

CHINA STATE JOINT VENTURE

Your ref:

Our ref: CDT/LT/GOV/2021/5372

15 October 2021

The EIA Ordinance Register Office Environmental Protection Department 27th floor, Southern 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 the Existing DSD Staff Quarters Site at Sha
Tin Sewage Treatment Works (Revision 1.1) under Approved Remediation Action Plan
(Revision 2.2) under EP-533/2017

We refer to your comments of the captioned RR by email on 28 September 2021 and 7 October 2021 and would like to submit herewith four hard copies and two electronic copies of the captioned report (Revision 1.1) for your approval.

Should you have any queries, please feel free to contact the undersigned at 9589 8156.

Thank you for your attention.

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

Kenny Poon Site Agent

KP/KW/KF/sls

Encl.

cc DSD/CP

AECOM site office

(IEC) Acuity

(ET) Lam Environmental

Services Limited

(Attn: Mr. Stanley Hung - 1CD)

(Attn: Mr. Peter Poon – 1 CD)

(Attn: Dr. C.F. Ng - 1 CD)

(Attn: Mr. Derek Lo - 1 CD)





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Date: 12 October 2021

Your ref:

Our ref: PL-202110007

AECOM Asia Limited c/o Site Office 21 Hang Tai Road Ma On Shan New Territories

Attn: Mr. Simon Leung, CRE

Dear Mr. Leung,

Re: Contract No. DC/2018/05

Relocation of Sha Tin Sewage Treatment Works to Cavern - Site Preparation and Access Tunnel Construction

<u>Verification of Remediation Report for the Existing Staff Quarters Site at Sha Tin Sewage Treatment Works (Rev. 1.1)</u>

Reference is made to the captioned report received on 8 October 2021.

Please be informed that we have no comments on the captioned submission. We hereby verify the Report with reference to paragraph 4.11.2 of the approved Contamination Assessment Report and Remediation Action Plan for the Existing DSD Staff Quarter (Revision 1.1) and according to Conditions 1.9 and 2.4(ii) of Environmental Permit No. EP-533/2017.

Thank you for your attention.

Yours sincerely, For and on behalf of Acuity Sustainability Consulting Limited

Dr. C. F. Ng

Independent Environmental Checker

c.c. DSD Cavern Projects Division Attn.: Mr. Stanley Hung By e-mail ETL Lam Environmental Services Limited Attn.: Mr. Derek Lo By e-mail



Our ref.: LES/J2021-03/CS/L026

Date: 8 October 2021

China State Joint Venture By Email & Hand

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

Attn: Mr. Eddie TANG

Dear Mr. TANG,

Contract No. STW 01/2021
Environmental Team for
Relocation of Sha Tin Sewage Treatment Works to Caverns – Site Preparation and
Access Tunnel Construction

Submission of Remediation Report (RR) for Existing DSD Staff Quarter Site (Rev.1.1)

Referring to the captioned submission (Document No.: TE20030/RR_SQ (REV.1.1)) received through email on 8 October 2021, 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. Stanley Hung Via email AECOM (CRE Office) Mr. Simon Leung Via email

AECOM (CRE Office) Mr. Simon Leung Via email Acuity Sustainability Consulting Mr. C.F Ng Via email

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

REMEDIATION REPORT

FOR THE EXISTING DSD STAFF QUARTERS SITE AT SHA TIN SEWAGE TREATMENT WORKS

DOCUMENT NO.: TE20030/RR_SQ (REV. 1.1)
OCTOBER 2021

CLIENT

DRAINAGE SERVICES DEPARTMENT

CONSULTANT

AECOM

INDEPENDENT ENVIRONMENTAL CHECKER

ACUITY SUSTAINABILITY CONSULTING LIMITED

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

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1.0 INTRODUCTION

1.1 Background Information

- 1.1.1 This Remediation Report (RR) is for the Decontamination Works at the Existing DSD Staff Quarter Site (The Site) 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 A Supplementary Contamination Assessment Plan (SCAP) was prepared to identify the potential land contamination issues at the Site for partial fulfilment of Condition 2.21 of the EP and recommended to conduct Site Investigation (SI) at ENV-G01(2) to identify potential land contamination issues.
- 1.1.4 A Contamination Assessment Report and Remediation Action Plan (CAR & RAP) (Revision 2.2) was prepared by Lam Environmental Services Limited to cover the assessment of the Existing DSD Staff Quarter Site. The CAR & RAP was submitted and agreed by Environmental Protection Department (EPD) on 02 March 2021.
- 1.1.5 For the agreed 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 ENV-G01(2) at the Existing DSD Staff Quarter Site was identified. The Site Location Plan with Hotspot Location is shown in Figure 1.
- 1.1.6 Teemway Engineering Limited was appointed as the Land Decontamination Contractor (The Contractor) for carrying out the decontamination work at the Existing DSD Staff Quarter Site and submit the Remediation Report (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
 - Summarize results of confirmatory testing results and confirm the extent of remediation at ENV-G01(2);
 - Describe the remediation process for cement solidification at ENV-G01(2);
 - Report the detail of remediation process conducted at ENV-G01(2), adequate clean-up of the contaminated soil has been completed and the test results to ensure the remediated soil has been treated properly to fulfil the treatment targets in accordance with the agreed CAR & RAP.

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 agreed CAR & RAP, a borehole at ENV-G01(2) was conducted for soil and groundwater sampling at Existing DSD Staff Quarter Site for site investigation stage.
- 3.1.2 For soil samples collected at 1.5m-1.95m and 3.0m-3.45m below ground level, the analytical results indicate that the concentration of Lead, are higher than the relevant RBRGs (Urban Residential Standard).
- 3.1.3 For all other soil and groundwater samples collected at ENV-G01(2) were tested within RBRGs (Urban Residential Standard). As no trace of NAPL was observed and all tested parameters in soil / groundwater samples were within C_{sat} / Solubility Limit respectively, the NAPL removal to soil saturation limit or solubility limit criterion is not required.
- 3.1.4 The detected levels of the parameters higher than that in RBRGs is shown in **Table 1**.
 The Previously Sampling Location at DSD Staff Quarter extracted from the agreed CAR & RAP can be referred to **Figure 1**.

Table 1 Soil Samples Exceeding RBRGs (Urban Residential Standard)

Sample ID	Parameters	Detected Concentrations (mg/kg)	RBRGs Standard (mg/kg)	
ENV-G01(2) (1.5m-1.95m)	Lood	281	258	
ENV-G01(2) (3.0m-3.45m)	Lead	379	200	

3.2 Extent of Contamination

3.2.1 For the contaminated soil identified in accordance with the agreed CAR & RAP, the estimated extent of contaminated soil at ENV-G01(2) for remediation is outlined by a 5m x 5m grid with the concerned sampling location located at the center of the grid. The vertical extent of initial contamination zone is assumed to be 0.5m above and below the sampling depth with contamination identified for conservation estimation. Further to the site investigation and soil sampling process, it was observed that the soil sample collected at 1.5m-1.95m and 3.0m-3.45m below ground level are in homogeneous nature. Therefore, the soil layer between 1.95m to 3.0m below ground level is considered to be contaminated.

REMEDIATION REPORT (RR) FOR THE EXISTING DSD STAFF QUARTERS SITE

3.2.2 Based on the above estimation approach, the estimated volume of contaminated soil for remediation should be approximate 74m³. The detail of estimated contaminated soil volume is illustrated in **Table 3**.

Table 2 Estimated Volume of Contaminated Soil for Remediation

Sample ID	Sample Depth (m bgl)	Contaminant	Depth of Contaminated Soil (m bgl)	Horizontal Dimension (m)	Contaminated Soil Area (m²)	Contaminated Soil Volume (m³)
ENV-G01(2) (1.5m-1.95m)	1.5m – 1.95m	Lead	1.0m – 3.95m	5.0m x 5.0m	25	~74
ENV-G01(2) (3.0m-3.45m)	3.0m – 3.45m		(2.95m thickness)			~74

3.3 Remediation Methods

3.3.1 In accordance with the agreed CAR & RAP, the proposed remediation method for the contaminated soil at ENV-G01(2) is summarized in **Table 3**.

Table 3 Proposed Remediation Method for the Contaminated Soil

Type of Contamination	Proposed Remediation Method
ENV-G01(2) – Soil (Lead)	Cement Solidification / Stabilization (S/S)

4.0 REMEDIATION PROGRAMME

4.1 Confirmatory Sampling at ENV-G01(2)

4.1.1 Sampling Locations & Depths

4.1.1.1 The soil samples were tested only for the contaminants exceeding RBRGs at the concerned location at ENV-G01(2) 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.

4.1.2 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 The soil samples were collected by stainless steel U76 sampler or glass jars provided by the laboratory, ALS Technichem (HK) Pty. Ltd. (ALS), which is accredited under Hong Kong Laboratory Accreditation Scheme (HOKLAS). 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 fourteen (14) samples (excluding duplicate sample) were collected at ENV-G01(2) during the period from 12 March 2021 to 31 March 2021. Testing of the confirmatory samples was performed by ALS. The confirmatory sampling locations are illustrated in **Figure 2**.

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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 4** and the complete laboratory reports for confirmatory test are attached in **Appendix A**.

Table 4 Confirmatory Testing Results

Concerned Location	Contaminant	Location	Sampling Date	Sample ID	Report ID	Result (mg/kg)	RBRG Limit (mg/kg)	Below RBRGs Limit? (Y/N)
		Тор	15/03/2021	ENV-G01(2)(T) (1.0m)	HK2110585-003	248	258	Υ
		Bottom	15/03/2021	ENV-G01(2)(B) (3.95m-4.40m)	HK2110585-004	161	258	Y
			12/03/2021	ENV-G01(2)(ET) (1.50m-1.95m)	HK2110213-001	160		Υ
		Sidewall	12/03/2021	ENV-G01(2)(EB) (3.00m-3.45m)	HK2110213-002	300	258	N (Extend to EB1)
			20/03/2021	ENV-G01(2)(EB1) (3.00m-3.45m)	HK2111450-001	323	258	N (Extend to EB3)*
) Lead		31/03/2021	ENV-G01(2)(EB3)* (3.00m-3.45m)	HK2112678-001	211		Υ
ENV-G01(2)		Sidewall	15/03/2021	ENV-G01(2)(ST) (1.50m-1.95m)	HK2110585-001	236		Υ
LIV-001(2)			15/03/2021	ENV-G01(2)(SB) (3.00m-3.45m)	HK2110585-002	532	258	N (Extend to SB1)
			22/03/2021	ENV-G01(2)(SB1) (3.00m-3.45m)	HK2111599-001	98		Y
		Sidewall	13/03/2021	ENV-G01(2)(WT) (1.50m-1.95m)	HK2110323-002	217	7	Υ
			13/03/2021	ENV-G01(2)(WB) (3.00m-3.45m)	HK2110323-003	1130	258	N (Extend to WB1)
			22/03/2021	ENV-G01(2)(WB1) (3.00m-3.45m)	HK2111603-001	199		Υ
		Sidewall	12/03/2021	ENV-G01(2)(NT) (1.50m-1.95m)	HK2110213-003	156	258	Υ
			13/03/2021	ENV-G01(2)(NB) (3.00m-3.45m)	HK2110323-001	148	230	Υ

The sample at ENV-G01(2)(EB2) was cancelled due to the presence of underground water pipe.

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. The QA/QC samples are collected on-site and then stored and delivered together with the soil confirmatory samples.

REMEDIATION REPORT (RR) FOR THE EXISTING DSD STAFF QUARTERS SITE

4.1.4.2 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 QA/QC samples

is presented in Table 5 and Table 6 and the laboratory reports for the relevant

QA/QC samples are attached in Appendix B.

Table 5 QA/QC Samples for Confirmatory Sampling

QA/QC Sample Sampling Date		Sample ID	Report ID	Associated Sample(s)	Testing Parameter	Result
Duplicate Sample	15/03/2021	DUP-1	HK2110587-003	ENV-G01(2)(T)(1.0m)	Lead	236 mg/kg
Field Blank	15/03/2021	FB-1	HK2110587-001	ENV-G01(2)(T)(1.0m)	Lead	<1 ug/L
Equipment Blank	15/03/2021	EQ-1	HK2110587-002	ENV-G01(2)(T)(1.0m)	Lead	<1 ug/L

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

Г	Ouplicate Sample		Asso	Testing	DDD		
Sample ID	Report ID	Result (mg/kg)	Sample ID	Report ID	Result (mg/kg)	Parameter	RPD
DUP-1	HK2110587-003	236	ENV-G01(2)(T)(1.0m)	HK2110585-003	248	Lead	4.96%

- 4.1.4.3 All parameters tested for field blank sample and equipment blank sample 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 Lead-Contaminated Soil found at ENV-G01(2), about 12.5m³ of the contaminated soil was estimated from 1.00m to 1.50m below ground level with the corresponding area of 25m². About 132.3m³ of the contaminated soil was estimated from 1.50m to 3.95m below ground level with the corresponding area of 54m². The excavation area of agreed and confirmed contaminated soil is shown in **Figure 3** and the confirmed volume of contaminated soil for remediation is shown in **Table 4**.

Table 7 Confirmed Volume of Contaminated Soil for Remediation

Location	Contaminant	Estimated Depth of Contaminated Soil (m bgl)	Estimated Area of Contaminated Soil (m²)	Estimated Volume of Contaminated Soil (m³)
ENIV (201/2)	Lead	1.00-1.50	25 (5.0m x 5.0m)	12.5
ENV-G01(2)	Leau	1.50-3.95	54 (6.0m x 9.0m)	132.3
	144.8			

4.2 Cement Solidification / Stabilization at ENV-G01(2)

4.2.1 Trial Mixing

- 4.2.1.1 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 approximate 1.5m bgl at ENV-G01(2). Three cement/soil ratio by weight were tested, i.e. 5%, 10% and 15% respectively. Water was added at approx. 1:1 ratio to cement for mixing.
- 4.2.1.2 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.
- 4.2.1.3 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 3-day settlement period. The laboratory results are summarized in Table 8 & Table 9 respectively and the complete laboratory reports for Trial Mix Tests are attached in Appendix C.

Table 8 Trial Mix Test Results for TCLP Testing

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)
ENV-G01(2)	Lead (TCLP)	5%	29/06/2021	ENV-G01(2)-CS (TM) TCLP-5%	HK2126255-001	<0.1		Y
		10%	29/06/2021	ENV-G01(2)-CS (TM) TCLP-10%	HK2126255-002	<0.1	<0.75	Y
		15%	29/06/2021	ENV-G01(2)-CS (TM) TCLP-15%	HK2126255-003	<0.1		Y

Table 9 Trial Mix Test Results for UCS Testing

Location	Cement / Soil Ratio	Sampling Date	Sample ID	UCS Test Result (MPa)	UCS Requirement (MPa)	Meet the UCS Requirement? (Y/N)
	5%	29/06/2021	ENV-G01(2)-CS (TM) UCS-5%	1.0		Y
ENV-G01(2)	10%	29/06/2021	ENV-G01(2)-CS (TM) UCS-10%	3.0	≥1.0	Υ
	15%	29/06/2021	ENV-G01(2)-CS (TM) UCS-15%	4.0		Υ

- 4.2.1.4 According to the above results of trial mixing and more conservative approach, 5% cement / soil ratio was adopted with approximate 3-day curing time was adopted for full scale remediation.
- 4.2.2 Implementation of Cement Solidification
- 4.2.2.1 The excavation boundaries for contaminated soil were indicated on site in accordance with the as-built confirmatory sampling locations to ensure that all contaminated soil was excavated for treatment by cement solidification / stabilization. The layout plan for cement solidification / stabilization for contaminated soil extent is shown in **Figure 3**.
- 4.2.2.2 During the excavation of clean soil above the extent of Contaminated Soil, the excavation tools reached the soil approx. 0.3m above the contaminated area to avoid any potential contamination to the excavation equipment.
- 4.2.2.3 In order to prevent cross-contamination between contaminated soil and clean soil, the excavated Contaminated Soil was excavated and delivered to the container skip for treatment by cement solidification / stabilization process. After treatment, the stockpiled treated soil was covered by impermeable sheeting with clear labelling.

- 4.2.2.4 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.
- 4.2.2.5 Oversize materials (i.e. cobble, boulder etc.) within the extent of contaminated soil should be sorted out and then steam-cleaned at 60°C for material surface to remove surface contaminants and then handled with other treated soil
- 4.2.2.6 The contaminated soil was delivered to a container skip with measured dimension in for start cement solidification / stabilization process (i.e. not more than 10m³ for each batch). The calculated quantity of cement and water were added for soil mixing. The treated soil then was delivered to the designated stockpiling area for waiting for the corresponding test results of TCLP and UCS testing as per Figure 3. Total of eighteen (18) verification samples (excluding duplicate sample) were collected for TCLP and UCS testing.
- 4.2.2.7 Finally, 144.8m³ of Contaminated Soil at ENV-G01(2) was excavated and treated for cement solidification / stabilization during the period from 09 July 2021 to 31 July 2021.
- 4.2.3 Verification Test
- 4.2.3.1 As the treated soil will be backfilled on-site at ENV-G01(2), 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 10** & **Table 11** respectively and the complete laboratory reports for Verification Tests are attached in **Appendix D**.
- 4.2.3.2 In considering the cement solidification / stabilization was conducted in difference batches, one sample was collected for every 10m³ of solidified soil or for daily basis for laboratory analysis. Total of eighteen (18) verification samples (excluding duplicate sample) were collected for TCLP and UCS testing.
- 4.2.3.3 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.

4.2.3.4 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 10 Verification Test Results for TCLP Testing

Location	Testing Parameter	Sampling Date	Sample ID	Report ID	TCLP Test Result (mg/L)	TCLP Limit (mg/L)	Below the TCLP Limit? (Y/N)
	اممط		ENV-G01(2)-CS TCLP-1	HK2127955-001	<0.1		Υ
	Lead (TCLP)	09/07/2021	ENV-G01(2)-CS TCLP-2	HK2127955-002	<0.1	< 0.75	Υ
	(TCLP)		ENV-G01(2)-CS TCLP-3	HK2127955-003	<0.1		Υ
	Lead		ENV-G01(2)-CS TCLP-4	HK2128600-001	<0.1		Υ
	(TCLP)	12/07/2021	ENV-G01(2)-CS TCLP-5	HK2128600-002	<0.1	< 0.75	Υ
			ENV-G01(2)-CS TCLP-6	HK2128600-003	<0.1		Υ
	Lead (TCLP)		ENV-G01(2)-CS TCLP-7	HK2129122-001	<0.1		Υ
		15/07/2021	ENV-G01(2)-CS TCLP-8	HK2129122-002	<0.1	< 0.75	Υ
ENV-G01(2)			ENV-G01(2)-CS TCLP-9	HK2129122-003	<0.1		Υ
LINV-G01(2)	Lood		ENV-G01(2)-CS TCLP-10	HK2129124-001	<0.1		Υ
	Lead (TCLP)	17/07/2021	ENV-G01(2)-CS TCLP-11	HK2129124-002	<0.1	< 0.75	Υ
	(TCLP)		ENV-G01(2)-CS TCLP-12	HK2129124-003	<0.1		Υ
	Lood		ENV-G01(2)-CS TCLP-13	HK2130742-001	<0.1		Υ
	Lead (TCLP)	27/07/2021	ENV-G01(2)-CS TCLP-14	HK2130742-002	<0.1	< 0.75	Υ
	(TOLF)		ENV-G01(2)-CS TCLP-15	HK2130742-003	<0.1		Y
	Lead		ENV-G01(2)-CS TCLP-16	HK2131024-001	<0.1		Υ
	(TCLP)	31/07/2021	ENV-G01(2)-CS TCLP-17	HK2131024-002	<0.1	< 0.75	Y
	(ICLF)		ENV-G01(2)-CS TCLP-18	HK2131024-003	<0.1		Υ

Table 11 Verification Test Results for UCS Testing

Location	Sampling Date	Sample ID	Report ID	UCS Test Result	UCS Requirement	Meet the UCS Requirement?
Location	Sampling Date	Sample 10	Sample id Report id			(Y/N)
		ENV-G01(2)-CS UCS-1		3.0		Υ
	09/07/2021	ENV-G01(2)-CS UCS-2	734517	4.5	≥1.0	Y
		ENV-G01(2)-CS UCS-3		3.0		Y
		ENV-G01(2)-CS UCS-4		3.0		Υ
	12/07/2021	ENV-G01(2)-CS UCS-5	734490	4.0	≥1.0	Y
		ENV-G01(2)-CS UCS-6		5.5		Y
	15/07/2021	ENV-G01(2)-CS UCS-7		3.0	≥1.0	Y
ENV-G01(2)		ENV-G01(2)-CS UCS-8	741135	3.0		Y
		ENV-G01(2)-CS UCS-9		3.5		Υ
		ENV-G01(2)-CS UCS-10		4.5		Y
	17/07/2021	ENV-G01(2)-CS UCS-11	746321	4.5	≥1.0	Υ
		ENV-G01(2)-CS UCS-12		3.5		Υ
		ENV-G01(2)-CS UCS-13		3.5	≥1.0	Υ
	27/07/2021	ENV-G01(2)-CS UCS-14	750716	3.0		Υ
		ENV-G01(2)-CS UCS-15		3.0		Υ

REMEDIATION REPORT (RR) FOR THE EXISTING DSD STAFF QUARTERS SITE

	ENV-G01(2)-CS UCS-16		2.5		Y
31/07/2021	ENV-G01(2)-CS UCS-17	756980	2.0	≥1.0	Υ
	ENV-G01(2)-CS UCS-18		2.0		Υ

4.2.3.5 All TCLP concentrations were below TCLP limit, and thus the remediation of Contaminated Soil at ENV-G01(2) by cement solidification / stabilization method 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.

