISHED BY:			RECEIVED BY			METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 29/05/2020		Name:	Date: 29/5/20		Con' Note No:
Of: TEEMWAY	Time: 16:15		Of: ALS (HK)	Time: 16:33		
Name:	Date:		Name:	Date:		Transport Co:
Of:	Time:		Of:	Time:		

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

ALS Laboratory Group

WHITE - LAB COPY
YELLOW - CUSTOMER COPY
PINK - BOOK COPY

CHAIN OF CUSTODY DOCUMENTATION

H 040772

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05)	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

ALS Laboratory Group

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TETRACHLOROETHYLENE
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
1	TB-5	W	01/06/20		BOTTLE	2	✓

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 01/06/2020	Name: Kara	Date: 1/6/20	
Of: TEEMWAY	Time: 16:50	Of: ALS (HK)	Time: 17:10	Con' Note No:
Name:	Date:	Name:	Date:	
Of:	Time:	Of:	Time:	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

H 040757

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DG/2018/05)	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No (N/A)
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE INFORMATION (note: S = Soil, W=Water) | CONTAINER INFORMATION

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	TETRACHLOROETHENE	Notes: e.g. Highly contaminated samples; e.g. "High PAHs expected"; Extra volume for QC or trace LORs etc.
1	FB-1	W	26/05/20		BOTTLE	2	✓	

RELINQUISHED BY:

Name:	Thomas YEUNG	Date:	26/05/2020
Of:	TEEMWAY	Time:	14:30
Name:		Date:	
Of:		Time:	

RECEIVED BY

Name:		Date:	26/5/20
Of:	ALS (HK)	Time:	15:15
Name:	ADAM	Date:	26/05/20
Of:	ALS	Time:	1830

METHOD OF SHIPMENT
Con' Note No:
Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

ALS Laboratory Group

WHITE - LAB COPY
YELLOW - CUSTOMER COPY
PINK - BOOK COPY

CHAIN OF CUSTODY DOCUMENTATION

H 040760

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05)	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		LEAD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
1	FB-2	W	26/05/20		BOTTLE	1	✓

RELINQUISHED BY:

Name:	Thomas YEUNG	Date:	26/05/2020
Of:	TEEMWAY	Time:	16:30
Name:		Date:	
Of:		Time:	

RECEIVED BY

Name:	[illegible]	Date:	26/5/20
Of:	ALS (HK)	Time:	[illegible]
Name:	Alan	Date:	26/05/20
Of:	ALS	Time:	18:30

METHOD OF SHIPMENT

Con' Note No:

Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

ALS Laboratory Group

WHITE - LAB COPY
YELLOW - CUSTOMER COPY
PINK - BOOK COPY

CHAIN OF CUSTODY DOCUMENTATION

H 040764

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (D6/2018/05)	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TETRACHLOROETHENE
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
1	EQ-1	W	27/05/20		BOTTLE	2	✓

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 27/5/2020	Name:	Date: 27/5/20	Con' Note No:
Of: TEEMWAY	Time: 16:45	Of: ALS (HK)	Time: 15:55	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

H 040766

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

ALS Laboratory Group

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water) | CONTAINER INFORMATION

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	LEAD
1	EQ-2	W	28/05/20		BOTTLE	1	✓

RELINQUISHED BY:

Name:	Thomas YEUNG	Date:	28/05/2020
Of:	TEEMWAY	Time:	10:45
Name:		Date:	
Of:		Time:	

RECEIVED BY

Name:		Date:	28/5/20
Of:	ALS (HK)	Time:	11:45
Name:		Date:	
Of:		Time:	

METHOD OF SHIPMENT

Con' Note No:

Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

ALS Laboratory Group

WHITE - LAB COPY
YELLOW - CUSTOMER COPY
PINK - BOOK COPY

APPENDIX C

LABORATORY REPORTS & COC FORMS FOR PROGRESS SAMPLING FOR BIOPILE (ZONE 1)

(Please refer to attached CD-ROM)

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2032768
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 31-Aug-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 04-Sep-2020
C-O-C number	: H040791			No. of samples received	: 4
Site	: —			No. of samples analysed	: 4

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 31-Aug-2020 to 03-Sep-2020.

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: HK2032768

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Result(s) of soil/sediment sample(s) was / were reported on dry weight basis.

Analytical Results

Sub-Matrix: SOIL

Compound	CAS Number	LOR	Unit	Client sample ID: BH4-BIOPILE 1A	BH4-BIOPILE 1B	BH4-BIOPILE 1C	BH4-BIOPILE 1D	—
				Client sampling date / time: 31-Aug-2020	31-Aug-2020	31-Aug-2020	31-Aug-2020	—
				HK2032768-001	HK2032768-002	HK2032768-003	HK2032768-004	——
EP-074_SR-E: Halogenated Aliphatics								
EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	<0.04	<0.04	—
EP-074_SR-S: VOC Surrogates								
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%	108	100	105	106	—
EP074_SR: Toluene-D8	2037-26-5	0.1	%	102	94.6	100	102	—
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%	103	94.3	94.6	102	—

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3230155)								
HK2032572-006	Anonymous	EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	0.00

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
		LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3230155)											
EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	108	----	82.0	124	----	----

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3230155)										
HK2032572-006	Anonymous	EP074_SR: Tetrachloroethene	127-18-4	0.25 mg/kg	112	----	50.0	130	----	----

Surrogate Control Limits

Sub-Matrix: SOIL

Compound	CAS Number	Recovery Limits (%)	
		Low	High
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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2035045
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 14-Sep-2020
Order number	: ---	Quote number	: HKE/1680/2020	Issue Date	: 21-Sep-2020
C-O-C number	: H022737			No. of samples received	: 4
Site	: ---			No. of samples analysed	: 4

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 14-Sep-2020 to 18-Sep-2020.

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: HK2035045

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Result(s) of soil/sediment sample(s) was / were reported on dry weight basis.

Analytical Results

Sub-Matrix: SOIL

Compound	CAS Number	LOR	Unit	Client sample ID: BH4-BIOPILE 2A	BH4-BIOPILE 2B	BH4-BIOPILE 2C	BH4-BIOPILE 2D	—
				Client sampling date / time: 14-Sep-2020	14-Sep-2020	14-Sep-2020	14-Sep-2020	---
				HK2035045-001	HK2035045-002	HK2035045-003	HK2035045-004	———
EP-074_SR-E: Halogenated Aliphatics								
EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	<0.04	<0.04	—
EP-074_SR-S: VOC Surrogates								
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%	101	92.5	102	99.4	—
EP074_SR: Toluene-D8	2037-26-5	0.1	%	98.4	96.3	99.0	99.8	—
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%	97.6	95.0	95.4	96.7	—

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3249460)								
HK2034381-001	Anonymous	EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	0.00

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3249460)											
EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	98.6	----	82.0	124	----	----

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3249460)										
HK2034381-001	Anonymous	EP074_SR: Tetrachloroethene	127-18-4	0.25 mg/kg	92.1	----	50.0	130	----	----

Surrogate Control Limits

Sub-Matrix: SOIL

Compound	CAS Number	Recovery Limits (%)	
		Low	High
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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2037496
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 05-Oct-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 09-Oct-2020
C-O-C number	: H038203			No. of samples received	: 4
Site	: —			No. of samples analysed	: 4

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 05-Oct-2020 to 09-Oct-2020.

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: HK2037496

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Result(s) of soil/sediment sample(s) was / were reported on dry weight basis.

Analytical Results

Sub-Matrix: SOIL				Client sample ID	BH4 - BIOPILE 3A	BH4 - BIOPILE 3B	BH4 - BIOPILE 3C	BH4 - BIOPILE 3D	---
				Client sampling date / time	05-Oct-2020	05-Oct-2020	05-Oct-2020	05-Oct-2020	---
Compound	CAS Number	LOR	Unit		HK2037496-001	HK2037496-002	HK2037496-003	HK2037496-004	-----
EP-074_SR-E: Halogenated Aliphatics									
EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	---
EP-074_SR-S: VOC Surrogates									
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%		97.5	93.9	91.7	92.5	---
EP074_SR: Toluene-D8	2037-26-5	0.1	%		92.4	91.4	91.3	91.2	---
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		105	108	106	108	---

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3294718)								
HK2037592-001	Anonymous	EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	0.00

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
		LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3294718)											
EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	105	---	79.0	124	---	---

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3294718)										
HK2037496-001	BH4 - BIOPILE 3A	EP074_SR: Tetrachloroethene	127-18-4	0.25 mg/kg	108	---	50.0	130	---	---

Surrogate Control Limits

Sub-Matrix: SOIL

Compound	CAS Number	Recovery Limits (%)	
		Low	High
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

CHAIN OF CUSTODY DOCUMENTATION

H 040791

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No (N/A)
SAMPLE TEMPERATURE
CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TETRA CHLOROETHENE											Notes: e.g. Highly contaminated samples e.g. "High PAHs expected" Extra volume for QC or trace LORs etc.
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles												
1	BH4-BIOPILE 1A	S	31/08/20		JAR	1	✓											5 DAYS EXPRESS
2	BH4-BIOPILE 1B	S	31/08/20		JAR	1	✓											
3	BH4-BIOPILE 1C	S	31/08/20		JAR	1	✓											
4	BH4-BIOPILE 1D	S	31/08/20		JAR	1	✓											

RELINQUISHED BY:			RECEIVED BY			METHOD OF SHIPMENT
Name:	Thomas YEUNG	Date: 31/08/2020	Name:	Sanna	Date: 31-8-2020	Con' Note No:
Of:	TEEMWAY	Time: 1630	Of:	ALS (HK)	Time: 18:00	
Name:		Date:	Name:		Date:	Transport Co:
Of:		Time:	Of:		Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

H 022737

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No (N/A)
SAMPLE TEMPERATURE
CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

SAMPLE INFORMATION (note: S = Soil, W=Water) | CONTAINER INFORMATION | TETRACHLOROETHENE

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	TETRACHLOROETHENE
1	BH4 - BIOPILE 2A	S	14/08/20		JAR	1	✓
2	BH4 - BIOPILE 2B	S	14/08/20		JAR	1	✓
3	BH4 - BIOPILE 2C	S	14/08/20		JAR	1	✓
4	BH4 - BIOPILE 2D	S	14/08/20		JAR	1	✓

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

5 DAYS EXPRESS

RELINQUISHED BY:			RECEIVED BY			METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 14/08/2020		Name:	Date: 14/8/20		Con' Note No:
Of: TEEMWAY	Time: 1600		Of: ALS (HK)	Time: 15:50		
Name:	Date:		Name:	Date:		Transport Co:
Of:	Time:		Of:	Time:		

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

ALS Laboratory Group

WHITE - LAB COPY
YELLOW - CUSTOMER COPY
PINK - BOOK COPY

CHAIN OF CUSTODY DOCUMENTATION

H 038203

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05)	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED Including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No (N/A)
SAMPLE TEMPERATURE
CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TETRACHLOROETHENE	Notes: e.g. Highly contaminated samples e.g. "High PAHs expected" Extra volume for QC or trace LORs etc.
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles		
1	BH4 - BIOPILE 3A	S	05/10/20		JAR	1	✓	
2	BH4 - BIOPILE 3B	S	05/10/20		JAR	1	✓	5 DAYS EXPRESS.
3	BH4 - BIOPILE 3C	S	05/10/20		JAR	1	✓	
4	BH4 - BIOPILE 3D	S	05/10/20		JAR	1	✓	

RELINQUISHED BY:			RECEIVED BY		METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 05/10/2020		Name: Samma	Date: 5 Oct 2020	Con' Note No:
Of: TEEMWAY	Time: 12:00		Of: ALS (HK)	Time: 12:30	
Name:	Date:		Name:	Date:	Transport Co:
Of:	Time:		Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

APPENDIX D

LABORATORY REPORTS & COC FORMS FOR QA/QC TESTING FOR BIOPILE (ZONE 1)

(Please refer to attached CD-ROM)

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2032779
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 31-Aug-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 04-Sep-2020
C-O-C number	: H040793			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 31-Aug-2020 to 03-Sep-2020.