4.2.4 QA/QC Sample Result

- 4.2.4.1 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.
- 4.2.4.2 Since eighteen (18) 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 12 and Table 13 and the complete laboratory analytical reports for QA/QC samples are attached in Appendix E.

Table 12 QA/QC Samples for Cement Solidification

QA/QC Sample Sampling Date		Sample ID	Report ID	Result	Associated Sample
Duplicate Sample		ENV-G01(2)-CS TCLP-DUP1 HK2130744-001		<0.1 mg/L	ENV-G01(2)-CS TCLP-14
	27/07/2021	ENV-G01(2)-CS UCS-DUP1	750717	2.5 MPa	ENV-G01(2)-CS UCS-14
Field Blank	27/07/2021	ENV-G01(2)-CS FB1	HK2130256-001	<1 μg/L	ENV-G01(2)-CS TCLP-14
Equipment Blank	27/07/2021	ENV-G01(2)-CS EQ1	HK2130256-002	<1 μg/L	ENV-G01(2)-CS TCLP-14

Table 13 Relative Percent Difference (RPD) Values for Cement Solidification

Dup	olicate Sample		Ass	sociated Sample		Testing	RPD
Sample ID	Report ID	Result	Sample ID	Report ID Result		Parameter	KPU
ENV-G01(2)-CS TCLP-DUP1	HK2130744	<0.1 mg/L	ENV-G01(2)-CS TCLP-14	HK2130742-002	<0.1 mg/L	Lead (TCLP)	0.0%
ENV-G01(2)-CS UCS-DUP1	750717	2.5 MPa	ENV-G01(2)-CS UCS-14	750716	3.0 MPa	UCS	18.2%

REMEDIATION REPORT (RR) FOR THE EXISTING DSD STAFF QUARTERS SITE

- 4.2.4.3 All parameters tested for field blank sample and equipment blank sample are below the laboratory reporting limits.
- 4.2.4.4 The laboratory QA/QC sample results included surrogate recoveries, matrix spike sample, laboratory duplicate samples and method blanks and met their respective requirements.
- 4.2.4.5 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.

4.3 Backfilling of Treated Contaminated Soil

- 4.3.1 After the completion of cement solidification / stabilization process, the treated contaminated soil should be backfilled on-site at ENV-G01(2) 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.
- 4.3.2 The treated soil then was backfilled to the original position of the excavated pit at ENV-G01(2). According to the site measurement record, the bulk backfilling volume for Treated Contaminated Soil after cement solidification / stabilization is approx. 156.6m³. 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 4** and the backfilling summary of treated soil is listed in **Table 14**.

Table 14 Backfilling Summary for Treated Soil

Ref.	Description	Approx. Depth of Backfilling (m bgl)	Horizontal Dimension (m)	Bulk Backfilling Volume (m³)
1.	Treated Soil by Cement Solidification / Stabilization	1.05m-3.95m (2.90m Thickness)	6.0m x 9.0m	156.6

5.0 FIELDWORK HEALTH, SAFTEY AND ENVIRONMENTAL PRECAUTIONS

- 5.1.1 In accordance with the agreed CAR & RAP, the environmental mitigation and safety measures mentioned in Section 4.12 was adopted during the remediation process. The supplementary health, safety and environmental precautions are also illustrated in below section;
- 5.1.2 Spoil generated during excavation was placed on impermeable sheeting within the soil treatment area with appropriate temporarily covered with impermeable sheeting.
- 5.1.3 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;

REMEDIATION REPORT (RR) FOR THE EXISTING DSD STAFF QUARTERS SITE

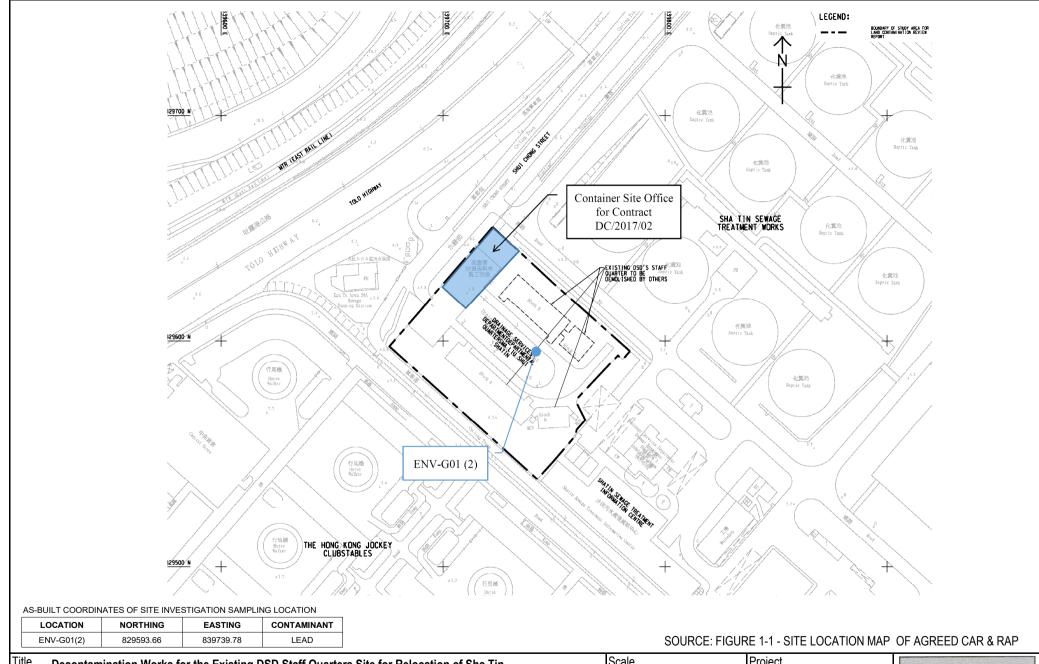
Transportation of Contaminated Soil

- 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";
- 5.1.4 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 treatment area throughout the period of decontamination works;
 - 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;
 - 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;
 - Employ all necessary measures to prevent cross-contamination of different types of contaminated soil.

6.0 CONCLUSIONS

- 6.0.1 Site Investigation fieldwork for confirmatory sampling, laboratory analyses and subsequent decontamination works for contaminated soil at the Existing DSD Staff Quarter Site for the Relocation of Sha Tin Sewage Treatment Works to Caverns Site Preparation & Access Tunnel Construction (Contract No. DC/2018/05) was implemented in according with the agreed CAR & RAP.
- 6.0.2 In accordance with the agreed CAR & RAP, the concentration of Lead was found to be higher than the relevant RBRGs (Urban Residential Standard) for the soil samples collected at 1.5m-1.95m and 3.0m-3.45m below ground level at ENV-G01(2). Cement Solidification / Stabilization was proposed to be the soil remediation method. Remediation Report (RR) should be submitted to EPD for agreement after completion of remediation work.
- 6.0.3 Confirmatory samples at ENV-G01(2) were collected from 12 March 2021 to 31 March 2021 prior to soil remediation works to determine the boundaries of contaminated soil. The remediation boundaries were confirmed at confirmatory samples that are below RBRGs (Urban Residential) criteria. The volume of contaminated soil for remediation (Treated by Cement Solidification / Stabilization) was confirmed to be 144.8m³.
- 6.0.4 Cement Solidification / Stabilization for contaminated soil at ENV-G01(2) was carried out from 09 July 2021 to 31 July 2021 in accordance with the agreed CAR & RAP. Trial mixing was conducted prior to full-scale remediation works, and 5% of cement / soil ratio was implemented for full-scale remediation work.
- 6.0.5 One soil sample per every 10m³ of the contaminated soil for cement solidification should be collected. Total 18 nos. verification test samples were collected, and the relevant results met the associated TCLP limit for Lead and UCS requirement. Finally, all the treated soil with approx. 156.6m³ of bulk volume was backfilled to the original excavated trench at ENV-G01(2) area.
- 6.0.6 All identified contaminated soil within the site were remediated to be below the clean-up target agreed in the agreed 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 work, the site area is considered to be suitable for carrying out the sequent construction works.

SITE LOCATION PLAN WITH HOTSPOT LOCATION



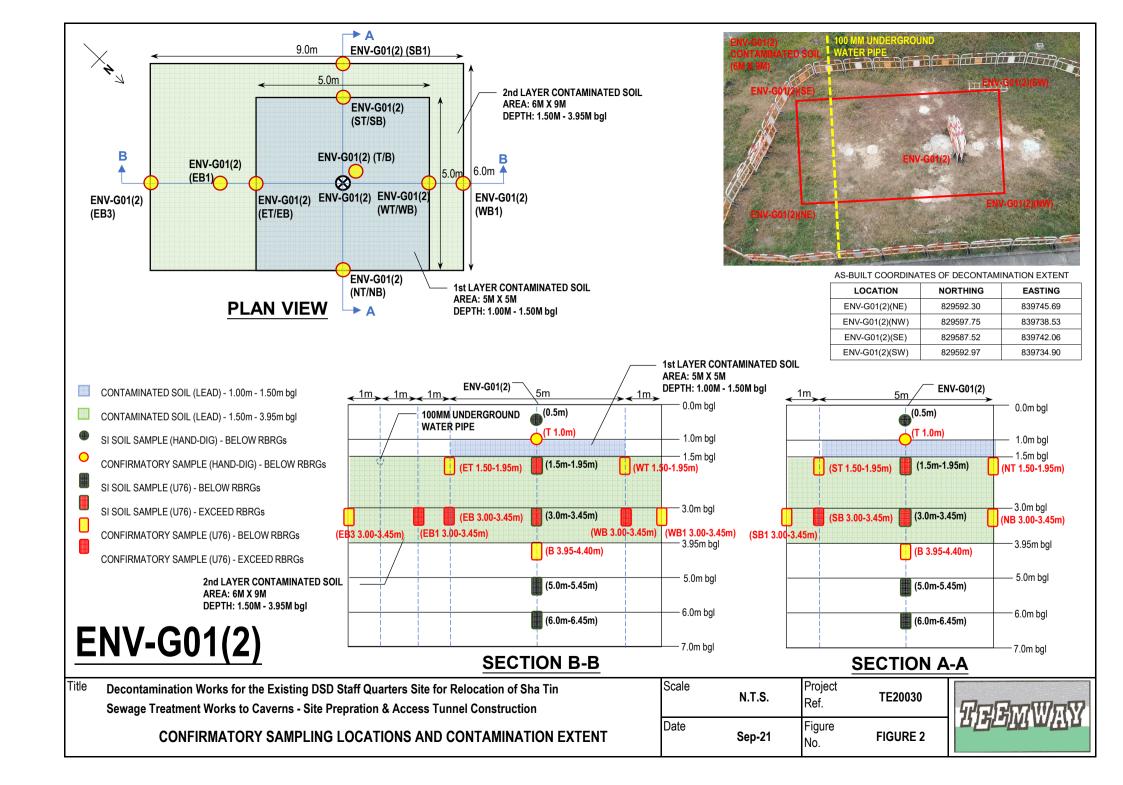
Title Decontamination Works for the Existing DSD Staff Quarters Site for Relocation of Sha Tin Sewage Treatment Works to Caverns - Site Prepration & Access Tunnel Construction

SITE LOCATION PLAN WITH HOTSPOT LOCATION

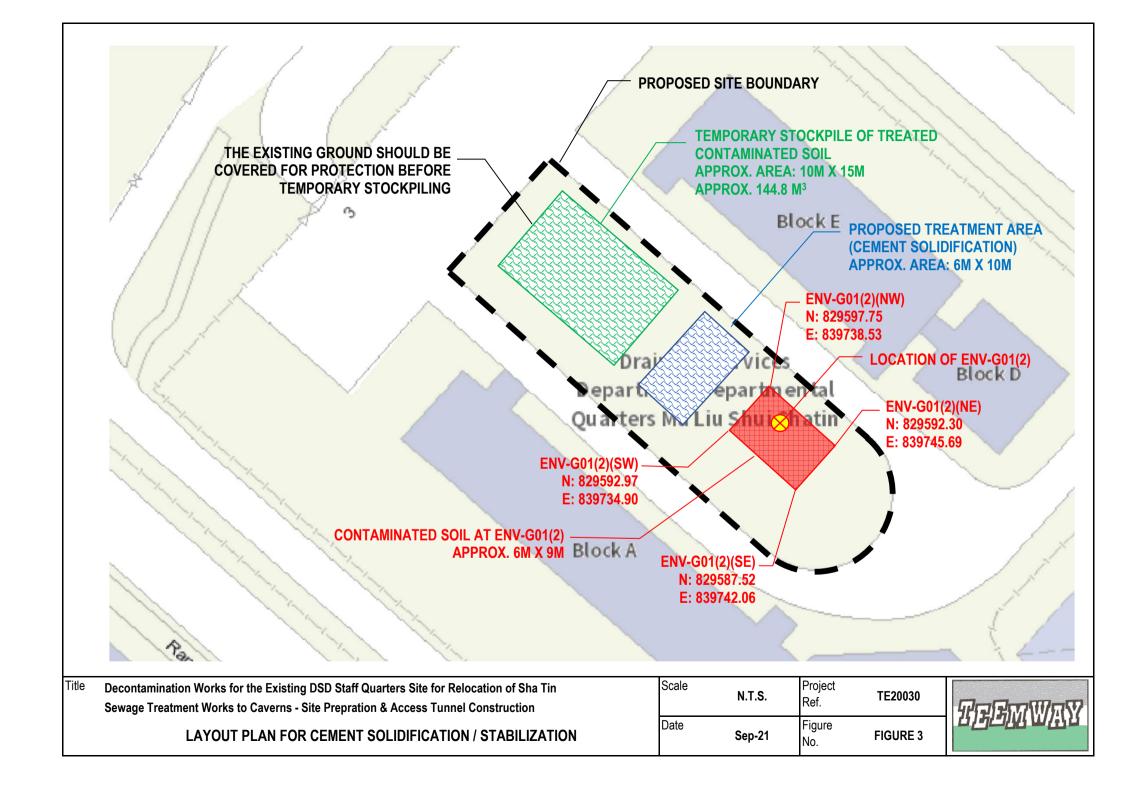
Scale	N.T.S.	Project Ref.	TE20030
Date	Sen-21	Figure No.	FIGURE 1



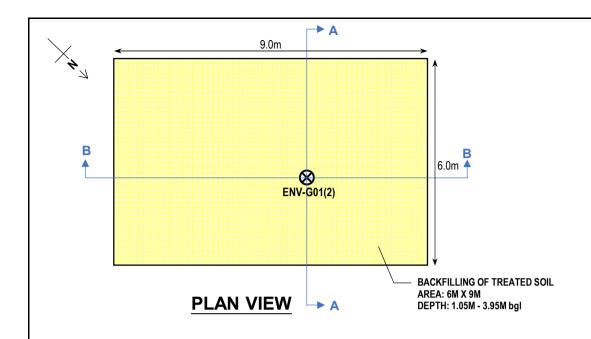
CONFIRMATORY SAMPLING LOCATIONS AND CONTAMINATION EXTENT



LAYOUT PLAN FOR CEMENT SOLIDIFCATION / STABILIZATION



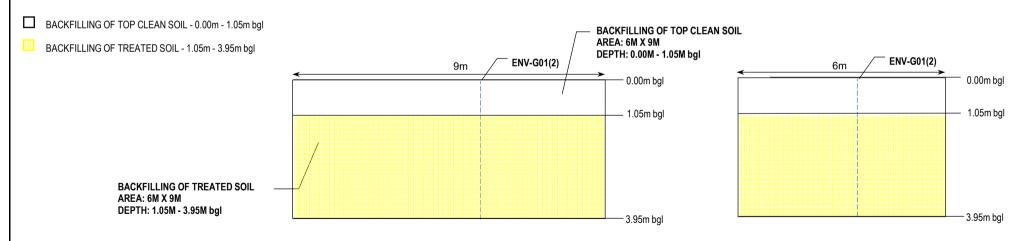
BACKFILLING LAYOUT OF TREATED CONTAMINATED SOIL





AS-BUILT COORDINATES OF DECONTAMINATION EXTENT

LOCATION	NORTHING	EASTING
ENV-G01(2)(NE)	829592.30	839745.69
ENV-G01(2)(NW)	829597.75	839738.53
ENV-G01(2)(SE)	829587.52	839742.06
ENV-G01(2)(SW)	829592.97	839734.90



ENV-G01(2)

SECTION B-B

SECTION A-A

Title Decontamination Works for the Existing DSD Staff Quarters Site for Relocation of Sha Tin Sewage Treatment Works to Caverns - Site Prepration & Access Tunnel Construction

BACKFILLING LAYOUT OF TREATED CONTAMINATED SOIL

Scale	N.T.S.	Project Ref.	TE20030
Date	Sep-21	Figure No.	FIGURE 4



APPENDIX A

LABORATORY REPORTS & COC FORMS FOR CONFIRMATORY TESTING

ALS Technichem (HK) Pty Ltd

: RM 1008, 10/F, CHEVALIER COMMERCIAL CENTRE, 8 WANG HOI

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address

E-mail



CERTIFICATE OF ANALYSIS

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: TEEMWAY ENGINEERING LTD : ALS Technichem (HK) Pty Ltd : 1 of 4 Client Laboratory Page

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: Works@teemway.com : richard.fung@alsglobal.com E-mail

: +852 2796 2268 : +852 2610 1044 Telephone Telephone : +852 2796 2217 : +852 2610 2021 Facsimile

DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS **Date Samples Received** : 12-Mar-2021 Project

TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)

: HKE/1680/2020_V2 : 17-Mar-2021 Order number Quote Issue Date

number

C-O-C number : H038271 : 3 No. of samples received

: 3 No. of samples analysed Site

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Signatories Position Authorised results for 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. Chan Siu Ming, Vico Manager - Inorganics Inorganics

Mole

Leung Chak Cheong, Mike Senior Chemist Metals ENV Page Number : 2 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2110213



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 12-Mar-2021 to 17-Mar-2021.

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: HK2110213

Sample(s) was/ were picked up from client by ALS staff. 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.) 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.

Page Number

3 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2110213

ALS

Analytical Results

Sub-Matrix: SOIL			Sample ID	ENV-G01(2) (ET)	ENV-G01(2) (EB)	ENV-G01(2) (NT)	
				1.50m-1.95m	3.00m-3.45m	1.50m-1.95m	
		Samplir	ng date / time	12-Mar-2021 14:45	12-Mar-2021 15:15	12-Mar-2021 16:10	
Compound	CAS Number	LOR	Unit	HK2110213-001	HK2110213-002	HK2110213-003	
EA/ED: Physical and Aggregate Properties							
EA055: Moisture Content (dried @ 103°C)		0.1	%	19.0	17.7	17.5	
EG: Metals and Major Cations							
EG020: Lead	7439-92-1	1	mg/kg	160	300	156	

Page Number

∴ 4 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2110213



Laboratory Duplicate (DUP) Report

Matrix: SOIL					Labora	atory Duplicate (DUP)	Report	
Laboratory	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)
sample ID							Result	
EA/ED: Physical and Aggregate Properties (QC Lot: 3563747)								
HK2109962-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	79.6	79.6	0.00
HK2110194-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	20.6	21.1	2.41
EG: Metals and Major (ations (QC Lot: 3563865)							
HK2110213-002	ENV-G01(2) (EB)	EG020: Lead	7439-92-1	1	mg/kg	300	257	15.2
	3.00m-3.45m							

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control
											Limit
EG: Metals and Major Cations (QC Lot: 3563865)											
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	108		86.7	115		

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

Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
			Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)			
Laboratory	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and Major Cations (QC Lot: 3563865)											
HK2110213-001	ENV-G01(2) (ET)	EG020: Lead	7439-92-1	5 mg/kg	# Not		75.0	125			
	1.50m-1.95m				Determined						

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ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: TEEMWAY ENGINEERING LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

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: 1 of 4

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DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS

Date Samples Received

: 13-Mar-2021

TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)

Order number

Quote

: HKE/1680/2020_V2

Issue Date

: 17-Mar-2021

number

No. of samples received

: 3

C-O-C number : H038281

: 3 No. of samples analysed

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: RM 1008, 10/F, CHEVALIER COMMERCIAL CENTRE, 8 WANG HOI

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

Position

Authorised results for

Signatories

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Manager - Inorganics

Inorganics

Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Page Number : 2 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2110323



General Comments

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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: HK2110323

Sample(s) was/ were picked up from client by ALS staff. 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.) 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.

Page Number : 3 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2110323

ALS

Analytical Results

Sub-Matrix: SOIL			Sample ID	ENV-G01(2) (NB)	ENV-G01(2) (WT)	ENV-G01(2) (WB)	
				3.00m-3.45m	1.50m-1.95m	3.00m-3.45m	
		Samplin	ng date / time	13-Mar-2021 10:40	13-Mar-2021 11:15	13-Mar-2021 11:50	
Compound	CAS Number	LOR	Unit	HK2110323-001	HK2110323-002	HK2110323-003	
EA/ED: Physical and Aggregate Properties							
EA055: Moisture Content (dried @ 103°C)		0.1	%	20.8	16.6	18.9	
EG: Metals and Major Cations							
EG020: Lead	7439-92-1	1	mg/kg	148	217	1130	

4 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2110323



Laboratory Duplicate (DUP) Report

Matrix: SOIL			Laboratory Duplicate (DUP) Report									
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)				
EA/ED: Physical and Ago	EA/ED: Physical and Aggregate Properties (QC Lot: 3563751)											
HK2110294-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	8.0	8.2	2.54				
EG: Metals and Major Ca	itions (QC Lot: 3563865)											
HK2110213-002	Anonymous	EG020: Lead	7439-92-1	1	mg/kg	300	257	15.2				

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
					Spike	Spike Recovery (%)		Recovery Limits(%)		RPD (%)		
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit	
EG: Metals and Major Cations (QC Lot: 3563865)											LIIIIL	
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	108		86.7	115			

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

Matrix: SOIL	rix: SOIL				eport	ort				
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and M	Major Cations (QC Lot: 3563865)									
HK2110213-001	Anonymous	EG020: Lead	7439-92-1	5 mg/kg	# Not		75.0	125		
					Determined					

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: 1 of 4

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DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS **Date Samples Received** : 15-Mar-2021 Project

TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)

: HKE/1680/2020_V2 : 18-Mar-2021 Order number Quote Issue Date

number

Facsimile

C-O-C number : H038282 No. of samples received : 4

: 4 No. of samples analysed Site

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

Signatories Position Authorised results for

Leung Chak Cheong, Mike Senior Chemist Metals ENV

Lin Wai Yu, Iris Assistant Manager - Inorganics Inorganics Page Number : 2 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2110585



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 15-Mar-2021 to 17-Mar-2021.

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: HK2110585

Sample(s) was/ were picked up from client by ALS staff. 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.) 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.

Page Number : 3 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2110585



Analytical Results

Sub-Matrix: SOIL			Sample ID	ENV-G01(2) (ST)	ENV-G01(2) (SB)	ENV-G01(2) (T)	ENV-G01(2) (B)	
				1.50m-1.95m	3.00m-3.45m	1.0m	3.95m-4.40m	
	Sampling date / time				15-Mar-2021 10:50	15-Mar-2021 14:45	15-Mar-2021 16:20	
Compound	CAS Number	LOR	Unit	HK2110585-001	HK2110585-002	HK2110585-003	HK2110585-004	
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)		0.1	%	17.5	17.5	14.3	19.1	
EG: Metals and Major Cations								
EG020: Lead	7439-92-1	1	mg/kg	236	532	248	161	

∴ 4 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2110585



Laboratory Duplicate (DUP) Report

Matrix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)			
sample ID							Result				
EA/ED: Physical and Aggregate Properties (QC Lot: 3566143)											
HK2110470-039	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	20.0	19.9	0.00			
EG: Metals and Major (ations (QC Lot: 3566285)										
HK2110585-002	ENV-G01(2) (SB)	EG020: Lead	7439-92-1	1	mg/kg	532	449	17.0			
	3.00m-3.45m										

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
				Spike	Spike Recovery (%)		Recovery Limits(%)		RPD (%)			
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control	
											Limit	
EG: Metals and Major Cations (QC Lot: 3566285)												
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	108		86.7	115			

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

Matrix: SOIL	ix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)			
Laboratory	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and I	Major Cations (QC Lot: 3566285)											
HK2110585-001	ENV-G01(2) (ST)	EG020: Lead	7439-92-1	5 mg/kg	# Not		75.0	125				
	1.50m-1.95m				Determined							

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: TEEMWAY ENGINEERING LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

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

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

Page

: 1 of 4

Contact Address

E-mail

: THOMAS YEUNG

Contact Address

: Richard Fung

Work Order

: HK2111450

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Project

DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS

: 20-Mar-2021

TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)

: RM 1008, 10/F, CHEVALIER COMMERCIAL CENTRE, 8 WANG HOI

Quote

: HKE/1680/2020_V2

Issue Date

: 24-Mar-2021

Order number

number

C-O-C number : H022082

No. of samples received

Date Samples Received

: 1 : 1

Site

No. of samples analysed

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

Signatories

Authorised results for

Chan Siu Ming, Vico

Manager - Inorganics

Position

Inorganics

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Page Number : 2 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2111450



General Comments

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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: HK2111450

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.) 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.

: 3 of 4

Client

: TEEMWAY ENGINEERING LTD

Work Order HK2111450

ALS

Analytical Results

Sub-Matrix: SOIL			Sample ID	ENV-G01(2) (EB1)	 	
				3.00m-3.45m		
		Samplin	ng date / time	20-Mar-2021 10:30	 	
Compound	CAS Number	LOR	Unit	HK2111450-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	17.8	 	
EG: Metals and Major Cations						
EG020: Lead	7439-92-1	1	mg/kg	323	 	

4 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2111450



Laboratory Duplicate (DUP) Report

Matrix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)			
EA/ED: Physical and Aggregate Properties (QC Lot: 3577838)											
HK2111326-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	14.9	14.8	0.759			
EG: Metals and Major C	ations (QC Lot: 3580269)										
HK2111451-001	Anonymous	EG020: Lead	7439-92-1	1	mg/kg	590	517	13.1			

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
					Spike	Spike Recovery (%)		Recovery Limits(%)		RPD (%)		
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit	
EG: Metals and Major Cations (QC Lot: 3580	0269)											
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	109		86.7	115			

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

Matrix: SOIL	trix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
					Spike Recovery (%)		Recovery Limits (%)		RPD (%)		
Laboratory	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3580269)										
HK2111450-001	ENV-G01(2) (EB1)	EG020: Lead	7439-92-1	5 mg/kg	# Not		75.0	125			
	3.00m-3.45m				Determined						

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ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



: 1 of 4

CERTIFICATE OF ANALYSIS

Client : TEEMWAY ENGINEERING LTD Laboratory : ALS Technichem (HK) Pty Ltd Page

Contact : THOMAS YEUNG Contact : Richard Fung Work Order : HK2111599

Address : RM 1008, 10/F, CHEVALIER COMMERCIAL CENTRE, 8 WANG HOI Address : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing

ROAD, KOWLOON Yip Street, Kwai Chung, N.T., Hong Kong

Project : DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS Date Samples Received : 22-Mar-2021

TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)

Order number : --- | Quote | : HKE/1680/2020_V2 | Issue Date | : 25-Mar-2021

number

C-O-C number : H022085

No. of samples received : 1

Site : --- No. of samples analysed : 1

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laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories.

Chan Siu Ming , Vico Manager - Inorganics Inorganics

Mole

Leung Chak Cheong , Mike Senior Chemist Metals ENV

Page Number : 2 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2111599



General Comments

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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: HK2111599

Sample(s) was/ were picked up from client by ALS staff. 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.) 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.

3 of 4

Client :

: TEEMWAY ENGINEERING LTD

Work Order HK2111599

Analytical Results

•						
Sub-Matrix: SOIL			Sample ID	ENV-G01(2) (SB1)	 	
				3.00m-3.45m		
		Samplii	ng date / time	22-Mar-2021 10:45	 	
Compound	CAS Number	LOR	Unit	HK2111599-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	12.4	 	
EG: Metals and Major Cations						
EG020: Lead	7439-92-1	1	mg/kg	98	 	 -

∴ 4 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2111599



Laboratory Duplicate (DUP) Report

Matrix: SOIL					Laboratory Duplicate (DUP) Report							
Laboratory	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	ggregate Properties (QC Lot:	: 3582671)										
HK2111176-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	22.8	22.4	1.64				
HK2111667-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	18.0	18.1	0.00				
EG: Metals and Major	Cations (QC Lot: 3580269)											
HK2111451-001	Anonymous	EG020: Lead	7439-92-1	1	mg/kg	590	517	13.1				

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

Matrix: SOIL			Method Blank (ME	3) Report	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
					Spike	Spike Recovery (%)		Recovery Limits(%)		RPD (%)		
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control	
											Limit	
EG: Metals and Major Cations (QC Lot: 3580269)												
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	109		86.7	115			

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

Matrix: SOIL	rix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Re	ecovery (%)	Recovery	Limits (%)	RPD	0 (%)		
Laboratory	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and M	Major Cations (QC Lot: 3580269)											
HK2111450-001	Anonymous	EG020: Lead	7439-92-1	5 mg/kg	# Not		75.0	125				
					Determined							

ALS Technichem (HK) Pty Ltd

: RM 1008, 10/F, CHEVALIER COMMERCIAL CENTRE, 8 WANG HOI

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address

E-mail



CERTIFICATE OF ANALYSIS

: TEEMWAY ENGINEERING LTD : ALS Technichem (HK) Pty Ltd : 1 of 4 Client Laboratory Page

Address

: THOMAS YEUNG : HK2111603 : Richard Fung Work Order Contact Contact

: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing ROAD, KOWLOON BAY, KOWLOON Yip Street, Kwai Chung, N.T., Hong Kong

: Works@teemway.com : richard.fung@alsglobal.com E-mail

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DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS **Date Samples Received** : 22-Mar-2021 Project

TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)

: HKE/1680/2020_V2 : 25-Mar-2021 Order number Quote Issue Date

number

C-O-C number : H022087 No. of samples received : 1

No. of samples analysed : 1 Site

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Signatories Position Authorised results for 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. Chan Siu Ming, Vico Manager - Inorganics Inorganics

Mole

Leung Chak Cheong, Mike Senior Chemist Metals ENV Page Number : 2 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2111603



General Comments

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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: HK2111603

Sample(s) was/ were picked up from client by ALS staff. 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.) 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.

: 3 of 4

Client

: TEEMWAY ENGINEERING LTD

Work Order HK2111603

Analytical Results

Sub-Matrix: SOIL	Sample ID			ENV-G01(2) (WB1)	 	
				3.00m-3.45m		
	Sampling date / time				 	
Compound	CAS Number	LOR	Unit	HK2111603-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	18.2	 	
EG: Metals and Major Cations						
EG020: Lead	7439-92-1	1	mg/kg	199	 	 -



4 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2111603



Laboratory Duplicate (DUP) Report

Matrix: SOIL					Laboratory Duplicate (DUP) Report							
Laboratory	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	ggregate Properties (QC Lo	ot: 3582671)										
HK2111176-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	22.8	22.4	1.64				
HK2111667-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	18.0	18.1	0.00				
EG: Metals and Major (Cations (QC Lot: 3580269)											
HK2111451-001	Anonymous	EG020: Lead	7439-92-1	1	mg/kg	590	517	13.1				

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

Matrix: SOIL			Method Blank (ME	3) Report	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
					Spike	Spike Re	covery (%)	Recove	ry Limits(%)	RP	D (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value Control		
											Limit	
EG: Metals and Major Cations (QC Lot: 358026	9)											
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	109		86.7	115			

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

Matrix: SOIL	rix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report								
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)				
Laboratory	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control			
sample ID										Limit			
EG: Metals and M	Major Cations (QC Lot: 3580269)												
HK2111450-001	Anonymous	EG020: Lead	7439-92-1	5 mg/kg	# Not		75.0	125					
					Determined								

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address



CERTIFICATE OF ANALYSIS

Client : TEEMWAY ENGINEERING LTD Laboratory : ALS Technichem (HK) Pty Ltd Page : 1 of 4

Contact : THOMAS YEUNG Contact : Richard Fung Work Order : HK2112678

: RM 1008, 10/F, CHEVALIER COMMERCIAL CENTRE, 8 WANG HOI Address : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing ROAD, KOWLOON BAY, KOWLOON Yip Street, Kwai Chung, N.T., Hong Kong

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Project : DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS Date Samples Received : 31-Mar-2021

TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)

Order number : --- | Quote : HKE/1680/2020_V2 | Issue Date : 08-Apr-2021

number

C-O-C number : H022089

No. of samples received : 1

Site : — No. of samples analysed : 1

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(Reg. No. HOKLAS 066) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific

laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories.

Chan Siu Ming , Vico

Manager - Inorganics

Inorganics

Mile

Leung Chak Cheong , Mike Senior Chemist Metals_ENV

Page Number : 2 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2112678



General Comments

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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: HK2112678

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.) 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.

3 of 4

Client

: TEEMWAY ENGINEERING LTD

Work Order HK2112678

ALS

Analytical Results

Sub-Matrix: SOIL			Sample ID	ENV-G01(2) (EB3)	 	
				3.00m-3.45m		
	Sampling date / time				 	
Compound	CAS Number	LOR	Unit	HK2112678-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	15.0	 	
EG: Metals and Major Cations						
EG020: Lead	7439-92-1	1	mg/kg	211	 	

4 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2112678



Laboratory Duplicate (DUP) Report

Matrix: SOIL					Laboratory Duplicate (DUP) Report							
Laboratory	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	ggregate Properties (QC Lo	ot: 3599639)										
HK2112417-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	20.8	20.9	0.737				
HK2112565-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	14.4	14.4	0.00				
EG: Metals and Major (Cations (QC Lot: 3599571)											
HK2112680-001	Anonymous	EG020: Lead	7439-92-1	1	mg/kg	205	208	1.50				

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
			Spike	Spike Recovery (%)		Recovery Limits(%)		RPD (%)			
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control
											Limit
EG: Metals and Major Cations (QC Lot: 3599571)											
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	106		86.7	115		

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

Matrix: SOIL	ix: SOIL			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Re	ecovery (%)	Recovery	Limits (%)	RPD	(%)	
Laboratory	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3599571)										
HK2112678-001	ENV-G01(2) (EB3)	EG020: Lead	7439-92-1	5 mg/kg	# Not		75.0	125			
	3.00m-3.45m				Determined						

СН	AIN OF CUSTODY	DOC	UME	NTAT	ION							Ц	03	02	71			
CLIENT			MWAY				LSAM	PLER:					03	02	<u>/ T</u>			A
ADDRE	SS / OFFICE:		1111/11				MOBI							 -				
PROJE	CT MANAGER (PM):	Thoma	s YEUN	iG			PHON											(ALS)
PROJE	CT ID: Relocation of Sha Tin Sewag	ne Treatme	ent Works	to Cavero	ns - Site			L REPORT	TO									ALS Laboratory Group
SITE:	Preparation and Access Tunr	nel Constr	uction (DC	2/2018/05)			L INVOICE.		rent to ror	nort)							
RESULT	TS REQUIRED (Date):			QUOTE !	NO.:			YSIS REQ				ta suita.						
FOR LA	BORATORY USE ONLY	COMM	MENTS / SF	PECIAL HA	NDLING / STORAGE C	OR DIPOSAL:	+	T T T	JIKED IIIC	Tuung 30	TI ES (NOI	.e - suite c	odes mus	st be list	led to att	ract si	uite prid	T
	R SEAL (circle appropriate)				THE STATE OF THE S	AT DIT GOTE.	1											Notes: e.g. Highly contaminated samples
Intact:	Yes No (N/A)						1								1 1			e.g. "High PAHs expected"
SAMPLI	E TEMPERATURE						┨.											Extra volume for QC or trace LORs etc.
CHILLE	D: (es No						15.EA	<u> </u>	:									
	SAMPLE INFORMATION (note: S	S = Soll, W:	=Water)		CONTAINER INF	ORMATION	127											
ALSID		MATRIX		Time	Type / Code	Total bottles	-											
11	ENV-GOI(2)(E1)	5	15/2/25	1447	· · · · · · · · · · · · · · · · · · ·	1 ,	V		+-				+	 	-		 	1
	1.50m - 1.95m		14 SIK	1447	NID	+	+~			 -		+	+	 			 	
			 	 		+	+	 		\vdash			↓				<u> </u>	3 DAYS EXPRESS
			 	 	ļ	+	 			 							L	
2	EN/V-GOI (2) (EB)	5	12/3/2	1212	W76_	1 1 2	V											
	3-00m - 3.45 m	ļ		<u> </u>				L.,_L		_								1
																		7 2000 0000 50
3	Bair- GOI(2) (NT)	7	12/3/21	1610	и76		1				_		1		-+			1 3 DAYS BXPRESS
	1.50m - 1.95m		-1-4-64	14/1	V., V	1					_		┼─┼		+			
	7.7.			-		+:	+	 	_	 	+		-		\dashv		<u> </u>	
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		ļ					$\perp \!\!\! \perp \!\!\! \mid$	<u> </u>										
	<u></u>	ļ			<u></u>	<u> </u>							1.					
			JIŞHED BY	<u>(:</u>							RECEIV	ED BY	<u> </u>			7		METHOD OF SHIPMENT
Name:	Thomas	YEUNC	Ĺ		Date: /2/03/7		Name	∌: .					Date:		12/	1		Con' Note No:
Of:		MWAY			Time: 1630)	Of:			N	M		Time:		17	7		Total No.
Name:					Date:		Name	<u>):</u>			11/		Date:			\overline{z}	7	Transport Co:
Of:		· · · · · ·			Time:		Of:		-		,		Time:		$\prod_{i=1}^{n}$	//	70	
Water	Container Codes: P = Unpreserved	d Plastic;	N = Nitric P	² reserved F	Plastic; ORC = Nitric Pr	reserved ORC;	SH = S	odium Hydr	roxide/Cd F	'reserved;	S = Sod	lium Hydro	xide Pre	served I	Plastic;	AG = /	Amber	Glass Unpreserved;
v = voa	Viai HCi Preserved; VS = VOA Viai S	Sulphuric Pr	reserved; S	SG = Sulfu	ıric Preserved Amber G	Blass: H = HCl	l Preserv	ved Plastic;	HS = HCI	Preserved	Speciatio	on Bottle;	SP = Sul	lfuric Pre	eserved	Plastic	c; F=f	Formaldehyde Preserved Glass;
Z – Zinc	Acetate Preserved Bottle; E = EDTA P	reserved B	ottle; ST =	Sterile Bo	ttle; ASS = Plastic Bag	j for Acid Sulph:	ate Soil;	B = Unpre	served Bag	<u> </u>								İ