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: HK2032779

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Result(s) of soil/sediment sample(s) was / were reported on dry weight basis.

Analytical Results

Sub-Matrix: SOIL

				Client sample ID	BH4-BIOPILE DUP-1	—	—	—	—
				Client sampling date / time	31-Aug-2020	---	---	---	---
Compound	CAS Number	LOR	Unit		HK2032779-001	———	———	———	———
EP-074_SR-E: Halogenated Aliphatics									
EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg		<0.04	—	—	—	—
EP-074_SR-S: VOC Surrogates									
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%		102	—	—	—	—
EP074_SR: Toluene-D8	2037-26-5	0.1	%		102	—	—	—	—
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		98.4	—	—	—	—

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3230155)								
HK2032572-006	Anonymous	EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	0.00

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3230155)											
EP074_SR: Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	108	---	82.0	124	---	---

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3230155)										
HK2032572-006	Anonymous	EP074_SR: Tetrachloroethene	127-18-4	0.25 mg/kg	112	---	50.0	130	---	---

Surrogate Control Limits

Sub-Matrix: SOIL

Compound	CAS Number	Recovery Limits (%)	
		Low	High
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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2032791
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 31-Aug-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 09-Sep-2020
C-O-C number	: H040796			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 31-Aug-2020 to 07-Sep-2020.

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: HK2032791

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Analytical Results

Sub-Matrix: WATER

Compound	CAS Number	LOR	Unit	Client sample ID: BH4-BIOPILE TB-1	—	—	—	—
				Client sampling date / time: 31-Aug-2020	---	---	---	---
				HK2032791-001	———	———	———	———
EP-074_SR-E: Halogenated Aliphatics								
EP074_SR: Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	—	—	—	—
EP-074_SR-S: VOC Surrogates								
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%	98.7	—	—	—	—
EP074_SR: Toluene-D8	2037-26-5	0.1	%	105	—	—	—	—
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%	99.5	—	—	—	—

Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

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 Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3232778)											
EP074_SR: Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	2 µg/L	98.6	----	82.0	122	----	----

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

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

Surrogate Control Limits

Sub-Matrix: 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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2035053
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 14-Sep-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 22-Sep-2020
C-O-C number	: H022770			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 14-Sep-2020 to 22-Sep-2020.

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: HK2035053

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Analytical Results

Sub-Matrix: WATER				Client sample ID	BH4-BIOPILE TB-2	—	—	—	—
				Client sampling date / time	14-Sep-2020	---	---	---	---
Compound	CAS Number	LOR	Unit	HK2035053-001	———	———	———	———
EP-074_SR-E: Halogenated Aliphatics									
EP074_SR: Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	—	—	—	—
EP-074_SR-S: VOC Surrogates									
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%	99.0	—	—	—	—
EP074_SR: Toluene-D8	2037-26-5	0.1	%	101	—	—	—	—
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%	94.8	—	—	—	—

Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

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 Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3255359)											
EP074_SR: Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	2 µg/L	101	---	82.0	122	---	---

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

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

Surrogate Control Limits

Sub-Matrix: 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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2037502
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 05-Oct-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 09-Oct-2020
C-O-C number	: H038202			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 05-Oct-2020 to 08-Oct-2020.

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: HK2037502

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Result(s) of soil/sediment sample(s) was / were reported on dry weight basis.

Analytical Results

Sub-Matrix: WATER

				Client sample ID	BH4-BIOPILE TB-3	—	—	—	—
				Client sampling date / time	05-Oct-2020	---	—	---	—
Compound	CAS Number	LOR	Unit		HK2037502-001	———	———	———	———
EP-074_SR-E: Halogenated Aliphatics									
EP074_SR: Tetrachloroethene	127-18-4	0.5	µg/L		<0.5	—	—	—	—
EP-074_SR-S: VOC Surrogates									
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%		100	—	—	—	—
EP074_SR: Toluene-D8	2037-26-5	0.1	%		96.9	—	—	—	—
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		109	—	—	—	—

Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

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 Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3293255)											
EP074_SR: Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	2 µg/L	92.2	---	82.0	122	---	---

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

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

Surrogate Control Limits

Sub-Matrix: 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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2032782
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 31-Aug-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 09-Sep-2020
C-O-C number	: H040794			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 31-Aug-2020 to 07-Sep-2020.

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: HK2032782

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Analytical Results

Sub-Matrix: WATER

Compound	CAS Number	LOR	Unit	Client sample ID: BH4-BIOPILE FB-1	—	—	—	—
				Client sampling date / time: 31-Aug-2020	—	—	—	—
				HK2032782-001	———	———	———	———
EP-074_SR-E: Halogenated Aliphatics								
EP074_SR: Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	—	—	—	—
EP-074_SR-S: VOC Surrogates								
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%	103	—	—	—	—
EP074_SR: Toluene-D8	2037-26-5	0.1	%	108	—	—	—	—
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%	92.3	—	—	—	—

Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

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 Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3232778)											
EP074_SR: Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	2 µg/L	98.6	----	82.0	122	----	----

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

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

Surrogate Control Limits

Sub-Matrix: 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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2032788
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 31-Aug-2020
Order number	: ---	Quote number	: HKE/1680/2020	Issue Date	: 09-Sep-2020
C-O-C number	: H040795			No. of samples received	: 1
Site	: ---			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 31-Aug-2020 to 07-Sep-2020.

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: HK2032788

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Analytical Results

Sub-Matrix: WATER

				Client sample ID	BH4-BIOPILE EQ-1	—	—	—	—
				Client sampling date / time	31-Aug-2020	---	---	---	---
Compound	CAS Number	LOR	Unit		HK2032788-001	———	———	———	———
EP-074_SR-E: Halogenated Aliphatics									
EP074_SR: Tetrachloroethene	127-18-4	0.5	µg/L		<0.5	—	—	—	—
EP-074_SR-S: VOC Surrogates									
EP074_SR: Dibromofluoromethane	1868-53-7	0.1	%		99.6	—	—	—	—
EP074_SR: Toluene-D8	2037-26-5	0.1	%		106	—	—	—	—
EP074_SR: 4-Bromofluorobenzene	460-00-4	0.1	%		96.6	—	—	—	—

Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

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

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
		LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3232778)											
EP074_SR: Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	2 µg/L	98.6	----	82.0	122	----	----

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

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

Surrogate Control Limits

Sub-Matrix: WATER

Compound	CAS Number	Recovery Limits (%)	
		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

CHAIN OF CUSTODY DOCUMENTATION

H 040793

CLIENT: ~~TEEMWAY~~	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)

ALS Laboratory Group

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TETRACHLOROETHENE												Notes: e.g. Highly contaminated samples e.g. "High PAHs expected" Extra volume for QC or trace LORs etc.
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles													
1	BH4-BIOPILE DUP-1	S	31/08/20		JAR	1	✓												5 DAYS EXPRESS

RELINQUISHED BY:				RECEIVED BY				METHOD OF SHIPMENT
Name:	Thomas YEUNG	Date:	31/08/2020	Name:	Samma	Date:	31-8-2020	Con' Note No:
Of:	TEEMWAY	Time:	16:30	Of:	ALS (HK)	Time:	18:00	
Name:		Date:		Name:		Date:		Transport Co:
Of:		Time:		Of:		Time:		

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

H 040796

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) P.O. No.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	**ANALYSIS REQUIRED Including SUITES** (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TETRACHLORO ETHANE
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
1	BH4 - BIOPILE TB-1	W	31/08/20		BOTTLE	2	✓

RELINQUISHED BY:			RECEIVED BY			METHOD OF SHIPMENT
Name:	Thomas YEUNG	Date: 31/08/2020	Name:	[illegible]	Date: 31-8-2020	Con' Note No:
Of:	TEEMWAY	Time: 16:30	Of:	ALS (HK)	Time: 18:00	
Name:		Date:	Name:		Date:	Transport Co:
Of:		Time:	Of:		Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

H 022770

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05)	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TETRACHLOROETHENE
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
1	BH4 - RIPPLE TB-2	W	16/09/20		BOTTLE	2	V

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 16/09/2020	Name:	Date: 16/9/20	Con' Note No:
Of: TEEMWAY	Time: 1600	Of: ALS (HK)	Time: 16:40	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

H 038202

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2019/05)	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No (N/A)
SAMPLE TEMPERATURE
CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TETRACHLOROETHENE
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
	~~BH4 - TB-3~~	W	05/10/20		BOTTLE	2	✓
1	BH4-BIOPILE TB-3						

RELINQUISHED BY:				RECEIVED BY			METHOD OF SHIPMENT
Name:	Thomas YEUNG	Date:	05/10/2020	Name:	Jamma	Date:	5 Oct 2020	Con' Note No:
Of:	TEEMWAY	Time:	12:05	Of:	ALS (HK)	Time:	12:30	
Name:		Date:		Name:		Date:		Transport Co:
Of:		Time:		Of:		Time:		

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

H 040794

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED Including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TETRACHLOROETHENE
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
1	BH4 - BIOPILE EB-1	W	31/08/20		BOTTLE	2	✓

RELINQUISHED BY:			RECEIVED BY			METHOD OF SHIPMENT
Name:	Thomas YEUNG	Date: 31/08/2020	Name:	Sharma	Date: 31-8-2020	Con' Note No:
Of:	TEEMWAY	Time: 16:30	Of:	ALS (HK)	Time: 18:00	
Name:		Date:	Name:		Date:	Transport Co:
Of:		Time:	Of:		Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

H 040795

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TETRACHLOROETHENE
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
1	BH4-BIOPILE EQ-1	W	31/08/20		BOTTLE	2	✓

RELINQUISHED BY:			RECEIVED BY			METHOD OF SHIPMENT
Name:	Thomas YEUNG	Date: 31/08/2020	Name: Samma	Date: 31-8-2020		Con' Note No:
Of:	TEEMWAY	Time: 16:30	Of: ALS (HK)	Time: 18:00		
Name:		Date:	Name:	Date:		Transport Co:
Of:		Time:	Of:	Time:		

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

APPENDIX E

LABORATORY REPORTS & COC FORMS FOR BIOPILE CONDITION TESTING (ZONE 1)

(Please refer to attached CD-ROM)

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 6
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2032775
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 31-Aug-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 09-Sep-2020
C-O-C number	: H040792			No. of samples received	: 5
Site	: —			No. of samples analysed	: 5

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 Siu Ming , Vico	Manager - Inorganics	Inorganics
Leung Chak Cheong , Mike	Senior Chemist	Metals_ENV
Lin Wai Yu , Iris	Assistant Manager - Inorganics	Inorganics
Yu Kai Man .	Assistant Manager	Microbiology_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 31-Aug-2020 to 09-Sep-2020.

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: HK2032775

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Result(s) of soil/sediment sample(s) was / were reported on dry weight basis.

EA002SOIL - pH value is reported as at 25°C.

EK059A - Nitrate and Nitrite were determined on a 1:5 soil / 1M KCl solution extract.

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.

EA002SOIL - Soil sample(s) analysed on as air-dry weight basis. pH value determined and reported on a 1:5 soil / water extract.

EA002SOIL - Calibration range of pH value is 4.0 - 10.0. Results exceeding this range is for reference only.

EK062A - Total Nitrogen is the sum of Total Oxidizable (NOx) and Total Kjeldahl Nitrogen.