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

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CH.	AIN OF CUSTODY	DOC	UME	NTAT	10N							F	l n	382	81			A .
CLIENT		TEEMV	VAY	····			SAME	LER:						<u> </u>	<u> </u>		\dashv	$oldsymbol{\Lambda}$
ADDRE	SS / OFFICE:		•				МОВІ		F.1.E.					1000	***	•		AIS
PROJE			YEUNG				PHON			•								
PROJE	CT ID: Relocation of Sha Tin Sew	age Treat	ment Worl	ks to Cave	erns - Site		1	. REPORT			· · · · · · · · · · · · · · · · · · ·							ALS Laboratory Group
SITE:	Preparation and Access Tu	nner con:	struction (DC/2018/0 P.O. NO.	15)			INVOICE		rent to re	eport)			1000		,		
RESUL	S REQUIRED (Date):			QUOTE	VO.:			YSIS REQL			<u> </u>	noto ou	ito onder					
FOR LA	BORATORY USE ONLY	COMM	IENTS / SP	·	NDLING/STORAGE C	R DIPOSAL:	1		JACED III.		01123(1	note - su	ne codes	must de lis	ited to at	tract su		
COOLE	R SEAL (circle appropriate)						1										- 1	Notes: e.g. Highly contaminated samples
Intact:	Yes No N/A		**********				1				l					1		e.g. "High PAHs expected"
SAMPL	TEMPERATURE				(1,00)	***	1											Extra volume for QC or trace LORs etc.
CHILLE	D: Yes No				70	***************************************	10											
	SAMPLE INFORMATION (note; S	= Soil, W	=Water)		CONTAINER INF	ORMATION	LEAD											
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	1~											
1	ENV-GOILT) (NB)	5	13/3/21	10:40	u76	1	V											\
	3.00m - 3.45m										1			+		-+	-	1
		****							+	\vdash		+						
ン	ENV-601(2) (WT)	,	2661	11:15	7/	,	V		<u> </u>							\dashv		3 DAYS EXPRESS
-	1.50m - 1.95m	>_	13/3/21	11/12	W76	+-'	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		+					-				
	100W-143W		<u> </u>	 	-									-		.		
							L											
3	ENV-GOI (2) (WB)		13/3/21	11:50	1176		V											
	3.00 m - 3.45 m																	
	·																_	
														-				
		,							 					-				
		,		<u></u>														
Marer -	Thomas YEU		JISHED BY	<u>.</u>	Τ						RECE	EIVED B	<u>Y</u>			\overline{Z}		METHOD OF SHIPMENT
Name:				··········	Date: /3/03/2	,	Name	:				A	Da	te:	$\frac{1}{2}$	<u> </u>	C	Con' Note No:
Of: Name:	TEEMWAY				Time: / 7 203	0	Of:	*****				41_	Tin	ie:	' /			
Of:				 	Date:		Name	:			-/	Ή	Da		, , , , ,		7 T	ransport Co:
	Container Codes: B-lin	l Digatio:	Ki Kiya.i . m	\	Time:		Of:				- /		Tin	ne: /	12-		/	
V = VOA	Container Codes: P = Unpreserved Vial HCI Preserved: VS = VOA Vial St	i Flasiic; Ilohuria Di	IN = INTITIC P	reserved l	riastic; ORC = Nitric Pr	reserved ORC;	SH≃S	odium Hydro	oxide/Cd f	Preserved	; S=S	odium H	ydroxide	Preserved	Plastic;	AG = A	mber Gla	iss Unpreserved;
7 = Zinc	Vial HCI Preserved; VS = VOA Vial St Acetate Preserved Bottle: F = FDTA Pr	oppressod P	office OT		His ASS Die No B	uass; H = HCI	Preserv	ed Plastic;	HS = HCI	Preserve	d Specia	ation Bot	tle; SP =	Sulfuric Pi	eserved	Plastic	; F≂For	maldehyde Preserved Glass;

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COC Page ___of___

CH	AIN OF CUSTODY	DOC	UME	NTAT	ION	,			194.00			Н	n	382	82			A
CLIENT		<i>'</i>	CEEMW	/AΥ			SAME	LER:						<u> </u>	<u>. v </u>			
ADDRE	SS / OFFICE:						МОВІ											ALS
			YEUNG		· · · · · · · · · · · · · · · · · · ·		PHON						*****					ALS Laboratory Group
PROJE	CTID: Releastion of Sha Tin Sewage	Treatmen	nt Works t	to Caverns	- Site		EMAI	REPORT T	O:	· .			-			·····		And cassiatory droup
SITE:	Preparation and Access Tunni	ei Constiu		P.O. NO.:		*	EMAII	INVOICE T	O: (if diffe	rent to re	port)	****	•					
RESULT	rs REQUIRED (Date):			QUOTE	10.:		ANAL	YSIS REQU	IRED inc	luding S	UlTES(n	note - sui	te codes	must be	listed to	attract s	uite pric	(293)
Į.	BORATORY USE ONLY	COMM	IENTS/SP	PECIAL HAI	NDLING / STORAGE O	R DIPOSAL:									T		Total price	Notes: e.g. Highly contaminated samples
	R SEAL (circle appropriate)						4				Ī							e.g. "High PAHs expected"
Intact:	Yes No NA																	Extra volume for QC or trace LORs etc.
	TEMPERATURE						┨ 、											·
CHILLE		L					FA5										'	
ALS ID	SAMPLE INFORMATION (note: S	MATRIX	DATE	Time	CONTAINER INFO	T	1 11											
1					Type / Code	Total bottles				-			+		-	-	 	·
1	ENV-601(2) (5T)	5	15/3/4	08:80	и76	1	LV			 -,}-						<u> </u>) 3 DAYS EXPRESS
	1.50m-1.95m		ļ															
												-						V
2_	ENV-GOI(2) (SB)	S	15/3/21	10,50	476	, .	V									1.	†	
	15 Jan 195m 3.00m-	3.45m																
1	7										_			_	 	 	 	
}	Jul 10162 172 10	5	to la la	144 -4	-714		1			\vdash	+					┢		
	ENV-GOI(2) (T) 1.0M	>	15/3/21	1442	JAR	/									_			
				ļ		-	<u> </u>		_									
4_	ENV-GOI (2) (3)													·				,
	3.95m - 4,40m	_ ડ	15/3/21	16,20	U76	1	V		j)
																 		
		RELINQL	JISHED BY	/:		I					PECE	IVED BY			1		<u> </u>	
Name:	Thomas YE	UNG			Date: 15/03	1,0,1	Name):			INCOL	-IVED BI	<u> </u>	ite:	. (4-		METHOD OF SHIPMENT
Of:	TEEMW.	AY			Time: 16 >	12021	Of:			12.00		. /		ne:	75	/ ろ		Con' Note No:
Name:					Date:		Name	:				\mathcal{M}		ite:		/ /		Transport Co:
Of:					Time:		Of:					7111	Ti	ne:	1			
Water (Container Codes: P = Unpreserved	d Plastic;	N = Nitric F	reserved F	Plastic; ORC = Nitric Pr	eserved ORC;	SH = S	odium Hydro	xide/Cd F	reserved	; S = S	odium H	ydroxide	Preserve	d Plastic	c; AG =	Amber	Glass Unpreserved:
V ≈ VOA	Vial HCI Preserved; VS = VOA Vial S	ulphuric Pr	eserved; S	3G = Sulfu	ric Preserved Amber G	lass; H = HCI	Preserv	ed Plastic; 1	IS = HCI	Preserve	d Specia	ation Bott	lle; SP	Sulfuric	Preserve	ed Plast	ic; F=F	Formaldehyde Preserved Glass;
Z = Zinc	Acetate Preserved Bottle; E = EDTA Pr	reserved B	ottle; ST =	Sterlle Bot	tle; ASS = Plastic Bag	for Acid Sulpha	ate Soil;	B = Unprese	erved Bag	J .								

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CHA	AIN OF CUSTODY	DOC	UME	NTAT	ION								Н	02	20	82		
CLIENT:		TEEMY			V 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 		SAME	PLER:	~				!_!			<u> </u>		-
ADDRES	SS / OFFICE:	4-1-11-12-1	***	******			мові							***				
PROJEC	T MANAGER (PM): Tho	mas YE	UNG				PHON				•							
PROJEC	TID: Relocation of Sha Tin Sewaç	je Treatm	ent Works	to Caverr	ns - Site		+		ORT TO:							····		ALS Laboratory Group
SITE;	Preparation and Access Tun	nel Consti	ruction (D)	C/2.018/85)	***					ent to rep	oort)						The state of the s
RESULT	S REQUIRED (Date):		-	QUOTE	10.:								de quite	codes m	ant he lie	1041 10 01	ract sulte pr	
FOR LAE	BORATORY USE ONLY	соми	ENTS / SP	ECIAL HAI	NDLING / STORAGE O	R DIPOSAL:		T	T			JII EU(iio	ite - suite	codes m	ast be ils	ied to at	ract suite pr	
COOLER	SEAL (circle appropriate)						1											Notes: e.g. Highly contaminated samples
Intact:	Yes No NA				111 100.0		1						ľ					e.g. "High PAHs expected"
SAMPLE	TEMPERATURE						1							1				Extra volume for QC or trace LORs etc.
CHILLED	Yes No						1 ^										1	
	SAMPLE INFORMATION (note: S	S = Soil, W	=Water)		CONTAINER INFO	ORMATION	(EA)											
ALS ID	SAMPLE ID	MATRIX	1	Time	Type / Code	Total bottles	1 7											
1.	ENV-601(2) (EB)	<	20/3/21	10,30	W76		17											
	3,00m - 3.45m		12/1/21	·	0.70	 '	┼ <u>ݖ</u>		 			-	-					3 DAYS EXPRESS
	7,700					 	├-	-	-	-			-					
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									<u></u>									
			JISHED BY	<u>:</u>								RECEIV	VED BY		<u> </u>			METHOD OF SHIPMENT
Name:	Thomas YEU		200		Date: 20/03	12021	Name	э:	lak	~m~				Date	: 26	, -3-	2021	Con' Note No:
Of:	TEEMWA	Υ			Time: // > 3C		Of:		NIS	CHIC	2			Time		(>40		
Name:					Date:		Name	e:		•		****		Date				Transport Co:
Of:		***			Time:		Of:							Time	:			
Nater C	ontainer Codes: P = Unpreserved	i Plastic;	N = Nitric P	reserved F	Plastic; ORC = Nitric Pro	eserved ORC;	SH=S	odium	Hydroxi	de/Cd P	reserved;	S = So	dium Hy	droxide Pr	eserved	Plastic;	AG = Amber	Glass Unpreserved;
v = voa	Viai HCi Preserved; VS = VOA Viai S	ulphuric Pr	eserved; S	G = Sulfu	ric Preserved Amber G	lass; H = HCl	l Preserv	ved Pla	stic; HS	B = HCLE	reserved	i Speciati	on Bottle	e; SP = S	ılfuric Pr	eserved	Plastic; F=	Formaldehyde Preserved Glass;
ZIIIG P	cetate Preserved Bottle; E = EDTA Pr	eserved B	ottle; ST =	Sterile Bot	tle; ASS = Plastic Bag	for Acid Sulphi	ate Soil;	B = U	npreserv	ved Bag								

WHITE - LAB COPY YELLOW - CUSTOMER COPY PINK - BOOK COPY COC Page ___of___

CHAIN OF CUSTODY DOCUMENTAT	ION						H	1 02	220	85		
CLIENT: TEEMWAY		SAMP	LER:								••••	\neg
ADDRESS / OFFICE:		MOBIL							-			ALS
PROJECT MANAGER (PM): Thomas YEUNG		PHON	E						•		***	ALS Laboratory Group
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Cavi	erns - Site	EMAIL	REPOR	TTO:							****	Aca cannacing monb
SITE: Preparation and Access Tunnel Construction (DC/2018/	05)	EMAIL	INVOIC	E TO: (if dif	ferent to	report)	****				-110	
RESULTS REQUIRED (Date): QUOTE N	10.:	ANAL	YSIS RE	QUIRED in	cluding	SUITES	(note - sui	te codes r	rust be li	sted to a	ttract suit	a prices)
FOR LABORATORY USE ONLY COMMENTS / SPECIAL HAY	NDLING / STORAGE OR DIPOSAL:				Т			T	1400.001	1	taract som	
COOLER SEAL (circle appropriate)		1										Notes: e.g. Highly contaminated samples
Intact: Yes No (N)A)		1							ĺ			e.g. "High PAHs expected"
SAMPLE TEMPERATURE	- Lhuyy											Extra volume for QC or trace LORs etc.
CHILLED: (Fes) No		ا ا										
SAMPLE INFORMATION (note: S = Soil, W=Water)	CONTAINER INFORMATION	EAS.										
ALS ID SAMPLE ID MATRIX DATE TIME	Type / Code Total bottles	2										
(1 ENV-GOI(2)(SBI) 5 22/03/4 10:45	W76 1	/			<u> </u>					1		2 544
3.00m - 3.45m	V010 /	ľ			-				-			3 DAYS EXPRESS
3.00m 3.48 M					 	-			-	<u> </u>		
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			-		<u> </u>				-		-	
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	:				<u> </u>							
							Í					
									1			
RELINQUISHED BY:						PEC	EIVED B			J		
Name: Thomas YEUNG	Date: 22/03/2021	Name		HUG	$\overline{\alpha}$	NP	EIVEDB	Dat	e: ン.,	2/3	/21	METHOD OF SHIPMENT
of: TEEMWAY	Time: /6:00	Of:		1100	7.(<	1- 01		Tim		h	_	Con' Note No:
Name:	Date:	Name	:		1	<u> </u>	* ****	Dat		1.03	20	Transport Co.
Of:	Time:	Of:					.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Tim		*******	1000	Transport Co:
Vater Container Codes: P = Unpreserved Plastic; N = Nitric Preserved F / = VOA Vial HCI Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfur / = Zinc Acetale Preserved Bottle: E = EDTA Preserved Bottle: ST = Startle Bot	ric Preserved Amber Glass; H = HCI	Preserv	ed Plasti	c; HS = HC	Preser	ed; S = ved Spe	Sodium H	vdroxide F	reserver	Plastic;	AG = An I Plastic;	ther Glass Unpreserved; F = Formaldehyde Preserved Glass;

WHITE - LAB COPY YELLOW - CUSTOMER COPY PINK - BOOK COPY COC Page ___of__l

CHAIN OF CUSTODY DOCUMENTAT	ION						Н	02	20	87			
CLIENT: TEEMWAY		SAMP	LER:							<u> </u>			$\mathbf{\Lambda}$
ADDRESS / OFFICE:		MOBIL					 -						AIS
PROJECT MANAGER (PM): Thomas YEUNG		PHON			***************************************					 -			(723)
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Cavi	erns - Site		REPORT TO	:									ALS Laboratory Group
SITE: Preparation and Access Tunnel Construction (DC/2018))6)	1	INVOICE TO		ent to rer	port)		WA					
RESULTS REQUIRED (Date): QUOTE	NO.:		YSIS REQUIF				e - suite c	odos mi	int ha lie				
FOR LABORATORY USE ONLY COMMENTS / SPECIAL HA	NDLING / STORAGE OR DIPOSAL:	1			T	31123(1.01	C - Suite (Oues int	T St De IIS	sted to a	ittract s	uite prid	
COOLER SEAL (circle appropriate)		1											Notes: e.g. Highly contaminated samples
Intact: Yes No M7A		1					.	1					e.g. "High PAHs expected"
SAMPLE TEMPERATURE		1											Extra volume for QC or trace LORs etc.
CHILLED: (Yes) No		1 0											
SAMPLE INFORMATION (note: S = Soil, W=Water)	CONTAINER INFORMATION	LEAD											
ALS ID SAMPLE ID MATRIX DATE Time	Type / Code Total bottles	1 7			l								
Env-Gorth								† –					
1. ENV-GOI(2) (WBI) S 2403/21 15:30	u76 /	/			_		-	-					3 DAYS EXPRESS
3,00m - 3.45m									-				· · · · · · · · · · · · · · · · · · ·
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							+	 					
						_		 					
				-									
Name: Thomas YEUNG				(c 3(RECEIV	ED BY	γ					METHOD OF SHIPMENT
Of: TERMWAY	Date: ≥2/03/2021	Name:	: 1	fUG	<u> </u>	-		Date	27	1.3,	15		Con' Note No:
Vame:	Time: 16:00	Of:			7		-	Time		16.	2		
Of:	Time:	Name: Of:						Date:					Transport Co:
Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved			adham Hade	1.10.15				Time:					
V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfu	rlc Preserved Amber Glass: H = HCI	Preserve	ad Plastic: US	ue/Ca Pr	eserved;	S = Sod	um Hydro	oxide Pre	served	Plastic;	AG = /	Amber (Glass Unpreserved;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bo	ttle; ASS = Plastic Bag for Acid Sulpha	ate Soil:	B = Unpreser	ad Ran	10001460	г оренаис	n bottle;	SP = SU	iiiuric Pr	eserve	i Plastic	; F=F	ormaldehyde Preserved Glass;

WHITE - LAB COPY YELLOW - CUSTOMER COPY PINK - BOOK COPY COC Page ____ of ___

CHAIN OF CUSTODY DOCUMENTA	TION						LI	0.2	201	0.0		
CLIENT: TEEMWAY		T			<u>-</u>			02	200	55		^
ADDRESS / OFFICE:		SAME										
PROJECT MANAGER (PM): Thomas YEUNG		MOBI		 -								(ALS)
PROJECT ID. Relocation of Sha Tin Savage Treatment Works to Care	erns - Site	PHON		DT TO						···		ALS Laboratory Group
SITE: Preparation and Access Tunnel Construction (DC/2018)	[5]		L REPO						-			
RESULTS REQUIRED (Date): QUOTE	: NO ·			CE TO: (if di								
	ANDLING / STORAGE OR DIPOSAL:	ANAL	YSIS R	EQUIRED I	ncluding	SUITES	(note - suit	e codes mu	st be list	ed to att	ract suite	prices)
COOLER SEAL (circle appropriate)	ANDEING / STORAGE OR DIPOSAL:	-										Notes: e.g. Highly contaminated samples
Intact: Yes No N/A		-										e.g. "High PAHs expected"
SAMPLE TEMPERATURE		-										Extra volume for QC or trace LORs etc.
CHILLED: / Yes No		1 0	<u> </u>									
SAMPLE INFORMATION (note: S = Soil, W=Water)	CONTAINER INFORMATION	LEAD	·			1				1		
ALS ID SAMPLE ID MATRIX DATE Time	Type / Code Total bottles	-										1
(- ENV-GOI (2) (EB3) 5 31/3/21 10:15					-							
3.00m - 3.45 m	DEAD WIG				_	 						3 DAYS EXPRESS
2,00M - 3,42 M		1										
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RELINQUISHED BY:	- L					DEO	5N/55 5N/					
Name: Thomas YEUNG	Date: 31/03/2021	Name:	:	10		KEU	EIVED BY	Tp-1	7	1/3	151	METHOD OF SHIPMENT
Of: TEEMWAY	Daile.							$\frac{7}{7}$	112	121	Con' Note No:	
Name:	Time: 12:00	Name:	 :	- [][- 2	-\-)		Time:		4)		
Of:	Time:	Of:		· · · · · · · · · · · · · · · · · · ·	-						****	Transport Co:
Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved / = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SC = Sulf	Plastic; ORC = Nitric Preserved ORC;	SH = So	dium Hy	/droxide/Cd	Preserve	id; S = 5	Sodium Hvr		enved P	iantio: A	O = A==1	
The supplies to the supplies t	THE FIRSTIVED AMORT GISSS: H = HCI	Preserve	ed Plasti	le: HS = HC	1 Dragage	ed Spec	ation Bottle	; SP = Sulf	uric Pre	served D	o = Ambe	F Granddohyda Pasa a wyl C
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile B	ottle; ASS = Plastic Bac for Acid Sulpha	ate Soil: 1	B = Uno	recensed De							, asio, F	Tomaductiyde Preserved Glass;

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

COC Page ___of__

APPENDIX B

LABORATORY REPORTS & COC FORMS FOR QA/QC CONFIRMATORY TESTING

ALS Technichem (HK) Pty Ltd

: RM 1008, 10/F, CHEVALIER COMMERCIAL CENTRE, 8 WANG HOI

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

Client : TEEMWAY ENGINEERING LTD

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 6

Contact Address

E-mail

: THOMAS YEUNG

Contact Address : Richard Fung

Work Order

: HK2110587

ROAD, KOWLOON BAY, KOWLOON

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

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

: richard.fung@alsglobal.com

Telephone : +852 2796 2268

: Works@teemway.com

E-mail
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

: 15-Mar-2021

TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)

Order number : -

Quote number : HKE/1680/2020_V2

Issue Date

: 24-Mar-2021

C-O-C number : **H022083**

.

No. of samples received

Date Samples Received

No. of samples analysed : 3

: 3

Site : ----

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

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

Signatories

Lin Wai Yu . Iris

Assistant Manager - Inorganics

Inorganics

Authorised results for

Wong Wing, Kenneth

Manager - Metals

Position

Metals ENV

Page Number : 2 of 6

Client : TEEMWAY ENGINEERING LTD

Work Order HK2110587



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 15-Mar-2021 to 23-Mar-2021.

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: HK2110587

Sample(s) was/ were picked up from client by ALS staff. 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.) is provided by client.