Analytical Results

Sub-Matrix: SOIL

Compound	CAS Number	LOR	Unit	Client sample ID	BH4-BIOPILE 1A	BH4-BIOPILE 1B	BH4-BIOPILE 1C	BH4-BIOPILE 1D	BH4-BIOPILE DUP-1
				Client sampling date / time	31-Aug-2020	31-Aug-2020	31-Aug-2020	31-Aug-2020	31-Aug-2020
					HK2032775-001	HK2032775-002	HK2032775-003	HK2032775-004	HK2032775-005
EA/ED: Physical and Aggregate Properties									
EA002SOIL: pH Value	---	0.1	pH Unit		9.0	8.9	8.9	8.8	8.9
EA055: Moisture Content (dried @ 103°C)	---	0.1	%		17.5	16.2	18.0	16.2	17.1
ED/EK: Inorganic Nonmetallic Parameters									
EK062A: Total Nitrogen as N	---	20	mg/kg		250	110	280	650	120
EK067A: Total Phosphorus as P	---	20	mg/kg		114	65	177	450	69
EG: Metals and Major Cations									
EG032: Potassium	7440-09-7	5	mg/kg		1130	1290	1240	1120	1170
EM: Microbiological Testing									
EM001L: Total Bacteria Count (30°C)	---	10	CFU/g		6200000	9700000	330000	450000	7100000
EM113: Hydrocarbon Utilising Bacteria	---	10	CFU/g		3200000	5100000	120000	160000	2800000

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3231554)								
HK2032421-007	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	18.0	17.7	1.86
HK2032538-001	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	22.1	22.5	1.77
EA/ED: Physical and Aggregate Properties (QC Lot: 3231555)								
HK2032775-004	BH4-BIOPILE 1D	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	16.2	16.5	1.44
EA/ED: Physical and Aggregate Properties (QC Lot: 3231557)								
HK2032775-001	BH4-BIOPILE 1A	EA002SOIL: pH Value	----	0.1	pH Unit	9.0	9.0	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3236938)								
HK2032947-004	Anonymous	EK067A: Total Phosphorus as P	----	10	mg/kg	87	96	9.80
EG: Metals and Major Cations (QC Lot: 3231865)								
HK2032775-002	BH4-BIOPILE 1B	EG032: Potassium	7440-09-7	5	mg/kg	1290	1330	2.74

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3236938)											
EK067A: Total Phosphorus as P	----	10	mg/kg	<10	512 mg/kg	90.1	----	85.0	115	----	----
EG: Metals and Major Cations (QC Lot: 3231865)											
EG032: Potassium	7440-09-7	5	mg/kg	<5	100 mg/kg	100	----	85.0	115	----	----

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3236938)										
HK2032947-004	Anonymous	EK067A: Total Phosphorus as P	----	98.8 mg/kg	84.2	----	75.0	125	----	----
EG: Metals and Major Cations (QC Lot: 3231865)										
HK2032775-001	BH4-BIOPILE 1A	EG032: Potassium	7440-09-7	100 mg/kg	# Not Determined	----	75.0	125	----	----

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 6
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2035050
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 14-Sep-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 23-Sep-2020
C-O-C number	: H022765			No. of samples received	: 4
Site	: —			No. of samples analysed	: 4

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 Siu Ming , Vico	Manager - Inorganics	Inorganics
Leung Chak Cheong , Mike	Senior Chemist	Metals_ENV
Lin Wai Yu , Iris	Assistant Manager - Inorganics	Inorganics
Yu Kai Man .	Assistant Manager	Microbiology_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 14-Sep-2020 to 23-Sep-2020.

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: HK2035050

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Result(s) of soil/sediment sample(s) was / were reported on dry weight basis.

Microbiological sample(s) were collected in plastic bag. Sample(s) arrived at the laboratory at 15:50.

NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

EA002SOIL - pH value is reported as at 25°C.

EK059A - Nitrate and Nitrite were determined on a 1:5 soil / 1M KCl solution extract.

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.

EA002SOIL - Soil sample(s) analysed on as air-dry weight basis. pH value determined and reported on a 1:5 soil / water extract.

EA002SOIL - Calibration range of pH value is 4.0 - 10.0. Results exceeding this range is for reference only.

EK062A - Total Nitrogen is the sum of Total Oxidizable (NOx) and Total Kjeldahl Nitrogen.

Analytical Results

Sub-Matrix: SOIL .

Compound	CAS Number	LOR	Unit	Client sample ID	BH4-BIOPILE 2A	BH4-BIOPILE 2B	BH4-BIOPILE 2C	BH4-BIOPILE 2D	—
				Client sampling date / time	14-Sep-2020	14-Sep-2020	14-Sep-2020	14-Sep-2020	—
					HK2035050-001	HK2035050-002	HK2035050-003	HK2035050-004	——
EA/ED: Physical and Aggregate Properties									
EA002SOIL: pH Value	----	0.1	pH Unit		8.9	8.8	8.7	8.5	—
EA055: Moisture Content (dried @ 103°C)	----	0.1	%		14.2	14.8	15.4	13.2	—
ED/EK: Inorganic Nonmetallic Parameters									
EK062A: Total Nitrogen as N	----	20	mg/kg		210	160	210	290	—
EK067A: Total Phosphorus as P	----	20	mg/kg		163	170	112	131	—
EG: Metals and Major Cations									
EG032: Potassium	7440-09-7	5	mg/kg		1270	1290	1230	1330	—
EM: Microbiological Testing									
EM001L: Total Bacteria Count (30°C)	----	10	CFU/g		640000	520000	800000	1500000	—
EM113: Hydrocarbon Utilising Bacteria	----	10	CFU/g		150000	96000	110000	72000	—

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3258960)								
HK2035045-001	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	14.6	14.5	0.00
HK2035058-001	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	22.3	22.1	0.835
EA/ED: Physical and Aggregate Properties (QC Lot: 3259953)								
HK2034255-001	Anonymous	EA002SOIL: pH Value	----	0.1	pH Unit	12.5	12.4	0.00
HK2034255-011	Anonymous	EA002SOIL: pH Value	----	0.1	pH Unit	12.1	12.2	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3264938)								
HK2035050-004	BH4-BIOPILE 2D	EK067A: Total Phosphorus as P	----	10	mg/kg	131	112	15.7
EG: Metals and Major Cations (QC Lot: 3256610)								
HK2035050-002	BH4-BIOPILE 2B	EG032: Potassium	7440-09-7	5	mg/kg	1290	1210	6.65

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3264938)											
EK067A: Total Phosphorus as P	----	10	mg/kg	<10	512 mg/kg	92.8	----	85.0	115	----	----
EG: Metals and Major Cations (QC Lot: 3256610)											
EG032: Potassium	7440-09-7	5	mg/kg	<5	100 mg/kg	101	----	85.0	115	----	----

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3264938)										
HK2035050-004	BH4-BIOPILE 2D	EK067A: Total Phosphorus as P	----	165 mg/kg	113	----	75.0	125	----	----
EG: Metals and Major Cations (QC Lot: 3256610)										
HK2035050-001	BH4-BIOPILE 2A	EG032: Potassium	7440-09-7	100 mg/kg	# Not Determined	----	75.0	125	----	----

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2037500
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 05-Oct-2020
Order number	: ---	Quote number	: HKE/1680/2020	Issue Date	: 14-Oct-2020
C-O-C number	: H038201			No. of samples received	: 4
Site	: ---			No. of samples analysed	: 4

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 Siu Ming , Vico	Manager - Inorganics	Inorganics
Leung Chak Cheong , Mike	Senior Chemist	Metals_ENV
Yu Kai Man .	Assistant Manager	Microbiology_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 05-Oct-2020 to 14-Oct-2020.

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: HK2037500

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

Result(s) of soil/sediment sample(s) was / were reported on dry weight basis.

EA002SOIL - pH value is reported as at 25°C.

EK059A - Nitrate and Nitrite were determined on a 1:5 soil / 1M KCl solution extract.

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.

EA002SOIL - Soil sample(s) analysed on as air-dry weight basis. pH value determined and reported on a 1:5 soil / water extract.

EA002SOIL - Calibration range of pH value is 4.0 - 10.0. Results exceeding this range is for reference only.

EK062A - Total Nitrogen is the sum of Total Oxidizable (NOx) and Total Kjeldahl Nitrogen.

Analytical Results

Sub-Matrix: SOIL			Client sample ID	BH4 - BIOPILE 3A	BH4 - BIOPILE 3B	BH4 - BIOPILE 3C	BH4 - BIOPILE 3D	---
			Client sampling date / time	05-Oct-2020	05-Oct-2020	05-Oct-2020	05-Oct-2020	---
Compound	CAS Number	LOR	Unit	HK2037500-001	HK2037500-002	HK2037500-003	HK2037500-004	-----
EA/ED: Physical and Aggregate Properties								
EA002SOIL: pH Value	---	0.1	pH Unit	8.7	8.8	8.4	8.5	---
EA055: Moisture Content (dried @ 103°C)	---	0.1	%	12.3	18.9	13.6	12.8	---
ED/EK: Inorganic Nonmetallic Parameters								
EK062A: Total Nitrogen as N	---	20	mg/kg	190	120	240	260	---
EK067A: Total Phosphorus as P	---	20	mg/kg	192	177	270	118	---
EG: Metals and Major Cations								
EG032: Potassium	7440-09-7	5	mg/kg	1160	1380	1430	1310	---
EM: Microbiological Testing								
EM001L: Total Bacteria Count (30°C)	---	10	CFU/g	1100000	950000	4200000	2400000	---
EM113: Hydrocarbon Utilising Bacteria	---	10	CFU/g	140000	99000	490000	10000	---

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3294874)								
HK2037451-001	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	56.0	56.6	0.972
HK2037599-001	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	25.8	25.8	0.00
EA/ED: Physical and Aggregate Properties (QC Lot: 3294903)								
HK2037500-001	BH4 - BIOPILE 3A	EA002SOIL: pH Value	----	0.1	pH Unit	8.7	8.6	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3295283)								
HK2037500-004	BH4 - BIOPILE 3D	EK067A: Total Phosphorus as P	----	10	mg/kg	118	115	2.65
EG: Metals and Major Cations (QC Lot: 3292759)								
HK2037500-001	BH4 - BIOPILE 3A	EG032: Potassium	7440-09-7	5	mg/kg	1160	1140	2.21

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3295283)											
EK067A: Total Phosphorus as P	----	10	mg/kg	<10	512 mg/kg	89.8	----	85.0	115	----	----
EG: Metals and Major Cations (QC Lot: 3292759)											
EG032: Potassium	7440-09-7	5	mg/kg	<5	100 mg/kg	102	----	85.0	115	----	----

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3295283)										
HK2037500-004	BH4 - BIOPILE 3D	EK067A: Total Phosphorus as P	----	125 mg/kg	91.1	----	75.0	125	----	----
EG: Metals and Major Cations (QC Lot: 3292759)										
HK2037259-001	Anonymous	EG032: Potassium	7440-09-7	100 mg/kg	# Not Determined	----	75.0	125	----	----

CHAIN OF CUSTODY DOCUMENTATION

H 040792

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site Preparation and Access Tunnel Construction (DC/2018/05)	EMAIL REPORT TO:
SITE: P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE INFORMATION (note: S = Soil, W=Water) | CONTAINER INFORMATION