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

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

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.

: 3 of 6

Client

: TEEMWAY ENGINEERING LTD

Work Order HK2110587

ALS

Analytical Results

-						
Sub-Matrix: SOIL			Sample ID	DUP-1	 	
		Samplii	ng date / time	15-Mar-2021 14:45	 	
Compound	CAS Number	LOR	Unit	HK2110587-003	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	14.3	 	
EG: Metals and Major Cations						
EG020: Lead	7439-92-1	1	mg/kg	236	 	

4 of 6

Client

: TEEMWAY ENGINEERING LTD

Work Order

HK2110587



Sub-Matrix: WATER			Sample ID	FB-1	EQ-1	 	
		Samplii	ng date / time	15-Mar-2021	15-Mar-2021	 	
Compound	CAS Number	LOR	Unit	HK2110587-001	HK2110587-002	 	
EG: Metals and Major Cations - Filtered							
EG020: Lead	7439-92-1	1	μg/L	<1	<1	 	

: 5 of 6

Client : TEEMWAY ENGINEERING LTD

Work Order HK2110587



Laboratory Duplicate (DUP) Report

Matrix: SOIL					Labo	ratory Duplicate (DUP)	Report	
Laboratory	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)
sample ID							Result	
EA/ED: Physical and A	ggregate Properties (QC Lo	ot: 3566143)						
HK2110470-039	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	20.0	19.9	0.00
EG: Metals and Major (Cations (QC Lot: 3566285)							
HK2110585-002	Anonymous	EG020: Lead	7439-92-1	1	mg/kg	532	449	17.0
Matrix: WATER					Labo	ratory Duplicate (DUP)	Report	
Laboratory	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)
sample ID							Result	
EG: Metals and Major (Cations - Filtered (QC Lot:	3566251)						
HK2110587-002	EQ-1	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: SOIL			Method Blank (ME	3) Report		Laboratory Contro	ol Spike (LCS) and Labora	atory Control S	pike Duplicate (DCS) Report	
					Spike	Spike Red	covery (%)	Recove	ory Limits(%)	RPL	D (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control
											Limit
EG: Metals and Major Cations (QC Lot: 3566285)											
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	108		86.7	115		
Matrix: WATER			Method Blank (ME	3) Report		Laboratory Contro	ol Spike (LCS) and Labora	atory Control S	pike Duplicate (DCS) Report	
Matrix: WATER			Method Blank (ME	3) Report	Spike		ol Spike (LCS) and Labora covery (%)		pike Duplicate (ory Limits(%)		D (%)
Matrix: WATER Method: Compound	CAS Number	LOR	Method Blank (ME Unit	B) Report Result	Spike Concentration						D (%) Control
	CAS Number	LOR	·		1 .	Spike Red	covery (%)	Recove	ory Limits(%)	RPI	
		LOR	·		1 .	Spike Red	covery (%)	Recove	ory Limits(%)	RPI	Control

: 6 of 6

Client

: TEEMWAY ENGINEERING LTD

Work Order HK2110587



Matrix: SOIL					Matrix Spi	ike (MS) and Matri	x Spike Duplic	ate (MSD) Re	eport	
				Spike	Spike Re	ecovery (%)	Recovery	Limits (%)	RPD	(%)
Laboratory	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and	Major Cations (QC Lot: 3566285)									
HK2110585-001	Anonymous	EG020: Lead	7439-92-1	5 mg/kg	# Not		75.0	125		
					Determined					
Matrix: WATER					Matrix Spi	ike (MS) and Matri	x Spike Duplic	ate (MSD) Re	eport	
				Spike	Spike Re	ecovery (%)	Recovery	Limits (%)	RPD	(%)
Laboratory	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and	Major Cations - Filtered (QC Lot: 356625	51)						•		•
HK2110587-001	FB-1	EG020: Lead	7439-92-1	50 μg/L	103		75.0	125		

CHA	IN OF CUSTODY	DOC	UME	TAT	ION							H	1 ()22	08	3			A
CLIENT:	TI	EEMWA	Ϋ́	· ·			SAME	LER:					-						
ADDRES	S/OFFICE:						МОВІ	LE:			- 10								ALS
PROJEC	TMANAGER (PM): The	omas YE	UNG				PHON	IE											ALS Laboratory Group
PROJEC	TID: Relocation of Sha Tin Seway	je Treatma	ent Works	to Caverns	s - Site		EMAII	REPORT	TO:					-					
SITE:	Preparation and Access Tun	nel Constr	uction (DC	/ 2 93.8(05)			EMAI	. INVOICE	TO: (if diffe	rent to re	eport)	4*							
RESULT	S REQUIRED (Date):			QUOTE N	10.:		ANAL	YSIS REQ	UIRED inc	luding S	SUITES	(note - s	uite coc	les must	be liste	d to att	ract su	uite prie	ces)
FOR LAE	ORATORY USE ONLY	COMM	IENTS / SP	ECIAL HAN	NDLING / STORAGE OF	R DIPOSAL:												<u> </u>	Notes: e.g. Highly contaminated samples
COOLER	SEAL (circle appropriate)																		e.g. "High PAHs expected"
Infact:	Yes No WA																	1	Extra volume for QC or trace LORs etc.
SAMPLE	TEMPERATURE														Ì				The country of the co
CHILLED	res No	1											1	İ					·
	SAMPLE INFORMATION (note:	S = Soil, W	=Water)		CONTAINER INFO	RMATION	TEAD												
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	<u> </u>												
1	FB-1	h	15/3/21		BOTTLE	1	V												
											- "								
>	EQ-1	W	15/3/21		BOTTLE	1	1					-		1					
		- W	19/2/21		SUICE	<u> </u>	┢╧		 										
ž,	N N N	 	- N		715														
>	DUP-1	<u> </u>	19/3/21	14:45	JAR	/	V			 									
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		<u> </u>	L					<u> </u>											
N1	Thomas YEUN		UISHED BY	<u>:</u>				-	· · · · · · · · · · · · · · · · · · ·		REC	EIVED					4		METHOD OF SHIPMENT
Name: Of:	TEEMWAY		, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		Date: 15/63/		Name	9:					$\overline{}$	Date:	1		_	····	Con' Note No:
Name:	TEEMWAT			····	Time: 16 > 0	∤ \$	Of:					M		Time:	-+	2/	7		
Of:	<u> </u>				Time:		Name Of:	3.				H		Date:		+		>	Transport Co:
***************************************	Container Codes: P = Unpreserve	ed Plastic:	N = Nitric F	Preserved F	<u> </u>	eserved ORC		lodium Hod	rovidolCd	Procon:	d: 8-	Sadhus		Time:		/			
V = VOA	Vial HCI Preserved; VS = VOA Vial	Sulphuric P	reserved;	SG = Suifu	ric Preserved Amber G	lass; H = HC	Preser	ved Plastic	HS = HC	Preserve	u, 5= ed Sner	augium dation P	nydrox	D = Cult	erved Pl	iastic;	AG = ,	Amber	Glass Unpreserved;
Z = Zinc	Acetate Preserved Bottle; E = EDTA	Preserved &	Bottle; ST=	Sterile Bo	ttle; ASS = Plastic Bag	for Acid Sulph	ate Soil	B = Unpre	served Ba	g.	_a opac		vano, o	, – ouii	and F168	aG VB()	ा ।दश	υ _ι Γ"#	ronnauenyde Preserved Glass;

ALS Laboratory Group

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REMEDIATION REPORT (RR) FOR THE EXISTING DSD STAFF QUARTERS SITE

APPENDIX C

LABORATORY REPORTS & COC FORMS FOR TRIAL MIX TEST

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ROAD, KOWLOON BAY, KOWLOON

ANALYICAL CHEMISTRY & TESTING SERVICES





Client : TEEMWAY ENGINEERING LTD

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

: THOMAS YEUNG

Contact

: Richard Fung

Work Order

: HK2126255

Address :

: RM 1008, 10/F, CHEVALIER COMMERCIAL CENTRE, 8 WANG HOI

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

: +852 2610 1044

Telephone : +852 2796 2268 Facsimile : +852 2796 2217

Telephone Facsimile

: +852 2610 2021

Project

: DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS

Date Samples Received

: 02-Jul-2021

TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)

Order number : ---

Quote

: HKE/1680/2020_V2

Issue Date

: 07-Jul-2021

number

C-O-C number : H022281

Site : ----

No. of samples received : 3

No. of samples analysed : 3

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Signatories

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

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.

Mole

Leung Chak Cheong, Mike

Assistant Manager - Metals

Position

Metals ENV

Authorised results for

Page Number : 2 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2126255



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-Jul-2021 to 07-Jul-2021.

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: HK2126255

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.) 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.

3 of 4

Client

: TEEMWAY ENGINEERING LTD

Work Order HK2126255

ALS

Analytical Results

Sub-Matrix: TCLP LEACHATE			Sample ID	ENV-G01(2)-CS (TM) TCLP-5%	ENV-G01(2)-CS (TM) TCLP-10%	ENV-G01(2)-CS (TM) TCLP-15%	
		Sampli	ng date / time	29-Jun-2021	29-Jun-2021	29-Jun-2021	
		Sampin	ig uate / time	29-3011-2021	29-3011-2021	29-3011-2021	
Compound	CAS Number	LOR	Unit	HK2126255-001	HK2126255-002	HK2126255-003	
EG: Metals and Major Cations							
EG020: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	<0.1	
Sample Preparation Method							
E-TCLP: Extraction Fluid Number		1		1	1	1	

4 of 4

Client

: TEEMWAY ENGINEERING LTD

Work Order HK2126255



Laboratory Duplicate (DUP) Report

Matrix: WATER					Labo	oratory Duplicate (DUP)	Report	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cati	ons (QC Lot: 3779204)					,		
HK2125878-001	Anonymous	EG020: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.0

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

Matrix: WATER			Method Blank (ME	3) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike	Spike Red	covery (%)	Recove	ory Limits(%)	RP	D (%)
thod: Compound CAS Numb		LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control
											Limit
EG: Metals and Major Cations (QC Lot: 3779204)											
EG020: Lead	7439-92-1	0.1	mg/L	<0.1	0.5 mg/L	96.2		85.0	114		

Matrix: WATER					Matrix Spi	ike (MS) and Matrix	Spike Duplic	ate (MSD) Re	əport .	
				Spike	Spike Re	ecovery (%)	Recovery	Limits (%)	RPD	7 (%)
Laboratory	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3779204)									
HK2125726-001	Anonymous	EG020: Lead	7439-92-1	0.5 mg/L	96.2		75.0	125		

CHA	AIN OF CUSTODY	DOC	UME	TAT	ION							F	02	222	81		A
CLIENT:		CEEMW	/AY			W00-244	SAME	LER:	· · · · · · · · · · · · · · · · · · ·								
ADDRE	SS / OFFICE:						МОВІ	.E:					" "				ALS
PROJEC	CT MANAGER (PM): The	omas YE	UNG				PHON	E									ALS Laboratory Group
PROJEC	CTID: Relocation of Sha Tin Sewa	ge Treatm	ent Works	to Caverr	ıs - Site		EMAI	REPORT	TO:		-			*****			
SITE:	Preparation and Access Tur	inel Const	ruction (DO	22018405)		EMAI	. INVOICE	TO: (if diffe	rent to re	eport)	•	, , , ,	-			
RESULT	'S REQUIRED (Date):			QUOTE N	lO.:		ANAL	YSIS REQ	UIRED incl	luding S	UITES	(note - su	ite codes r	nust be li	sted to att	ract suite prid	ces)
GOOLEI	R SEAL (circle appropriate) Yes No N/A	COMM	MENTS / SPI	ECIAL HAN	IDLING / STORAGE O	R DIPOSAL:	(7EAP)										Notes: e.g. Highly contaminated samples e.g. "High PAHs expected" Extra volume for QC or trace LORs etc.
CHILLE		<u> </u>			T			***************************************					-				
	SAMPLE INFORMATION (note: \$	T	1		CONTAINER INFO	<u>ORMATION</u>	12	***************************************									
ALS ID	SAMPLE ID	MATRIX	 	Time	Type / Code	Total bottles	1										
	ENV-6101(2) - CS (7M)	S	29/06/21		BAG	1	V										1
	TCLP - 5%																
2-	ENV-GOI(2) - CS (TM)		29/06/21		BAG	1	V							 	1 1		2 2001
	TCLP - 10%	-	27,0070	*******	[51] 0 1	1	<u> </u>								+-+		1 3 DAYS EXPRESS
	(CL) > 10 /6	<u> </u>							-						+		
			- 1	•											-		
3_	EUV-611(2) - CS (TM)	5	29/06/21	1	BAG		V										
	TCLP-15%																,
											~						
	·	DELINO	UISHED BY														
Name:	Thomas YEUNG		OISTIED BT	<u></u>	Date: 02/67/2	A2 I	Nam				REC	EIVED B					METHOD OF SHIPMENT
Of:	TEEMWA				Time: (1:00	70 1	Of:	7.			~		Dai Tim				Con' Note No:
Name:	TEZZAM III			· · · · · · · · · · · · · · · · · · ·	Date:		Name	<u></u>	Kot	^	Lan				<u>-1. /</u>	-2021	Transport Car
Of:	-				Time:	-	Of:			FLS	HK		Tim	-	14=		Transport Co:
V = VOA	Container Codes: P = Unpreserved Vial HCl Preserved; VS = VOA Vial S Acetate Preserved Bottle; E = EDTA F	Bulphuric P	reserved; S	G= Sulfu	ric Preserved Amber G	Slass; H = HC	SH = S	ed Plastic	roxide/Cd F ; HS = HCl	Preserve Preservi	d; S=	Sodium F	fydroxide I	reserve	d Plastic;	AG = Amber	I Glass Unpreserved; Formaldehyde Preserved Glass;

ALS Laboratory Group

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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

Test Report Concrete - Compressive Strength of Concrete Cubes (CS1: 1990 Section 12 + Amd. 1201, 1202 & 1203)

33, On Kui Street, Fanling, Hong Kong. 29A, On Chuen Street, Fanling, Hong Kong

Website: www.castco.com.hk

Tel: 2597 8333 Fax: 2597 8399



Castco Lab. Ref No.: 210708-2088

Report No.:728723

Audit No : --

Customer's Ref. No.: --

1. SAMPLE DETAILS AS SUPPLIED BY CUSTOMER

Teemway Engineering Limited

Address:

Room 1008, 10/F, Chevalier Commercial Centre,

8 Wang Hoi Raod, Kowloon Bay, Kowloon

Contract No.: DC/2018/05

Date of issue: 16/07/2021

Page 1 of 1 page(s)

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: --

Cement brand: --

Designed/ Measured slump: --/-- mm

Grade: --W/C ratio: --

A/C ratio: --

Cement content (OPC/PFA): -- / -- kg/m3

Supplier:

Plant:

Source of coarse aggregate: --

Source of fine aggregate: --

Admixture brand: --Date of sampling: 29-06-2021 Dosage: --/m3

Time of water added to cement: --

Place of sampling: ENV-G01(2)

Place and time of making cubes: ON SITE / --

Method of Compaction:

Name of person making cubes:

Test at: 3 days

Nominal size: 100.0 mm 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

No. of cubes: 3

3. LABORATORY TEST RESULT

Date received: 02-07-2021

Date of Test: 02-07-2021

Age at tests: 3 days

Laboratory curing method: WATER CURING TANK

Moisture condition at test: WET

Tank No.: G		Max./ Min.	temp: 30.0 / 24.0°0	C
Cube Mark - ENV-G01(2)-CS(TM)UCS-		5%	10%	15%
Mould No	-	NA	NA	NA
Weight in air	kg	1.635	1.680	1.695
Weight in water	kg	-	_	-
Height	mm	102.0	102.3	102.4
Width	mm	100.1	100.3	100.4
Length	mm	100.4	100.1	100.3
As- Received density (Vol. by calculation)	kg/m³	1590	1640	1640
As- Received density (Vol. by water disp.)	kg/m³		-	_
Load at Failure	kN	12.4	28.8	39.4
Compressive Strength	MPa	1.0	3.0	4.0
Observation Code	-		E	E
Type of Fracture	-	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 C1.10.4 of CS1:1990.

4. TESTING TIME: 11:38

Checked By:

WAI Po Yi

Assistant Supervisor

Approved Signatory:

WONG Ka Man Senior Manager

End Of Report

Form No.CUBE COMP_STR_LIMS(CS1:1990)_T1 dd 10/08/2020

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APPENDIX D

LABORATORY REPORTS & COC FORMS FOR VERIFICATION TESTING

ALS Technichem (HK) Pty Ltd

: RM 1008, 10/F, CHEVALIER COMMERCIAL CENTRE, 8 WANG HOI

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address

E-mail





CERTIFICATE OF ANALYSIS

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

Client : TEEMWAY ENGINEERING LTD Laboratory : ALS Technichem (HK) Pty Ltd Page : 1 of 4

Address

Contact : THOMAS YEUNG Contact : Richard Fung Work Order : HK2127955

ROAD, KOWLOON BAY, KOWLOON Yip Street, Kwai Chung, N.T., Hong Kong

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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 Date Samples Received : 12-Jul-2021

TO CAVERNS SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)

Order number : --- : HKE/1680/2020_V2 : Issue Date : 15-Jul-2021

number

C-O-C number : ----

Site : --- No. of samples analysed : 3

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

Hong Kong Accreditation Service (HKAS) has accredited this laboratory, ALS Technichem (HK) Pty Ltd

Signatories Position Authorised results for

(Reg. No. HOKLAS 066) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific

laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories.

Leung Chak Cheong , Mike

Assistant Manager - Metals Metals_ENV

Page Number : 2 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2127955



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 12-Jul-2021 to 15-Jul-2021.

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: HK2127955

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.) is provided by client.

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

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.

3 of 4

Client

: TEEMWAY ENGINEERING LTD

Work Order HK2127955

ALS

Analytical Results

Sub-Matrix: TCLP LEACHATE			Sample ID	ENV-G01(2)-CS	ENV-G01(2)-CS	ENV-G01(2)-CS	
				TCLP-1	TCLP-2	TCLP-3	
		Samplii	ng date / time	09-Jul-2021	09-Jul-2021	09-Jul-2021	
Compound	CAS Number	LOR	Unit	HK2127955-001	HK2127955-002	HK2127955-003	
EG: Metals and Major Cations							
EG020: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	<0.1	
Sample Preparation Method							
E-TCLP: Extraction Fluid Number		1		1	1	1	

∴ 4 of 4

Client

: TEEMWAY ENGINEERING LTD

Work Order HK2127955



Laboratory Duplicate (DUP) Report

Matrix: WATER					Labo	ratory Duplicate (DUP)	Report	
Laboratory	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)
sample ID							Result	
EG: Metals and Major Cati	ons (QC Lot: 3791821)							
HK2127955-002	ENV-G01(2)-CS TCLP-2	EG020: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.0

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	Spike Recovery (%)		Recovery Limits(%)		RPD (%)			
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control	
											Limit	
EG: Metals and Major Cations (QC Lot: 3791821)												
EG020: Lead	7439-92-1	0.1	mg/L	<0.1	0.5 mg/L	95.0		85.0	114			

Matrix: WATER	: WATER				Matrix Sp	ate (MSD) Re	(MSD) Report			
			Spike	Spike R	Pecovery (%)	Recovery	Limits (%)	RPD (%)		
Laboratory	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3791821)									
HK2127955-001	ENV-G01(2)-CS TCLP-1	EG020: Lead	7439-92-1	0.5 mg/L	92.5		75.0	125		

ALS Technichem (HK) Pty Ltd

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ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: TEEMWAY ENGINEERING LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

Work Order

: 1 of 4

: THOMAS YEUNG Contact

Contact

: RM 1008, 10/F, CHEVALIER COMMERCIAL CENTRE, 8 WANG HOI

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Project

Address

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DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS

Date Samples Received

: 15-Jul-2021

TO CAVERNS - SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)

Order number

: HKE/1680/2020_V2

Issue Date

: 20-Jul-2021

Quote number

C-O-C number : H022283

No. of samples received

: 3

: 3

Site

No. of samples analysed

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Hong Kong Accreditation Service (HKAS) has accredited this laboratory, ALS Technichem (HK) Pty Ltd (Reg. No. HOKLAS 066) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific

laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories.

Signatories

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

Authorised results for

Mole

Leung Chak Cheong, Mike

Assistant Manager - Metals

Metals ENV

Page Number : 2 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2128600



General Comments

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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: HK2128600

Sample(s) was/ were picked up from client by ALS staff. 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.) is provided by client.

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

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.

3 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2128600



Analytical Results

Sub-Matrix: TCLP LEACHATE			Sample ID	ENV-G01(2)-CS	ENV-G01(2)-CS	ENV-G01(2)-CS	
				TCLP-4	TCLP-5	TCLP-6	
		Samplii	ng date / time	12-Jul-2021	12-Jul-2021	12-Jul-2021	
Compound	CAS Number	LOR	Unit	HK2128600-001	HK2128600-002	HK2128600-003	
EG: Metals and Major Cations							
EG020: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	<0.1	
Sample Preparation Method							
E-TCLP: Extraction Fluid Number		1		1	1	1	

4 of 4

Client : TE

: TEEMWAY ENGINEERING LTD

Work Order HK2128600



Laboratory Duplicate (DUP) Report

Matrix: WATER	atrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3801423)											
HK2128600-002	ENV-G01(2)-CS TCLP-5	EG020: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.0				

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	Spike Recovery (%)		Recovery Limits(%)		RPD (%)		
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control	
											Limit	
EG: Metals and Major Cations (QC Lot: 3801423)												
EG020: Lead	7439-92-1	0.1	mg/L	<0.1	0.5 mg/L	99.6		85.0	114			

Matrix: WATER	WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
	Mother Company			Spike	Spike Re	ecovery (%)	Recovery I	Limits (%)	RPD	0 (%)		
Laboratory	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and M	Major Cations (QC Lot: 3801423)											
HK2128600-001	ENV-G01(2)-CS TCLP-4	EG020: Lead	7439-92-1	0.5 mg/L	95.2		75.0	125				

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CERTIFICATE OF ANALYSIS

Client : TEEMWAY ENGINEERING LTD Laboratory : ALS Technichem (HK) Pty Ltd Page : 1 of 4

Contact : THOMAS YEUNG Contact : Richard Fung Work Order : HK2129122

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Project : DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS Date Samples Received : 19-Jul-2021

TO CAVERNS - SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)

Order number : --- Quote : HKE/1680/2020_V2 Issue Date : 22-Jul-2021

number

C-O-C number : H022285

Site : --- No. of samples analysed : 3

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Hong Kong Accreditation Service (HKAS) has accredited this laboratory, ALS Technichem (HK) Pty Ltd

Signatories Position Authorised results for

(Reg. No. HOKLAS 066) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific

laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories.

Leung Chak Cheong , Mike

Assistant Manager - Metals Metals_ENV

Page Number : 2 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2129122



General Comments

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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: HK2129122

Sample(s) was/ were picked up from client by ALS staff. 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.) is provided by client.

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

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.

3 of 4

Client

: TEEMWAY ENGINEERING LTD

Work Order HK2129122

Analytical Results

Sub-Matrix: TCLP LEACHATE			Sample ID	ENV-G01(2)-CS	ENV-G01(2)-CS	ENV-G01(2)-CS	
				TCLP-7	TCLP-8	TCLP-9	
		Samplii	ng date / time	15-Jul-2021	15-Jul-2021	15-Jul-2021	
Compound	CAS Number	LOR	Unit	HK2129122-001	HK2129122-002	HK2129122-003	
EG: Metals and Major Cations							
EG020: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	<0.1	
Sample Preparation Method							
E-TCLP: Extraction Fluid Number		1		1	1	1	



∴ 4 of 4

Client :

: TEEMWAY ENGINEERING LTD

Work Order HK2129122



Laboratory Duplicate (DUP) Report

Matrix: WATER	atrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3804264)											
HK2129122-002	ENV-G01(2)-CS TCLP-8	EG020: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.0				

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	Spike Recovery (%)		Recovery Limits(%)		RPD (%)		
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control	
											Limit	
EG: Metals and Major Cations (QC Lot: 3804264)												
EG020: Lead	7439-92-1	0.1	mg/L	<0.1	0.5 mg/L	102		85.0	114			

Matrix: WATER	atrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSL					
			Spike	Spike Ré	ecovery (%)	Recovery I	Limits (%)	RPD (%)		
Laboratory	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and M	Major Cations (QC Lot: 3804264)									
HK2129122-001	ENV-G01(2)-CS TCLP-7	EG020: Lead	7439-92-1	0.5 mg/L	100		75.0	125		

ALS Technichem (HK) Pty Ltd

: RM 1008, 10/F, CHEVALIER COMMERCIAL CENTRE, 8 WANG HOI

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CERTIFICATE OF ANALYSIS

: TEEMWAY ENGINEERING LTD : ALS Technichem (HK) Pty Ltd Client Laboratory Page

: HK2129124 : THOMAS YEUNG : Richard Fung Work Order Contact Contact

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DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS **Date Samples Received** : 19-Jul-2021 Project

TO CAVERNS - SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)

: HKE/1680/2020_V2 : 22-Jul-2021 Order number Quote Issue Date

number

Address

C-O-C number : H022286 : 3 No. of samples received

: 3 No. of samples analysed Site

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Signatories Position Authorised results for Hong Kong Accreditation Service (HKAS) has accredited this laboratory, ALS Technichem (HK) Pty Ltd Mole

(Reg. No. HOKLAS 066) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific

laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories. Leung Chak Cheong, Mike Assistant Manager - Metals Metals ENV Page Number : 2 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2129124



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 19-Jul-2021 to 22-Jul-2021.

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: HK2129124

Sample(s) was/ were picked up from client by ALS staff. 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.) is provided by client.

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

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.

3 of 4

Client

: TEEMWAY ENGINEERING LTD

Work Order HK2129124

Analytical Results

Sub-Matrix: TCLP LEACHATE			Sample ID	ENV-G01(2)-CS	ENV-G01(2)-CS	ENV-G01(2)-CS	
				TCLP-10	TCLP-11	TCLP-12	
		Sampli	ng date / time	17-Jul-2021	17-Jul-2021	17-Jul-2021	
Compound	CAS Number	LOR	Unit	HK2129124-001	HK2129124-002	HK2129124-003	
EG: Metals and Major Cations							
EG020: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	<0.1	
Sample Preparation Method							
E-TCLP: Extraction Fluid Number		1		1	1	1	



4 of 4

Client : T

: TEEMWAY ENGINEERING LTD

Work Order HK2129124



Laboratory Duplicate (DUP) Report

Matrix: WATER	atrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)				
EG: Metals and Major Cati	ons (QC Lot: 3804264)											
HK2129122-002	Anonymous	EG020: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.0				

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	Spike Red	covery (%)	Recove	ory Limits(%)	RPL	D (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control
											Limit
EG: Metals and Major Cations (QC Lot: 3804264)											
EG020: Lead	7439-92-1	0.1	mg/L	<0.1	0.5 mg/L	102		85.0	114		

Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike R	ecovery (%)	Recovery	Limits (%)	RPD) (%)
Laboratory	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3804264)									
HK2129122-001	Anonymous	EG020: Lead	7439-92-1	0.5 mg/L	100		75.0	125		

ALS Technichem (HK) Pty Ltd

: RM 1008, 10/F, CHEVALIER COMMERCIAL CENTRE, 8 WANG HOI

(Reg. No. HOKLAS 066) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

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CERTIFICATE OF ANALYSIS

: TEEMWAY ENGINEERING LTD : 1 of 4 : ALS Technichem (HK) Pty Ltd Client Laboratory Page

Address

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DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS **Date Samples Received** : 30-Jul-2021 Project

TO CAVERNS - SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)

: HKE/1680/2020_V2 : 04-Aug-2021 Order number Quote Issue Date

number

C-O-C number : H022288 : 3 No. of samples received

: 3 No. of samples analysed Site

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Signatories Position Authorised results for Hong Kong Accreditation Service (HKAS) has accredited this laboratory, ALS Technichem (HK) Pty Ltd

laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories. Wong Wing, Kenneth Manager - Metals Metals ENV Page Number : 2 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2130742



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 30-Jul-2021 to 04-Aug-2021.

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: HK2130742

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.) is provided by client.

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

The metal concentrations reported are those determined on the TCLP leachate. Extraction Fluid #1 pH 4.88 - 4.98.

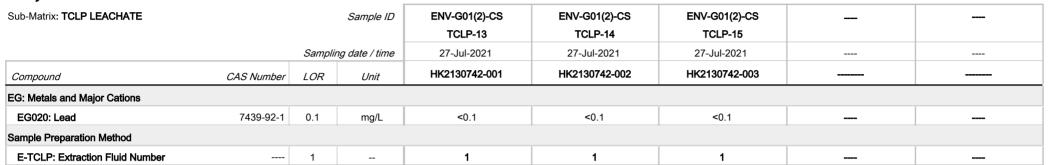
3 of 4

Client

: TEEMWAY ENGINEERING LTD

Work Order HK2130742

Analytical Results





4 of 4

Client :

: TEEMWAY ENGINEERING LTD

Work Order HK2130742



Laboratory Duplicate (DUP) Report

Matrix: WATER					Laboratory Duplicate (DUP) Report							
Laboratory	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3825786)											
HK2130742-002	ENV-G01(2)-CS TCLP-14	EG020: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.0				

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	Spike Red	covery (%)	Recove	ory Limits(%)	RP	D (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control
											Limit
EG: Metals and Major Cations (QC Lot: 3825786)											
EG020: Lead	7439-92-1	0.1	mg/L	<0.1	0.5 mg/L	99.9		85.0	114		

Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3825786)									
HK2130742-001	ENV-G01(2)-CS TCLP-13	EG020: Lead	7439-92-1	0.5 mg/L	96.8		75.0	125		

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address



: 1 of 4

CERTIFICATE OF ANALYSIS

Client : TEEMWAY ENGINEERING LTD Laboratory : ALS Technichem (HK) Pty Ltd Page

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 : +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 Date Samples Received : 02-Aug-2021

TO CAVERNS - SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)

Order number : --- Quote : HKE/1680/2020_V3 Issue Date : 05-Aug-2021

number

C-O-C number : H022293

Site : --- No. of samples analysed : 3

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

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. Wong Wing , Kenneth Assistant Manager - Environmental Metals_ENV

Page Number : 2 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2131024



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-Aug-2021 to 05-Aug-2021.

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: HK2131024

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.) is provided by client.

The metal concentrations reported are those determined on the TCLP leachate. Extraction Fluid #1 pH 4.88 - 4.98. E

3 of 4

Client

: TEEMWAY ENGINEERING LTD

Work Order HK2131024

ALS

Analytical Results

Sub-Matrix: TCLP LEACHATE			Sample ID	ENV-G01(2)-CS	ENV-G01(2)-CS	ENV-G01(2)-CS	
				TCLP-16	TCLP-17	TCLP-18	
		Samplii	ng date / time	31-Jul-2021	31-Jul-2021	31-Jul-2021	
Compound	CAS Number	LOR	Unit	HK2131024-001	HK2131024-002	HK2131024-003	
EG: Metals and Major Cations							
EG020: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	<0.1	
Sample Preparation Method							
E-TCLP: Extraction Fluid Number		1		1	1	1	

4 of 4

Client

: TEEMWAY ENGINEERING LTD

Work Order HK2131024



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER					Laboratory Duplicate (DUP) Report							
Laboratory	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)					
sample ID							Result						
EG: Metals and Major Cati	ions (QC Lot: 3828741)												
HK2131024-001	ENV-G01(2)-CS TCLP-16	EG020: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.0					

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	Spike Red	covery (%)	Recove	ry Limits(%)	RPL	D (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control
											Limit
EG: Metals and Major Cations (QC Lot: 3828741)											
EG020: Lead	7439-92-1	0.1	mg/L	<0.1	0.5 mg/L	101		85.0	114		

Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike R	ecovery (%)	Recovery I	Limits (%)	RPL	7(%)
Laboratory	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3828741)									
HK2130977-001	Anonymous	EG020: Lead	7439-92-1	0.5 mg/L	97.4		75.0	125		

CLIENT THE NAME	CHAIN OF CUSTODY DOCUMENTATION		H 022282	A							
Modes Product Modes Product Modes Product Modes Product Modes Product Modes Product Modes Product	CLIENT: TEEMWAY	SAMPLER:		-							
PROJECTOR Reduction of State United State U				ALS							
PROJECTOR Reduction of State United State U	PROJECT MANAGER (PM): Thomas YELING	PHONE		ALS Laboratoru Group							
RESULTS REQUIRED (Date): OUTS NO: AMALYSIS REQUIRED Including SUITES (rote - suite codes mast be lited to althract suite prices) FOR LABORATORY USE OBLY. COMMENTS I SPECIAL HAND ING I STORAGE ON DIPOSAL. SAMPLE PROFESSIONATE INCOMENTS I SPECIAL HAND ING I STORAGE ON DIPOSAL. SAMPLE PROFESSIONATE INCOMENTS I SPECIAL HAND ING I STORAGE ON DIPOSAL. SAMPLE PROFESSIONATE INCOMENTS I SPECIAL HAND ING I STORAGE ON DIPOSAL. SAMPLE PROFESSIONATURE SAMPLE PROFESSIONATION (rote S - Sail, Vinchiburus) ALIS IN SAMPLE DIPOSTANTINE INCOMENTS INTO TIPOSTANTINE INCOMENTATION. ALIS IN SAMPLE DIPOSTANTINE INCOMENTATION INTO STORAGE INCOMENTATION. ALIS IN SAMPLE DIPOSTANTINE INCOMENTATION INTO STORAGE INCOMENTATION. ALIS IN SAMPLE PROFESSIONATION (rote S - Sail, Vinchiburus) SAMPLE PROFESSIONATION (rote S - Sail, Vinchiburus) ALIS IN SAMPLE DIPOSTANTINE INCOMENTATION INTO STORAGE INCOMENTATION. ALIS IN SAMPLE DIPOSTANTINE INCOMENTATION INTO STORAGE INCOMENTATION. ALIS IN SAMPLE DIPOSTANTINE INCOMENTATION INTO STORAGE INCOMENTATION. ALIS IN SAMPLE DIPOSTANTINE INCOMENTATION INTO STORAGE INCOMENTATION. ALIS IN SAMPLE DIPOSTANTINE INCOMENTATION INTO STORAGE INCOMENTATION. ALIS IN SAMPLE DIPOSTANTINE INCOMENTATION INTO STORAGE INCOMENTATION. ALIS IN SAMPLE DIPOSTANTINE INCOMENTATION INTO STORAGE INCOMENTATION INTO STORAGE INCOMENTATION INTO STORAGE INCOMENTATION INTO STORAGE INCOMENTATION INTO STORAGE INCOMENTATION INTO STORAGE INCOMENTATION INTO STORAGE INTO STORAGE INCOMENTATION INTO STORAGE INCOMENTATION INTO STORAGE INCOMENTATION INTO STORAGE INTO STO	PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caverns - Site	EMAIL REPORT TO:	, and a second s								
COMMENTAL (SPECIAL HANDLING / STORAGE OR DPCCAL) COMMENTAL (SPECIAL HANDLING / STORAGE OR DPCCAL (SPECIAL HAND	SITE: Preparation and Access Tunnel Construction (DC/2018/05)			100001 300001 10000 1 20000 100000 100000 10000 10000 10000 10000 10000 10000 10000 10000 1000000							
COMMENTE SPECIAL HANDLING STORAGE OR DIPOSAL	RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES	S(note - suite codes must be listed to attract suite pri	ices)							
Marker Ves No Color Section Personnel Pe				Notes: e.g. Highly contaminated samples							
WV-Gpl(2) - CS TCLP-1 S SKT/z BAG	SAMPLE TEMPERATURE	(Apž)									
MV-Gpl(x) - CS TCLP-1 S S\nkT\nu BAG 1		<u> </u>									
		RINFORMATION Q									
Sun-Gol(x)-cs TCLP-2 S Sy51/z BAG											
3 5 5 5 5 5 5 5 5 5	1 (CLF-) S (D)/61/21 SA		 	+7							
2 EMY - 6M 2 Con' Note No: Con' Note											
SAG	2 ENV-GOI(2)-CS TCLP-2 S S1/57/21 BAC			3 DAYS EXPRESS							
Styling Styl				(
Mane: Thomas YEUNG Date: 9/67/201 Name: Name: Thomas YEUNG Date: 9/67/201 Name: Of: ALCULUS Name: Of: Name: Of: ALCULUS Name: Of: Of	3 ENV-601/2)-CS TCLP-3 S 8/01/21 BAG	1 /									
Name: Thomas YEUNG Date: 09/67/2021 Name: Charles Date: 12-7-2021 Con' Note No: Of: TEEMWAY Time: Of: ALSCULO Time: 16-231 Con' Note No: Name: Date: Name: Date: Transport Co: Of: Time: Of: Time: Of: Time: Sodium Hydroxide/Cd Preserved Plastic; AG = Amber Glass Unpreserved; V= VOA Vial HCI Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCI Preserved Plastic; HS = HCI Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;											
Name: Thomas YEUNG Date: 09/67/2021 Name: Charles Date: 2-7-2021 Con' Note No: Of: TEEMWAY Time: Of: ALSCULO Time: 16-231 Name: Date: Name: Date: Transport Co: Of: Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCI Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCI Preserved Plastic; HS = HCI Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;											
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Name: Thomas YEUNG Date: 09/67/2021 Name: CALALA Date: 12-7-2021 Con' Note No: Of: TEEMWAY Time: Of: ALSCULO Time: 16-33T Name: Date: Name: Date: Transport Co: Of: Of: Time: Time: Transport Co: Of: Time: Served Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCI Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCI Preserved Plastic; HS = HCI Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;	RELINQUISHED BY:	RE	CEIVED BY	METHOD OF SHIPMENT							
Of: ALCULO Time: 16-331 Name: Date: Name: Date: Date: Transport Co: Of: Time: Of: ALCULO Time: 16-331 Name: Date: Transport Co: Of: Time: Of: Time: Transport Co: Of: Time: Of: Time: Served Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCI Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCI Preserved Plastic; HS = HCI Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; V = VOA Vial Sulphuric Preserved; VS = VOA Vial Sulphuric Preserved; VS = VOA Vial Sulphuric Preserved; VS = VOA Vial Sulphuric Preserved; VS = VOA Vial Sulphuric Preserved Societion Bottle; VS = VOA Vial Sulphuric Preserved; VS = VOA Vial Sulphuric Preserv	Name: Thomas YEUNG Date:	,									
Name: Of: Of: Of: Of: Of: Of: Of: Of: Of: Of				Oon Hotelto.							
Of: Time: Of: Time: Of: Time: Time: Of: Time:	Name: Date:	Name:		Transport Co:							
V = VOA Vial HCI Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCI Preserved Plastic; HS = HCI Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;	Of: Time:	Of:	Time:								
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.	V = VOA Vial HCI Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved	mber Glass; H = HCI Preserved Plastic; HS = HCI Preserved Spe	= Sodium Hydroxide Preserved Plastic; AG = Amber eciation Bottle; SP = Sulfuric Preserved Plastic; F =	Glass Unpreserved; Formaldehyde Preserved Glass;							

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COC Page ____of___

CHA	AIN OF CUSTODY	DOC	UME	TAT	ON								Н	02	222	83			A
CLIENT:	J	TEEMW	/AY				SAMP	LER:											
ADDRES	SS / OFFICE:						MOBI	LE:						*					(ALS)
PROJEC	T MANAGER (PM): Tho	mas YE	UNG				PHON	ΙE											ALS Laboratory Group
PROJEC	т iD: Relocation of Sha Tin Sewage	Treatmer	at Works t	o Caverns	- Site		EMAIL	REPO	RT TO:										
SITE:	Preparation and Access Tunne	al Constru	.ction (DC/	² 2018(05).			EMAIL	INVO	CE TO:	(if differ	ent to rep	oort)							
RESULT	S REQUIRED (Date):			QUOTE N	0.:		ANAL	YSIS R	EQUIR	ED incl	uding Sl	JITES(note - suite	codes r	nust be li	sted to at	tract su	ite pric	es)
COOLEF	CORATORY USE ONLY R SEAL (circle appropriate) Yes No N/A TEMPERATURE D: Yes No SAMPLE INFORMATION (note: S			ECIAL HAN	ODLING / STORAGE OF		TOLY (LEAD)									-			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	14												
Ì	ENV-601(2)-CS TCLP-4	5	12/07/	21	BAG		V												<u> </u>
	, , , , , , , , , , , , , , , , , , , ,	ĺ																	
2	TENV-601(2)- CS 7CZP-5	<u> </u>	12/07/21		BAG	1 /	V											•	/ 3 DAYS EXPRESS
3	ENV-601(2)-15 TOLP-6	3	12/07/21		BA6	1	V)
		İ																	
																1 1			
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***************************************						 		,						+	 	++			
				<u> </u>		-								+	-	+			
			 									\dashv	-	+		-			
		RELINO) UISHED B1	<u> </u>		L				<u> </u>		BEC	EIVED BY			.			
Name:	Thomas YEUNC		JIONED B	<u></u>	Date: וצ/ב/	7.57.1	Name	e:		***		KEC	EIVED BY	Da	te.	1			METHOD OF SHIPMENT Con' Note No:
Of:	TEEMWA	Y			Time:	100	Of:	<u>. </u>					Δ.	Tim	1	5/			CON NOTE NO.
Name:					Date:		Name	e:		*****			M	Dat		7	\neg		Transport Co:
Of:					Time:	*	Of:						~ 11	Tim		1	\top		
V = VQ/	Container Codes: P = Unpreserve A Vial HCI Preserved; VS = VOA Vial S Accelate Preserved Bottle: E = FOTA P	Sulphuric P	reserved;	SG = Sulfu	ıric Preserved Amber G	Glass; H = HC	Preser	ved Pla	astic; HS	s = HCI	Preserve								