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	pH	MOISTURE	TOTAL NITROGEN	TOTAL PHOSPHORUS	POTASSIUM	HYDROCARBON UTILIEING BACTERIA	TOTAL BACTERIA COUNT
1	BH4 - BIOPILE 1A	S	31/08/20		BAG	1	✓	✓	✓	✓	✓	✓	✓
2	BH4 - BIOPILE 1B	S	31/08/20		BAG	1	✓	✓	✓	✓	✓	✓	✓
3	BH4 - BIOPILE 1C	S	31/08/20		BAG	1	✓	✓	✓	✓	✓	✓	✓
4	BH4 - BIOPILE 1D	S	31/08/20		BAG	1	✓	✓	✓	✓	✓	✓	✓
5	BH4 - BIOPILE DUP-1	S	31/08/20		BAG	1	✓	✓	✓	✓	✓	✓	✓

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 31/08/2020	Name: Sam Ma	Date: 31-8-2020	Con' Note No:
Of: TEEMWAY	Time: 16:30	Of: ALS (HK)	Time: 18:00	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

H 022765

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DG/2018/05)	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED Including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No (N/A)
SAMPLE TEMPERATURE
CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		pH	MOISTURE	TOTAL NITROGEN	TOTAL PHOSPHORUS	POTASSIUM	HYDROCARBON UTILIZING BACTERIA	TOTAL BACTERIA COUNT
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles							
1	BH4 - BIOPILE 2A	S	14/09/20		BAG	1	✓	✓	✓	✓	✓	✓	✓
2	BH4 - BIOPILE 2B	S	14/09/20		BAG	1	✓	✓	✓	✓	✓	✓	✓
3	BH4 - BIOPILE - 2C	S	14/09/20		BAG	1	✓	✓	✓	✓	✓	✓	✓
4	BH4 - BIOPILE - 2D	S	14/09/20		BAG	1	✓	✓	✓	✓	✓	✓	✓

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 14/09/2020	Name:	Date: 14/9/20	Con' Note No:
Of: TEEMWAY	Time: 1600	Of: ALS (HK)	Time: 15:37	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

H 038201

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) P.O. No.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		pH	MOISTURE	TOTAL NITROGEN	TOTAL PHOSPHORUS	POTASSIUM	HYDROCARBON UTILIEING BACTERIA	TOTAL BACTERIA COUNT							
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles														
1	BH4 - BIOPILE 3A	S	05/10/20		BAG	1	✓	✓	✓	✓	✓	✓	✓							
2	BH4 - BIOPILE 3B	S	05/10/20		BAG	1	✓	✓	✓	✓	✓	✓	✓							
3	BH4 - BIOPILE 3C	S	05/10/20		BAG	1	✓	✓	✓	✓	✓	✓	✓							
4	BH4 - BIOPILE 3D	S	05/10/20		BAG	1	✓	✓	✓	✓	✓	✓	✓							

RELINQUISHED BY:				RECEIVED BY				METHOD OF SHIPMENT
Name:	Thomas YEUNG	Date:	05/10/2020	Name:	Samma	Date:	5 OCT 2020	Con' Note No:
Of:	TEEMWAY	Time:	12:00	Of:	ALS (HK)	Time:	12:30	
Name:		Date:		Name:		Date:		Transport Co:
Of:		Time:		Of:		Time:		

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

APPENDIX F

WEEKLY GAS MONITORING SUMMARY (ZONE 1)

(Please refer to attached CD-ROM)

Decontamination Works of Groundwater and Soil

For Relocation of Sha Tin Sewage Treatment Works to Caverns – Site Preparation & Access Tunnel Construction (Contract No. DC/2018/05)

Biopile Operation Monitoring Checklist

Biopile Location: BH4 (Zone 1 Contaminated Soil)

Weekly Soil Gas Measurement Record Summary

Date	Time	Inlet					Outlet		Remarks
		CH_4 ppm	CO_2 ppm	O_2 (%)	H_2S ppm	VOC ppm	H_2S ppm	VOC ppm	
15/08/20	15:00	0.0	594	20.93	0.0	0.0	0.0	0.0	
22/08/20	16:30	0.0	552	20.93	0.0	0.0	0.0	0.0	
29/08/20	09:30	0.0	680	20.93	0.0	0.0	0.0	0.0	
05/09/20	10:00	0.0	583	20.93	0.0	0.0	0.0	0.0	
12/09/20	11:30	0.0	641	20.03	0.0	0.0	0.0	0.0	
19/09/20	11:00	0.0	603	20.04	0.0	0.0	0.0	0.0	
26/09/20	09:30	0.0	542	20.04	0.0	0.0	0.0	0.0	
03/10/20	11:00	0.0	592	20.39	0.0	0.0	0.0	0.0	

APPENDIX G

LABORATORY REPORTS & COC FORMS FOR TRIAL MIX TEST (ZONE 3)

(Please refer to attached CD-ROM)

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2031860
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 24-Aug-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 28-Aug-2020
C-O-C number	: H040789			No. of samples received	: 4
Site	: —			No. of samples analysed	: 4

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*
Leung Chak Cheong , Mike	Senior Chemist	Metals_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 24-Aug-2020 to 28-Aug-2020.

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: HK2031860

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

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

The metal concentrations reported are those determined on the TCLP leachate. Extraction Fluid #1 pH 4.88 - 4.98.

TCLP extract were filtered prior to the determination of metals.

Analytical Results

Sub-Matrix: TCLP LEACHATE				Client sample ID	BH4-TM TCLP-5%	BH4-TM TCLP-10%	BH4-TM TCLP-15%	BH4-TM TCLP-20%	---
				Client sampling date / time	22-Aug-2020	22-Aug-2020	22-Aug-2020	22-Aug-2020	---
Compound	CAS Number	LOR	Unit		HK2031860-001	HK2031860-002	HK2031860-003	HK2031860-004	-----
EG: Metals and Major Cations									
EG020: Lead	7439-92-1	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	---
Sample Preparation Method									
E-TCLP: Extraction Fluid Number	---	1	--		1	1	1	1	---

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations (QC Lot: 3224064)								
HK2031860-001	BH4-TM TCLP-5%	EG020: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00

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

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3224064)											
EG020: Lead	7439-92-1	0.1	mg/L	<0.1	0.5 mg/L	105	----	85.0	114	----	----

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

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3224064)										
HK2031860-001	BH4-TM TCLP-5%	EG020: Lead	7439-92-1	0.5 mg/L	101	----	75.0	125	----	----

CHAIN OF CUSTODY DOCUMENTATION

H 040789

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES(note - suite codes must be listed to attract suite prices)

ALS Laboratory Group

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TCLP (LEAD)	
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles		
1	BH4-TM TCLP-5%	S	22/8/20		BAG	1	✓	
2	BH4-TM TCLP-10%	S	22/8/20		BAG	1	✓	
3	BH4-TM TCLP-15%	S	22/8/20		BAG	1	✓	3 DAYS EXPRESS PLEASE START THE TEST ON 26/08/2020
4.	BH4-TM TCLP-20%	S	22/8/20		BAG	1	✓	

RELINQUISHED BY:			RECEIVED BY			METHOD OF SHIPMENT
Name:	Date: 26/08/2020		Name: Samuel	Date: 26/08/2020		Con' Note No:
Of: Thomas YEUNG	Time: 1915		Of: ALS(HK)	Time: 18:15		
Name: TEEMWAY	Date:		Name:	Date:		Transport Co:
Of:	Time:		Of:	Time:		

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CASTCO
香港粉嶺安居街33號
香港粉嶺安全街29A號
Email: info@castco.com.hk

佳力高試驗中心有限公司
CASTCO TESTING CENTRE LIMITED
33, On Kui Street, Fanling, Hong Kong. Tel : 2597 8333
29A, On Chuen Street, Fanling, Hong Kong Fax: 2597 8399
Website: www.castco.com.hk

HOKLAS 032
TEST

Test Report
Concrete - Compressive Strength of Concrete Cubes
(CS1 : 1990 Section 12 + Amd. 1201, 1202 & 1203)

Castco Lab. Ref No.: 200914-2091
Report No.:512815

Date of issue: 18/09/2020

1. SAMPLE DETAILS AS SUPPLIED BY CUSTOMER

Audit No.: --
Customer's Ref. No.: --

Customers: Teemway Engineering Limited
Address: Room 1008, 10/F, Chevalier Commercial Centre, 8 Wang Hoi Raod, Kowloon Bay, Kowloon

Contract No.: DC/2018/05 Job Title: Relocation of Sha Tin Sewage Treatment Works to Caverns – Site Preparation and Access Tunnel Construction

Location in works of concrete batch sampled:

Concrete mix ID: --
Grade: --
Designed/ Measured slump: -- / -- mm
W/C ratio: -- A/C ratio: --
Cement content (OPC/PFA): -- / -- kg/m³
Supplier:
Plant:
Source of coarse aggregate: --
Cement brand: --
Source of fine aggregate: --
Admixture brand: --
Dosage: -- kg/m³
Date of sampling: 22-08-2020 Time of water added to cement: --
Place of sampling: BH4
Place and time of making cubes: ON SITE / --
No. of cubes: 4
Name of person making cubes:
Method of Compaction:
Nominal size: 100.0 mm
Test at: 4 days
Site curing method:
Max./ Min. temp: -- / -- °C

2. CERTIFICATE OF SAMPLING, SLUMP TEST, CUBE MAKING AND CURING

A certificate of sampling, slump test, cube make and curing [ ] is available and a copy is attached [X] is not available

3. LABORATORY TEST RESULT

Date received: 26-08-2020 Date of Test: 26-08-2020 Age at tests: 4 days
Laboratory curing method: WATER CURING TANK Moisture condition at test: WET
Tank No.: G Max./ Min. temp: 30.0 / 24.0°C

Cube Mark - BH4-TM UCS-		5%	10%	15%	20%
Mould No	-	NA	NA	NA	NA
Weight in air	kg	1.755	1.785	1.800	1.795
Weight in water	kg	–	–	–	–
Height	mm	99.1	101.9	102.0	101.4
Width	mm	99.5	99.7	100.0	100.3
Length	mm	99.5	99.7	99.6	100.1
As- Received density (Vol. by calculation)	kg/m³	1790	1760	1770	1770
As- Received density (Vol. by water disp.)	kg/m³	–	–	–	–
Load at Failure	kN	23.2	30.6	42.2	58.7
Compressive Strength	MPa	2.5	3.0	4.0	6.0
Observation Code	-	–	–	–	–
Type of Fracture	-	K	K	K	K

Observation Legend: A - Dry on Receipt B - Irregular shape C - Damaged corners D - Damaged edges E - Oversize F - Undersize
G - Segregation H - Honeycombing I - Voids J - Abnormal fracture K - Satisfactory Failures

Remark(s): -
1. Test result relates only to the specimen tested. Loading rate 22 MPa/ minute
2. Laboratory curing commenced from date cubes received.
3. The time of water added to cement has not been given by client, the exact age at test is therefore not determined to Cl.10.4 of CS1:1990.
4. TESTING TIME : 16:20

Checked By:

WAI Po Yi
Assistant Supervisor

Approved Signatory:

K.K.WONG K.K.WONG

WONG Ka Man
Senior Manager

End Of Report

APPENDIX H

LABORATORY REPORTS & COC FORMS FOR VERIFICATION TESTING (ZONE 3)

(Please refer to attached CD-ROM)

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2033402
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 03-Sep-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 08-Sep-2020
C-O-C number	: H040797			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Leung Chak Cheong , Mike	Senior Chemist	Metals_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 03-Sep-2020 to 08-Sep-2020.

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: HK2033402

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

The metal concentrations reported are those determined on the TCLP leachate. Extraction Fluid #1 pH 4.88 - 4.98.

TCLP extract were filtered prior to the determination of metals.

Analytical Results

Sub-Matrix: TCLP LEACHATE				Client sample ID	BH4-CS TCLP-1	---	---	---	---
				Client sampling date / time	31-Aug-2020	---	---	---	---
Compound	CAS Number	LOR	Unit		HK2033402-001	-----	-----	-----	-----
EG: Metals and Major Cations									
EG020: Lead	7439-92-1	0.1	mg/L		<0.1	---	---	---	---
Sample Preparation Method									
E-TCLP: Extraction Fluid Number	---	1	--		1	---	---	---	---

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations (QC Lot: 3240651)								
HK2033402-001	BH4-CS TCLP-1	EG020: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00

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

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3240651)											
EG020: Lead	7439-92-1	0.1	mg/L	<0.1	0.5 mg/L	98.5	---	85.0	114	---	---

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

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3240651)										
HK2033402-001	BH4-CS TCLP-1	EG020: Lead	7439-92-1	0.5 mg/L	93.7	----	75.0	125	----	----

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2033409
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 03-Sep-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 08-Sep-2020
C-O-C number	: H041903			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Mike		
Leung Chak Cheong , Mike	Senior Chemist	Metals_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 03-Sep-2020 to 08-Sep-2020.

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: HK2033409

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

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

The metal concentrations reported are those determined on the TCLP leachate. Extraction Fluid #1 pH 4.88 - 4.98.

TCLP extract were filtered prior to the determination of metals.

Analytical Results

Sub-Matrix: TCLP LEACHATE								
			Client sample ID	BH4-CS TCLP-2	---	---	---	---
			Client sampling date / time	01-Sep-2020	---	---	---	---
Compound	CAS Number	LOR	Unit	HK2033409-001	-----	-----	-----	-----
EG: Metals and Major Cations								
EG020: Lead	7439-92-1	0.1	mg/L	<0.1	---	---	---	---
Sample Preparation Method								
E-TCLP: Extraction Fluid Number	----	1	--	1	---	---	---	---

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations (QC Lot: 3240651)								
HK2033402-001	Anonymous	EG020: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00

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

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
		LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3240651)											
EG020: Lead	7439-92-1	0.1	mg/L	<0.1	0.5 mg/L	98.5	---	85.0	114	---	---

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

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3240651)										
HK2033402-001	Anonymous	EG020: Lead	7439-92-1	0.5 mg/L	93.7	---	75.0	125	---	---

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2033412
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 03-Sep-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 08-Sep-2020
C-O-C number	: H041902			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Mike		
Leung Chak Cheong , Mike	Senior Chemist	Metals_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 03-Sep-2020 to 08-Sep-2020.

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: HK2033412

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

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

The metal concentrations reported are those determined on the TCLP leachate. Extraction Fluid #1 pH 4.88 - 4.98.

TCLP extract were filtered prior to the determination of metals.

Analytical Results

Sub-Matrix: TCLP LEACHATE				Client sample ID	BH4-CS TCLP-3	---	---	---	---
				Client sampling date / time	01-Sep-2020	---	---	---	---
Compound	CAS Number	LOR	Unit		HK2033412-001	----	----	----	----
EG: Metals and Major Cations									
EG020: Lead	7439-92-1	0.1	mg/L		<0.1	---	---	---	---
Sample Preparation Method									
E-TCLP: Extraction Fluid Number	----	1	--		1	---	---	---	---

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations (QC Lot: 3240651)								
HK2033402-001	Anonymous	EG020: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00

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

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3240651)											
EG020: Lead	7439-92-1	0.1	mg/L	<0.1	0.5 mg/L	98.5	----	85.0	114	----	----

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

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3240651)										
HK2033402-001	Anonymous	EG020: Lead	7439-92-1	0.5 mg/L	93.7	----	75.0	125	----	----

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2033414
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 03-Sep-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 08-Sep-2020
C-O-C number	: H041901			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Mike		
Leung Chak Cheong , Mike	Senior Chemist	Metals_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 03-Sep-2020 to 08-Sep-2020.

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: HK2033414

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

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

The metal concentrations reported are those determined on the TCLP leachate. Extraction Fluid #1 pH 4.88 - 4.98.

TCLP extract were filtered prior to the determination of metals.

Analytical Results

Sub-Matrix: TCLP LEACHATE				Client sample ID	BH4-CS TCLP-4	—	—	—	—
				Client sampling date / time	02-Sep-2020	—	—	—	—
Compound	CAS Number	LOR	Unit	HK2033414-001	——	——	——	——	
EG: Metals and Major Cations									
EG020: Lead	7439-92-1	0.1	mg/L	<0.1	—	—	—	—	
Sample Preparation Method									
E-TCLP: Extraction Fluid Number	---	1	--	1	—	—	—	—	

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations (QC Lot: 3240651)								
HK2033402-001	Anonymous	EG020: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00

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

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3240651)											
EG020: Lead	7439-92-1	0.1	mg/L	<0.1	0.5 mg/L	98.5	----	85.0	114	----	----

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

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3240651)										
HK2033402-001	Anonymous	EG020: Lead	7439-92-1	0.5 mg/L	93.7	----	75.0	125	----	----

CHAIN OF CUSTODY DOCUMENTATION

H 040797

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): ~~Thomas YEUNG~~ Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: Yes (No)

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TCLP (LEAD)											
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles												
1.	BH4-CS TCLP-1	S	31/08/20		BAG	1	✓										PLEASE START THE TEST ON 04/09/2020 3 DAYS EXPRESS	

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 31/08/2020	Name: (ALS CHK)	Date: 3/9/20	Con' Note No:
Of: TEEMWAY	Time:	Of:	Time: 16:35	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

H 041903

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No (N/A)
SAMPLE TEMPERATURE
CHILLED: Yes (No)

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TCLP (LEAD)												
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles													
1.	BH4-CS TCLP-2	S	01/08/20		BAG	1	✓												

PLEASE START THE TEST ON 05/01/2020
3 DAYS EXPRESS

RELINQUISHED BY:			RECEIVED BY			METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 01/08/2020		Name: [illegible]	Date: 3/9/20		Con' Note No:
Of: TEEMWAY	Time:		Of: ALS (HK)	Time: 16:35		
Name:	Date:		Name:	Date:		Transport Co:
Of:	Time:		Of:	Time:		

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

H 041902

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) W.O. No.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: Yes (No)

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TCLP (LEAD)											
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles												
1.	BH4-CS TCLP-3	S	01/08/20		BAG	1	✓											

PLEASE START THE TEST ON 07/09/2020
3 DAYS EXPRESS

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 01/09/2020	Name:	Date: 3/9/20	Con' Note No:
Of: TEEMWAY	Time:	Of: ALS (HK)	Time: 15:35	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

H 041901

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: ~~Relocation of Sha Tin Sewage Treatment Works to Caverns - Site~~	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05)	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No (N/A)
SAMPLE TEMPERATURE
CHILLED: Yes (No)

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TCLP (LEMP)											
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles												
1.	BH4-CS TCLP-4	S	02/09/20		BAG	1	✓											PLEASE START THE TEST ON 07/09/2020 3 DAYS EXPRESS

RELINQUISHED BY:			RECEIVED BY			METHOD OF SHIPMENT
Name:	Thomas YEUNG	Date: 02/09/2020	Name:		Date: 3/9/20	Con' Note No:
Of:	TEEMWAY	Time:	Of:	ALS (HK)	Time: 16:51	
Name:		Date:	Name:		Date:	Transport Co:
Of:		Time:	Of:		Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CASTCO
香港粉嶺安居街33號
香港粉嶺安全街29A號
Email: info@castco.com.hk

佳力高試驗中心有限公司
CASTCO TESTING CENTRE LIMITED
33, On Kui Street, Fanling, Hong Kong. Tel : 2597 8333
29A, On Chuen Street, Fanling, Hong Kong Fax: 2597 8399
Website: www.castco.com.hk

HOKLAS 032
TEST

Test Report
Concrete - Compressive Strength of Concrete Cubes
(CS1 : 1990 Section 12 + Amd. 1201, 1202 & 1203)

Castco Lab. Ref No.: 200922-2511
Report No.:516321

Date of issue: 24/09/2020

1. SAMPLE DETAILS AS SUPPLIED BY CUSTOMER

Audit No.: --
Customer's Ref. No.: --

Customers: Teemway Engineering Limited
Address: Room 1008, 10/F, Chevalier Commercial Centre, 8 Wang Hoi Raod, Kowloon Bay, Kowloon

Contract No.: DC/2018/05 Job Title: Relocation of Sha Tin Sewage Treatment Works to Caverns – Site Preparation and Access Tunnel Construction

Location in works of concrete batch sampled:

Concrete mix ID: --
Designed/ Measured slump: -- / -- mm
Cement content (OPC/PFA): -- / -- kg/m³
Plant:
Cement brand: --
Admixture brand: --
Date of sampling: 31-08-2020 Time of water added to cement: --
Place and time of making cubes: ON SITE / --
Name of person making cubes:
Nominal size: 100.0 mm
Site curing method:

Grade: --
W/C ratio: -- A/C ratio: --
Supplier:
Source of coarse aggregate: --
Source of fine aggregate: --
Dosage: -- kg/m³
Place of sampling: BH4
No. of cubes: 1
Method of Compaction:
Test at: 4 days
Max./ Min. temp: -- / -- °C

2. CERTIFICATE OF SAMPLING, SLUMP TEST, CUBE MAKING AND CURING

A certificate of sampling, slump test, cube make and curing [ ] is available and a copy is attached [X] is not available

3. LABORATORY TEST RESULT

Date received: 04-09-2020 Date of Test: 04-09-2020 Age at tests: 4 days
Laboratory curing method: WATER CURING TANK Moisture condition at test: WET
Tank No.: G Max./ Min. temp: 30.0 / 24.0°C

Cube Mark - BH4-CS UCS-		1
Mould No	-	NA
Weight in air	kg	1.805
Weight in water	kg	–
Height	mm	102.0
Width	mm	99.6
Length	mm	99.3
As- Received density (Vol. by calculation)	kg/m³	1790
As- Received density (Vol. by water disp.)	kg/m³	–
Load at Failure	kN	33.0
Compressive Strength	MPa	3.0
Observation Code	-	–
Type of Fracture	-	K

Observation Legend: A - Dry on Receipt B - Irregular shape C - Damaged corners D - Damaged edges E - Oversize F - Undersize
G - Segregation H - Honeycombing I - Voids J - Abnormal fracture K - Satisfactory Failures

Remark(s): -
1. Test result relates only to the specimen tested. Loading rate 22 MPa/ minute
2. Laboratory curing commenced from date cubes received.
3. The time of water added to cement has not been given by client, the exact age at test is therefore not determined to Cl.10.4 of CS1:1990.
4. TESTING TIME : 09:55

Checked By:

SHEK Ka Fung
Assistant Technical Officer

Approved Signatory:

K.M.WONG

WONG Ka Man
Senior Manager

End Of Report

CASTCO
香港粉嶺安居街33號
香港粉嶺安全街29A號
Email: info@castco.com.hk

佳力高試驗中心有限公司
CASTCO TESTING CENTRE LIMITED
33, On Kui Street, Fanling, Hong Kong. Tel : 2597 8333
29A, On Chuen Street, Fanling, Hong Kong Fax: 2597 8399
Website: www.castco.com.hk

HOKLAS 032
TEST

Test Report
Concrete - Compressive Strength of Concrete Cubes
(CS1 : 1990 Section 12 + Amd. 1201, 1202 & 1203)

Castco Lab. Ref No.: 200924-2071
Date of issue: 28/09/2020 Report No.:518611

1. SAMPLE DETAILS AS SUPPLIED BY CUSTOMER

Audit No.: --
Customers: Teemway Engineering Limited Customer's Ref. No.: --
Address: Room 1008, 10/F, Chevalier Commercial Centre,
8 Wang Hoi Raod,
Kowloon Bay, Kowloon