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COC Page ___ of ___

CHAIN OF CUSTODY DOCUMENTAT	ION					H	02	2285	5		A
CLIENT: TEEMWAY		SAMPL	ER:								
ADDRESS / OFFICE:		MOBILE	 :					MARKEN III			(ALS)
PROJECT MANAGER (PM): Thomas YEUNG		PHONE							************		ALS Laboratory Group
PROJECT ID: Relocation of Sha Tin Sewage Treatment Works to Caver	ns - Site	EMAIL	REPORT TO:			***************************************					-
SITE: Preparation and Access Tunnel Construction (DC/2018/0)	5)	EMAIL	INVOICE TO: (i	f different to	report)						
RESULTS REQUIRED (Date): QUOTE	10.:	ANALY	SIS REQUIRE	D including	SUITES(r	note - suite	codes mus	t be listed to	attract s	suite pri	ices)
FOR LABORATORY USE ONLY COOLER SEAL (circle appropriate) Intact: Yes No SAMPLE TEMPERATURE CHILLED: Yes No	NDLING / STORAGE OR DIPOSAL:	-P(LEAD)					er er er er er er er er er er er er er e				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	2						Ī			
ALSID SAMPLEID MATRIX DATE Time	Type / Code Total bottles										
ENV-601(2)-CS 1CLP-7 S 15/07/21	BAG /	V			1			İ			3
										1	
) ENV-GOI(2)-CS TCLP-8 5 15/07/21	BAG 1	V									3 DAYS EXPRESS
	•							į	1		
3 ENV-601(2)-CS TCL8-9 S 15/07/4	BAG /	V									
										1	
										+	
		 -			++		-				
		\vdash			+						
		 									
RELINQUISHED BY:					REC	EIVED BY				•	METHOD OF SHIPMENT
Name: Thomas YEUNG	Date: 15/07/1021	Name:					Date:		1		Con' Note No:
Of: TEEMWAY	Time:	Of:				MΛ	Time:	18	75		
Name:	Date:	Name:				M	Date:	1 /			Transport Co:
Of:	Time:	Of:				///	Time:	1			
Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved V = VOA Vial HCI Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfi Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterlie Bo	uric Preserved Amber Glass; H = HC	Preserve	ed Plastic; HS	= HCI Prese					-		· · · · · · · · · · · · · · · · · · ·

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COC Page ____ of ____

CHAIN	OF CUSTODY	DOC	UMEN	TAT	ION					Н	022	2286)		٨
CLIENT:	Ι	TEEMW	ΑY				SAMPI	LER:							
ADDRESS / C	OFFICE:						MOBIL	LE:							(ALS)
		omas YE					PHON	E							ALS Laboratory Group
PROJECT ID	Relocation of Sha Tin Sewage	Treatmen	t Works to	Caverns	- Site		EMAIL	REPORT TO:							
SITE:	Preparation and Access Tunne	d Construc	otion (DG/2	1918/NO.:			EMAIL	NVOICE TO: (if diffe	rent to report)						
RESULTS RE	EQUIRED (Date):			QUOTE N	10.:		ANAL	YSIS REQUIRED inc	luding SUITE	S (note - suif	te codes mus	t be listed to	attract su	lite price	es)
COOLER SE/ Intact: SAMPLE TEN CHILLED:	ATORY USE ONLY AL (circle appropriate) Yes No WA MPERATURE (Yes) No SAMPLE INFORMATION (note: S			ECIAL HAN	NDLING / STORAGE O		70LP (46AD)								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 2	***************************************							
1 Ex	NV-601(2)- CS 70LP-10	S	17/67/21		BAG	1	V)
) EN	VV-60(2)-CS TELP-11	ζ	17/57/21		BAG		V								3 DAYS EMPRESS
3 EN	/V-601 (z)-CS 7CLP-12		17/67/21		BAG	1	V								PLEASE START ON 20/07/21
		RELINQ	UISHED BY	<i>'</i>	<u> </u>			<u> </u>	R	ECEIVED BY			1	<u> </u>	METHOD OF SHIPMENT
Name:	Thomas YEUN	G		<u> </u>	Date: 17/0	7/2021	Name	e:			Date:	101	/		Con' Note No:
Of:	TEEMWA	Y			Time:		Of:				Time:	17/	7		
Name:					Date:	·····	Name	e:		11	Date:				Transport Co:
Of:		,			Time:		Of:		<u> </u>	111	Time:	f	_/		NA (III.)
	ntainer Codes: P = Unpreserve al HCl Preserved; VS = VOA Vial S														

Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

CHA	AIN OF CUSTODY	DOC	UME	TAT	ION							Н	022	228	38		A
CLIENT:		TEEM	WAY				SAME	PLER:				*********	*************************************				
ADDRES	SS / OFFICE:						МОВІ	LE:						•			(ALS)
PROJEC	T MANAGER (PM): Thom	as YEUI	NG				10H9	₹ E									ALS Laboratory Group
PROJEC	TID: Relocation of Sha Tin Sewac	e Treatm	ent Works	to Cavern	s - Site	1400	EMAI	L REPORT TO):								
SITE:	Preparation and Access Tun	nel Const	ruction (DC	72918/85			EMAI	L INVOICE TO): (if differ	ent to repo	ort)						
RESULT	S REQUIRED (Date):	,		QUOTE N	Ю.;		ANAL	YSIS REQUI	RED incl	uding SU	ITES(note	- suite c	odes must	be liste	d to attract	suite prid	ees)
COOLEI Intact: SAMPLE	BORÁTORY USE ONLY R SEAL (circle appropriate) Yes No N/A TEMPERATURE D: Yes No	COMM	MENTS / SP	ECIAL HAN	IDLING / STORAGE O	R DIPOSAL:	RLP (LEA)>						- In the second				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 INFO	DRMATION	\mathcal{C}_{i}										
AL\$ ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	100	3									t.
\perp	ENV-B01(2)-CS 7CLP-13	5	ग्रीग्र/21		BAG	1	V)
2	ENV-G01(2)-CS TOLP-14	2	27/01/21		BAG		1/										3 DAYS EXPRESS
.3	ENV-GOI(2)-CS TCLP-15	S	27/51/21		BAG	/	V										
																<u> </u>	
.	Thomas Y		UISHED BY	<u>:</u>	D. 171 /-		 		17		RECEIVE	ED BY	Τ		· /21	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	METHOD OF SHIPMENT
Name: Of:	TEEMW				Date: 27/07/2		Nam Of:	e: (Jag-	(1	11/		Date:	$\frac{1}{2}$	2/1/	4	Con' Note No:
Name:		AY			Date:	/	Nam	<u> </u>		5	41-)		Time:		403	 -	Transport Co.
Of:					Time:	,	Of:	G.			····		Time:				Transport Co:
<i>Water</i> (Container Codes: P = Unpreserve Vial HCl Preserved; VS = VOA Vial S Acetate Preserved Bottle; E = EDTA	Sulphuric P	reserved; S	SG = Sulfu	Plastic; ORC = Nitric Pi	Glass; H = HC	SH = S	ved Plastic; I	HS ≈ HCI	Preserved			oxide Pres				

ALS Laboratory Group

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

COC Page ____ of ___

CHA	IN OF CUSTODY	DOC	UMEN	ITATI	ON							\underline{H}	02	222	<u>93</u>		Λ
CLIENT:		TEEM	WAY				SAMPL	ER:									AIS
tternt.	S / OFFICE:						MOBIL	E:									(
PROJEC	TMANAGER (PM): Thon	nas YEU	ING				PHON	Ξ				···					ALS Laboratory Group
PROJEC	TID: Relocation of Sha Tin Sewage	e Treatme	nt Works t	o Caverns	- Site		EMAIL	REPORT	то:								
SITE:	Preparation and Access Tunn	iel Constr	uction (DC	2018(85)					TO: (if diff								
RESULT	S REQUIRED (Date):			QUOTE N	D.:		ANAL	YSIS RE	QUIRED in	cluding S	UITES(n	note - suite	e codes i	must be lis	ted to attr	act suite prid	
COOLER Intact: SAMPLE	RORATORY USE ONLY R SEAL (circle appropriate) Yes No (N/A) TEMPERATURE D: Yes (No)	СОММ	ENTS / SPE	ECIAL HAN	DLING/STORAGE OI	R DIPOSAL:	7 (JEAD)						Browney, J. J. J. J. J. J. J. J. J. J. J. J. J.				Notes: e.g. Highly contaminated samples e.g. "High PAHs expected" Extra volume for QC or trace LORs etc.
	SAMPLE INFORMATION (note: S	S = Soil, W	=Water)		CONTAINER INFO	ORMATION	400										
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	1				<u> </u>				+		
1	ENV-601(2)- CS TOLP-16	5	31/07/21		BAG	1	V										7
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1	ENV-601(2)-CS TCLP-17	5	31/07/21		BAG	1	V										(3 DAYS EXPRESS
	37 11																PLEASE START THE TEST ON
3	ENV-GOI(2) - CS TCLP-18	8	31/07/21		BAG	1	V										03/08/2021
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Name					Date:		Nan	ıe:			· · ·		D	ate:			Transport Co:
Of:					Time:		Of:							me:			
Water V = VC	Container Codes: P = Unpreserv A Vial HCI Preserved; VS = VOA Vial ac Acetate Preserved Bottle; E = EDTA	Sulphuric	Preserved;	SG = Sulf	furic Preserved Amber	Glass; H = H	CI Prese	erved Pla	stic; HS = 1	ICI Presei	ved; S =	: Sodium H	lydroxida ttle; SP	= Sulturic	Preserved	Plastic; F=	r Glass Unpreserved; Formaldehyde Preserved Glass;
														\A/HI	TELLAR O	OPY] /

ALS Laboratory Group

YELLOW - CUSTOMER COPY

COC Page ____ of ____ PINK - BOOK COPY



佳力高試驗中心有限公司

CASTCO TESTING CENTRE LIMITED

Test Report Concrete - Compressive Strength of Concrete Cubes (CS1: 1990 Section 12 + Amd. 1201, 1202 & 1203)

33, On Kui Street, Fanling, Hong Kong. 29A, On Chuen Street, Fanling, Hong Kong

Website: www.castco.com.hk

Tel: 2597 8333 Fax: 2597 8399



Castco Lab. Ref No.: 210716-2896

Report No.:734517

Audit No.: --

A/C ratio: --

No. of cubes: 3

Customer's Ref. No.: --

Date of issue: 23/07/2021 Page 1 of 1 page(s)

1. SAMPLE DETAILS AS SUPPLIED BY CUSTOMER

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: 09-07-2021

Time of water added to cement: --

Place and time of making cubes: ON SITE / --

3. LABORATORY TEST RESULT

Name of person making cubes:

Nominal size: 100.0 mm

Date received: 12-07-2021

Site curing method:

Grade: --

W/C ratio: --

Supplier:

Source of coarse aggregate: --Source of fine aggregate: --

Dosage: --/m3

Place of sampling: ENV-G01(2)

Method of Compaction:

Test at: 3 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

Max./ Min. temp: 30.0 / 24.0°C

Age at tests: 3 days

Date of Test: 12-07-2021

[] is available and a copy is attached

Moisture condition at test: WET

[X] is not available

Laboratory curing method; WATER CURING TANK

Tank No.: G

Cube Mark - ENV-G01(2)-CS UCS-		1	2	3
Mould No	-	NA	NA	NA
Weight in air	kg	1.730	1.825	1.750
Weight in water	kg	=	_	_
Height	mm	103.7	102.0	101.0
Width	mm	100.1	100.1	100.1
Length	mm	100.7	100.0	100.2
As- Received density (Vol. by calculation)	kg/m³	1660	1790	1730
As- Received density (Vol. by water disp.)	kg/m³	_	_	_
Load at Failure	kN	30.4	46.4	30.7
Compressive Strength	MPa	3.0	4.5	3.0
Observation Code	-	E	-	-
Type of Fracture	-	K	K	K

Observation Legend:

A - Dry on Receipt G - Segregation

B - Irregular shape H - Honeycombing C - Damaged corners

I - Voids

D - Damaged edges J - Abnormal fracture E - Oversize

K - Satisfactory Failures

F - Undersize

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 C1.10.4 of CS1:1990.

4. TESTING TIME:

Checked By:

SHEK Ka Fung

Assistant Technical Officer

Approved Signatory:

WONG Ka Man Senior Manager

End Of Report

Form No.CUBE COMP STR LIMS(CS1:1990) T1 dd 10/08/2020



佳力高試驗中心有限公司

CASTCO TESTING CENTRE LIMITED

Test Report Concrete - Compressive Strength of Concrete Cubes (CS1: 1990 Section 12 + Amd. 1201, 1202 & 1203)

33. On Kui Street, Fanling, Hong Kong. 29A. On Chuen Street, Fanling, Hong Kong

Website: www.castco.com.hk

Tel: 2597 8333 Fax: 2597 8399



Castco Lab. Ref No.: 210721-2021

Report No.:734490



Audit No.: --

A/C ratio: --

No. of cubes: 3

[X] is not available

Moisture condition at test: WET

Customer's Ref. No.: --

Date of issue: 23/07/2021 Page 1 of 1 page(s)

1. SAMPLE DETAILS AS SUPPLIED BY CUSTOMER

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

Cement brand: --

Admixture brand: --

Date of sampling: 12-07-2021

Time of water added to cement: --

Place and time of making cubes: ON SITE / --

3. LABORATORY TEST RESULT

Name of person making cubes:

Nominal size: 100.0 mm

Site curing method:

Date received: 15-07-2021

Tank No.: G

Grade: --W/C ratio: --

Supplier: Source of coarse aggregate: --

Source of fine aggregate: --

Dosage: --/m3

Place of sampling: ENV-G01 (2)

Method of Compaction:

Test at: 3 days

[] is available and a copy is attached

Max./ Min. temp: -- / -- °C

2. CERTIFICATE OF SAMPLING, SLUMP TEST, CUBE MAKING AND CURING

A certificate of sampling, slump test, cube make and curing

Date of Test: 15-07-2021

Age at tests: 3 days

Laboratory curing method: WATER CURING TANK

Max./ Min. temp: 30.0 / 24.0°C

Cube Mark - ENV-G01(2)-CS UCS-		4	5	6
Mould No	1-1	NA	NA	NA
Weight in air	kg	1.780	1.785	1.865
Weight in water	kg	-	-	_
Height	mm	102.3	102.9	102.0
Width	mm	99.8	99.6	99.8
Length	mm	100.1	99.9	100.1
As- Received density (Vol. by calculation)	kg/m³	1740	1740	1830
As- Received density (Vol. by water disp.)	kg/m³	_	-	_
Load at Failure	kN	29.0	43.2	57.7
Compressive Strength	MPa	3.0	4.0	5.5
Observation Code	-	E	E	_
Type of Fracture	-	K	K	K

Observation Legend:

A - Dry on Receipt G - Segregation

B - Irregular shape H - Honeycombing

C - Damaged corners

End Of Report

I - Voids

D - Damaged edges J - Abnormal fracture E - Oversize

K - Satisfactory Failures

F - Undersize

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 : 16:04

Checked By:

SHEK Ka Fung

Assistant Technical Officer

Approved Signatory:

WONG Ka Man

Senior Manager

Form No.CUBE COMP STR LIMS(CS1:1990) T1 dd 10/08/2020



佳力高試驗中心有限公司

CASTCO TESTING CENTRE LIMITED

33. On Kui Street, Fanling, Hong Kong. 29A, On Chuen Street, Fanling, Hong Kong

Website: www.castco.com.hk

Tel: 2597 8333 Fax: 2597 8399



Castco Lab. Ref No.: 210726-2187

Report No.:741135

Customer's Ref. No.: --

Audit No.: --

A/C ratio: --

No. of cubes: 3

[X] is not available

Test Report Concrete - Compressive Strength of Concrete Cubes

(CS1: 1990 Section 12 + Amd. 1201, 1202 & 1203)

Date of issue: 02/08/2021 Page 1 of 1 page(s)

1. SAMPLE DETAILS AS SUPPLIED BY CUSTOMER

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

[] is available and a copy is attached

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: 15-07-2021

Time of water added to cement: --

Place and time of making cubes: ON SITE / --

3. LABORATORY TEST RESULT

Name of person making cubes:

Nominal size: 100.0 mm

Site curing method:

Grade: --

W/C ratio: --

Supplier: Source of coarse aggregate: --

Source of fine aggregate: --

Dosage: --/m3

Place of sampling: ENV-G01 (2)

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

Date of Test: 19-07-2021

Age at tests: 4 days

Moisture condition at test: WET

Date received: 19-07-2021

Laboratory curing method: WATER CURING TANK

Tank No.: A Max./ Min. temp: 30.0 / 24.0°C

Cube Mark - ENV-G01-(2)-CS UCS-		7	8	9
Mould No	-	NA	NA	NA
Weight in air	kg	1.830	1.955	1.840
Weight in water	kg	_	=	=
Height	mm	99.7	100.2	100.4
Width	mm	100.4	100.3	100.1
Length	mm	100.1	100.1	100.2
As- Received density (Vol. by calculation)	kg/m³	1830	1940	1830
As- Received density (Vol. by water disp.)	kg/m³		_	_
Load at Failure	kN	28.1	28.4	36.4
Compressive Strength	MPa	3.0	3.0	3.5
Observation Code	-	_	=	_
Type of Fracture	-	K	K	K

Observation Legend:

A - Dry on Receipt

B - Irregular shape H - Honeycombing C - Damaged corners

End Of Report

I - Voids

D - Damaged edges J - Abnormal fracture E - Oversize

K - Satisfactory Failures

F - Undersize

G - Segregation 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: 16:41

Checked By:

SHEK Ka Fung

Assistant Technical Officer

Approved Signatory:

WONG Ka Man

Senior Manager

Form No.CUBE COMP_STR_LIMS(CS1:1990)_T1 dd 10/08/2020



佳力高試驗中心有限公司

CASTCO TESTING CENTRE LIMITED

33, On Kui Street, Fanling, Hong Kong. 29A, On Chuen Street, Fanling, Hong Kong

Website: www.castco.com.hk

Tel: 2597 8333 Fax: 2597 8399



Castco Lab. Ref No.: 210726-2188

Report No.:746321

Audit No.: --Customer's Ref. No.: --

A/C ratio: --

No. of cubes: 3

[X] is not available

Concrete - Compressive Strength of Concrete Cubes

(CS1: 1990 Section 12 + Amd. 1201, 1202 & 1203)

Test Report

Date of issue: 10/08/2021 Page 1 of 1 page(s)

1. SAMPLE DETAILS AS SUPPLIED BY CUSTOMER

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: 17-07-2021

Time of water added to cement: --

Place and time of making cubes: ON SITE / --

3. LABORATORY TEST RESULT

Name of person making cubes:

Nominal size: 100.0 mm

Date received: 19-07-2021

Site curing method:

Grade: --

W/C ratio: --

Supplier:

Source of coarse aggregate: --Source of fine aggregate: --

Dosage: --/m3

Place of sampling: ENV-G01 (2)

Method of Compaction:

Test at: 3 days

[] is available and a copy is attached

Max./ Min. temp: -- / -- °C

2. CERTIFICATE OF SAMPLING, SLUMP TEST, CUBE MAKING AND CURING

A certificate of sampling, slump test, cube make and curing

Date of Test: 20-07-2021

Max./ Min. temp: 30.0 / 24.0°C

Age at tests: 3 days

Moisture condition at test: WET

Laboratory curing method; WATER CURING TANK

Tank No.: G

- Lane 110 C		111411.1 111111. temp. 50.0 / 21.0 C							
Cube Mark - ENV-G01-(2)-CS UCS-		10	11	12					
Mould No	-	NA	NA	NA					
Weight in air	kg	1.920	1.925	1.940					
Weight in water	kg	-	_	_					
Height	mm	101.3	100.9	101.1					
Width	mm	100.2	100.5	99.7					
Length	mm	99.6	99.5	99.9					
As- Received density (Vol. by calculation)	kg/m³	1900	1910	1930					
As- Received density (Vol. by water disp.)	kg/m³	_	-	_					
Load at Failure	kN	48.1	44.7	36.9					
Compressive Strength	MPa	4.5	4.5	3.5					
Observation Code	1-	-	_	-					
Type of Fracture	-	K	K	K					

Observation Legend:

Remark(s): -

A - Dry on Receipt

B - Irregular shape

C - Damaged corners

I - Voids

D - Damaged edges J - Abnormal fracture E - Oversize

K - Satisfactory Failures

F - Undersize

G - Segregation H - Honeycombing 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 C1.10.4 of CS1:1990.
- 4. TESTING TIME: 14:34

Checked By:

SHEK Ka Fung

Assistant Technical Officer

Approved Signatory:

WONG Ka Man Senior Manager

End Of Report

Form No.CUBE COMP_STR_LIMS(CS1:1990)_T1 dd 10/08/2020



佳力高試驗中心有限公司

CASTCO TESTING CENTRE LIMITED

33, On Kui Street, Fanling, Hong Kong. 29A, On Chuen Street, Fanling, Hong Kong Website: www.castco.com.hk

Tel: 2597 8333

Fax: 2597 8399



Test Report Concrete - Compressive Strength of Concrete Cubes (CS1: 1990 Section 12 + Amd. 1201, 1202 & 1203)

Castco Lab. Ref No.: 210806-2123

Report No.:750716

Customer's Ref. No.: --

Audit No : --

A/C ratio: --

No. of cubes: 3

[X] is not available

Date of issue: 16/08/2021 Page 1 of 1 page(s)

1. SAMPLE DETAILS AS SUPPLIED BY CUSTOMER

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

Cement brand: --

Admixture brand: --

Date of sampling: 27-07-2021

Time of water added to cement: --

Place and time of making cubes: ON SITE / --

3. LABORATORY TEST RESULT

Name of person making cubes:

Nominal size: 100.0 mm

Site curing method:

Date received: 30-07-2021

Tank No.: G

Grade: --

W/C ratio: --

Supplier:

Source of coarse aggregate: --Source of fine aggregate: --

Dosage: --/m3

Place of sampling: ENV-G01 (2)

Method of Compaction:

Test at: 3 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

Age at tests: 3 days Moisture condition at test: WET

Laboratory curing method: WATER CURING TANK

Max / Min temp: 30.0 / 24.0°C

Date of Test: 30-07-2021

Talik 110 G		1914A.7 191111. tellip. 50.0 / 24.0 C							
Cube Mark - ENV-G01(2)-CS-UCS-		13	14	15					
Mould No		NA	NA	NA					
Weight in air	kg	1.905	1.935	1.925					
Weight in water	kg	_	_	_					
Height	mm	101.7	104.7	103.4					
Width	mm	100.8	99.9	100.2					
Length	mm	99.7	100.0	100.1					
As- Received density (Vol. by calculation)	kg/m³	1860	1850	1860					
As- Received density (Vol. by water disp.)	kg/m³	-		_					
Load at Failure	kN	35.4	31.5	33.0					
Compressive Strength	MPa	3.5	3.0	3.0					
Observation Code	-	-	Е	Е					
Type of Fracture	-	K	K	K					

Observation Legend:

Remark(s): -

A - Dry on Receipt

B - Irregular shape

C - Damaged corners

I - Voids

D - Damaged edges J - Abnormal fracture E - Oversize

K - Satisfactory Failures

F - Undersize

G - Segregation H - Honeycombing 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: 11:29

Checked By:

WAI Po Yi **Assistant Supervisor**

End Of Report

Approved Signatory:

WONG Ka Man

Senior Manager



佳力高試驗中心有限公司

CASTCO TESTING CENTRE LIMITED

33, On Kui Street, Fanling, Hong Kong. 29A, On Chuen Street, Fanling, Hong Kong

Website: www.castco.com.hk

Tel: 2597 8333 Fax: 2597 8399



Castco Lab. Ref No.: 210809-2087

Report No.:756980

Audit No .: --

A/C ratio: --

No. of cubes: 3

Customer's Ref. No.: --

Test Report Concrete - Compressive Strength of Concrete Cubes (CS1: 1990 Section 12 + Amd. 1201, 1202 & 1203)

Date of issue: 25/08/2021 Page 1 of 1 page(s)

1. SAMPLE DETAILS AS SUPPLIED BY CUSTOMER

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: 31-07-2021

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: --

Supplier:

Source of coarse aggregate: --

Source of fine aggregate: --Dosage: --/m3

Place of sampling: ENV-G01(2)

Method of Compaction:

Test at: 3 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

Age at tests: 3 days

Moisture condition at test: WET

[X] is not available

3. LABORATORY TEST RESULT

Date received: 03-08-2021

Laboratory curing method: WATER CURING TANK

Tank No.: G

Max./ Min. temp: 30.0 / 24.0°C

Date of Test: 03-08-2021

Cube Mark - ENV-G01(2)-CS UCS-		16	17	18
Mould No	-	NA	NA	NA
Weight in air	kg	1.935	1.930	1.970
Weight in water	kg	3 	-	
Height	mm	101.7	102.7	101.6
Width	mm	100.3	100.1	100.2
Length	mm	100.3	100.1	100.3
As- Received density (Vol. by calculation)	kg/m³	1890	1880	1930
As- Received density (Vol. by water disp.)	kg/m³	-	_	
Load at Failure	kN	25.5	21.1	21.9
Compressive Strength	MPa	2.5	2.0	2.0
Observation Code	-	_	E	_
Type of Fracture	-	K	К	K

Observation Legend:

Remark(s): -

A - Dry on Receipt

B - Irregular shape

C - Damaged corners

End Of Report

I - Voids

D - Damaged edges J - Abnormal fracture

E - Oversize

K. NONH XILZWAN

K - Satisfactory Failures

F - Undersize

G - Segregation H - Honeycombing 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: 16:08

Checked By:

SHEK Ka Fung

Assistant Technical Officer

Approved Signatory:

WONG Ka Man

Senior Manager

Form No.CUBE COMP STR LIMS(CS1:1990) T1 dd 10/08/2020

APPENDIX E

LABORATORY REPORTS & COC FORMS FOR QA/QC VERIFICATION TESTING

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: TEEMWAY ENGINEERING LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact Address : THOMAS YEUNG

Contact

: Richard Fung

Work Order

: HK2130256

ROAD, KOWLOON BAY, KOWLOON

: RM 1008, 10/F, CHEVALIER COMMERCIAL CENTRE, 8 WANG HOI

Address

: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong

E-mail Telephone : Works@teemway.com

: +852 2796 2268

E-mail

Quote

number

: richard.fung@alsglobal.com

Telephone

: +852 2610 1044

: +852 2796 2217 Facsimile

Facsimile

: +852 2610 2021

Project

DECONTAMINATION WORKS OF GROUNDWATER AND SOIL FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS

Date Samples Received

: 27-Jul-2021

TO CAVERNS - SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)

Order number

: HKE/1680/2020_V2

Issue Date

: 04-Aug-2021

C-O-C number : H022290

No. of samples received

No. of samples analysed

: 2 : 2

Site

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

This report may not be reproduced except with prior written approval from the testing laboratory.

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.

Signatories

Position

Authorised results for

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Page Number : 2 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2130256



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-Jul-2021 to 04-Aug-2021.

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: HK2130256

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.) is provided by client.

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

Page Number

3 of 4

Client

: TEEMWAY ENGINEERING LTD

Work Order HK2130256

ALS

Analytical Results

Sub-Matrix: WATER			Sample ID	ENV-G01(2)-CS	ENV-G01(2)-CS	 	
				FB1	EQ1		
		Samplir	ng date / time	27-Jul-2021	27-Jul-2021	 	
Compound	CAS Number	LOR	Unit	HK2130256-001	HK2130256-002	 	
EG: Metals and Major Cations - Filtered							
EG020: Lead	7439-92-1	1	μg/L	<1	<1	 	

Page Number

4 of 4

Client : 1

: TEEMWAY ENGINEERING LTD

Work Order HK2130256



Laboratory Duplicate (DUP) Report

Matrix: WATER		Laboratory Duplicate (DUP) Report									
Laboratory	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)			
sample ID							Result				
EG: Metals and Major Cati	ons - Filtered (QC Lot: 3815917)										
HK2130196-001	Anonymous	EG020: Lead	7439-92-1	1	μg/L	<1	<1	0.0			

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

Matrix: WATER			Method Blank (ME	i) Report	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report									
					Spike	Spike Re	Recovery Limits(%)		RPD (%)					
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low Hig		Value	Control			
											Limit			
EG: Metals and Major Cations - Filtered (QC Lot: 3815917)														
EG020: Lead	7439-92-1	1	μg/L	<1	50 μg/L	98.0		86.9	110					

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

Matrix: WATER		Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report									
		Spike	Spike Re	ecovery (%)	Recovery	Limits (%)	RPD (%)				
Laboratory	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations - Filtered (QC Lot: 381591	7)									
HK2130114-011	Anonymous	EG020: Lead	7439-92-1	50 μg/L	98.8		75.0	125			

ALS Technichem (HK) Pty Ltd

: RM 1008, 10/F, CHEVALIER COMMERCIAL CENTRE, 8 WANG HOI

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address

E-mail



CERTIFICATE OF ANALYSIS

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

Client : TEEMWAY ENGINEERING LTD Laboratory : ALS Technichem (HK) Pty Ltd Page : 1 of 4

Address

Contact : THOMAS YEUNG Contact : Richard Fung Work Order : HK2130744

ROAD, KOWLOON BAY, KOWLOON

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

: 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 Date Samples Received : 30-Jul-2021

TO CAVERNS - SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION (CONTRACT NO. DC/2018/05)

Order number : --- : HKE/1680/2020_V2 : HKE/1680/2020_V2 : 06-Aug-2021

number

C-O-C number : H022289

No. of samples received : 1

Site : --- No. of samples analysed : 1

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(Reg. No. HOKLAS 066) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific

laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories.

Wong Wing , Kenneth

Assistant Manager - Environmental

Metals_ENV

Page Number : 2 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2130744



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 30-Jul-2021 to 04-Aug-2021.

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: HK2130744

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.) is provided by client.

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

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.

Page Number

: 3 of 4

Client : TEEMWAY ENGINEERING LTD

Work Order HK2130744

ALS

Analytical Results

_						
Sub-Matrix: TCLP LEACHATE Sample ID				ENV-G01(2)-CS	 	
				TCLP-DUP1		
		Samplii	ng date / time	27-Jul-2021	 	
Compound	CAS Number	LOR	Unit	HK2130744-001	 	
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	 	

Page Number

∴ 4 of 4

Client

: TEEMWAY ENGINEERING LTD

Work Order HK2130744



Laboratory Duplicate (DUP) Report

Matrix: WATER		Laboratory Duplicate (DUP) Report										
Laboratory sample ID	Sample ID	Method: Compound	LOR	Unit	Original Result	Duplicate Result	RPD (%)					
EG: Metals and Major Cati	ons (QC Lot: 3825786)											
HK2130742-002	Anonymous	EG020: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.0				

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

Matrix: WATER			Method Blank (ME	3) Report	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report									
					Spike	Spike Red	Recove	ory Limits(%)	RPD (%)					
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control			
											Limit			
EG: Metals and Major Cations (QC Lot: 3825786)														
EG020: Lead	7439-92-1	0.1	mg/L	<0.1	0.5 mg/L	99.9	99.9		114					

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

Matrix: WATER		Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report										
		Spike	Spike Re	ecovery (%)	Recovery	Limits (%)	RPD (%)					
Laboratory	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and I	Major Cations (QC Lot: 3825786)											
HK2130742-001	Anonymous	EG020: Lead	7439-92-1	0.5 mg/L	96.8		75.0	125				

CHAIN OF CUSTODY DOCUMENTAT	ON	H 022290	****		
CLIENT: TEEMWAY ADDRESS / OFFICE:		SAMPLER:	\		
PROJECT MANAGER (PM): Thomas YEUNG		MOBILE: (ALS	,		
PROJECT IDRelocation of Sha Tin Sewage Treatment Works to Caverns-	Cita	PHONE ALS Laborators	1 CLOND		
SITE: Preparation and Access Tunnel Construction (DC/2018/05).	DITE	EMAIL INVOICE TO: (# diff year to year to			
RESULTS REQUIRED (Date): QUOTE N	O -	EMAIL INVOICE TO: (if different to report)			
All Plans of the base of the b		ANALYSIS REQUIRED including SUITES(note - suite codes must be listed to attract suite prices)			
COOLER SEAL (circle appropriate)	DLING / STORAGE OR DIPOSAL:	Notes: e.g. Highly contamit	nated samples		
		e.g. "High PAHs expected"	ł		
Intact: Yes No (N/A) SAMPLE TEMPERATURE		Extra volume for QC or trade	e LORs etc.		
CHILLED: Yes No: SAMPLE INFORMATION (note: S = Soil, W=Water)	AAUTANIED MEGDIATION				
ALS ID SAMPLE ID MATRIX DATE Time	CONTAINER INFORMATION Type / Code Total bottles				
ENV-601(2)-CS FB1 W 21/07/4	BOTTLE 1				
3					
2 ENV-GOI(2)-(S EQ) W 7/07/21	BOTTLE 1				
RELINQUISHED BY:		RECEIVED BY METHOD OF SHII	DATEST		
Name: Thomas YEUNG	Date: 27/07/2021	Name: Date:) T /) / Con' Note No:	MENI		
Of: TEEMWAY	Time: 16-00	Of: HS G-IC \ Time: 1808			
Name:	Date:	Name: Date: Transport Co:	Transport Co:		
Of:	Time:	Of: Time:			
Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved I		C; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved;			

V = VOA Vial HCI Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCI Preserved Plastic; HS = HCI 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__

CHA	AIN OF CUSTODY	DOC	UME	TAT	ION								H	4 (022	228	39			A
CLIENT:	T	EEMW.	AY				SAMPI	LER:												
ADDRES	SS / OFFICE:						MOBILE:										(ALS)			
PROJEC	CT MANAGER (PM): Th	omas Y	EUNG				PHONE											ALS Laboratory Group		
PROJEC	CT ID: Relocation of Sha Tin Sev	vage Trea	itment Wor	rks to Cav	erns - Site		EMAIL	.REPC	ORT TO:											
SITE:	Preparation and Access To	unnel Cor	nstruction	(BC/2018/	05)		EMAIL	. INVO	ICE TO:	(if differ	ent to re	port)			, ,,					
RESULT	'S REQUIRED (Date):			QUOTE N	IO.:		ANAL	YSIS F	REQUIR	ED incl	uding S	UITES	(note - s	uite cod	des mus	t be liste	ed to at	tract su	ite pric	es)
COOLER Intact:	BORATORY USE ONLY R SEAL (circle appropriate) Yes No NA ETEMPERATURE D: Yes No SAMPLE INFORMATION (note: S			ECIAL HAN	NDLING / STORAGE OF		TOLP (LEAD)	, EAD	The state of the s											Notes: e.g. Highly contaminated samples e.g. "High PAHs expected" Extra volume for QC or trace LORs etc.
ALS ID	\$AMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles		$\overline{}$	<u>′</u>					***************************************						
	BUV-GOI(2)-CS TOLP-DUP	1 5	27/07/21		BAG	/	V													·
						<u> </u>			\perp											
	TW-GDI (2)-C5 FB!	W	17/11/W		BOTTLE	7		=	-		=/	7								
												/								
	19N GOI(2)-CS EQ 1		21./01/21		1301/12		\blacksquare	V	#		-/	3		ı						
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		· · · · · · · · · · · · · · · · · · ·	UISHED BY	<u> </u>						,		REC	CEIVED	BY				·		METHOD OF SHIPMENT
Name:	Thomas YI	EUNG			Date: 27/07/-	262	Name):		$\overline{\sim}$					Date:	λ	0	71	21	Con' Note No:
Of:	TEEMWA	4Y			Time: /6:00)	Of:				CHR	$\leq \lambda$			Time:	J		101	•	
Name:					Date:		Name:						Date:					Transport Co:		
Of: Time:						Of: Time:														
V = VO	Container Codes: P = Unpreserved A Vial HCl Preserved; VS = VOA Vial S	ulphuric P	Preserved; S	SG = Sulfu	ıric Preserved Amber G	ilass; H = HC	l Preserv	ved Pla	astic; H	S = HCI	Preserve									

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

COC Page ____of___



佳力高試驗中心有限公司

CASTCO TESTING CENTRE LIMITED

33, On Kui Street, Fanling, Hong Kong. 29A, On Chuen Street, Fanling, Hong Kong

Website: www.castco.com.hk

Tel: 2597 8333 Fax: 2597 8399



Test Report Concrete - Compressive Strength of Concrete Cubes (CS1: 1990 Section 12 + Amd. 1201, 1202 & 1203)

Castco Lab. Ref No.: 210806-2124

Report No.:750717

Customer's Ref. No.: --

Audit No : --

A/C ratio: --

No. of cubes: 1

[X] is not available

Moisture condition at test: WET

Date of issue: 16/08/2021 Page 1 of 1 page(s)

1. SAMPLE DETAILS AS SUPPLIED BY CUSTOMER

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

Cement brand: --

Admixture brand: --

Date of sampling: 27-07-2021

Time of water added to cement: --

Place and time of making cubes: ON SITE / --

3. LABORATORY TEST RESULT

Name of person making cubes:

Nominal size: 100.0 mm

Date received: 30-07-2021

Site curing method:

Grade: --

W/C ratio: --

Supplier:

Source of coarse aggregate: --Source of fine aggregate: --

Dosage: --/m3

Place of sampling: ENV-G01 (2)

Method of Compaction:

Test at: 3 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

Laboratory curing method: WATER CURING TANK

Age at tests: 3 days

Date of Test: 30-07-2021

[] is available and a copy is attached

Max./ Min. temp: 30.0 / 24.0°C

Tank No.: G		Max./ Min. te
Cube Mark - ENV-G01(2)-CS-UCS-		DUP1
Mould No	-	NA
Weight in air	kg	1.930
Weight in water	kg	-
Height	mm	102.0
Width	mm	99.9
Length	mm	100.0
As- Received density (Vol. by calculation)	kg/m³	1890
As- Received density (Vol. by water disp.)	kg/m³	-
Load at Failure	kN	25.8
Compressive Strength	MPa	2.5
Observation Code	-	_
Type of Fracture	-	K

Observation Legend: Remark(s): -

A - Dry on Receipt

B - Irregular shape H - Honeycombing C - Damaged corners

End Of Report

I - Voids

D - Damaged edges J - Abnormal fracture E - Oversize

K - Satisfactory Failures

F - Undersize

G - Segregation

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: 11:32

Checked By:

WAI Po Yi **Assistant Supervisor** **Approved Signatory:**

WONG Ka Man

Senior Manager

Form No.CUBE COMP_STR_LIMS(CS1:1990) T1 dd 10/08/2020

APPENDIX F

PHOTO RECORD

CONFIRMATORY SAMPLING

Site Setup & Decontamination of Sampling Tools













Collection of Confirmatory Sampling













QA/QC Sampling for Confirmatory Sampling









SOIL REMEDIATION WORK

Site Setup & Installation of ELS Work





Trial Mix Test for Cement Solidification / Stabilization









Excavation of Contaminated Soil (1.00m - 1.50m bgl)





Excavation of Contaminated Soil (1.50m – 3.95m bgl)









Implementation of Cement Solidification / Stabilization













Verification Sampling for Cement Solidification / Stabilization









Temporary Storage for Treated Soil





REMEDIATION REPORT (RR) FOR THE EXISTING DSD STAFF QUARTERS SITE





QA/QC Sampling for Verification Sampling









Decontamination of Excavation Bucket









Backfilling & Compaction of Treated Soil (1.05m - 3.95m bgl)









Backfilling & Compaction of Top Clean Soil (0.00m – 1.05m bgl)