Contract No.: DC/2018/05 Job Title: Relocation of Sha Tin Sewage Treatment Works to Caverns – Site Preparation and Access Tunnel Construction

Location in works of concrete batch sampled:

Concrete mix ID: -- Grade: --
Designed/ Measured slump: -- / -- mm W/C ratio: -- A/C ratio: --
Cement content (OPC/PFA): -- / -- kg/m³ Supplier:
Plant: Source of coarse aggregate: --
Cement brand: -- Source of fine aggregate: --
Admixture brand: -- Dosage: -- kg/m³
Date of sampling: 01-09-2020 Time of water added to cement: -- Place of sampling: BH4
Place and time of making cubes: ON SITE / -- No. of cubes: 1
Name of person making cubes: Method of Compaction:
Nominal size: 100.0 mm Test at: 4 days
Site curing method: Max./ Min. temp: – / -- °C

2. CERTIFICATE OF SAMPLING, SLUMP TEST, CUBE MAKING AND CURING

A certificate of sampling, slump test, cube make and curing [ ] is available and a copy is attached [X] is not available

3. LABORATORY TEST RESULT

Date received: 05-09-2020 Date of Test: 05-09-2020 Age at tests: 4 days
Laboratory curing method: WATER CURING TANK Moisture condition at test: WET
Tank No.: G Max./ Min. temp: 30.0 / 24.0°C

Cube Mark - BH4-CS UCS-		2
Mould No	-	NA
Weight in air	kg	1.820
Weight in water	kg	–
Height	mm	101.3
Width	mm	99.9
Length	mm	99.9
As- Received density (Vol. by calculation)	kg/m³	1800
As- Received density (Vol. by water disp.)	kg/m³	–
Load at Failure	kN	35.7
Compressive Strength	MPa	3.5
Observation Code	-	–
Type of Fracture	-	K

Observation Legend: A - Dry on Receipt B - Irregular shape C - Damaged corners D - Damaged edges E - Oversize F - Undersize
G - Segregation H - Honeycombing I - Voids J - Abnormal fracture K - Satisfactory Failures

Remark(s): -
1. Test result relates only to the specimen tested. Loading rate 22 MPa/ minute
2. Laboratory curing commenced from date cubes received.
3. The time of water added to cement has not been given by client, the exact age at test is therefore not determined to Cl.10.4 of CS1:1990.
4. TESTING TIME : 10:29

Checked By:

SHEK Ka Fung
Assistant Technical Officer

Approved Signatory:

LIU Ka Wai
Technical Manager

End Of Report

CASTCO
香港粉嶺安居街33號
香港粉嶺安全街29A號
Email: info@castco.com.hk

佳力高試驗中心有限公司
CASTCO TESTING CENTRE LIMITED
33, On Kui Street, Fanling, Hong Kong. Tel : 2597 8333
29A, On Chuen Street, Fanling, Hong Kong Fax: 2597 8399
Website: www.castco.com.hk

HKAS HOKLAS 032 TEST

Test Report
Concrete - Compressive Strength of Concrete Cubes
(CS1 : 1990 Section 12 + Amd. 1201, 1202 & 1203)

Castco Lab. Ref No.: 200924-2072
Report No.:518612

Date of issue: 28/09/2020

1. SAMPLE DETAILS AS SUPPLIED BY CUSTOMER

Audit No.: --
Customer's Ref. No.: --

Customers: Teemway Engineering Limited
Address: Room 1008, 10/F, Chevalier Commercial Centre, 8 Wang Hoi Raod, Kowloon Bay, Kowloon

Contract No.: DC/2018/05 Job Title: Relocation of Sha Tin Sewage Treatment Works to Caverns – Site Preparation and Access Tunnel Construction

Location in works of concrete batch sampled:

Concrete mix ID: -- Grade: --
Designed/ Measured slump: -- / -- mm W/C ratio: -- A/C ratio: --
Cement content (OPC/PFA): -- / -- kg/m³ Supplier:
Plant: Source of coarse aggregate: --
Cement brand: -- Source of fine aggregate: --
Admixture brand: -- Dosage: -- kg/m³
Date of sampling: 01-09-2020 Time of water added to cement: -- Place of sampling: BH4
Place and time of making cubes: ON SITE / -- No. of cubes: 1
Name of person making cubes: Method of Compaction:
Nominal size: 100.0 mm Test at: 4 days
Site curing method: Max./ Min. temp: -- / -- °C

2. CERTIFICATE OF SAMPLING, SLUMP TEST, CUBE MAKING AND CURING

A certificate of sampling, slump test, cube make and curing [ ] is available and a copy is attached [X] is not available

3. LABORATORY TEST RESULT

Date received: 05-09-2020 Date of Test: 05-09-2020 Age at tests: 4 days
Laboratory curing method: WATER CURING TANK Moisture condition at test: WET
Tank No.: G Max./ Min. temp: 30.0 / 24.0°C

Cube Mark - BH4-CS UCS-		3
Mould No	-	NA
Weight in air	kg	1.770
Weight in water	kg	–
Height	mm	99.7
Width	mm	99.6
Length	mm	99.6
As- Received density (Vol. by calculation)	kg/m³	1790
As- Received density (Vol. by water disp.)	kg/m³	–
Load at Failure	kN	21.2
Compressive Strength	MPa	2.0
Observation Code	-	–
Type of Fracture	-	K

Observation Legend: A - Dry on Receipt B - Irregular shape C - Damaged corners D - Damaged edges E - Oversize F - Undersize
G - Segregation H - Honeycombing I - Voids J - Abnormal fracture K - Satisfactory Failures

Remark(s): -
1. Test result relates only to the specimen tested. Loading rate 22 MPa/ minute
2. Laboratory curing commenced from date cubes received.
3. The time of water added to cement has not been given by client, the exact age at test is therefore not determined to Cl.10.4 of CS1:1990.
4. TESTING TIME : 10:30

Checked By:

SHEK Ka Fung
Assistant Technical Officer

Approved Signatory:

LIU Ka Wai
Technical Manager

End Of Report

CASTCO
香港粉嶺安居街33號
香港粉嶺安全街29A號
Email: info@castco.com.hk

佳力高試驗中心有限公司
CASTCO TESTING CENTRE LIMITED
33, On Kui Street, Fanling, Hong Kong. Tel : 2597 8333
29A, On Chuen Street, Fanling, Hong Kong Fax: 2597 8399
Website: www.castco.com.hk

HOKLAS 032
TEST

Test Report
Concrete - Compressive Strength of Concrete Cubes
(CS1 : 1990 Section 12 + Amd. 1201, 1202 & 1203)

Castco Lab. Ref No.: 200925-2128
Report No.:519611

Date of issue: 30/09/2020

1. SAMPLE DETAILS AS SUPPLIED BY CUSTOMER

Audit No.: --
Customer's Ref. No.: --

Customers: Teemway Engineering Limited
Address: Room 1008, 10/F, Chevalier Commercial Centre, 8 Wang Hoi Raod, Kowloon Bay, Kowloon

Contract No.: DC/2018/05 Job Title: Relocation of Sha Tin Sewage Treatment Works to Caverns – Site Preparation and Access Tunnel Construction

Location in works of concrete batch sampled:

Concrete mix ID: --
Grade: --
Designed/ Measured slump: -- / -- mm
W/C ratio: -- A/C ratio: --
Cement content (OPC/PFA): -- / -- kg/m³
Supplier:
Plant:
Source of coarse aggregate: --
Cement brand: --
Source of fine aggregate: --
Admixture brand: --
Dosage: -- kg/m³
Date of sampling: 02-09-2020 Time of water added to cement: --
Place of sampling: BH4
Place and time of making cubes: ON SITE / --
No. of cubes: 1
Name of person making cubes:
Method of Compaction:
Nominal size: 100.0 mm
Test at: 5 days
Site curing method:
Max./ Min. temp: -- / -- °C

2. CERTIFICATE OF SAMPLING, SLUMP TEST, CUBE MAKING AND CURING

A certificate of sampling, slump test, cube make and curing [ ] is available and a copy is attached [X] is not available

3. LABORATORY TEST RESULT

Date received: 07-09-2020 Date of Test: 07-09-2020 Age at tests: 5 days
Laboratory curing method: WATER CURING TANK Moisture condition at test: WET
Tank No.: G Max./ Min. temp: 30.0 / 24.0°C

Cube Mark - BH4-CS UCS-		4
Mould No	-	NA
Weight in air	kg	1.825
Weight in water	kg	–
Height	mm	101.3
Width	mm	99.6
Length	mm	100.0
As- Received density (Vol. by calculation)	kg/m³	1810
As- Received density (Vol. by water disp.)	kg/m³	–
Load at Failure	kN	33.5
Compressive Strength	MPa	3.5
Observation Code	-	–
Type of Fracture	-	K

Observation Legend: A - Dry on Receipt B - Irregular shape C - Damaged corners D - Damaged edges E - Oversize F - Undersize
G - Segregation H - Honeycombing I - Voids J - Abnormal fracture K - Satisfactory Failures

Remark(s): -
1. Test result relates only to the specimen tested. Loading rate 22 MPa/ minute
2. Laboratory curing commenced from date cubes received.
3. The time of water added to cement has not been given by client, the exact age at test is therefore not determined to Cl.10.4 of CS1:1990.

Checked By:

SHEK Ka Fung
Assistant Technical Officer

Approved Signatory:

LIU Ka Wai
Technical Manager

End Of Report

APPENDIX I

LABORATORY REPORTS & COC FORMS FOR QA/QC VERIFICATION TESTING (ZONE 3)

(As shown below and attached CD-ROM)

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2033406
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 03-Sep-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 08-Sep-2020
C-O-C number	: H040798			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Leung Chak Cheong , Mike	Senior Chemist	Metals_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 03-Sep-2020 to 08-Sep-2020.

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: HK2033406

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

The metal concentrations reported are those determined on the TCLP leachate. Extraction Fluid #1 pH 4.88 - 4.98.

TCLP extract were filtered prior to the determination of metals.

Analytical Results

Sub-Matrix: TCLP LEACHATE				Client sample ID	BH4-CS TCLP-DUP-1	---	---	---	---
				Client sampling date / time	01-Sep-2020	---	---	---	---
Compound	CAS Number	LOR	Unit		HK2033406-001	-----	-----	-----	-----
EG: Metals and Major Cations									
EG020: Lead	7439-92-1	0.1	mg/L		<0.1	---	---	---	---
Sample Preparation Method									
E-TCLP: Extraction Fluid Number	---	1	-		1	---	---	---	---

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations (QC Lot: 3240651)								
HK2033402-001	Anonymous	EG020: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00

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

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
		LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3240651)											
EG020: Lead	7439-92-1	0.1	mg/L	<0.1	0.5 mg/L	98.5	----	85.0	114	----	----

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

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3240651)										
HK2033402-001	Anonymous	EG020: Lead	7439-92-1	0.5 mg/L	93.7	----	75.0	125	----	----

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2032792
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 31-Aug-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 08-Sep-2020
C-O-C number	: H040799			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Mike		
Leung Chak Cheong , Mike	Senior Chemist	Metals_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 31-Aug-2020 to 08-Sep-2020.

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: HK2032792

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

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

Analytical Results

Sub-Matrix: WATER			Client sample ID	BH4-CS FB-1	—	—	—	—
			Client sampling date / time	31-Aug-2020	—	—	—	—
Compound	CAS Number	LOR	Unit	HK2032792-001	———	———	———	———
EG: Metals and Major Cations - Filtered								
EG020: Lead	7439-92-1	1	µg/L	<1	—	—	—	—

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations - Filtered (QC Lot: 3231854)								
HK2032581-002	Anonymous	EG020: Lead	7439-92-1	1	µg/L	<1	<1	0.00

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

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QC Lot: 3231854)											
EG020: Lead	7439-92-1	1	µg/L	<1	50 µg/L	94.4	----	85.0	113	----	----

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

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QC Lot: 3231854)										
HK2032581-001	Anonymous	EG020: Lead	7439-92-1	50 µg/L	93.4	----	75.0	125	----	----

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2032793
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 31-Aug-2020
Order number	: ---	Quote number	: HKE/1680/2020	Issue Date	: 08-Sep-2020
C-O-C number	: H040800			No. of samples received	: 1
Site	: ---			No. of samples analysed	: 1

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*
Mike		
Leung Chak Cheong , Mike	Senior Chemist	Metals_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 31-Aug-2020 to 08-Sep-2020.

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: HK2032793

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

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

Analytical Results

Sub-Matrix: WATER			Client sample ID	BH4-CS EQ-1	—	—	—	—
			Client sampling date / time	31-Aug-2020	---	---	---	---
Compound	CAS Number	LOR	Unit	HK2032793-001	———	———	———	———
EG: Metals and Major Cations - Filtered								
EG020: Lead	7439-92-1	1	µg/L	<1	—	—	—	—

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations - Filtered (QC Lot: 3231854)								
HK2032581-002	Anonymous	EG020: Lead	7439-92-1	1	µg/L	<1	<1	0.00

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

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QC Lot: 3231854)											
EG020: Lead	7439-92-1	1	µg/L	<1	50 µg/L	94.4	----	85.0	113	----	----

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

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QC Lot: 3231854)										
HK2032581-001	Anonymous	EG020: Lead	7439-92-1	50 µg/L	93.4	----	75.0	125	----	----

CHAIN OF CUSTODY DOCUMENTATION

H 040798

ALS Laboratory Group

CLIENT: ~~TEEMWAY~~	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site Preparation and Access Tunnel Construction (DC/2018/05)	EMAIL REPORT TO:
SITE: P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No (N/A)
SAMPLE TEMPERATURE
CHILLED: Yes (No)

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TCLP (LEAD)										
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles											
1.	BH4-CS TCLP-DUP-1	S	~~31/08/20~~ 01/09/20		BAG	1	✓										PLEASE START THE TEST ON 05/09/2020 3 DAYS EXPRESS

RELINQUISHED BY:				RECEIVED BY				METHOD OF SHIPMENT
Name:	Thomas YEUNG	Date:	~~31/08/2020~~	Name:		Date:	3/9/20	Con' Note No:
Of:	~~TEEMWAY~~	Time:	01/09/2020	Of:	ALS (HK)	Time:	16:35	
Name:		Date:		Name:		Date:		Transport Co:
Of:		Time:		Of:		Time:		

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

H 040799

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

ALS Laboratory Group

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		LEAD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
1	BH4-CS FB-1	W	31/08/20		BOTTLE	1	✓

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 31/08/2020	Name: Jemma	Date: 31-8-2020	Con' Note No:
Of: TEEMWAY	Time: 16:30	Of: ALS (HK)	Time: 18:00	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

H 040800

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		LEAD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
1	BH4-CS FB-1	W	31/08/20		BOTTLE	1	✓

RELINQUISHED BY:			RECEIVED BY			METHOD OF SHIPMENT
Name:	Thomas YEUNG	Date: 31/08/2020	Name:		Date: 31-8-2020	Con' Note No:
Of:	TEEMWAY	Time: 16:30	Of:	ALS (HK)	Time: 18:00	
Name:		Date:	Name:		Date:	Transport Co:
Of:		Time:	Of:		Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CASTCO
香港粉嶺安居街33號
香港粉嶺安全街29A號
Email: info@castco.com.hk

佳力高試驗中心有限公司
CASTCO TESTING CENTRE LIMITED
33, On Kui Street, Fanling, Hong Kong. Tel : 2597 8333
29A, On Chuen Street, Fanling, Hong Kong Fax: 2597 8399
Website: www.castco.com.hk

HOKLAS 032
TEST

Test Report
Concrete - Compressive Strength of Concrete Cubes
(CS1 : 1990 Section 12 + Amd. 1201, 1202 & 1203)

Castco Lab. Ref No.: 200924-2070
Report No.:518610

Date of issue: 28/09/2020
Page 1 of 1 page(s)

1. SAMPLE DETAILS AS SUPPLIED BY CUSTOMER

Audit No.: --
Customer's Ref. No.: --

Customers: Teemway Engineering Limited
Address: Room 1008, 10/F, Chevalier Commercial Centre,
8 Wang Hoi Raod,
Kowloon Bay, Kowloon

Contract No.: DC/2018/05 Job Title: Relocation of Sha Tin Sewage Treatment Works to Caverns – Site Preparation and Access Tunnel Construction

Location in works of concrete batch sampled:

Concrete mix ID: --
Grade: --
Designed/ Measured slump: -- / -- mm
W/C ratio: -- A/C ratio: --
Cement content (OPC/PFA): -- / -- kg/m³
Supplier:
Plant:
Source of coarse aggregate: --
Cement brand: --
Source of fine aggregate: --
Admixture brand: --
Dosage: -- kg/m³
Date of sampling: 01-09-2020 Time of water added to cement: --
Place of sampling: BH4
Place and time of making cubes: ON SITE / --
No. of cubes: 1
Name of person making cubes:
Method of Compaction:
Nominal size: 100.0 mm
Test at: 4 days
Site curing method:
Max./ Min. temp: -- / -- °C

2. CERTIFICATE OF SAMPLING, SLUMP TEST, CUBE MAKING AND CURING

A certificate of sampling, slump test, cube make and curing [ ] is available and a copy is attached [X] is not available

3. LABORATORY TEST RESULT

Date received: 05-09-2020 Date of Test: 05-09-2020 Age at tests: 4 days
Laboratory curing method: WATER CURING TANK Moisture condition at test: WET
Tank No.: G Max./ Min. temp: 30.0 / 24.0°C

Cube Mark - BH4-CS UCS-DUP-		1
Mould No	-	NA
Weight in air	kg	1.695
Weight in water	kg	–
Height	mm	101.0
Width	mm	99.7
Length	mm	99.8
As- Received density (Vol. by calculation)	kg/m³	1690
As- Received density (Vol. by water disp.)	kg/m³	–
Load at Failure	kN	24.3
Compressive Strength	MPa	2.5
Observation Code	-	–
Type of Fracture	-	K

Observation Legend: A - Dry on Receipt B - Irregular shape C - Damaged corners D - Damaged edges E - Oversize F - Undersize
G - Segregation H - Honeycombing I - Voids J - Abnormal fracture K - Satisfactory Failures

Remark(s): -
1. Test result relates only to the specimen tested. Loading rate 22 MPa/ minute
2. Laboratory curing commenced from date cubes received.
3. The time of water added to cement has not been given by client, the exact age at test is therefore not determined to Cl.10.4 of CS1:1990.
4. TESTING TIME : 10:27

Checked By:

SHEK Ka Fung
Assistant Technical Officer

Approved Signatory:

LIU Ka Wai
Technical Manager

End Of Report

APPENDIX J

LABORATORY REPORTS & COC FORMS FOR GROUNDWATER CONFIRMATORY TESTING

(As shown below and attached CD-ROM)

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2026159
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 13-Jul-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 16-Jul-2020
C-O-C number	: H040785			No. of samples received	: 3
Site	: —			No. of samples analysed	: 3

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 13-Jul-2020 to 16-Jul-2020.

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: HK2026159

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

EP070 is the numeric code for internal use. Test method for C6-C9 Fraction of TPH is EP071.

Analytical Results

Sub-Matrix: WATER

Compound	CAS Number	LOR	Unit	Client sample ID: S1-GW-1A	S1-GW-1B	S1-GW-1C	---	---
				Client sampling date / time: 13-Jul-2020 14:15	13-Jul-2020 14:40	13-Jul-2020 15:00	---	---
				HK2026159-001	HK2026159-002	HK2026159-003	-----	-----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								
EP071HK_SR: C17 - C35 Fraction	---	500	µg/L	<500	<500	<500	---	---

Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

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

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3137547)											
EP071HK_SR: C17 - C35 Fraction	---	0.5	mg/L	<0.5	0.45 mg/L	102	---	68.0	103	---	---

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

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

CHAIN OF CUSTODY DOCUMENTATION

H 040785

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) P.O. NO.:	EMAIL INVOICE TO: (If different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No (N/A)
SAMPLE TEMPERATURE
CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		PCB(CM-CAS)												Notes: e.g. Highly contaminated samples e.g. "High PAHs expected" Extra volume for QC or trace LORs etc.
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles													
1	SI-GW-1A	W	13/07/20	1615	BOTTLE	1	✓												} 3 DAYS EXPRESS
2	SI-GW-1B	W	13/07/20	1640	BOTTLE	1	✓												
3	SI-GW-1C	W	13/07/20	1700	BOTTLE	1	✓												

RELINQUISHED BY:			RECEIVED BY			METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 13/07/2020		Name:	Date: 13/7/20		Con' Note No:
Of: TEEMWAY	Time: 1630		Of: ALS (HK)	Time: 17:30		
Name:	Date:		Name:	Date:		Transport Co:
Of:	Time:		Of:	Time:		

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

APPENDIX K

LABORATORY REPORTS & COC FORMS FOR TREATED GROUNDWATER TESTING

(As shown below and attached CD-ROM)

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2026160
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 13-Jul-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 16-Jul-2020
C-O-C number	: H040787			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 13-Jul-2020 to 16-Jul-2020.

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: HK2026160

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

EP070 is the numeric code for internal use. Test method for C6-C9 Fraction of TPH is EP071.

Analytical Results

Sub-Matrix: WATER			Client sample ID	S1-TREATED-1	—	—	—	—
			Client sampling date / time	13-Jul-2020 15:10	—	—	—	—
Compound	CAS Number	LOR	Unit	HK2026160-001	——	——	——	——
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								
EP071HK_SR: C17 - C35 Fraction	----	500	µg/L	<500	—	—	—	—

Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

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

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3137547)											
EP071HK_SR: C17 - C35 Fraction	---	0.5	mg/L	<0.5	0.45 mg/L	102	---	68.0	103	---	---

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

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

CHAIN OF CUSTODY DOCUMENTATION

H 040787

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site Preparation and Access Tunnel Construction (DC/2018/05)	EMAIL REPORT TO:
SITE: P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED Including SUITES(note - suite codes must be listed to attract suite prices)

ALS Laboratory Group

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

PCR (C17-C35)

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
1-	SI-TREATED-)	W	13/07/20	1510	BOTTLE	1	✓

3 DAY EXPRESS

RELINQUISHED BY:			
Name:	Thomas YEUNG	Date:	13/07/2020
Of:	TEEMWAY	Time:	1630
Name:		Date:	
Of:		Time:	

RECEIVED BY			
Name:	Karen	Date:	13/7/20
Of:	ALS (HK)	Time:	17:30
Name:		Date:	
Of:		Time:	

METHOD OF SHIPMENT	
Con' Note No:	
Transport Co:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

APPENDIX L

LABORATORY REPORTS & COC FORMS FOR QA/QC GROUNDWATER TESTING

(As shown below and attached CD-ROM)

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2026165
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 13-Jul-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 17-Jul-2020
C-O-C number	: H040786			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 13-Jul-2020 to 16-Jul-2020.

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: HK2026165

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

EP070 is the numeric code for internal use. Test method for C6-C9 Fraction of TPH is EP071.

Analytical Results

Sub-Matrix: WATER			Client sample ID	S1-GW-DUP1	---	---	---	---
			Client sampling date / time	13-Jul-2020 14:40	---	---	---	---
Compound	CAS Number	LOR	Unit	HK2026165-001	----	----	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								
EP071HK_SR: C17 - C35 Fraction	----	500	µg/L	<500	---	---	---	---

Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

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 Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3137547)											
EP071HK_SR: C17 - C35 Fraction	---	0.5	mg/L	<0.5	0.45 mg/L	102	---	68.0	103	---	---

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

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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2026168
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 13-Jul-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 17-Jul-2020
C-O-C number	: H040788			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 13-Jul-2020 to 16-Jul-2020.

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: HK2026168

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

EP070 is the numeric code for internal use. Test method for C6-C9 Fraction of TPH is EP071.

Analytical Results

Sub-Matrix: WATER								
			Client sample ID	S1-TREATED-DUP 1	—	—	—	—
			Client sampling date / time	13-Jul-2020 15:10	—	—	—	—
Compound	CAS Number	LOR	Unit	HK2026168-001	——	——	——	——
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								
EP071HK_SR: C17 - C35 Fraction	—	500	µg/L	<500	—	—	—	—

Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

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 Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3137547)											
EP071HK_SR: C17 - C35 Fraction	----	0.5	mg/L	<0.5	0.45 mg/L	102	----	68.0	103	----	----

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

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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2026161
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 13-Jul-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 17-Jul-2020
C-O-C number	: H040783			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 13-Jul-2020 to 16-Jul-2020.

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: HK2026161

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

EP070 is the numeric code for internal use. Test method for C6-C9 Fraction of TPH is EP071.

Analytical Results

Sub-Matrix: WATER			Client sample ID	S1-FB1	—	—	—	—
			Client sampling date / time	13-Jul-2020	---	---	---	---
Compound	CAS Number	LOR	Unit	HK2026161-001	———	———	———	———
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								
EP071HK_SR: C17 - C35 Fraction	---	500	µg/L	<500	—	—	—	—

Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

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 Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3137547)											
EP071HK_SR: C17 - C35 Fraction	----	0.5	mg/L	<0.5	0.45 mg/L	102	----	68.0	103	----	----

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

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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: TEEMWAY ENGINEERING LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS YEUNG	Contact	: Richard Fung	Work Order	: HK2026164
Address	: RM 1008, 10/F, CHEVALIER COMMERICAL CENTRE, 8 WANG HOI ROAD, KOWLOON BAY, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: works@teemway.com	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2796 2268	Telephone	: +852 2610 1044		
Facsimile	: +852 2796 2217	Facsimile	: +852 2610 2021		
Project	: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)			Date Samples Received	: 13-Jul-2020
Order number	: —	Quote number	: HKE/1680/2020	Issue Date	: 17-Jul-2020
C-O-C number	: H040784			No. of samples received	: 1
Site	: —			No. of samples analysed	: 1

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*
Anh Ngoc Huynh .	Senior Chemist	Organics_ENV

General Comments

This report supersedes any previous report(s) with this reference. 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 13-Jul-2020 to 16-Jul-2020.

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: HK2026164

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

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

EP070 is the numeric code for internal use. Test method for C6-C9 Fraction of TPH is EP071.

Analytical Results

Sub-Matrix: WATER			Client sample ID	S1-EQ1	---	---	---	---
			Client sampling date / time	13-Jul-2020	---	---	---	---
Compound	CAS Number	LOR	Unit	HK2026164-001	-----	-----	-----	-----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								
EP071HK_SR: C17 - C35 Fraction	---	500	µg/L	<500	---	---	---	---

Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

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 Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3137547)											
EP071HK_SR: C17 - C35 Fraction	---	0.5	mg/L	<0.5	0.45 mg/L	102	---	68.0	103	---	---

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

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

CHAIN OF CUSTODY DOCUMENTATION

H 040786

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) P.O. NO.:	EMAIL INVOICE TO: (If different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No (N/A)
SAMPLE TEMPERATURE
CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	PER (C17-C35)
1.	S1-GW-DUP1	W	13/07/20	1660	BOTTLE	1	✓

RELINQUISHED BY:			RECEIVED BY			METHOD OF SHIPMENT
Name:	Thomas YEUNG	Date: 13/07/2020	Name:		Date: 13/7/20	Con' Note No:
Of:	TEEMWAY	Time: 1630	Of:	ALS (HK)	Time: 17:30	
Name:		Date:	Name:		Date:	Transport Co:
Of:		Time:	Of:		Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

H 040788

ALS Laboratory Group

CLIENT: ~~Thomas YEUNG~~ TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		PCR(C17-C27)
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
1.	S1-TREATED-DUP1	W	13/07/20	1510	BOTTLE	1	√

RELINQUISHED BY:				RECEIVED BY				METHOD OF SHIPMENT
Name:	Thomas YEUNG	Date:	13/07/2020	Name:	Karen	Date:	13/7/20	Con' Note No:
Of:	TEEMWAY	Time:	1630	Of:	ALS (HK)	Time:	17:30	
Name:		Date:		Name:		Date:		Transport Co:
Of:		Time:		Of:		Time:		

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

H 040783

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM):	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05)	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A)

SAMPLE TEMPERATURE

CHILLED: (Yes) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		PCR (C17-C35)												
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles													
1-	S1 - FB1	W	13/07/20		BOTTLE	1	V												

RELINQUISHED BY:				RECEIVED BY				METHOD OF SHIPMENT
Name:	Thomas YEUNG	Date:	13/7/2020	Name:	[illegible]	Date:	13/7/20	Con' Note No:
Of:	TEEMWAY	Time:	1630	Of:	ALS (HK)	Time:	17:30	
Name:		Date:		Name:		Date:		Transport Co:
Of:		Time:		Of:		Time:		

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

H 040784

ALS Laboratory Group

CLIENT: TEEMWAY	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): Thomas YEUNG	PHONE
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:
SITE: Preparation and Access Tunnel Construction (DC/2018/05) P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES(note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No (N/A circled)

SAMPLE TEMPERATURE

CHILLED: (Yes circled) No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples e.g. "High PAHs expected" Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		ANALYSIS REQUIRED
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	PCR(C17-C35)
1.	S1-EG1	W	13/07/20		BOTTLE	1	✓

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 13/07/2020	Name: Karen	Date: 13/7/20	Con' Note No:
Of: TEEMWAY	Time: 1630	Of: ALS (HK)	Time: 17:30	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

ALS Laboratory Group

WHITE - LAB COPY
YELLOW - CUSTOMER COPY
PINK - BOOK COPY

COC Page ____ of ____

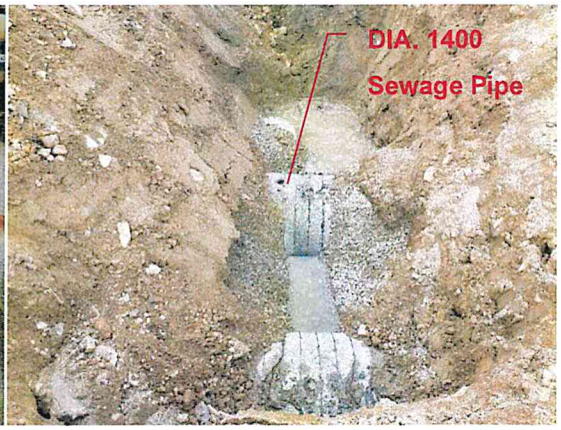
APPENDIX M

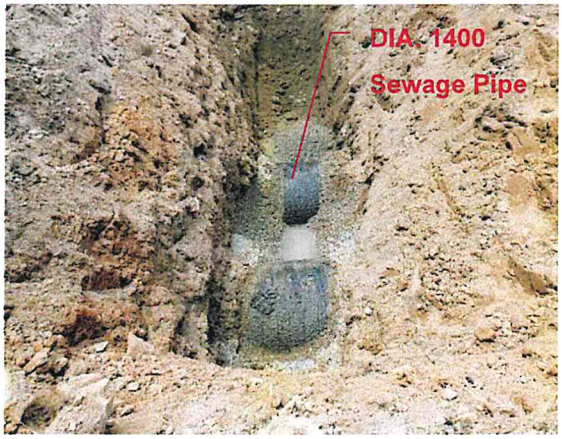
PHOTO RECORD

(As shown below and attached CD-ROM)

CONFIRMATORY SAMPLING AT BH4

Trial Trenches for Underground Sewage Pipes





Decontamination for Sampling Tools

Conducting Confirmatory Sampling

Conducting QA/QC Sampling

Excavation Extent for Contaminated Soil

BIOPILE TREATMENT AT BH4

Biopile Construction

Excavation of Zone 1 Contaminated Soil

Biopile Setup

Aeration System for Biopile

Decontamination for Sampling Tools

Biopile Progress Sampling

Conducting QA/QC Sampling

CEMENT SOLIDIFICATION AT BH4

Trial Mix Test for Cement Solidification

Excavation of Zone 3 Contaminated Soil

Cement Solidification


BH4 – CS TCLP-1
BH4 – CS UCS-1
Sampling Date: 31/08/2020
Testing Date: 04/09/2020


BH4 – CS TCLP-2
BH4 – CS UCS-2
Sampling Date: 01/09/2020
Testing Date:
BH4 – CS TCLP-DUP-1
BH4 – CS UCS-DUP-1
Sampling Date: 01/09/2020
Testing Date:

CROSS-CONTAMINATION PREVENTION

Decontamination for Excavation Equipment

Treatment Locations for Contaminated Soil

Treatment Area for Zone 1 Contaminated Soil

Treatment Area for Zone 3 Contaminated Soil

BACKFILLING OF TREATED SOIL TO ORIGINAL LOCATION

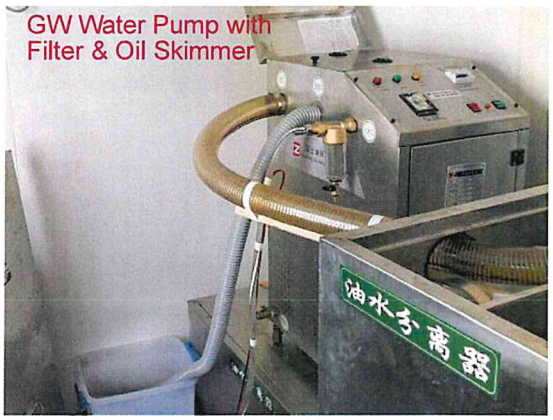
Backfilling of Zone 3 Treated Soil (Approx. From 4.73m bgl to 6.75m bgl)

Backfilling of Zone 1 Treated Soil (Approx. From 1.13m bgl to 2.70m bgl)

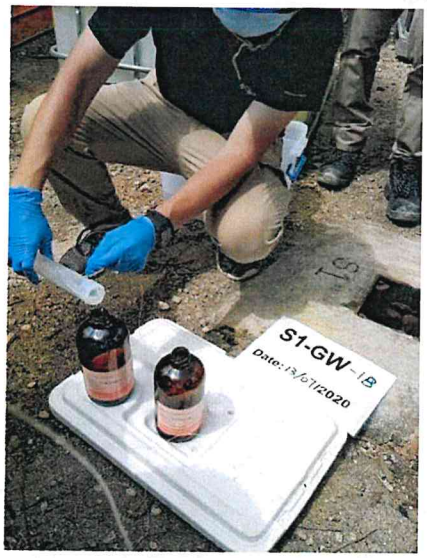
Backfilling of Clean Soil to Ground Level

GROUNDWATER TREATMENT AT S1

Groundwater Treatment Setup



Confirmatory & Verification Sampling for Groundwater Sample



Decontamination for Sampling Tools